



CITY OF GOODYEAR

Offer and Acceptance CONTRACT NO. CON-17-3793

Office of Procurement
190 N. Litchfield Road
P.O. Box 5100
Goodyear, AZ 85338
Phone: 623-882-7832

DESCRIPTION OF SERVICES: Purchase of Fire Department Pumper Trucks

OFFER

To the City of Goodyear: The undersigned Contractor hereby offers and agrees to furnish the Services and/or material(s) in compliance with this Contract, as the term Contract is defined in this document.

By signing and submitting this Offer, Contractor certifies and warrants that Contractor: has read, understands and agrees to comply with the Contract as defined here; has no known, undisclosed conflict of interest; has not made an offer of any gift(s), payment(s) or other consideration to any City employee, elected official who has or may have had a role in the procurement process for this Contract; v) pursuant to A.R.S. § 41-4401, Contractor and its subcontractors will comply with all immigration laws and regulations that relate to its employees and A.R.S. § 23-214; and the signatory is an officer or duly authorized agent of the Contractor with full power and authority to submit binding offers for the goods and/or services as specified herein.

Arizona Transaction (Sales): 21117822

Arizona Contractor License Number: NA

Privilege Tax License # 21117822

City of Goodyear Business Registration No.:
to be applied for upon contract award

For clarification of this offer contact:

Name:

Telephone:

E-Mail Address:

Sign:

Jeffrey M. Scherer
Authorized Signature for Offer

Jeffrey M. Scherer

Printed Name

Smeal Fire Apparatus co.

Company Name

610 4th Street

Address

Snyder NE 68664

City

State

Zip Code

CFO

November 15, 2016

Title

Date

ACCEPTANCE OF OFFER AND CONTRACT AWARD (For City of Goodyear Use Only)

Contractor's Offer is hereby accepted and a Contract awarded by the City. Contractor is now bound to provide the materials and/or services as specified in Scope of Work of this Contract. Contractor shall not start any billable work or provide any material/services until the Contractor receives an executed purchase order or written notice to proceed.

City Manager, City of Goodyear (if applicable)

Attested by:

Maureen Scott, City Clerk

City Seal

Official File

City of Goodyear, Arizona.

Eff. Date: _____

Awarded on _____

Approved as to form:

Roric Massey, City Attorney

Jacque Behrens, CPPB, Procurement Manager



CITY OF GOODYEAR

Fee Schedule

Office of Procurement
190 N. Litchfield Road
P.O. Box 5100
Goodyear, AZ 85338
Phone: 623-882-7834

Prices offered shall not include applicable state and local taxes. The City will pay all applicable taxes. For the purposes of determining the lowest cost, the City will not take tax into consideration.

Taxes must be listed as a separate item on all invoices. Applicable tax rate: _____ %

Line No.	Description	QTY	Unit Cost	Extended Cost
1.	Pumper Trucks	3 each	\$ 592,017	\$ 1,776,051
			Freight	\$ 12,000
			Total Cost	\$ 1,788,051

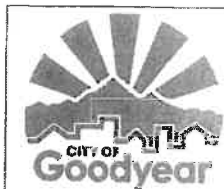
State Make and Model	
Make: <u>SHERR / SPARTAN METROSTAR</u>	Model: <u>REAR MOUNT PUMPER</u>

2. Delivery:

Bidder states that the item(s) will be delivered within WITHIN 300 DAYS AFTER PREBUILT calendar days after receipt of order. This delivery schedule shall include any time for shipping.

REFER TO COMMENTS & CLARIFICATIONS
Item #25


11/17/16



Solicitation Amendment No. 2

Solicitation No. 17-3793

Solicitation Due Date: November 17, 2016

Time: 3:00 pm (Arizona Time)

Office of Procurement
190 N. Litchfield Road
P.O. Box 5100
Goodyear, AZ 85338
Phone: 623-882-7834

Fire Department Pumper Trucks

Solicitation Amendment 2 is hereby issued as a result of questions received regarding the above mentioned solicitation.

Question 1. Page 133 #506 WATEROUS CX FIRE PUMP

A rear mounted Waterous CX series fire pump shall be provided. the pump shall comply with all applicable requirements of the latest standards for automotive fire apparatus of the National Fire Protection Association, NFPA 1901, 2016 edition and shall have a rated capacity of 1250 GPM (6000 LPM) to 2250 GPM (9000 LPM) depending on final configuration.

Answer 18: The city's desire is to maintain the CX model fire pump within the specification. This pump is better suited for the GPM in which we operate and it has a smaller foot print to facilitate the rear mount design.

In regards the pump that is being requested, with our design the Waterous S100 pump has been used due to its strength and flow capability, the S100 for us would be a much better pump for the use in the rear mount configuration, I would ask that the department would reconsider the use of the S100 given the following facts in regards to pump performance S100 vs. CX Pump, the S100 is built by the same manufacturer and is capable of more flow than the CX, not to mention considered (By Waterous) to be 35% lighter and 25% stronger than the specified pump. Please see the following facts on both pumps:

Answer 1. The City's desire is to stay with the Waterous CX model fire pump.

Question 2. Page 60 #145: Rear Suspension

The single rear axle suspension shall feature a Neway AD-127 air suspension. The air suspension shall include optimized air springs mounted to the equalizing beams and integral transverse beam. An adjustable torque rod and adjustable track bar shall also be included. 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 is run flat capable at reduced speeds. The rear suspension capacity shall be rated at 24,000 to 27,000 lbs.


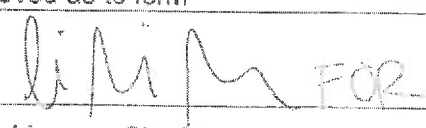
Add: The city will accept and consider with no exception a Fire Maxx Air Ride Suspension matching the weight rating outlined in this solicitation.

With the use of any air ride system space is always a concern, the specification calls out the use of a focal mounted Telma brake retarder, there is simply not enough room if air ride is required and we use the Fire Maxx Suspension System, would the department be willing to accept the use of a transmission retarder in lieu of the Telma Retarder with no exception?

Answer 2. The City's desire is to stay with the drive line retarder secondary braking system.

No other terms, conditions, or performance standards written or implied are changed.

Procurement Specialist: Dora Chavez


City of Goodyear	Approved as to form
By: 	By: 
Jacquie Behrens, CPPB	Roric Massey, City Attorney

Acknowledgement by Contractor

Contractor hereby acknowledges receipt and understanding of the above amendment. Contractor shall sign and return with their submittal.

Contractor Signature: 

Date: 11/17/16

	Solicitation Amendment No. 1		Office of Procurement 190 N. Litchfield Road P.O. Box 5100 Goodyear, AZ 85338 Phone: 623-882-7834
	Solicitation No. 17-3793 Solicitation Due Date: November 17, 2016 Time: 3:00 pm (Arizona Time)		

Fire Department Pumper Trucks

Solicitation Amendment 1 is hereby issued as a result of questions received regarding the above mentioned solicitation.

Question 1. Page 24, Section 3. Other

Liquidated Damages. If the successful Contractor fails to deliver the supplies or properly install a product within the time specified in this contract, or any extension thereof, the actual damages to the City for the delay will be difficult or impossible to determine. Therefore, in lieu of actual damages, the successful proposer shall pay to the City as fixed, agreed, and liquidated damages for each calendar day of delay, the amount of \$300 per day. The \$300 per day, is it per pumper truck or total of three?

Answer 1. The \$300 per day, it is per pumper truck.

Question 2. Page 52, #98: Clarify if the DEF access door needs to be painted or if it can be tread plate. Ours is tread plate.

Answer 2. A tread plate DEF access door is acceptable to the City of Goodyear.

Question 3. Page 64, #173: Clarify if they must have dual frame rails (liner). We can do it, but we meet the spec without the 2nd rail.

Answer 3. Yes, we are requiring dual frame rails per current specification.

Question 4. Page 65, #176: Clarify the frame paint. We cannot powder coat the frame a custom color. Ours are powder coated black and then painted any color (job color in this case).

Answer 4. We are requesting the frame rails be powder coated body color in order to assistance in the maintenance and operational inspection of the apparatus. The City of Goodyear will accept and take into consideration other paint methods with no exceptions as long as they meet the appropriate industry standards and or regulations.

Question 5. Page 66, #183: Clarify the minimum requirement for the air horn reservoir. They call for a 2000 cubic inch tank, but there's no room for it. We can do 1200 cubic inch (same as their current trucks).


Answer 5. The City of Goodyear will accept and take into consideration with no exceptions a horn air reservoir less than the stated 2084 cubic inch capacity as long as it meets or exceeds 2016 NFPA standards.

Question 6. Page 68, #192: Specify the cab tilt tether length. They call for 20' and ours is 12'. 20' is really too long, but we should be able to do it if needed. Also, they don't specify where the plug in is supposed to be.

Answer 6. The City of Goodyear will accept and take into consideration with no exceptions a cab tilt tether less than 20' as long as it meets or exceeds 2016 NFPA standards.

Question 7. Page 73, #224: Clarify if the cab doors must have the tread plate kick plate or not. We typically don't do this.

Answer 7. Yes, per specification, there will be a tread plate kick panel on the cab doors.

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Question 8. Page 73, #225: Clarify if they must have the "Custom Built for..." placard in the cab as this is a Spartan item.

Answer 8. Yes, per specification, this verbiage will be located on the interior door trim.

Question 9. Page 84, #310: The City will accept the "Do Not Move" light to be the same as their fleet (1" round red light with built in speaker)?

Answer 9. The City of Goodyear is requesting the "Do Not Move" light to be in excess of 5" long in order to maintain safety of our staff and equipment.

Question 10. Page 86, #320: The City is requesting a Whelan 900 scene light and 900 warning light on each side of the cab above the middle window. Please clarify if this is where they want them as the window will be very small if they do this. The Company will suggest going to 600 series lights and put one behind the rear crew doors.

Answer 10. The City of Goodyear will accept and take into consideration with no exceptions a 600 series Whelan side warning lights. The City does not want this light mounted behind the rear crew doors as it would interfere with the LED water tank level gauge.

Question 11. Page 87, #332: The gauge layout is specific to Spartan. Clarify if we have to match this or get close.

Answer 11. The City of Goodyear will accept and take into consideration and gauge layout that is similar to what is identified in this specification.

Question 12. Page 92, #355: Need to clarify the Cab to Axle length specified as a length of 126" doesn't exist.


Answer 12. The cab to axle distance should have read on or around 136".

Question 13. Page 97, #381: Clarify the in-cab trash can holder. The City wants it behind the driver's seat, but there's not really any room there. We could probably fabricate something, but it won't hold a trash can.

Answer 13. The City of Goodyear is requesting a small trash can holder to be mounted in the cab. The City will accept and take into consideration with no exception a different mounting location within the cab. This trash can holder must facilitate a small trash can like the one you would find in your home bathroom.

Question 14. Page 101, #399: Body Mounting

The body subframe shall be fastened to the chassis frame with a minimum of four (4) spring loaded body mounts. Each mount shall be configured using a two-piece encapsulated slide bracket. The two (2) brackets shall be fabricated of heavy duty 1/4" thick steel and shall have a powder coat finish to prevent any corrosion. Each mounting assembly shall utilizing two (2) 3/4" diameter x 6" long grade 8 bolts and two (2) heavy duty springs. The assembly design shall allow the body and subframe to act as one (1) component, separate from the chassis. As the chassis frame twists under driving conditions, the spring mounting system shall eliminate any stress from being transferred into the body. The spring loaded body mounts shall also prevent frame side rail or body damage caused by unevenly distributed stress and strains due to load and chassis movement.

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This is a very specific specification item to one manufacturer, would the department be willing to accept a hard mount body in place of these spring type mounts and consider equal score rating?

Answer 14. The City will accept and consider with no exception the use of a different body mounting design for this solicitation.

Question 15. Pages 110-116: Compartment layouts, I noticed that compartment L3 and R3 are left open, there is a great deal of loose equipment that needs to fit in a very tight location as far as the specifications are calling out. Would the department be willing to open these compartments to place more equipment as an attempt to spread some of these items out for a more efficient design?

Answer 15. The City is willing to open these compartments to place more equipment in for a more overall efficient design.

Question 16. Page 117, #452/453: Clarify folding steps in section 452-3. They want 1 step? Where?

Answer 16. The City of Goodyear is requesting the adequate number of mounted steps in order for staff to safely climb from the ground level to the top of the apparatus.

Question 17. Page 133, #505: Clarify if line #505 is required. Our electrical panel is in the front of the body and it won't be back by the pump panel.

Answer 17. Yes, this is required in order for the City of Goodyear staff to power necessary equipment. The City of Goodyear will accept and take into consideration other power distribution locations with no exceptions.

Question 18. Page 133, #506 WATEROUS CX FIRE PUMP

A rear mounted Waterous CX series fire pump shall be provided. The pump shall comply with all applicable requirements of the latest standards for automotive fire apparatus of the National Fire Protection Association, NFPA 1901, 2016 edition and shall have a rated capacity of 1,250 GPM (6,000 LPM) to 2,250 GPM (9,000 LPM) depending on final configuration.


Answer 18. The City's desire is to maintain the CX model fire pump within the specification. This pump is better suited for the GPM in which we operate at and has a smaller foot print to facilitate the rear mount design.

Question 19. Page 141, #7., Scope of Work: Clarify the rear gated 6" inlet. They want it "gated" but don't specify how.

Answer 19. The City of Goodyear is requesting a manual gated valve that is easily accessible from the Engineers panel.

Question 20. Page 154, #52., Scope of Work: Equipment Mounting, there is some mention of an attached drawings and photos in regards to brackets and compartment layouts, am I missing them on the IFB release are there attachments that I am not seeing? Please let me know. Had some questions in regards to the slideout toolboard that is mentioned as going into compartment C1.

Answer 20. The City of Goodyear is requesting bidders to provide compartment space designs incorporating the latest technology based on the load plan embedded within the specifications.

	Solicitation Amendment No. 1		Office of Procurement 190 N. Litchfield Road P.O. Box 5100 Goodyear, AZ 85338 Phone: 623-682-7834
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Question 21. Line number 68,204, and 206: Clarify if the HVAC controls can be integrated into the VMUX display or not.

Answer 21. **The City of Goodyear will accept and take into consideration with no exceptions integrated computerized HVAC controls.**

Question 22. Line number 238 and 429: Need to clarify the front body compartments. The driver's side is listed as transverse, but the passenger side isn't. This can't be transverse because of the water tank, however we can put the backboards there and make that small section transverse. Need to see if that's all they are asking for. Due to the size and position of the tank the entire compartment cannot be a pass through, however a portion can be to accommodate backboards and long tools. Would this be acceptable?

Answer 22. **The City of Goodyear's desire is to have as much compartment traverse space as possible in order to maximize equipment storage and allow the City of Goodyear staff to store equipment outside of the cab.**

ADDITIONAL INFORMATION:

Page 45, #65: Cab Test Information

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

The above tests have been witnessed by and attested to by an independent third party. The test results were recorded using cameras, high speed imagers, accelerometers and strain gauges. Documentation of the testing shall be provided upon request. The intent of the City is to obtain cab and crash test data that meets all Federal and State requirements. Cab and chassis crash testing not listed above will be considered without exception by the City.

ADD: **The City will accept and consider with no exception all cab and crash test information for this solicitation.**


Page 59, #135: Electronic Power Steering Fluid Level Indicator

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

ADD: **The City will accept and consider with no exception a manual check for the powers steering reservoir for this solicitation.**

Page 60, #145: Rear Suspension

The single rear axle suspension shall feature a Neway AD-127 air suspension. The suspension shall include optimized air springs mounted to the equalizing beams and integral transverse beam. An adjustable torque rod and adjustable track bar shall also be included.

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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 is run flat capable at reduced speeds.

ADD: The rear suspension capacity shall be rated at 24,000 to 27,000 pounds.
The City will accept and consider with no exception a Fire Maxx Air Ride Suspension matching the weight rating outlined in this solicitation.

Page 60, #149: Rear Axle Ratio

The rear axle ratio shall be 5.13:1.

ADD: The City will accept and consider with no exception the bidder to outline the best rear axle ration based on their final design.

Page 64, #171: Wheelbase

The chassis wheelbase shall not exceed 193.50 inches.

ADD: The City will accept and consider with no exception a wheel base that facilitate the construction of this apparatus in accordance with the specification.

Page 79, #269: Electronic Windshield Fluid Level Indicator

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

ADD: The City will accept and consider with no exception a visual check for the windshield washer reservoir for this solicitation.

Page 83, #302: Ground Lights


Each door shall include one (1) On-Scene brand Night Axe LED strip model ground light mounted to the underside of the cab step below each door. The ground light shall be mounted in a polished aluminum bezel. The ground lighting shall be activated by the opening of the respective side door, respective side turn signal, when the parking brake is set, as well as being activated through a virtual button on the Vista display and control screen.

ADD: The City will accept and consider with no exception a different make and model of ground lighting as long as it meets or exceeds 2016 NFPA standards.

Page 107, #425: Roll Up Door Construction –Amdor

The apparatus shall be equipped with AMDOR roll-up exterior compartment doors. AMDOR roll-up doors shall be complete with the following features.

ADD: The City's desire is to maintain the Amdor roll-up doors within this specification in order to maintain consistency within the City of Goodyear's fleet.

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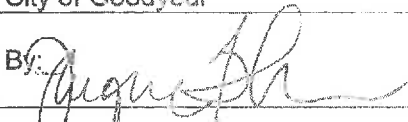

GENERAL QUESTION:

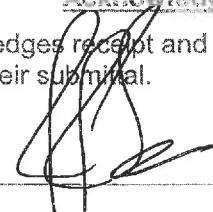
Question The amount of loose equipment storage that is required to be stored in compartments R1/L1 R2/L2 and R4/L4 although compartments over the wheel wells L3/R3 are to remain open and nothing is to be placed in these compartments, is there a way that these compartments could be used to spread some of these items out throughout the body for a more efficient compartment design?

Answer The City will except and consider compartment designs with the latest industry concepts that would facilitate the listed load plan in a more efficient manner.

No other terms, conditions, or performance standards written or implied are changed.

Procurement Specialist: Dora Chavez

City of Goodyear	Approved as to form
By: 	By: 
Jacques Behrens, CPPB	Roric Massey, City Attorney

<u>Acknowledgement by Contractor</u>	
Contractor hereby acknowledges receipt and understanding of the above amendment. Contractor shall sign and return with their submittal.	
Contractor Signature: 	Date: 11/16/17



CITY OF GOODYEAR

Invitation For Bid

Office of Procurement
190 N. Litchfield Road
P.O. Box 5100
Goodyear, AZ 85338
Phone: 623-882-7834

Solicitation Number: 17-3793

Materials and/or Service: Fire Department Pumper Trucks

Solicitation Due Date: November 17, 2016 **Time:** 3:00 pm (Arizona Time)

Mailing Address: City of Goodyear, City Hall Front Desk
190 North Litchfield Road
P.O. Box 5100
Goodyear, AZ 85338

Procurement Specialist: Dora Chavez
Phone: (623) 882-7834
Email: dora.chavez@goodyearaz.gov

All bids must be received by the City of Goodyear, City Hall Front Desk, at the specified location by the date and time cited above. Late bids will not be considered. Bids received by the correct date and time shall be publicly opened and read. Bidders are advised to carefully read the entire Solicitation Package. Bids that do not comply with all Instructions to Bidders may be disqualified.

Bidders must register as a vendor with the City of Goodyear at <https://procurement.goodyearaz.gov/bso/> to obtain a solicitation packet. Solicitation packages can be obtained by downloading from the City of Goodyear's website: www.goodyearaz.gov and following these instructions: Enter City website, click on BUSINESS, click on Vendor Services/Procurement, click on Solicitations for Bids/Proposals, click on IFB 17-3793. Should you experience problems downloading the solicitation, contact Dora Chavez, at the above email address.

Attendance at the Pre-Bid Conference is not mandatory; however, Bidders are strongly encouraged to attend. Offerors are also strongly encouraged to read entire solicitation prior to Pre-Bid Conference. Copies of the solicitation will not be handed out at the Pre-Bid.

Pre-Offer Conference: October 28, 2016
Time: 10:00 a.m. (Arizona Time)
Pre-Offer Location: Goodyear City Hall, Conference Room 125
190 N. Litchfield Road
Goodyear, AZ 85338

All communications concerning this solicitation must be directed to responsible procurement staff person identified above, via email only. Communications with other city staff may disqualify you from the evaluation process.

OFFERORS ARE STRONGLY ENCOURAGED TO READ THE ENTIRE SOLICITATION

Published in the Arizona Republic Southwest Section on: 10/12/16, and 10/14/16



CITY OF GOODYEAR

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CITY OF GOODYEAR

Instructions to Bidders

Office of Procurement
190 N. Litchfield Road
P.O. Box 5100
Goodyear, AZ 85338
Phone: 623-882-7834

1. PREPARATION OF OFFER

- a. It is the responsibility of all Bidders to examine the entire solicitation package and seek clarification from the responsible Procurement Specialist of any item or requirement that may not be clear, and to check all responses for accuracy before submitting a bid.
- b. All offers shall be on the forms provided in the solicitation package. It is permissible to copy these forms if required. Telegraphic (facsimile) or email bids will not be considered.
- c. The Offer and Acceptance document shall be returned with the submittal with an original blue ink signature by a person authorized to sign the Offer. Pricing documents and other documents which require information to be filled in must be done in ink, typewritten or computer printed. No bids will be accepted if pencil is used. Erasures, interlineations, or other modifications in the bid shall be initialed in original blue ink by the authorized person signing the bid.
- d. It is the Bidder's responsibility to obtain a copy of any addenda relevant to this solicitation. Failure to submit addenda with the solicitation response may be grounds for deeming a bid non-responsive.
- e. Bids shall be submitted in a sealed envelope provided by the Bidder, and should include the Bidder's name, address and solicitation number on outside of the sealed envelope/package.
- f. Periods of time, stated as a number of days, shall be calendar days.
- g. It is the responsibility of the Bidder to submit the bid at the place and by the time provided in the solicitation.
- h. Negligence in preparing a bid confers no right of withdrawal after the due date and time of the bid. No bid shall be altered, amended, or withdrawn after the specified offer due date and time.
- i. Offers shall include all costs as described and indicated by the specifications. The City is exempt from Federal Excise Tax, including the Federal Transportation Tax. Sales tax, if any, shall be indicated as a separate item.
- j. If price is a consideration, and in case of error in the extension of prices in the bid, the unit price shall govern.
- k. The City shall not reimburse the cost of developing, presenting, or providing any responses to this solicitation. Bids submitted for consideration should be prepared simply and economically, providing adequate information in a straightforward and concise manner.
- l. Bidder shall submit one (1) original, marked "original" and one (1) copy of their bid with their submittal. Bid shall be submitted single-sided and one (1) CD-ROM of the proposal containing all original documents.



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Instructions to Bidders

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2. SERIAL NUMBERS

Bids shall be for equipment on which the original manufacturer's serial number, if applicable, has not been altered in any way. Throughout the contract term, the City reserves the right to reject any altered equipment.

3. BRAND NAMES

Any manufacturer's names, trade names, brand names, or catalog numbers used in the specifications are for the purposes of describing and establishing the quality level, design and performance desired. Such references are not intended to limit or restrict bidding by other vendors, but are intended to establish the quality, design or performance which is desired. Any Bidder which proposes equal or greater quality, design or performance may be considered. The city has the sole authority to accept or reject any like items.

4. SUBSTITUTIONS OR EXCEPTIONS

The City reserves the option to not consider bids for award if the Bidder: i) takes any exception to the specifications and the City does not agree or accept the proposed changes; or ii) proposes a unit which does not meet the City's specifications exactly and the Bidder does not additionally propose the specified unit prior to bid opening, and the City rejects the alternative identified.

5. DESCRIPTIVE LITERATURE

All bidders shall include complete manufacturer's descriptive literature regarding the equipment and goods they propose to furnish. Literature shall be sufficient in detail in order to allow full and fair evaluation of the bid submitted. Failure to include this information may result may result in the bid being rejected.

6. PREPARATION OF SPECIFICATIONS BY PERSONS OTHER THAN CITY PERSONNEL

All specifications shall seek to promote overall economy for the purposes intended and encourage competition and not be unduly restrictive in satisfying the City's needs. No person preparing specifications shall receive any direct or indirect benefit from the utilization of specifications, other than fees paid for the preparation of specifications.

7. INQUIRIES

Any questions related to the solicitation shall be directed to the responsible Procurement Specialist whose name appears on the front page **via email only**. The Bidder shall not contact or ask questions of other City staff or the City department for which the requirement is being procured. Any correspondence related to a solicitation should refer to the solicitation number, page, and paragraph number. All questions must be submitted no later than the close of business five (5) calendar days prior to the opening date.

8. PRE-BID CONFERENCE

A Pre-Bid Conference will be held. Attendance at the scheduled Pre-Bid Conferences is not mandatory. The date, time and location of the conference are indicated on the cover page of this document. The purpose of this conference will be to clarify the contents of this solicitation in order to prevent any misunderstanding of the City's position. Any doubt as to the requirements of this solicitation or any apparent omission or discrepancy should be presented to the City at this conference. The City will then determine if any action is necessary and may issue a written amendment to the solicitation. *Oral statements or instructions will not constitute an amendment to this solicitation.*



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9. **LATE BIDS/MODIFICATIONS/WITHDRAWALS**

Bids, modifications of bids, and withdrawals received *after* the due date and time specified for receipt will be rejected and returned to the Bidder unopened. A Bidder (or designated representative) may withdraw their bid via email to the responsible Procurement Specialist any time *prior* to the solicitation due date and time.

10. **PUBLIC RECORD/CONFIDENTIAL INFORMATION**

All bids submitted in response to this solicitation shall become the property of the City and shall become a matter of public record available for review, subsequent to the award. If the Bidder believes that any information provided throughout the procurement process should be withheld as confidential, it is the responsibility of the Bidder to submit to the Procurement Manager a statement when the confidential information is submitted which identifies those items the Bidder believes to be confidential and the legal reason(s) why they are confidential. The Procurement Manager shall review the request for confidentiality and advise the Bidder in writing if the information will be treated as confidential by the City. If the City receives a public records request for any of the information determined to be confidential by the Procurement Manager, the City will use reasonable efforts to give notice to the Bidder prior to the release of the information.

11. **BID ACCEPTANCE PERIOD**

In order to allow for an adequate evaluation, the City requires a bid in response to this Solicitation to be valid for one hundred twenty (120) days after the opening time and date.

12. **DISCUSSIONS**

The City reserves the right to conduct discussions with Bidders for the purpose of eliminating minor irregularities, informalities, or apparent clerical mistakes in the submittal in order to clarify a bid and assure full understanding of, and responsiveness to, solicitation requirements.

13. **PERSONNEL**

It is essential that the Bidder provide adequate experienced personnel, capable of and devoted to the successful accomplishment of the work to be performed in this Solicitation. The Bidder agrees that those persons identified in their submittal shall not be removed or replaced without a written request to and approval from the City.

14. **AWARD OF CONTRACT**

- a. The contract will be awarded pursuant to the provisions of the City of Goodyear Procurement Code. Unless the Bidder states otherwise, or unless provided within this solicitation, the City reserves the right to award by individual line item, by group of line items, or as a total, whichever is deemed most advantageous to the City. Notwithstanding any other provision of this solicitation, the Procurement Manager further reserves the right to i) waive any immaterial defect or informality; ii) reject any or all bids, or portions thereof; iii) reissue the solicitation; or iv) modify or cancel this solicitation.
- b. A response to a solicitation is an offer to contract with the City based upon the terms, conditions and specifications contained in the City's solicitation and the written amendments thereto, if any. If City Council approval is necessary, bids do not become contracts unless and until they are accepted by the



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City Council. A contract is formed when written notice of award(s) is provided to the successful Bidder(s). The Contract has its inception in the award document, eliminating a formal signing of a separate contract.

- c. In the event the City should receive two or more identical bids, the awardee will be determined by lottery.

15. **BUSINESS REGISTRATION PERMIT**

All Bidders awarded contracts with the City shall be required to obtain a City of Goodyear Business Registration Permit through the Goodyear Business Registration Office. For further information call Finance, Joe Lewandowski at (623) 882-7899 or joe.lewandowski@goodyearaz.gov

16. **PROTESTS**

- a. Any interested party may protest a solicitation issued by the City or the proposed award or the award of a City Contract by submitting a request in writing with the Procurement Manager for the City of Goodyear, with a copy directed to the City Attorney for the City of Goodyear as follows:

Jacque Behrens, CPPB
Procurement Manager
City of Goodyear
P.O. Box 5100
190 North Litchfield Road
Goodyear, AZ 85338

Roric Massey
City Attorney
City of Goodyear
P.O. Box 5100
190 North Litchfield Road
Goodyear, AZ 85338

- b. Writing: All protests must be in writing and shall include the following information:
- The name, address and telephone number of the protester;
 - The signature of the protester or its representative;
 - The solicitation or contract number;
 - A detailed statement of the legal or factual grounds of the protest including copies of relevant documents; and
 - The form of relief requested. R3-4-16.01
- c. Time Frame: To be considered, protests must be filed during the time frame identified in the procurement code.
- *Protests of a solicitation* must be filed within five (5) days of the first advertising of the solicitation.
 - *Protests of an award* must be filed within ten (10) days of the issue date of the Notice of Award or Notice of Intent to Negotiate and Award.

- d. The Procurement Manager is required to notify all interested parties that a protest has been filed.

17. **CONFLICT OF INTEREST** Offerors shall fully disclose all known and potential conflicts that could influence or appear to influence their judgment or the quality of their services.

END OF INSTRUCTIONS TO OFFERORS



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SECTION 1. DEFINITIONS

- 1.1 “City” means the City of Goodyear.
- 1.2 “City Manager” means the manager of the City of Goodyear or designee.
- 1.3 “Contract” means this Goods/Services Contract and any attachments referenced herein, fully completed and executed between the City of Goodyear and the Contractor.
- 1.4 “Contractor” means the individual, partnership, entity or corporation who, as a result of the competitive process, is awarded a contract by the City of Goodyear to provide goods and/or services.
- 1.5 “Days” means calendar days unless otherwise specified herein.
- 1.6 “Litigation Expense” means any court filing fee and costs, arbitration fees or costs, witness fee, arbitration fees, and each other fee and cost of investigating and defending or asserting any claim for indemnification under this Contract, including, without limitation, in each case, attorneys’ fees, professional fees, disbursements and each other fee and cost of investigating and defending, appealing or asserting any claim for indemnification under this Contract.
- 1.7 “Loss” means any liability, loss, claim, settlement payment, cost and expense, interest, award, judgment, damages (including punitive damages), diminution in value, fines, fees and penalties or other charge, other than a litigation expense.
- 1.8 “Project” “Services” or “Work” means the subject matter of this Contract as more fully set forth in the attached Scope of Work, which may include delivery of goods and/or services.
- 1.9 “Subcontractor” means any individual, corporation, company, or other entity who contracts to perform work or render services or provide goods to a Contractor or to another subcontractor as part of this Contract with the City.

SECTION 2. TERM OF CONTRACT

- 2.1 The term of the contract may be automatically extended to include the warranty period.
- 2.2 Contractor shall not commence work until Contractor receives a purchase order signed by the City procurement manager or designee.

SECTION 3. COMPENSATION AND PAYMENTS

- 3.1 COMPENSATION: Total compensation to be paid under this Contract shall not exceed the purchase order amount.
- 3.2 Contractor shall invoice City on or before the 10th day of each month for goods and/or services provided under this contract during the prior month. All invoices shall contain itemized hourly fees, unit cost, extended cost of goods and supporting documentation for all invoiced amounts. All invoices to the City



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shall identify the specific item(s) being billed and the Purchase Order number. Items are to be identified by the name, model number, and/or serial number most applicable.

- 3.3 City shall make every effort to process payments to Contractor within thirty (30) calendar days after the receipt of a correct and approved invoice, unless a good faith dispute exists to any obligation to pay all or a portion of the invoice or account.
- 3.4 **PRICE ADJUSTMENT/CONTRACT EXTENSION:** The City's Office of Procurement will review fully documented requests for price increase after any contract has been in effect for one (1) year. Any price increase adjustment will only be made at the time of contract extension and will be a factor in the extension review process. The Office of Procurement will determine whether the requested price increase or alternate option is in the best interest of the City. Any price adjustment will be effective upon the effective date of the contract extension.
- 3.5 **PRICE REDUCTION:** A price reduction may be offered at any time during the term of the contract and shall become effective upon notice.
- 3.6 **LATE SUBMISSION OF CLAIM BY CONTRACTOR:** The City will not honor any invoices or claims which are tendered one (1) year after the last item of the account accrued.
- 3.7 **ESTIMATED QUANTITIES:** Quantities identified in the Solicitation are the City's best estimate and do not obligate the City to order or accept more than the City's actual requirements during the period of this Contract as determined by actual needs and availability of appropriate funds. It is expressly understood and agreed that Contractor is to supply the City with its complete and actual requirements for the contract period.
- 3.8 **PRODUCT DISCONTINUANCE:** In the event that a product or model identified in the offer is subsequently discontinued by the manufacturer, the City at its sole discretion may allow the Contractor to provide a substitute for the discontinued item. The Contractor shall request permission to substitute a new product or model and provide all of the following:
1. A formal announcement from the manufacturer that the product or model has been discontinued;
 2. Documentation from the manufacturer that names the replacement product or model;
 3. Documentation that provides clear and convincing evidence that the replacement meets or exceeds all specifications required by the original solicitation;
 4. Documentation that provides clear and convincing evidence that the replacement will be compatible with all the functions or uses of the discontinued product or model; and
 5. Documentation confirming that the price for the replacement is the same as or less than the discontinued product or model.
- 3.9 **USAGE REPORT:** The Contractor may be required to provide a usage report to the Procurement Manager.
- 3.10 **DISCOUNTS:** Payment discounts will be computed from the date receiving acceptable goods, materials and/or services or correct invoice, whichever is later to the date payment is mailed.
- 3.11 **NO ADVANCE PAYMENT:** Advance payments will not be authorized; payment will be made only for actual goods or services that have been received.



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- 3.12 **FUND APPROPRIATION CONTINGENCY**: The Parties recognize that the continuation of any contract after the close of any given fiscal year of the City of Goodyear, which fiscal year ends on June 30 of each year, shall be subject to appropriation and allocation of funds by the Goodyear City Council.
- 3.13 **F.O.B. POINT**: All prices are to be quoted F.O.B final destination, unless otherwise specified elsewhere in the solicitation.
- 3.14 **TAXES**: Contractor shall be solely responsible for any and all tax obligations that may result from Contractor's performance of this Contract.

SECTION 4. TERMINATION

- 4.1 **TERMINATION FOR CONVENIENCE**: City at any time and for any reason and without cause may terminate, suspend or abandon any portion, or all, of this Contract at City's convenience. In the event that the City terminates, suspends or abandons any part of the services, the City shall provide notice to the Contractor. Upon receipt of notice, the Contractor shall, unless the notice directs otherwise, immediately discontinue further services and placing of orders for materials, facilities and supplies in connection with the performance of this Agreement.

The Contractor shall appraise the services completed prior to receiving notice of the termination, abandonment or suspension and deliver to the City all drawings, special provisions, field survey notes, reports, estimates and any and all other documents or work product generated by the Contractor under the contract, entirely or partially completed, together with all unused materials supplied by the City.

In the event of termination, abandonment or suspension, Contractor shall be paid for services satisfactorily performed prior to receipt of such notice including reimbursable expenses then incurred. However, in no event shall the fee exceed that set forth in Section 4 of this Contract. Contractor shall not be entitled to any claim or claim of lien against Owner for any additional compensation or damages in the event of such termination and payment.

The City shall make final payment within thirty (30) days after the Contractor has fully complied with the provisions of Section 5 and Contractor submits a correct and approved final invoice for the fee that has been agreed to by the Parties.

- 4.2 Any attempt to represent any material and/or service not specifically awarded as being under contract with the City of Goodyear is a violation of the contract and the City of Goodyear Procurement Code. Any such action is subject to the legal and contractual remedies available to the City inclusive of, but not limited to, contract cancellation, suspension and/or debarment of the Contractor.

SECTION 5. RISK OF LOSS AND LIABILITY

- 5.1 **INDEMNIFICATION**: Unless a federal and state statute that expressly prohibits such indemnification, Contractor shall defend, indemnify, save and hold harmless the City of Goodyear, its officials, directors, officers, employees, agents, and representatives (hereinafter referred to as "Indemnatee") at all times after the date of this Contract from and against any and all Claims, caused by, relating to, arising out of, or alleged to have resulted from, in whole or in part, any negligent, reckless or intentional acts, errors, fault,



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mistakes, omissions, work, goods or service of the Contractor, its directors, officers, employees, agents, representatives, or any tier of subcontractors or any other person for whose acts, errors, fault, mistakes omissions, work, goods or service the Contractor may be legally liable in the performance of this Contract. The Indemnification provided hereunder shall extend to Claims arising out of, or recovered under, Arizona's Workers' Compensation Law or the failure of Contractor to conform to any applicable and appropriate federal, state, or local law, statute, ordinance, rule, regulation or court decree. It is the specific intention of the Parties that the Indemnitee shall, in all instances, except for Claims arising solely from the negligent or willful acts or omissions of the Indemnitee, be indemnified by Contractor from and against any and all Claims. It is agreed that the Contractor will be responsible for primary loss investigation, defense and judgment costs where this indemnification is applicable.

In consideration of the award of this contract, Contractor agrees to waive all rights of subrogation against Indemnitee for Claims arising from the work performed by Contractor, its directors, officers, employees, agents, representatives, or any tier of subcontractors pursuant to this Contract. This indemnification provision shall survive the expiration or earlier termination of this Contract.

For purposes of this Indemnification provision the term Claims shall mean claims, suits, actions, demands, proceedings, losses, settlement payments, disbursements, expenses, and damages of every kind and description (including but not limited to costs, interest, awards, judgments, diminution in value, fines, penalties or other charges, reasonable attorneys' fees, other professionals' fees, court filing fees and costs, arbitration fees, witness fees, and each other fee and cost of investigating and defending, negotiating, appealing or asserting any claim for indemnification under this Contract) (collectively referred to "Litigation Expenses").

- 5.2 **INDEMNIFICATION – PATENT, COPYRIGHT AND TRADEMARK:** The Contractor shall indemnify and hold harmless the City against any liability, including costs and expenses, for infringement of any patent, copyright or trademark or other proprietary rights of any third parties arising out of contract performance or use by the City of materials furnished or Services performed under this Contract. The Contractor agrees upon receipt of notification to promptly assume full responsibility for the defense of any claim, suit or proceeding which is, has been, or may be brought against the City and its agents for alleged infringement, as well as for the alleged unfair competition resulting from similarity in design, trademark or appearance of goods by reason of the use or sale of any goods furnished under this Contract and the Contractor further agrees to indemnify the City against any and all expenses, losses, royalties, profits and damages including courts costs and attorney's fees resulting from the bringing of such suit or proceedings including any settlement or decree of judgment entered therein. The City may be represented by and actively participate through its own counsel in such suit or proceedings, it so desires. It is expressly agreed by the Contractor that these covenants are irrevocable and perpetual.
- 5.3 **TITLE AND RISK OF LOSS:** The title and risk of loss of material or services shall not pass to the City until the City actually receives and accepts the materials or services at the point of delivery; and such loss, injury or destruction shall not release the Contractor from any obligation hereunder.
- 5.4 **ACCEPTANCE:** All materials or services are subject to final inspection and acceptance by the City. Materials or services failing to conform to the specifications of this Contract shall be held at Contractor's risk and may be returned to the Contractor. If returned, all costs are the responsibility of the Contractor. The City may elect to do any or all of the following: a) Waive the non-conformance; b) Stop the work



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immediately; c) Bring materials into compliance; and/or d) Terminate the Contract and seek all remedies available in law and in equity. This shall be accomplished by a written determination by the City.

- 5.5 **LOSS OF MATERIALS:** The City does not assume any responsibility, at any time, for the protection of or for the loss of materials, from the execution of this Contract until the final acceptance of the work by the City.
- 5.6 **DEFAULT IN ONE INSTALLMENT TO CONSTITUTE TOTAL BREACH:** Contractor shall deliver conforming materials in each installment of lot of this Contract and may not substitute nonconforming materials and/or services. Delivery of nonconforming materials or a default of any nature, at the option of the City, shall constitute a breach of the Contract as a whole.
- 5.7 **SHIPMENT UNDER RESERVATION PROHIBITED:** Contractor is not authorized to ship goods or perform services under reservation, and no tender of an invoice or bill of lading will operate as a tender of the goods or services.
- 5.8 **WORK PERFORMED AT CONTRACTOR'S RISK:** Contractor shall take all precautions reasonably necessary and shall be responsible for the safety of its employees, agents and subcontractors in the performance of the work hereunder and shall utilize all protections reasonably necessary for that purpose. All work shall be done at Contractor's own risk, and Contractor shall be responsible for any loss of or damage to materials, tools, or other articles used or held for use in connection with the work.
- 5.9 **SAFETY STANDARDS:** All items supplied pursuant to this Contract shall comply with the current applicable Occupational Safety and Health Standards of the State of Arizona Industrial Commission, the National Electric Code, and the National Fire Protection Association Standards.
- 5.10 **PROJECT STAFFING:** Prior to the start of any Services under this Contract, the Contractor shall submit to the City detailed resumes of key personnel that will be involved in performing Services prescribed in the Contract for review and approval. At any time hereafter that the Contractor desires to change key personnel while performing under the Scope, the Contractor shall submit the qualifications of the new personnel to the City for prior approval. Key personnel include but are not limited to the Contractor's principal-in-charge, project manager, project designer, project architect, system architect, system manager and system engineer.

The Contractor will maintain an adequate and competent staff of qualified persons throughout the performance of this Contract as necessary for acceptable and timely completion of the services. If the City objects, with reasonable cause, to any of the Contractor's staff, the Contractor shall take prompt corrective action and, if required, remove such personnel from the Project and replace them with the new personnel agreed to by the City.

- 5.11 **SUBCONTRACTORS:** Prior to beginning the work, the Contractor shall furnish the City for approval the names of subcontractors to be used on this Project. Any subsequent changes are subject to the approval of the City.
- 5.12 **DAMAGE TO CITY PROPERTY:** Contractor shall perform all work so that no damage to any City buildings or property results. Contractor shall repair any damage caused to the satisfaction of the City at no cost to the City. Contractor shall take care to avoid damage to adjacent finished materials that are to



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remain. If finished materials are damaged, Contractor shall repair and finish in a manner which matches existing material as approved by the City at the Contractor's expense.

- 5.13 **FORCE MAJEURE:** Neither Party shall be in default by reason of any failure in performance of this Contract if such failure arises out of causes beyond their reasonable control and without the fault or negligence of said Party including, unforeseeable Acts of God; terrorism or other acts of public enemy; war and epidemics or quarantine restrictions.

If either Party is delayed at any time in the progress of the Work by force majeure, the delayed Party shall notify the other Party in writing of such delay, as soon as is practical, of the commencement thereof and shall specify the causes of such delay in the notice. The notice shall be hand-delivered or mailed certified-return receipt and shall make a specific reference to this provision. The delayed Party shall cause such delay to cease as soon as practicable and shall notify the other party in writing when it has done so. The time of completion shall be extended by contract modification for a period of time equal to the time that results or effects of such delay prevent the delayed Party from performing in accordance with this contract.

SECTION 6. CONTRACT INTERPRETATION

- 6.1 **DISPUTES, GOVERNING LAW, ATTORNEY FEES:** Should any dispute, misunderstanding or conflict arise as to the terms or provisions contained in this Contract, the matter shall first be referred to the City, and the City shall determine the term or provision's true intent and meaning.

This Contract shall be deemed to be made under, shall be construed in accordance with, and shall be governed by the laws of the State of Arizona, without regard to choice of law or conflicts of laws principles thereof. Any action arising out of this Contract shall be commenced and maintained in the Superior Court of the State of Arizona in and for the County of Maricopa. The prevailing Party shall be reimbursed by the other Party for all attorney fees and all costs and expenses, including but not limited to all service of process, filing fees, court and court report costs, investigative costs, and expert witness fees which are incurred in any legal proceeding whatsoever arising out of this Contract, including, bankruptcy, arbitration, declaratory relief or other litigation, including appeals or rehearing.

- 6.2 **PROVISIONS REQUIRED BY LAW:** Each and every provision of law and any clause required by federal, state or local law to be in this Contract shall be read and enforced as though it were included herein and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either Party the Contract shall forthwith be physically amended to make such insertion or correction.
- 6.3 **PAROL EVIDENCE:** This Contract is intended by the parties as a final expression of their agreement and is intended also as a complete and exclusive statement of the terms of this agreement. No course of prior dealings between the parties and no usage in trade shall be relevant to contradict, supplement or explain any term used in this Contract.
- 6.4 **SEVERABILITY:** If any provision in this Contract or the application thereof to any person or circumstance shall be invalid, illegal or unenforceable to any extent, the remainder of this Contract and the application thereof shall not be affected and shall be enforceable to the fullest extent permitted by law.



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- 6.5 **CONTRACT ORDER OF PRECEDENCE:** In the event of a conflict in the provisions of the Contract, as accepted by the City and as they may be amended, the following shall prevail in the order set forth below:
1. Special Terms and Conditions
 2. Standard Terms and Conditions
 3. Specifications
 4. Fee Schedule
 5. Attachments
 6. Exhibits
 7. Invitation to Bid, Instructions to Bidders and other documents referenced or included.
- 6.6 **INTEGRATION:** This Contract contains the full agreement of the parties hereto. Any prior or contemporaneous written or oral agreement between the parties regarding the subject matter hereof is merged and superseded hereby.
- 6.7 **INDEPENDENT CONTRACTOR:** Each Party will act in its individual capacity and not as an agent, employee, partner, joint venture, or associate of the other. An employee or agent of one Party shall not be deemed or construed to be the employee or agent of the other for any purpose whatsoever. The Contractor is advised that taxes or Social Security payments will not be withheld from any City payments issued hereunder and that the Contractor should make arrangements to directly pay such expenses, if any.
- 6.8 **NON-WAIVER MONIES DUE:** The City of Goodyear as a public entity supported by tax monies, in execution of its public trust, cannot agree to waive any lawful or legitimate right to recover monies lawfully due it. Therefore, Contractor agrees that it will not insist upon or demand any statement whereby the City agrees to limit in advance or waive any right the City might have to recover actual lawful damages in any court of law under applicable Arizona law.
- 6.9 **AMBIGUITIES NOT HELD AGAINST DRAFTER:** This Contract having been freely and voluntarily negotiated by all parties and the rule of contract construction that ambiguities, if any, in any term or condition of an agreement are held against the drafter of the agreement is not applicable to this Contract.
- 6.10 **NON-WAIVER CONTRACT PROVISION:** The failure of either Party to enforce any of the provisions of this Contract or to require performance of the other Party of any of the provisions hereof shall not be construed to be a waiver of such provisions, nor shall it affect the validity of this Contract or any part thereof, or the right of either Party to thereafter enforce each and every provision.
- 6.11 **COOPERATION AND FURTHER DOCUMENTATION:** The Contractor agrees to provide the City all duly executed documents as shall be reasonably requested by the City to implement the intent of this Contract.

SECTION 7. CONTRACT ADMINISTRATION AND OPERATION

- 7.1 **WORK PRODUCT, EQUIPMENT AND MATERIALS:** All work product, equipment, or materials created or purchased under this Contract are considered the sole property of the City and must be delivered to the City upon termination, abandonment of the Contract or final payment to the Contractor and shall not be used or released by the Contractor without prior authorization from the City. Work product includes, but is not limited to, plans, specifications, cost estimates, tracings, studies, design analyses, original Mylar drawings, computer aided drafting and design (CADD) file, computer disks and/or other electronic records



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and media. Contractor agrees that all materials prepared under this Contract are “works for hire” within the meaning of the copyright laws of the United States and assigns to City all rights and interest Contractor may have in the materials it prepares under this Contract, including any right to derivative use of the materials. Contractor shall place the professional seal of Contractor on all plans and documents prepared in the performance of this Contract.

- 7.2 **CONFIDENTIALITY AND ENCRYPTION:** All data, regardless of form, including originals, images and reproductions, prepared by, obtained by, or transmitted to Contractor in connection with this Contract are confidential, proprietary information owned by the City. Except as specifically provided in this Contract, the Contractor shall not disclose data generated in the performance of the Service to any third person without the prior written consent of the City Manager.

Personal identifying information, financial account information or restricted City information, whether electronic format or hard copy, are considered confidential information and must be secured and protected at all times to avoid unauthorized access. At a minimum Contractor shall ensure that all electronic transmissions of confidential data are encrypted and any cryptographic algorithm implementations used must have been validated by the National Institute of Standards and Technology (NIST). The use of proprietary encryption algorithms will not be allowed for any purpose. The export of encryption technologies is restricted by the U.S. Government.

In the event that data collected or obtained by Contractor in connection with this Contract is believed to have been compromised, Contractor shall notify the City Attorney immediately. Contractor agrees to reimburse the City for any costs incurred by the City to investigate potential breaches of this data and, where applicable, the cost of notifying individuals who may be impacted by the breach.

Contractor agrees that the requirements of this section shall be incorporated into all subcontractor agreements entered into by the Contractor. It is further agreed that a violation of this section shall be deemed to cause irreparable harm and justifies injunctive relief in court. A violation of this section may result in immediate termination of this Contract without further notice. The obligations of Contractor under this section shall survive the termination of this Contract.

- 7.3 **CONFLICT OF INTEREST/THIRD PARTIES:** Contractor shall provide written notice to the City as set forth in this section, of any work or Services performed by the Contractor for third parties that, to the extent that the Contractor is aware, involves or is associated with any real property or personal property owned or leased by the City or which may be adverse to the City. Notice shall be given seven (7) days prior to commencement of the Services by the Contractor for a third party. Written notice and disclosure shall be sent to:

Roric Massey, City Attorney
City of Goodyear
190 N. Litchfield Rd
Goodyear, Arizona 85338

Actions that are considered to be adverse to the City include but are not limited to:

1. Using data acquired in connection with this Contract to assist a third party in pursuing administrative or judicial action against the City;



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2. Testifying or providing evidence on behalf of any third party in connection with an administrative or judicial action against the City; and
3. Using data to produce income for the Contractor, its subcontractors or employees independently of performing the services under this Contract, without the prior written consent of the City.

The Contractor represents that except for those persons, entities and projects identified to the City, the Services to be performed by the Contractor under this Contract are not expected to create an interest with any person, entity, or third party project that is or may be adverse to the interests of the City. The Contractor's failure to provide a written notice and disclosure of the information as set forth in this section shall constitute a material breach of Contract.

- 7.4 **CONFLICT AUDIT:** Within thirty (30) days of being requested to do so, Contractor agrees to provide the City an itemized summary of any and all gifts a Contractor, its directors, officers, managers, employees, agents and/or representatives have made to any City employee during the year prior to the date of the Contract through the date of the request. The summary shall include the date the gift was made, a description of the gift, the City employee(s) that received the gift, and the value of the gift. The summary shall be signed and its truthfulness certified by Contractor. For purposes of this section the terms "Gift" means anything of value that is provided to the employee and includes, by way of example, but not limitation, meals, free use of vacation homes, low interest or no interest loans, tickets to sporting events, tickets to charitable events, entertainment expenses, travel expenses, drinks, and the like. The failure to comply with any request made pursuant to this section and/or the submission of a summary that contains material misrepresentations constitutes grounds for debarment and the refusal to allow Contractor to participate in any future contracts with the City.
- 7.5 **AUDIT OF RECORDS:** Contractor shall retain, and shall contractually require each and every subcontractor that performs any Work under this Contract to retain all books, accounts, reports, files and any and all other records relating to the contract (hereinafter referred to as "Contract Documents") for six (6) years after completion of the Contract. City, upon written request and at reasonable times, shall have the right to review, inspect, audit and copy all Contract Documents of the Contractor and any subcontractors. Contractor shall produce the original Contract Documents at City Hall, currently located at 190 N. Litchfield Road, Goodyear, Arizona, or at such other City facility within the City as designated by the City in writing. If approved by City Attorney in writing, photographs, microphotographs, or other authentic reproductions may be maintained instead of original Contract Documents.
- 7.6 **AUDIT/BILLING AND EXPENSES:** The City reserves the right to request supporting documentation for all hourly amounts, cost of goods and reimbursable expenses charged to the City. Such records will be subject to audit at any time during the term of this Contract and for a period not to exceed two (2) years after any amount is billed. Within thirty (30) days of receiving a request, the Contractor will furnish to the City original invoices to support all charges and complete payroll records to support such hourly labor charges. The City reserves the right to audit any other supporting evidence necessary to substantiate charges related to this Contract, both direct and indirect costs, including overhead allocations if they apply to hourly costs associated with this Contract. If requested by the City, the Contractor will provide supporting records electronically in addition to a hard copy.

If the audit reveals overcharge, the Contractor will reimburse the City upon demand for the amount of such overcharges plus interest thereon from the date paid by the City through the date of reimbursement. If the



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overcharges exceed 5% of Contractor's compensation, then Contractor shall also reimburse the City for the cost of the audit.

The Contractor shall include a similar provision in all of its agreements with subcontractor providing goods and/or services under this Contract to ensure the City, its authorized representative, and/or the appropriate federal agency, has access to the subcontractor records to verify the accuracy of any similar amounts charged to the City.

- 7.7 **ADVERTISING**: Contractor and all subcontractors shall not advertise or publish new releases concerning this Contract, goods or services provided to the City without prior written consent of the City Attorney.
- 7.8 **CITY MARKS**: The Contractor and all subcontractors shall not use any trade name, trademark, service mark, or logo of the City (or any name, mark or logo confusingly similar thereto) in any advertising, promotions, or otherwise, without the City's express prior written consent.
- 7.9 **LICENSES AND PERMITS**: Contractor and all subcontractors shall keep current federal, state, and local licenses and permits required for the operation of the business conducted by the Contractor as applicable to this contract.
- 7.10 **E-VERIFY**: Contractor and all subcontractors warrant compliance with the e-verify statute, A.R.S. § 23-214(A). A breach of this warranty shall be deemed a material breach of this contract, and shall subject this contract to penalties up to and including termination of the contract. The City retains the right to inspect the papers and records of any of Contractor's employees or any subcontractor employees working on the contract to ensure compliance with this requirement. For this section, Contractor shall have the meaning of Contractor as found in A.R.S. § 41-4401, and subcontractor has the same meaning as found in A.R.S. § 41-4401.
- 7.11 **NON-DISCRIMINATION**: Contractor and all subcontractors will not discriminate against any person on the basis of race, color, religion, age, gender, or national origin in the performance of this Contract, and shall comply with the terms and intent of Title VI of the Civil Rights Act of 1964, P.L. 88-354.
- 7.12 **COMPLIANCE**: The Contractor and all subcontractors understand and agree to comply with the Americans with Disabilities Act, the Immigration Reform and Control Act of 1986 and the Drug Free Workplace Act of 1989 as amended. The Contractor agrees to comply with these laws and Arizona Executive Order 2009-09 in performing this Contract and to permit the City to verify such compliance.
- 7.13 **CONTINUATION DURING DISPUTES**: Contractor agrees that notwithstanding the existence of any dispute between the parties, insofar as is possible, under the terms of the contract, the Contractor shall continue to perform the obligations required of the Contractor during the continuation of any such dispute unless enjoined or prohibited by the City or an Arizona Court of competent jurisdiction.
- 7.14 **COOPERATIVE STATEMENT**: This contract shall be for the use of the City of Goodyear. In addition, eligible political subdivisions and nonprofit educational or public health institutions may also participate at their discretion. Any eligible agency may elect to participate (piggyback) on this contract if the Contractor agrees to do so.



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- 7.15 **CAPTIONS**: The captions used herein are for convenience only and are not a part of this Contract and do not in any way limit or amplify the terms and provisions hereof.
- 7.16 **BANKRUPTCY**: This Agreement, at the option of the City, shall be terminable in the case of bankruptcy, voluntary or involuntary, or insolvency of the Contractor.
- 7.17 **CONTINUATION OF SERVICES – ISRAEL**: Contractor certifies that it is not currently engaged in, and agrees for the duration of this Contract that it will not engage in a boycott of Israel, as that term is defined in A.R.S. § 35-393.

SECTION 8. **CONTRACT CHANGES**

- 8.1 **MODIFICATION**: No supplement, modification, or amendment of any term of this Contract will be deemed binding or effective unless in writing and signed by the Parties with authority to do so. This section does not prohibit the City from unilaterally extending the contract term.
- 8.2 **SUCCESSORS AND ASSIGNS**: This Contract is binding on the parties' respective partners, successors, assigns, and legal representatives. Contractor will not assign, sublet, or transfer its right or interest in this Contract nor monies due, in whole or in part, or delegation any duty of Contractor without the prior written consent of the City. Any assignment or delegation made in violation of this section shall be void. In no event does this Contract create any contractual relationship between the City and any third party.
- 8.3 **THIRD PARTY BENEFICIARY**: Nothing under this Contract shall be construed to give any rights or benefits in the Contract to anyone other than the City and the Contractor, and all duties and responsibilities undertaken pursuant to this Contract will be for the sole and exclusive benefit of City and the Contractor, and not for the benefit of any other Party.
- 8.4 **AUTHORIZED CHANGES**: The City reserves the right at any time to make changes in any one or more of the following: (i) specifications; (ii) methods of shipment or packing; (iii) place of delivery; (iv) time of delivery; and/or (v) quantities. If the change causes an increase or decrease in the cost of or the time required for performance, an equitable adjustment may be made in the price or deliver schedule, or both. Any claim for adjustment shall be deemed waived unless asserted in writing within thirty (30) days from the receipt of the change. Prior increases or extensions of delivery time shall not be binding on the City unless evidenced in writing and approved by the City.
- 8.5 **SUBCONTRACTS**: No subcontract shall be entered into by the Contractor with any other party to furnish any of the goods, Service or Work specified herein without the advance written approval of the City.
- 8.6 **CONTINGENT FEES**: Contractor warrants that no person has been employed or retained to solicit or secure this Contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, and that no member of the City Council, or any employee of the City of Goodyear has any interest, financially, or otherwise, in the Contractor's business/firm. For breach or violation of this warranty, the City of Goodyear shall have the right to annul this Contract without liability, or at its discretion to deduct from the Contract price or consideration, the full amount of such commission, percentage, brokerage, or contingent fee.



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- 8.7 **LIENS:** Contractor shall hold the City harmless from claimants supplying labor or materials to the contractor or subcontractors in the performance of the work required under this Contract.

SECTION 9. WARRANTY

- 9.1 **GUARANTEE:** Unless otherwise specified, all items shall be guaranteed for a minimum period of one (1) year from the date of acceptance by the City against defects in material and workmanship. At any time during that period, if a defect should occur in any item that item shall be replaced or repaired by the Contractor at no obligation to the City except where it is shown that the defect was caused solely by misuse of the City.
- 9.2 **QUALITY:** Contractor expressly warrants that all goods and services furnished under this Contract shall conform to the specifications, appropriate standards, and will be new and free from defects in material or workmanship. Contractor warrants that all such goods or services will conform to any statements made on the containers or labels or advertisements for such goods or services, and that any goods will be adequately contained, packaged, marked and labeled. Contractor warrants that all goods and services furnished hereunder will be merchantable, and will be safe and appropriate for the purpose which goods or services of that kind are normally used. If Contractor knows or has reason to know the particular purpose for which City intends to use the goods or services, Contractor warrants that goods and services furnished will conform in all respect to samples. Inspection, test, acceptance of use of the goods or services furnished hereunder shall not affect the Contractor's obligation under this warranty, and such warranties shall survive inspection, test, acceptance and use. Contractor's warranty shall run to City, its successors and assigns.
- 9.3 **RESPONSIBILITY FOR CORRECTION:** Any defects of design, workmanship, or materials that would result in non-compliance with the contract specification shall be fully corrected by the Contractor (including parts, labor, shipping or freight) without cost to the City. This includes any necessary labor to remove, repair, install, or to ship or transport any item to a point of repair and return. It is agreed that the Contractor shall be fully responsible for making any correction, replacement, or modification necessary for specification or legal compliance. Contractor agrees that if the product or service offered does not comply with the foregoing, the City has the right to cancel the purchase at any time with full refund within 30 calendar days after notice of non-compliance and Contractor further agrees to be fully responsible for any consequential damages suffered by the City.
- 9.4 **INVESTIGATION OF CONDITIONS:** The Contractor warrants and agrees familiarity of the work that is required, is satisfied as to the conditions under which it is to perform and enters into this Contract based upon the Contractor's own investigation.
- 9.5 **WORKMANSHIP:** Where not more specifically described in any of the various sections of the specifications, workmanship shall conform to all of the methods and operations of best standards and accepted practices of the trade or trades involved and shall include all items of fabrication, construction or installation regularly furnished or required for completion of the services or goods. All goods and services shall be provided and executed by personnel skilled in their respective lines of work. Contractor warrants that all goods and services delivered under this contract shall conform to the specifications of this contract. Additional warranty requirements may be set forth in the Solicitation.



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- 9.6 **RIGHT TO INSPECT PLANT:** The City may, at reasonable times, inspect the part of the plant or place of business of a Contractor or subcontractor which is related to the performance of any contract as awarded or to be awarded.
- 9.7 **PREPARATION OF SPECIFICATIONS BY PERSONS OTHER THAN CITY PERSONNEL:** All specifications shall seek to promote overall economy for the purposes intended and encourage competition and not be unduly restrictive in satisfying the City's needs. No person preparing specifications shall receive any direct or indirect benefit from the utilization of specifications, other than fees paid for the preparation of specifications.
- 9.8 **SURVIVAL:** Sections 6, 7, 8, 9, 10 and 11 will survive the completion, termination and/or abandonment of this Contract.
- 9.9 **COMPLIANCE WITH APPLICABLE LAW:** Contractor shall comply with all applicable federal, state and local laws, codes and regulations; including all applicable building regulations, license and permits requirements.

SECTION 10. CITY CONTRACTUAL RIGHTS

- 10.1 **RIGHT OF ASSURANCE:** Whenever the City in good faith has a reason to question the Contractor's intent or ability to perform, the City may demand that the Contractor give written assurance of the intent and ability to perform. In the event that a demand is made and no written assurance is given within five (5) work days, the City may treat this failure as an anticipatory repudiation of this contract.
- 10.2 **NON-EXCLUSIVE REMEDIES:** The rights and remedies of the City under this Contract are non-exclusive.
- 10.3 **DEFAULT IN ONE INSTALLMENT TO CONSTITUTE BREACH:** Each installment or lot of this Contract is dependent on every other installment or lot and a delivery of non-conforming goods or services or a default of any nature under one installment or lot will impair the value of the whole Contract and constitutes a breach of the Contract as a whole.
- 10.4 **TIME IS OF THE ESSENCE:** Time of each of the terms, covenants, and conditions of this Contract is hereby expressly made of the essence. The City is providing services which involve health, safety and welfare of the general public, delivery time is of the essence. Delivery must be made in accordance with the delivery schedule promised by the Contractor.
- 10.5 **NON-EXCLUSIVE CONTRACT:** The City reserves the right to purchase goods or services from another source only when necessary and determined appropriate by the City's Procurement Manager.
- 10.6 **STRICT PERFORMANCE:** Failure of either Party to insist upon the strict performance of any item or condition of the Contract or to exercise or delay the exercise of any right or remedy provided in the Contract, or by law, or the acceptance of materials or services, obligations imposed by this Contract or by law shall not be deemed a waiver of any right of either Party to insist upon the strict performance of the Contract.
- 10.7 **CONFLICT OF INTEREST:** This Contract is subject to the provisions of A.R.S. § 38-511 and may be canceled by the City, without penalty or further obligation, if any person significantly involved in initiating,



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negotiating, securing, drafting, or creating the Contract on behalf of the City is, or becomes, an employee, consultant, or agent of Contractor in any capacity with respect to the subject matter of the Contract while the Contract or any extension or amendment thereof, is in effect.

10.8 **DEFAULT:** In the case of default by the Contractor, the City may, by written notice, cancel this contract and repurchase from another source and may recover the excess costs by (i) deduction from an unpaid balance due; (ii) collection against the bid and/or performance bond, or (iii) a combination of the aforementioned remedies or other remedies as provided by law.

10.9 **NOTICES:** Unless otherwise provided herein, demands under this Contract will be in writing and will be deemed to have been duly given and received either (a) on the date of service if personally delivered to the Party to whom notice is to be given, or (b) on the third day after the date of the postmark of deposit by first class United States mail, registered or certified postage prepaid and properly addressed as follows:

To City:

Charles Schneider, Fleet Superintendent
Municipal Services/Public Works
Charles.schneider@goodyearaz.gov

To Contractor:

Copy to:

Roric Massey
City of Goodyear, City Attorney
190 N. Litchfield Road
Goodyear, AZ 85338

10.10 This Contract shall be in full force and effect only when it has executed by duly authorized City officials and the duly authorized agent of the Contractor.

SECTION 11. CERTIFICATION

11.1 By signing on the offer and acceptance page, the individual certifies that they are authorized to sign on behalf of Contractor and further certifies that (a) No collusion or other anti-competitive practices were engaged in to arrive at the terms of this Contract, and that this Contract is subject to the provisions of A.R.S. Section 38-511; (b) The Contractor has not given, offered to give, nor intends to give at any time hereafter any economic opportunity, future employment, gift, loan, gratuity, special discount, trip favor, or service to a public servant in connection with this Contract. Failure to sign the offer, or signing it with a false statement, shall void the submitted offer or any resultant contract, and the Contractor may be debarred.

SECTION 12. LICENSING, DEBARMENT AND SUSPENSION

12.1 **Licensing/Permits:** Contractor warrants and certifies that Contractor and its Subcontractors will maintain valid licenses, registrations, permits, and other approvals necessary to perform the Services required under this Contract ("Approvals"). Contractor shall immediately advise the City in writing of any change in



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information provided by Contractor or its subcontractors as it relates to any Approvals. Noncompliance with this provision is a material breach of Contract.

- 12.2 Debarment/Suspension: Contractor warrants and certifies neither Contractor nor any of its subcontractor:
- Are presently debarred, suspended, proposed for debarment, declared ineligible or otherwise legally excluded from contracting with any federal, state or local government entity; and
 - Have not been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain or performing a public (federal, state or local) transaction or contract; violation of federal or state anti-trust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements or receiving stolen property within a three (3) year period preceding this Contract;
 - Are not, or have not been, indicted of or otherwise criminally charged by a governmental entity with the commission of fraud or a criminal offense in connection with obtaining, attempting to obtain or performing any public transaction or contract under a public transaction; violation of federal or state anti-trust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements or receiving stolen property, and
 - Have not had one or more public transaction (federal, state or local) terminated for cause or default.
- 12.3 City has no affirmative duty or obligation to confirm or deny the existence or issuance of any Approvals or Debarments, or to examine Contractor's contracting ability.

END OF STANDARD TERMS AND CONDITIONS



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SECTION 1. TERM OF CONTRACT

1. The term of this Contract shall be one (1) year commencing on the effective date, which is the date last signed by both Parties, and may be extended or renewed for consecutive additional one (1) year periods, not to exceed a total of five (5) years, subject to appropriations and mutual agreement of the Parties. The City has no obligation to extend or renew this contract, and any decision to do so is at the sole discretion of the City.

SECTION 2 INSURANCE

- 2.1 Minimum Scope and Limits of Insurance. Contractors shall obtain and maintain in full force and effect during the life of this Contract, and any warranty period, all of the following minimum scope of insurance coverages with an insurance company duly licensed by the State of Arizona with a current A.M. Best Company, Inc rating of not less than A- or above and a category rating of not less than "VIII" with policies and forms satisfactory to the City. Use of alternative insurers requires prior written approval from City.
- 2.2 Commercial General Liability. Commercial General Liability insurance with a limit of not less than \$1,000,000, per occurrence and \$2,000,000 in the aggregate. The policy shall include coverage for premises-operations, products-completed operations, contractual liability, bodily injury, and property damage, but shall not be limited to the liability assumed under the indemnification provisions of this Contract. Coverage shall be at least as broad as Insurance Service Office policy form CG 00 01 07 98 or any replacement thereof, and shall be an occurrence-based policy. The Certificate of Insurance for the Commercial General Liability insurance policy shall expressly cover the indemnification obligations required by this Contract. These limits may be met through a combination of primary and excess liability coverage.
- 2.3 Automobile Liability. Commercial and Business Automobile Liability insurance for owned vehicles, hired, and non-owned vehicles, with a policy limit of not less than \$1,000,000, combined single limits, per occurrence for bodily injury and property damage. Coverage shall be at least as broad as coverage Code 1 "any auto" under Insurance Service Office policy form CA 00 01 10 01 or any replacement thereof.
- 2.4 Workers' Compensation. Workers' Compensation as required by State and federal law statutes having jurisdiction over its employees engaged in the performance of any Services herein. Contractor agrees to waive, and to obtain endorsements from its workers' compensation insurer waiving subrogation rights under its workers' compensation insurance policy against the City, its officers, agents, employees, and volunteers arising from work performed by Contractor for the City and to require each of its subcontractors, if any, to do likewise under their workers' compensation insurance policies.
- 2.5 Umbrella/Excess Liability. Contractor and Subcontractor shall maintain Umbrella and Excess Liability insurance with an limit of not less than \$2,000,000 per occurrence combined limit Bodily Injury and Property Damage, that "follows form" and applies in excess of the Commercial General Liability, Automobile Liability, and Employer's Liability, as required above. Primary per occurrence coverage may be used to fulfill this requirement.
- 2.6 Garage Liability: Contractor shall provide coverage at least as broad and with limits of liability not less than those stated below.



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2.6.1 Garage Liability – Occurrence Form

Policy shall include bodily injury, property damage, personal and advertising injury and broad form contractual liability for garage operations, covered autos and operations necessary and incidental to the garage business.

General Aggregate	\$2,000,000
Premises and Operations	\$1,000,000
Products – Completed Operations Aggregate	\$ 1,000,000
Personal and Advertising Injury	\$1,000,000
Each Occurrence	\$1,000,000
Damage to Rented Premises	\$ 50,000
Blanket Contractual Liability – Written and Oral	\$1,000,000
Garagekeepers Legal Liability - Direct Primary Coverage:	
Each Auto	\$ 500,000
Each Occurrence	\$1,000,000

2.6.2 The policy shall be endorsed to include direct primary Garagekeepers Legal Liability coverage.

- 2.7 Claim Reporting. Any failure to comply with the claim reporting provisions of the policies or any breach of a policy warranty shall not affect coverage afforded under the policy to protect the City.
- 2.8 Notice of Cancellation. Each certificate for each insurance policy required by the insurance provisions of this Contract shall provide the required coverage and shall not be suspended, voided, canceled, or reduced in coverage by endorsement to limits lower than those required by this Contract, except after prior written consent from the City. Notice will be sent as required herein.
- 2.9 Additional Insureds. The Commercial General Liability and Business Automobile Liability policies shall contain or be endorsed to contain the following provision: “The City of Goodyear and its elected and appointed boards, officers, officials, agents, employees, and volunteers are additional insureds with respect to liability arising out of, or related to, activities performed by or on behalf of the Contractor pursuant to its contract with the City; products and completed operations of the Contractor; premises owned, occupied or used by the Contractor; automobiles owned, leased, hired, or borrowed by the Contractor.”
- 2.10 Primacy of Coverage. Contractor’s insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respects to the limits of insurer’s liability. Contractor’s policy shall be primary and non-contributory.
- 2.11 Certificates of Insurance/Endorsements. Contractor shall provide City with Certificates of Insurance and proper additional insured endorsements as required by this Contract and as described above, in a form and content approved by City, prior to performing any services under this Contract. The Certificates of Insurance shall be attached hereto and incorporated hereby by this reference.
- 2.12 No Representation of Coverage Adequacy. The insurance requirements herein are *minimum requirements*. The City in no way warrants that the minimum requirements are sufficient to protect Contractor from liabilities that might arise out of the performance of the Work under this Contract by Contractor, and the Contractor is free to purchase additional insurance. Any insurance coverage carried by the City or its employees is excess coverage and not contributory coverage to that provided by the Contractor. The amount and type of insurance

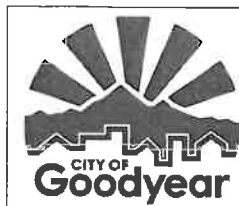
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coverage requirements set forth herein shall in no way be construed as limiting the scope of the indemnification obligations under this Contract.

- 2.13 Non-Waiver. The City reserves the right to review any and all insurance policies and/or an endorsement required by this Contract, but has no obligation to do so. Failure to identify any insurance deficiency shall not relieve the Contractor from, nor be construed or deemed a waiver of its obligation to maintain the required insurance at all times during the performance of this Contract. Any failure of Contractor to comply with the reporting provisions of the policies shall not affect coverage provided to the City, its officers, officials, agents, employees and volunteers.
- 2.14 Notice of Cancellation. Each certificate for each insurance policy required by this Section shall provide the required coverage and shall not be suspended, voided, canceled, reduced in coverage by endorsement to limits lower than those required by this Contract except after prior written consent from the City.
- 2.15 Claim Reporting. Any failure to comply with the claim reporting provisions of the policies or any breach of a policy warranty shall not affect coverage afforded under the policy to protect the City.
- 2.16 Other Contractors or Vendors. Contractor shall ensure its subcontractors and any vendors that may be contracted with in connection with the Project procure and maintain insurance coverage as is appropriate for their particular contract and properly endorse the City as required in this Section 9.

SECTION 3. **OTHER**

- 3.1 Liquidated Damages. If the successful Contractor fails to deliver the supplies or properly install a product within the time specified in this contract, or any extension thereof, the actual damages to the City for the delay will be difficult or impossible to determine. Therefore, in lieu of actual damages, the successful proposer shall pay to the City as fixed, agreed, and liquidated damages for each calendar day of delay, the amount of \$300 per day.
- 3.1.1 Liquidated damages shall be deemed to be a genuine pre-estimate of the foreseeable damages incurred by City.
- 3.1.2 The successful Contractor shall not be charged with liquidated damages when the delay is due to Force Majeure or delays caused by the City, as provided in the Contract.
- 3.2 Bonding. An original bid bond for ten (10%) of the bid price is required to be submitted with the bid.
- 3.2.1 The Contractor is required to submit with Bid a certified or cashiers' check, upon a solvent bank, or a surety bond in an amount equal to ten percent (10%) of the Base Bid price made payable to the City of Goodyear. The bid security shall be given as a guarantee that the Contractor will enter into the Contract if awarded to him; and shall be declared forfeited as liquidated damages if he refuses to enter into said contract upon request to do so by the City. The Bid security other than bid bonds will be returned to the unsuccessful bidders and to the successful bidder upon his execution of a satisfactory payment and performance bond, and contract. Failure by the Contractor to submit bid bond shall result in rejection of the Bid as non-responsive.



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- 3.3 A performance bond for one hundred (100%) of the Contract price is required at the time of execution of the Contract and shall meet the requirements of A.R.S., Title 34, as amended, if applicable.
- 3.4 A payment bond for one hundred (100%) of the Contract price is required at the time of execution of this Contract and shall meet the requirements of A.R.S., Title 34, as amended, if applicable.
- 3.4.1 Performance and Payment Bonds. The Contractor is required to provide and pay for performance and payment bonds. Bonds shall cover the faithful performance (100%) of the Contract, and the payment of all obligations (100%) arising thereunder, in such form as the City may prescribe and with such surety or sureties as are approved. The Contractor shall deliver the required bonds to the City not later than the date of execution of the Contract. The Contractor shall require the attorney in fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of his power-of-attorney indicating the monetary limit of such power. The surety bonds shall be executed solely by a company or companies holding a certificate of authority to transact surety business in the State of Arizona issued by the Director of the Department of Insurance pursuant to Arizona Revised Statutes, Title 20, Chapter 2, Article 1. The bond amounts shall be for one hundred percent (100%) of the Contract amount plus any authorized Change Orders added to the Contract, of which notice to the surety shall be waived. The bonds shall not be executed by an individual surety or sureties.
- 3.5 Registrar of Contractors. At a minimum, Contractors must be licensed with the Arizona Registrar of Contractors at the time of bid submittal. License must be active and in good standing. Contractor agrees to provide copies of all license(s) at time of bid submittal and at any time during the Contract Term.
- 3.6 Dust Control. Contractor must adhere to all necessary Maricopa County dust control laws and regulations and seek clarification when necessary regarding permitting.

SECTION 4. PROGRESS PAYMENTS FOR FIRE APPARATUS

- 4.1 The City of Goodyear will make progressive payments toward completion of each fire apparatus based on the following schedule.
- | | | |
|-------|---|-----|
| 4.1.1 | Completion of pre-build conference and agreement (by evidence of signed build sheet) to requirements of the manufacturing process and unit details. | 25% |
| 4.1.2 | Completion of Cab and Chassis (by evidence of completion via photographic representation) | 25% |
| 4.1.3 | Completion of plumbing components and body installation (mid-point inspection visit by COG staff) | 25% |
| 4.1.4 | Completion of final inspection by City Staff at manufacturing facility (final inspection visit by COG staff) | 20% |
| 4.1.5 | Final payment upon delivery to City of Goodyear | 5% |

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SECTION 5. WARRANTY/MAINTENANCE

5.1 Turnaround Time

- 5.1.1 Special service shall be given to expedite the maintenance and repairs of the City of Goodyear Fire Apparatus. The City of Goodyear is requesting that the successful bidder either respond with a maintenance update with estimated repair completion timeline to the appropriate City of Goodyear staff and or start the repair process within the initial 24 hours after the apparatus is removed from service and either picked up or dropped off at the bidder's repair facility.
- 5.1.2 Non-warranty related maintenance repair will be expedited within reason in order to decrease out of service time. The vendor will keep the City of Goodyear's Fleet and Equipment Management Division routinely updated on the maintenance status of the Fire Apparatus while it is at their repair facility.

END OF SPECIAL TERMS AND CONDITIONS



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Phone: 623-882-7834

The City of Goodyear ("City") is soliciting bids for three (3) pumper trucks for the Goodyear Fire Department. The specifications are as follows: The City's intent is that all three (3) of the pumper trucks meet or exceed NFPA 1901, 2016 edition requirements.

No.		BIDDER COMPLIES	
		Yes	No
1.	<u>VEHICLE STABILITY SUPPLIED WITH CAB/CHASSIS</u> The cab/chassis shall be equipped with a stability control system. The system shall have, at a minimum, a steering wheel position sensor, a vehicle yaw sensor, a lateral accelerometer and individual wheel brake controls.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.	<u>WIGHT DISTRIBUTION</u> When the fire apparatus is loaded to its estimated in-service weight, the front-to-rear weight distribution shall be within the limits set by the chassis manufacturer. The front axle loads shall not be less than the minimum axle loads specified by the chassis manufacturer under full load and all other loading conditions.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3.	<u>LOAD DISTRIBUTION</u> The apparatus manufacturer shall calculate the load distribution for the apparatus, and that load distribution plan shall be delivered with the fire apparatus. The manufacturer shall engineer the fire apparatus to comply with the gross axle weight ratings (GAWR), the overall gross vehicle weight rating (GVWR), and the chassis manufacturer's load balance guidelines. The fire apparatus, when loaded to its estimated in service weight, shall have a side-to-side tire load variation of no more than 7 percent of the total tire load for that axle. Each tire shall be equipped with a visual indicator or monitoring system that indicates tire pressure.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4.	<u>ROADABILITY</u> The apparatus, when loaded to its estimated in-service weight, shall be capable of the following performance while on dry, paved roads that are in good condition: 1) From a standing start, the apparatus shall be able to attain a speed of 35 mph (55 km/hr) within 25 seconds on a level road. 2) The apparatus shall be able to attain a minimum top speed of 50 mph (80 km/hr) on a level road. 3) The apparatus shall be able to maintain a speed of at least 20 mph (32 km/hr) on any grade up to and including 6 percent. The maximum top speed of fire apparatus with a GVWR over 26,000 lb (11,800 kg) shall not exceed either 68 mph (105 km/hr) or the manufacturer's maximum	<input checked="" type="checkbox"/>	<input type="checkbox"/>



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	<p>fire service speed rating for the tires installed on the apparatus, whichever is lower.</p> <p>If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1250 gal (4732 L), or the GVWR of the vehicle is over 50,000 lb (22,680 kg), the maximum top speed of the apparatus shall not exceed either 60 mph (85 km/ hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.</p>	✓	
5.	<p><u>SERVICEABILITY</u></p> <p>The fire apparatus shall be designed to allow the manufacturer's recommended routine maintenance checks of lubricant and fluid levels to be performed by the operator without lifting the cab of a tilt-cab apparatus or without the need for hand tools.</p> <p>Where special tools are required for routine service on any component of the apparatus, such tools shall be provided with the apparatus.</p> <p>Apparatus components that interfere with repair or removal of other major components shall be attached with fasteners, such as cap screws and nuts, so that the components can be removed and installed with ordinary hand tools. These components shall not be welded or otherwise permanently secured into place.</p>	✓	
6.	<p><u>CONSTRUCTION DOCUMENTATION</u></p> <p>The contractor shall supply, at the time of delivery, at least one (1) copy of the following documents:</p> <p>The manufacturers record of apparatus construction details, including the following information:</p> <ol style="list-style-type: none"> 1. Owner's name and address 2. Apparatus manufacturer, model, and serial number 3. Chassis make, model, and serial number <ol style="list-style-type: none"> a) GAWR of front and rear axles and GVWR b) Front tire size and total rated capacity in pounds (kilograms) c) Rear tire size and total rated capacity in pounds (kilograms) d) Chassis weight distribution in pounds (kilograms) with water and manufacturer-mounted equipment (front and rear) e) Engine make, model, serial number, rated horsepower and related speed, and governed speed; and if so equipped, engine transmission PTO(s) make, model, and gear ratio f) Type of fuel and fuel tank capacity g) Electrical system voltage and alternator output in amps h) Battery make, model, and capacity in cold cranking amps (CCA) i) Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio 	✓	



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	<ol style="list-style-type: none">4. Pump make, model, rated capacity in gallons per minute (liters per minute where5. Pump transmission make, model, serial number, and gear ratio6. Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number7. Water and Foam tank certified capacity in gallons or liters8. Paint manufacturer and paint number(s)9. Company name and signature of responsible company representative10. If the apparatus is a mobile foam fire apparatus, the certification of foam tank capacity11. Certification of compliance of the optical warning system12. Siren manufacturer's certification of the siren13. Written load analysis and results of the electrical system performance tests14. Certification of slip resistance of all stepping, standing, and walking surfaces15. If the apparatus has a fire pump, the pump manufacturer's certification of suction capability16. If the apparatus is equipped with a fire pump and special conditions are specified by the purchaser, the pump manufacturer's certification of suction capacity under the special conditions17. If the apparatus has a fire pump, a copy of the apparatus manufacturer's approval for stationary pumping applications18. If the apparatus has a fire pump, the engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed19. If the apparatus has a fire pump, the pump manufacturer's certification of the hydrostatic test20. If the apparatus has a fire pump, the certification of inspection and test for the fire pump21. If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test22. When the apparatus is equipped with a water tank, the certification of water tank capacity23. If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy and the final installer's certification the foam proportioning system meets this standard24. If the system has a CAFS, the documentation of the manufacturer's pre delivery tests25. If the apparatus has a line voltage power source, the certification of the test for the power source26. If the apparatus is equipped with an air system, air tank certificates, the SCBA fill station certification, and the results of the testing of the air system installation27. Any other required manufacturer test data or reports.		



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7.

OPERATIONS AND SERVICE DOCUMENTATION

The Contractor shall deliver with each fire apparatus at least two (2) sets of complete operation and service documentation covering the completed apparatus as delivered and accepted.

The documentation shall address at least the inspection, service, and operations of the fire apparatus and all major components thereof.

The Contractor shall also deliver with the fire apparatus the following documentation for the entire apparatus and each major operating system or major component of the apparatus:

- 1) Manufacturer's name and address
- 2) Country of manufacture
- 3) Source for service and technical information
- 4) Parts replacement information
- 5) Descriptions, specifications, and ratings of the chassis, pump (if applicable), and aerial device (if applicable)
- 6) Wiring diagrams for low voltage and line voltage systems to include the following information:
 - a) Pictorial representations of circuit logic for all electrical components and wiring
 - b) Circuit identification
 - c) Connector pin identification
 - d) Zone location of electrical components
 - e) Safety interlocks
 - f) Alternator-battery power distribution circuits
 - g) Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems
- 7) Lubrication charts
- 8) Operating instructions for the chassis, any major components such as a pump or aerial device, and any auxiliary systems
- 9) Precautions related to multiple configurations of aerial devices, if applicable
- 10) Instructions regarding the frequency and procedure for recommended maintenance
- 11) Overall apparatus operating instructions
- 12) Safety considerations
- 13) Limitations of use
- 14) Inspection procedures
- 15) Recommended service procedures
- 16) Troubleshooting guide
- 17) Apparatus body, chassis and other component manufacturer's warranties
- 18) Special data required by this standard
- 19) A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus



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	The Contractor shall deliver with the apparatus all manufacturer's operations and service documents supplied with components and equipment that are installed or supplied by the Contractor.	✓	
8.	<u>NFPA REQUIRED DOCUMENTATION FORMAT - USB FLASH DRIVE</u> The vehicle construction details and the operations and service documentation as required per NFPA 1901, 2016 edition shall be provided on a USB Flash Drive. These manuals shall be divided into sections for ease of reference. There shall be two (2) USB flash drives provided with the completed vehicle.	✓	
9.	<u>STATEMENT OF EXCEPTIONS</u> The Contractor shall deliver with the fire apparatus either a certification that the apparatus fully complies with all requirements of this standard or alternatively, a Statement of Exceptions specifically describing each aspect of the completed apparatus that is not fully compliant with the requirements of this standard at the time of delivery. The Statement of Exceptions shall contain, for each noncompliant aspect of the apparatus or missing required item, the following information: <ol style="list-style-type: none"> 1) A separate specification of the section of the applicable standard for which compliance is lacking 2) A description of the particular aspect of the apparatus that is not in compliance therewith or required equipment that is missing 3) A description of the further changes or modifications to the delivered apparatus that must be completed to achieve full compliance 4) Identification of the entity that will be responsible for making the necessary post-delivery changes or modifications or for supplying and installing any missing required equipment to the apparatus to achieve full compliance with this standard Prior to or at the time of delivery of the apparatus, the Statement of Exceptions shall be signed by an authorized agent of the entity responsible for final assembly of the apparatus and by an authorized agent of the purchasing entity, indicating mutual understanding and agreement between the parties regarding the substance thereof. An apparatus that is delivered subject to a Statement of Exceptions other than a certification of full compliance shall not be placed in emergency service until the apparatus has been modified as necessary to accomplish full compliance with this standard.	✓	
10.	<u>CARRYING CAPACITY</u> The GAWR and the GCWR or GVWR of the chassis shall be adequate to carry the weight of the completed vehicle when loaded to its estimated in-service weight. The Body Manufacturer shall establish the estimated in service weight during the design of the vehicle.	✓	



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The estimated in-service weight shall include the following:

- 1) The chassis, body and tank(s)
- 2) Full fuel, lubricant, and other chassis or component fluid tanks or reservoirs
- 3) Full water and other agent tanks
- 4) *250 lb (114 kg) in each seating position
- 5) Fixed equipment such as pumps, aerial devices, generators, reels and air systems as installed
- 6) Ground ladders, suction hose, designed hose load in their hose beds and on their reels
- 7) An allowance for miscellaneous equipment that is the greatest of the values for type of vehicle per NFPA 1901, 2016 edition, a Purchaser provided list of equipment to be carried with weights or a Purchaser specified miscellaneous equipment allowance

The Body Manufacturer shall engineer and design the vehicle such that the completed unit, when loaded to its estimated in-service weight, with all movable weights distributed as close as is practical to their intended in-service configuration, does not exceed the GVWR.

11. A final Body Manufacturer's certification of the GVWR or GCWR, along with a certification of each GAWR, shall be supplied on a label affixed to the vehicle.

Apparatus Type	Storage Areas	Apparatus Size	Equipment Allowance	
			lb.	kg.
Pumper Fire Apparatus	Equip. minimum of 40 cu ft (1.1 cu mt) of enclosed compartmentation.	Less than 250 cu ft (7 cu mt) compartmente	2,000	910
	Hose minimum of 30 cu ft (0.8 cu mt) for 2 1/2" (65 mm) or larger fire	250 cu ft (7 cu mt) or more of compartmente	2,500	1,135
	(2) areas for pre- connects each minimum of 3.5 cu.ft. (0.1 cu.mt.) for 1 1/2" (38 mm) or larger fire			
Compartment space for pumpers is calculated based on the inside dimensions of the enclosed compartment.				

12. **ROAD TEST**
Road test shall be conducted in accordance with this section to verify that the completed apparatus is capable of compliance with Road ability Section.



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	<p>The tests shall be conducted at a location and in a manner that does not violate local, state or provincial or federal traffic laws.</p> <p>The tests shall be conducted on dry, level, paved roads that are in good condition. The apparatus shall be loaded to its estimated in service weight.</p> <p>The engine shall not operate in excess of the maximum governed speed. Acceleration tests shall consist of two runs in opposite directions over the same route. The fire apparatus shall attain a speed of 35 mph (55 km/hr) from a standing start within 25 seconds. The fire apparatus shall attain a minimum top speed of 50 mph (80 km/hr).</p> <p>If the apparatus is equipped with an auxiliary braking system, the Body Manufacturer shall road test the system to confirm that the system is functioning as intended by the auxiliary braking system manufacturer.</p> <p>If the apparatus is equipped with an air brake system, the service brakes shall bring the apparatus, when loaded to its GVWR, to a complete stop from an initial speed of 20 mph (32.2 km/hr) in a distance not exceeding 35 ft (10.7 m) by actual measurement on a paved, level, dry surface road that is free of loose material, oil or grease.</p> <p>If the apparatus is equipped with a hydraulic brake system, the service brakes shall bring the apparatus, when loaded to its GVWR, to a complete stop from an initial speed of 30 mph (48.2 km/hr) in a distance not exceeding 88 ft (26.8 m) by actual measurement on a paved, level, dry surface road that is free of loose material, oil or grease.</p>		
13.	<p><u>LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST</u></p> <p>The vehicles low voltage electrical system shall be tested and certified by the manufacturer. The certified test results shall be delivered with the completed vehicle. Tests shall be performed when the air temperature is between 0°F and 110°F (-18°C and 43°C).</p>		
14.	<p><u>TEST SEQUENCE</u></p> <p>The following three (3) tests shall be performed in the order in which they appear below. Before each test, the batteries shall be fully charged until the voltage stabilizes at the voltage regulator set point and the lowest charge current is maintained for ten (10) minutes. Failure of any of these tests shall require a repeat of the sequence.</p> <p>1. <u>RESERVE CAPACITY TEST</u></p> <p>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</p>		



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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 test failure of the battery system.

2. ALTERNATOR PERFORMANCE TEST - 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. 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.

An alarm sounded by excessive battery discharge, as detected by the warning system required in 13.3.4, or a system voltage of less than 11.8 V dc for a 12 V nominal system, 23.6 V dc for a 24 V nominal system, or 35.4 V dc for a 42 V nominal system for more than 120 seconds shall be considered a test failure.

4. LOW VOLTAGE ALARM TEST

The following test shall be started with the engine off and the battery voltage at or above 12 V for a 12 V nominal system, 24 V for a 24 V nominal system or 36 V for a 42 V nominal system.

With the engine 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.

The test shall be considered a failure if the alarm does not sound in less than 140 seconds after the voltage drops to 11.70 V for a 12 V nominal system, 23.4 V dc for a 24 V nominal system, or 35.1 V for a 42 V nominal system.

The battery system shall then be able to restart the engine. Failure to restart the engine shall be considered a test failure.



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	LOW VOLTAGE ELECTRICAL SYSTEM PERFORMANCE TEST		
15.	<p>DOCUMENTATION</p> <p>The manufacturer shall deliver the following with the fire apparatus:</p> <ol style="list-style-type: none">1) Documentation of the electrical system performance tests2) A written electrical load analysis, including the following:<ol style="list-style-type: none">a) The nameplate rating of the alternatorb) The alternator ratingc) Each of the component loads specified that make up the minimum continuous electrical loadd) Additional electrical loads that, when added to the minimum continuous electrical load, determine the total continuous electrical loade) Each individual intermittent electrical load <p>UL PUMP CERTIFICATION</p> <p>The fire pump shall be tested and certified by Underwriters Laboratories, to perform as listed below;</p> <ul style="list-style-type: none">• 100% of rated capacity at 150 psi (1,000 kPa) net pressure• 70% of rated capacity at 200 psi (1,400 kPa) net pressure• 50% of rated capacity at 250 psi (1,700 kPa) net pressure <p>The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 500 psi (3,400 kPa).</p> <p>The pump shall comply with the applicable requirements of "Standard for Automotive Fire Apparatus 1901, 2016 edition latest edition.</p> <p>The pump shall be capable of producing fire streams that are free from objectionable pulsation under all normal operating conditions.</p>		
16.	<p>FOAM SYSTEM TEST</p> <p>The apparatus foam system shall be tested and certified by the manufacturer. The certification shall be delivered to the customer with the apparatus.</p> <p>The test shall be performed with the air temperature between 0 degrees F and 100 degrees F.</p> <p>The foam system will be tested to comply with requirements of NFPA 1901 2016 edition. The basis for the test is as follows:</p> <p>A base calibration range is established using water and foam concentrate from the system to be tested. Two (2) standard solutions are made, a minimum allowable foam percent and a maximum allowable foam percent solution for each foam proportioning system foam percent setting to be tested. The minimum allowable and maximum allowable foam percent solution are determined using the criteria given in NFPA 1901, 2016 edition "Foam Proportioning System Accuracy".</p>		



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	<p>After the standard foam solutions are thoroughly mixed the conductivity (a measure of a substances ability to conduct electricity) of each solution is measured. The conductivity of a solution is directly proportional to the percentage of foam in the solution. The reading is recorded on the certificate by the Testing Official. From these two (2) readings a range is established for that particular foam proportioning system's foam percent setting.</p> <p>The foam system is then operated at the corresponding foam percent setting, flow rate, and pressure as recommended by the foam proportioning system manufacturer. A test sample is the collected at an adequate distance downstream from the foam proportioner being tested. When the test sample has been collected its conductivity is measured and recorded by the Testing Official. The Testing Official then compares the conductivity reading of the test sample to the minimum and maximum allowable conductivity readings taken from the two (2) standard solutions. If it is greater than the minimum allowable conductivity, but less than the maximum allowable conductivity, the foam proportioning system is determined to be accurate at that foam percent setting.</p> <p>The above procedure is performed at three foam proportioning system foam percent settings. The foam percent settings are:</p> <ol style="list-style-type: none">1) The minimum foam percent setting available.2) A mid-range foam percent setting, if available.3) The maximum foam percent setting available. <p>The foam proportioning system is certified to be accurate if all three foam percent settings produce conductivity, measurements in the range of conductivity' as determined by' the standard solutions for each foam percent setting. The Testing Official makes the final determination of the foam proportioning system accuracy as installed by' the apparatus manufacturer.</p> <p>Criteria for the following systems:</p> <ul style="list-style-type: none">• Class A foam - .1%, .5%, 1.0%, 3.0%, 6.0% settings if available.		
17.	<p>WARRANTY</p> <p>A full statement shall be provided of the warranties for the vehicle(s) being bid. Warranties should clearly describe the terms under which the vehicle manufacturer accepts responsibility for the cost to repair defects caused by faulty design, quality of work or material and for the applicable period of time after delivery.</p> <p>Cost of repairs refers to all costs related thereto including, but not limited to, the cost of materials and the cost of labor.</p>		



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	<p>The Body Manufacturer shall warrant all materials and accessories used on the vehicle(s), whether fabricated by manufacturer or purchased from an outside source and will deal directly with the City of Goodyear on all warranty work.</p> <p>Fleet and Equipment Management shall be the sole source of responsibility for managing and coordinating response to all warranty repair issues during the period any/all warranties remain in effect. Fleet and Equipment Management shall maintain established, documented relationships with appropriately authorized service providers to carry out any repairs that may be required.</p> <p>The service providers shall be capable of supplying and installing component parts and troubleshooting equipment via certified fire apparatus technicians (EVT's).</p> <p>Warranty service providers shall be located in Maricopa County, Arizona. The travel distance shall not exceed 50 miles travel between the City location and the authorized service facilities. Minimum service hours shall be from 8:00 a.m. to 5:00 p.m. Monday through Friday.</p> <p>The warranty service provider service submissions shall fully describe the service capabilities maintained in order to meet this requirement and shall include all relevant contact information for the primary and alternate service contacts.</p> <p>The City shall reserve the right to physically inspect and approve any/all designated service locations.</p> <p>The City reserves the right to perform approved warranty work on the apparatus at the local shop rate. Prior to work being performed the City will contact the warranty service provider to receive approval and arrange for any parts that need to be supplied to the City.</p> <p><u>GENERAL LIMITED WARRANTY - TWO (2) YEARS</u></p> <p>The vehicle shall be free of defects in material and workmanship for a period of two (2) years or 36,000 miles (or 57,936 kilometers), whichever occurs first starting thirty (30) days after the final invoice date.</p> <p>The Contractor must be the "single source" coordinator of all warranties on the vehicle.</p>		
18.	<p><u>LOW VOLTAGE ELECTRICAL WARRANTY - FIVE (5) YEARS</u></p> <p>The vehicle low voltage electrical system shall be free of defects in material and workmanship for a period of five (5) years or 60,000 miles (or 96,561</p>		



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	kilometers), whichever occurs first, starting thirty (30) days after the final invoice date.	✓	
19.	<u>STRUCTURAL WARRANTY - TEN (10) YEARS</u> The body shall be free of structural or design failure or workmanship for a period of ten (10) years, or 100,000 miles (or 160,934 kilometers), whichever occurs first, starting thirty (30) days after the final invoice date.	✓	✓
20.	<u>PAINT LIMITED WARRANTY - TEN (10) YEARS</u> The body shall be free of bubbling or peeling as a result of a defect in the method of manufacture for a period of ten (10) years or 100,000 miles (or 160,934 kilometers), whichever occurs first, starting thirty (30) days after the final invoice date. Pro-rated warranties will not be acceptable.	✓	✓
21.	<u>GRAPHICS LIMITED WARRANTY</u> The 3M graphics installation shall be warranted for a period of three (3) years. The 3M materials installed on completed vehicle shall be warranted for seven (7) years. The 3M Diamond grade film (if specified) shall be warranted for ten (10) years.	✓	✓
22.	<u>WATEROUS FIVE YEAR PUMP WARRANTY</u> The fire pump shall be warranted by Waterous for a period of five (5) years starting thirty (30) days after the final invoice date.	✓	✓
23.	<u>STAINLESS STEEL PLUMBING WARRANTY</u> The stainless steel plumbing shall be free of defects in material and workmanship for a period of ten (10) years, or 100,000 miles (or 160,934 kilometers), whichever occurs first, starting thirty (30) days after the final invoice date. The contractor shall supply details of their warranty information with their bid submission.	✓	✓
24.	<u>UPF POLY WATER TANK WARRANTY</u> The UPF poly water tank shall be provided with a lifetime material and workmanship limited warranty. The manufacturer shall supply details of their warranty information with their bid submission.	✓	✓
25.	<u>CONSTRUCTION PERIOD</u> The completed vehicle shall be delivered within three hundred (300) days after the pre-construction conference. The City of Goodyear request to have the pre-construction conference no later than 10 days after contract signing. Contractor shall not be held liable for delays of chassis delivery due to accidents, strikes, floods or other events not subject to their control. Contractor shall provide immediate written notice to Goodyear Fleet Division as to delays and to what extent these delays have in completing vehicle within the stated construction time period.	✓	✱
26.	<u>OVERALL HEIGHT</u> The overall height (OAH) of the vehicle shall not exceed 131" (10' - 11") from the ground. This measurement shall be taken on flat ground with the tires	✓	✓



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	properly inflated, in the unloaded condition, at that highest point of the vehicle (deck gun).	✓	
27.	<u>OVERALL LENGTH</u> The overall length (OAL) of the vehicle shall be approximately 394" (32' - 10").	✓	
28.	<u>ANGLE OF APPROACH</u> The angle of approach for this vehicle shall not be less than eight (8) degrees when it is loaded to the estimated in-service weight as specified by the current edition of NFPA 1901, 2016 edition.	✓	
29.	<u>PRE-CONSTRUCTION CONFERENCE</u> A pre-construction conference shall be required, at the Contractor's factory for five (5) personnel from the City to finalize all construction details prior to manufacturing. The Contractor shall at his/her expense, provide transportation, lodging, rental car and meal expenses during the pre-construction conference. Any travel distance greater than 250 miles shall be by non-stop or no more than a single connection commercial air travel.	✓	
30.	<u>MID POINT-CONSTRUCTION INSPECTION</u> A mid-point construction inspection shall be required, at the Contractor's factory for four (4) personnel from the City of Goodyear to inspect progress and review any modifications or exceptions to the approved specification. The Contractor shall at his/her expense, provide transportation, lodging, rental car and meal expenses during the midpoint construction inspection. Any travel distance greater than 250 miles shall be by non-stop or no more than a single connection commercial air travel.	✓	
31.	<u>FINAL INSPECTION CONFERENCE</u> A final inspection conference shall be required, at the Contractor's factory for five (5) personnel from the City of Goodyear to inspect the vehicle and construction details prior to shipment of the completed vehicle. This inspection shall take place after any specified striping and lettering is installed. The Contractor shall at his/her expense, provide transportation, lodging, rental car and meal expenses during the final inspection conference. Any travel distance greater than 250 miles shall be by non-stop or no more than a single connection commercial air travel.	✓	
32.	<u>DELIVERY AND DEMONSTRATION</u> The Contractor shall be responsible for the delivery of the completed unit to the Goodyear Fleet Division location. On initial delivery of the apparatus, the Contractor shall supply a qualified representative to demonstrate the apparatus and provide initial instruction to representatives of the Goodyear Fire Department regarding the operation, care and maintenance of the apparatus and equipment supplied at Goodyear Fire Department location.	✓	



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	<p>The Delivery Engineer shall set delivery and instruction schedule with the person appointed by Goodyear Fire Department.</p> <p>After delivery of the apparatus, the Goodyear Fire Department shall be responsible for ongoing training of its personnel to proficiency regarding the proper and safe use of the apparatus and associated equipment.</p>	✓	
	<u>AB CHASSIS SPECIFICATION</u>		
33.	<p><u>MODEL</u></p> <p>The cab and chassis shall include design considerations for multiple emergency vehicle applications, rapid transit and maneuverability. The chassis shall be manufactured for heavy duty service with the strength and capacity to support a fully laden apparatus, one hundred (100) percent of the time.</p>	✓	
34.	<p><u>MODEL YEAR</u></p> <p>The chassis shall have a vehicle identification number that reflects a 2016/2017 model year.</p>	✓	
35.	<p><u>COUNTRY OF SERVICE</u></p> <p>The chassis shall be put in service in the country of United States of America (USA).</p> <p>The chassis will meet applicable U.S.A. federal motor vehicle safety standards per CFR Title 49 Chapter V Part 571 as clarified in the incomplete vehicle book per CFR Title 49 Chapter V Part 568 Section 4 which accompanies each chassis. Chassis manufacture is not responsible for compliance to state, regional, or local regulations. Dealers should identify those regulations and order any necessary optional equipment from the chassis manufacture or their OEM needed to be in compliance with those regulations.</p>	✓	
36.	<p><u>APPARATUS TYPE</u></p> <p>The apparatus shall be a rescue pumper vehicle designed for emergency service use which shall be equipped with a permanently mounted fire pump which has a minimum rated capacity of 1250 gallons per minute. The apparatus shall include a water tank and hose body whose primary purpose is to combat structural and associated fires.</p>	✓	
37.	<p><u>VEHICLE TYPE</u></p> <p>The chassis shall be manufactured for use as a straight truck type vehicle and designed for the installation of a permanently mounted apparatus behind the cab. The apparatus of the vehicle shall be supplied and installed by the apparatus manufacturer.</p>	✓	
38.	<p><u>AXLE CONFIGURATION</u></p> <p>The chassis shall feature a 4 x 2 axle configuration consisting of a single rear drive axle with a single front steer axle.</p>	✓	
39.	<p><u>GROSS AXLE WEIGHT RATINGS FRONT</u></p> <p>The front gross axle weight rating (GAWR) of the chassis shall be 20,000 pounds.</p> <p>This front gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.</p>	✓	



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40.	<p><u>GROSS AXLE WEIGHT RATINGS REAR</u></p> <p>The rear gross axle weight rating (GAWR) of the chassis shall be 24,000 pounds.</p> <p>This rear gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.</p>	✓	
41.	<p><u>PUMP PROVISION</u></p> <p>The chassis shall include provisions to mount a drive line pump in the rear of the chassis, more commonly known as the rear pump location.</p>	✓	
42.	<p><u>CAB STYLE</u></p> <p>The cab shall be a custom, fully enclosed, LFD model with a 10.00 inch raised roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to six (6) seating positions.</p> <p>The cab shall incorporate a fully enclosed design with side wall roof supports, allowing for a spacious cab area with no partition between the front and rear sections of the cab. To provide a superior finish by reducing welds that fatigue cab metal; the roof, the rear wall and side wall panels shall be assembled using a combination of welds and proven industrial adhesives designed specifically for aluminum fabrication for construction.</p> <p>The cab shall be constructed using multiple aluminum extrusions in conjunction with aluminum plate, which shall provide proven strength and the truest, flattest body surfaces ensuring less expensive paint repairs if needed. All aluminum welding shall be completed to the American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum.</p> <p>All interior and exterior seams shall be sealed for optimum noise reduction and to provide the most favorable efficiency for heating and cooling retention.</p> <p>The cab shall be constructed of 5052-H32 corrosion resistant aluminum plate. The cab shall incorporate tongue and groove fitted 6061-T6 0.13 & 0.19 inch thick aluminum extrusions for extreme duty situations. A single formed, one (1) piece extrusion shall be used for the "A" pillar, adding strength and rigidity to the cab as well as additional roll-over protection. The cab side walls and lower roof skin shall be 0.13 inch thick; the rear wall and raised roof skins shall be 0.09 inch thick; the front cab structure shall be 0.19 inch thick.</p> <p>The exterior width of the cab shall be a minimum of 94.00 inches not to exceed 100 inches wide with a minimum interior width of 88.00 inches. The overall cab length shall be 144.60 inches with 67.50 inches from the centerline of the front of the axle to the back of the cab.</p>	✓	



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

The cab shall offer an interior height of 57.50 inches from the front floor to the headliner and a rear floor to headliner height of 65.00 inches in the raised roof area, at a minimum. The cab shall offer an interior measurement at the floor level from the rear of the engine tunnel to the rear wall of the cab of 63.38 inches at minimum. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

The cab shall include a driver and officer area with two (2) cab doors large enough for personnel in full firefighting gear. The front doors shall offer a clear opening of 40.25 inches wide X 53.50 inches high, from the cab floor to the top of the door opening. The cab shall also include a crew area with up to two (2) cab doors, also large enough for personnel in full firefighting gear. The rear doors shall offer a clear opening of 32.25 inches wide X 61.00 inches high, from the cab floor to the top of the door opening.

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

The first step for the driver and officer area shall measure approximately 10.25 inches deep X 31.13 inches wide. The intermediate step shall measure approximately 8.38 inches deep X 32.13 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 11.00 inches.

The first step for the crew area shall measure approximately 10.38 inches deep X 20.44 inches wide. The intermediate step shall measure approximately 10.20 inches deep X 21.00 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.80 inches.

43.

CAB FRONT FASCIA

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

The cab fascia will encompass the entire front of the aluminum cab structure from the bottom of the windshield to the bottom of the cab. The manufacture shall submit cab front fascia designs for review and approval by the City of Goodyear.



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	The front cab fascia shall include two (2) molded plastic modules on each side accommodating a total of up to four (4) Hi/Low beam headlights and two (2) turn signal lights or up to four (4) warning lights.	✓	
44.	<u>FRONT GRILLE</u> The front fascia shall include a box style, 304 stainless steel front grille 44.5 inches wide 33.50 inches high X 1.50 inches, the grille shall include a minimum free air intake of 732.00 square inches. If there is any service components located behind the grille, the grille shall be hinged to provide service access.	✓	
45.	<u>CAB UNDERCOAT</u> There shall be a rubberized undercoating applied to the underside of the cab that provides abrasion protection, sound deadening and corrosion protection.	✓	
46.	<u>CAB SIDE DRIP RAIL</u> There shall be a drip rail along the top radius of each cab side. The drip rails shall help prevent water from the cab roof running down the cab side.	✓	
47.	<u>CAB PAINT EXTERIOR</u> The cab shall be painted prior to the installation of glass accessories and all other cab trim to ensure complete paint coverage and the maximum in corrosion protection of all metal surfaces. All metal surfaces on the entire cab shall be ground by disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once the surface is machine ground a high quality acid etching of base primer shall be applied. Upon the application of body fillers and their preparation, the cab shall be primed with a coating designed for corrosion resistance and surface paint adhesion. The maximum thickness of the primer coat shall be 2.00 mils. The entire cab shall then be coated with an intermediate solid or epoxy surfacing agent that is designed to fill any minor surface defects, provide an adhesive bond between the primer and the paint and improve the color and gloss retention of the color. The finish to this procedure shall be a sanding of the cab with 360 grit paper followed by sealing the seams with SEM brand seam sealer. The cab shall then be painted the specific color designated by the customer with an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on the fire ground or emergency scene. The paint shall have a minimum thickness of 2.00 mils, followed by a clear top coat not to exceed 2.00 mils. The entire cab shall then be baked at 180 degrees for one (1) hour to speed the curing process of the coatings.	✓	
48.	<u>CAB PAINT MANUFACTURER</u> The cab shall be painted with PPG Industries paint.	✓	
49.	<u>CAB PAINT PRIMARY/LOWER COLOR</u> The lower paint color shall be PPG 81739 yellow.	✓	
50.	<u>CAB PAINT SECONDARY/UPPER COLOR</u> The secondary/upper paint color shall be PPG 91258 white.	✓	



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51.	<u>CAB PAINT EXTERIOR BREAKLINE</u> Please refer to the attached City of Goodyear graphic standards manual for a pictorial representation of the current paint scheme on the Cities existing apparatus'. Prior to the application of cab and body paint, the manufacture will submit for approval a detailed drawing of paint and graphics package.	✓	
52.	<u>CAB PAINT PINSTRIPE</u> Please refer to the attached City of Goodyear graphic standards manual for a pictorial representation of the current paint scheme on the Cities existing apparatus'.	✓	
53.	<u>CAB PAINT WARRANTY</u> The cab and chassis shall be covered by a limited manufacturer paint warranty which shall be in effect for ten (10) years from the first owner's date of purchase or in service or the first 100,000 actual miles, whichever occurs first.	✓	
54.	<u>CAB PAINT INTERIOR</u> The visible interior cab structure surfaces shall be painted with a Zolatone #20-06 black-grey speckle texture finish.	✓	
55.	<u>CAB ENTRY DOORS</u> The cab shall include four (4) entry doors, two (2) front doors and two (2) crew doors designed for ease of entering and egress. The doors shall be constructed of extruded aluminum with a nominal thickness of 0.13 inch. The exterior skins shall be constructed of 0.13 inch aluminum plate. The doors shall include a double rolled style automotive rubber seal around the perimeter of each door frame and door edge which ensures a weather tight fit. All door hinges shall be hidden within flush mounted cab doors for a pleasing smooth appearance and perfect fit along each side of the cab. Each door hinge shall be piano style with a 0.38 inch pin and shall be constructed of stainless steel.	✓	
56.	<u>CAB ENTRY DOOR TYPE</u> All cab entry doors shall be barrier clear design resulting in exposed lower cab steps. The doors shall provide approximately 32.00 inches of clearance from the ground to the bottom of the door so cab doors may be opened un-hindered by most obstacles encountered, such as guard rails along interstate highways.	✓	
57.	<u>CAB INSULATION</u> The cab ceiling and walls shall include 1.00 inch thick foam insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.	✓	
58.	<u>LH EXTERJIOR REAR COMPARTMENT</u> The cab shall offer an exterior compartment on the left side of the cab behind the rear door. The compartment opening shall be 10.00 inches wide X 21.19 inches high. The compartment size shall be 11.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 10.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch.	✓	



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	There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.		
59.	<u>LEFT HAND EXTERIOR REAR COMPARTMENT LIGHTING</u> There shall be compartment LED strip lighting installed inside the compartment to allow for adequate lighting during night time operations. These LED strip lights will be located in such a manner as to not get damaged when equipment is inserted and removed from the compartment.	✓	
60.	<u>LH EXTERIOR COMPARTMENT INTERIOR FINISH</u> The interior of the left hand exterior compartment shall be painted with a Zolatone #20-06 black-grey speckle texture finish.	✓	
61.	<u>RH EXTERIOR REAR COMPARTMENT</u> The cab shall offer an exterior compartment on the right side of the cab behind the rear door. The compartment opening shall be 10.00 inches wide X 21.19 inches high. The compartment size shall be 11.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 10.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.	✓	
62.	<u>RIGHT HAND EXTERIOR REAR COMPARTMENT LIGHTING</u> There shall be compartment LED strip lighting installed inside the compartment to allow for adequate lighting during night time operations. These LED strip lights will be located in such a manner as to not get damaged when equipment is inserted and removed from the compartment.	✓	
63.	<u>RH EXTERIOR COMPARTMENT INTERIOR FINISH</u> The interior of the right hand exterior compartment shall be painted with a Zolatone #20-06 black-grey speckle texture finish.	✓	
64.	<u>CAB STRUCTURAL WARRANTY</u> Summary of Warranty Terms: The cab structure shall be warranted for a period of ten (10) years or one hundred thousand (100,000) miles which ever may occur first. The warranty period shall commence on the date the vehicle is delivered to the first end user.	✓	
65.	<u>CAB TEST INFORMATION</u> The cab shall have successfully completed the preload side impact, static roof load application and frontal impact without encroachment to the occupant survival space when tested in accordance with Section 4 of SAE J2420 COE Frontal Strength Evaluation Dynamic Loading Heavy Trucks, Section 5 of SAE J2422 Cab Roof Strength Evaluation Quasi -Static Loading Heavy Trucks and ECE R29 Uniform Provisions Concerning the Approval of Vehicles with regard to the Protection of the Occupants of the Cab of a Commercial Vehicles Annex 3 Paragraph 5. The above tests have been witnessed by and attested to by an independent third party. The test results were recorded using cameras, high speed imagers, accelerometers and strain gauges. Documentation of the testing shall be provided	✓	



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	upon request. The intent of the City is to obtain cab and crash test data that meets all Federal and State requirements. Cab and chassis crash testing not listed above will be considered without exception by the City.	✓	
66.	<u>ELECTRICAL SYSTEM</u> The chassis shall include a single starting electrical system which shall include a 12 volt direct current Weldon brand of multiplexing system, suppressed per SAE J551. The wiring shall be appropriate gauge cross link with 311 degree Fahrenheit insulation. All SAE wires in the chassis shall be color coded and shall include the circuit number and function where possible. The wiring shall be protected by 275 degree Fahrenheit minimum high temperature flame retardant loom. All nodes and sealed Deutsch connectors shall be waterproof.	✓	
67.	<u>APPARATUS WIRING PROVISION</u> An apparatus wiring panel shall be installed in the center dash area behind the rocker switch panel which shall include eight (8) open circuits consisting of three (3) 20 amp, one (1) 30 amp, three (3) 10 amp, and one (1) 15 amp circuit, with relays and breakers with trigger wires which shall be routed to the rocker switch panel.	✓	
68.	<u>MULTIPLEX DISPLAY</u> The multiplex electrical system shall include two (2) Weldon Vista IV Touchscreen displays which shall be located one (1) on the left side dash in the switch panel and one (1) on the right side of the dash in the switch panel and one (1) on the pump panel. The Touchscreen displays shall feature full color LCD display screens. The display shall include a message bar displaying the time of day, and important messages requiring acknowledgement by the user. There shall be virtual controls for the on-board diagnostics. The display screens shall be video ready 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. The Touchscreen displays shall measure approximately 6.25 inches wide x 3.38 inches in height. The displays shall offer varying fonts and background colors. The display shall be fully programmable to the needs of the customer and shall offer virtually infinite flexibility for screen configuration options.	✓	
69.	<u>DATA RECORDING SYSTEM</u> The chassis shall have a Weldon Vehicle Data Recorder (VDR) system installed. The system shall be designed to meet NFPA 1901 2016 edition and shall be integrated with the Weldon Multiplex electrical system. The following information shall be recorded: <ul style="list-style-type: none"> • Vehicle Speed • Acceleration • Deceleration • Engine Speed • Engine Throttle Position • ABS Event • Seat Occupied Status • Seat Belt Status 	✓	



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	<ul style="list-style-type: none"> • Master Optical Warning Device Switch Position • Time • Date <p>Each portion of the data shall be recorded at the specified intervals and stored for the specified length of time to meet NFPA 1901 2016 edition guidelines and shall be retrievable by connecting a laptop computer to the VDR system.</p>	✓	
70.	<p><u>ACCESSORY POWER</u></p> <p>The electrical distribution panel shall include two (2) power studs. The studs shall be size #10 and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall be capable of carrying up to a 40 amp battery direct load. One (1) power stud shall be capable of carrying up to a 15 amp ignition switched load. The two (2) power studs shall share one (1) #10 ground stud. A 225 amp battery direct power and ground stud shall be provided and installed on the chassis near the left hand battery box for OEM body connections. Adequate power supply will be located in the Captain side rear compartment to power the secured drug box container.</p>	✓	
71.	<p><u>EXTERIOR ELECTRICAL TERMINAL COATING</u></p> <p>All terminals exposed to the elements will be sprayed with a high visibility protective rubberized coating to prevent corrosion.</p>	✓	
72.	<p><u>ENGINE</u></p> <p>The chassis engine shall be a Cummins ISL9 engine. The ISL9 engine shall be an in-line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 450 horse power at 2100 RPM and shall be governed at 2200 RPM. The torque rating shall feature 1250 foot pounds of torque at 1400 RPM with 543 cubic inches (8.9 liters) of displacement.</p> <p>The ISL9 engine shall feature a VGT™ Turbocharger, a high pressure common rail fuel system, fully integrated electronic controls with an electronic governor, and shall be EPA certified to meet the 2013 emissions standards using cooled exhaust gas recirculation and selective catalytic reduction technology.</p> <p>The engine shall include an engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge for use with the engine lubrication system. The engine shall include Citgo brand Citgard 500, or equivalent SAE 15W40 CJ4 low ash engine oil which shall be utilized for proper engine lubrication.</p> <p>A wiring harness shall be supplied ending at the back of the cab. The harness shall include a connector which shall allow an optional harness for the pump panel. The included circuits shall be provided for a tachometer, oil pressure, engine temperature, hand throttle, high idle and a PSG system. A circuit for J1939 data link shall also be provided at the back of the cab.</p>	✓	*
73.	<p><u>CAB ENGINE TUNNEL</u></p>	✓	



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	The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade, 0.19 of an inch thick aluminum. The tunnel shall be a maximum of 41.50 inches wide X 25.50 inches high.	✓	
74.	<u>ENGINE PROGRAMMING HIGH IDLE SPEED</u> The engine high idle control shall maintain the engine idle at approximately 1250 RPM when engaged.	✓	
75.	<u>ENGINE HIGH IDLE CONTROL</u> The vehicle shall be equipped with an automatic high-idle speed control. It shall be pre-set so when activated, it will operate the engine at the appropriate RPM to increase alternator output. 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 or automatically re-engage when the brake is released, or when the transmission is placed in neutral. There shall be an indicator on the Vista display and control screen for the high idle speed control.	✓	
76.	<u>ENGINE PROGRAMMING ROAD SPEED GOVERNOR</u> The engine shall include programming which will govern the top speed of the vehicle.	✓	
77.	<u>AUXILIARY ENGINE BRAKE</u> The engine shall utilize a variable geometry turbo (VGT). The VGT auxiliary engine brake shall be an integral part of the turbo and shall offer a variable rate of exhaust flow, which when activated shall slow the engine and in turn slow the vehicle. The VGT shall actuate the vehicle's brake lights when engaged as an auxiliary brake. A cutout relay shall be installed to disable the VGT when in pump mode or when an ABS event occurs. The VGT engine brake shall activate at a 0% accelerator throttle position when in operation mode.	✓	
78.	<u>AUXILIARY ENGINE BRAKE CONTROL</u> An engine variable geometry turbo 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: <ul style="list-style-type: none"> • 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 variable geometry turbo brake shall be controlled via a virtual button on the Vista display and control screen. The multiplex system shall remember and default to the last engine brake control setting when the vehicle is shut off and re-started. The operator will have the ability to shut off the VGT brake control on the Vista display.	✓	
79.	<u>ELECTRONIC ENGINE OIL LEVEL INDICATOR</u>	✓	



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	The engine oil shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal. The warning shall activate in a low oil situation upon turning on the master battery and ignition switches without the engine running.	✓	
80.	<u>FLUID FILLS</u> Engine oil dipstick and fill shall be located in a manner to allow checking and filling without tilting the cab of the apparatus. The transmission, power steering, and coolant fluid fills and checks shall be under the cab. The windshield washer fill shall be easily accessible without tilting the cab.	✓	
81.	<u>ENGINE DRAIN PLUG</u> The engine shall include an original equipment manufacturer installed oil drain plug.	✓	
82.	<u>ENGINE WARRANTY</u> The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever occurs first.	✓	
83.	<u>REMOTE THROTTLE HARNESS</u> An apparatus interface wiring harness for the engine shall be supplied with the chassis. The rear mount harness shall include a connector for connection to the chassis harness which shall terminate in the left frame rail behind the body for reconnection by the apparatus builder. The rear mount harness shall contain connectors for a Class 1 Total Pressure Governor and a multiplexed gauge. Separate circuits shall be included for pump controls, "Pump Engaged" and "OK to Pump" indicator lights, open compartment ground, start signal, park brake ground, ignition signal, master power, customer ignition, air horn solenoid switch, high idle switch and high idle indication light. The harness shall be designed for a rear mount pump panel. An apparatus interface wiring harness shall also be included which shall be wired to the cab harness interface connectors and shall incorporate circuits with relays to control pump functions. This harness shall control the inputs for the transmission lock up circuits, governor/hand throttle controls and dash display which shall incorporate "Pump Engaged" and "OK to Pump" indicator lights. The harness shall contain circuits for the apparatus builder to wire in a pump switch.	✓	
84.	<u>ENGINE PROGRAMMING REMOTE THROTTLE</u> The engine ECM (Electronic Control Module) discreet wire remote throttle circuit shall be turned off for use with a J1939 based pump controller or when the discreet wire remote throttle controls are not required.	✓	
85.	<u>ENGINE PROGRAMMING IDLE SPEED</u> The engine low idle speed will be programmed at 700 rpm.	✓	
86.	<u>ENGINE FAN DRIVE</u> The engine cooling system fan shall incorporate a thermostatically controlled, Horton clutched type fan drive.	✓	



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	<p>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.</p>	✓	
87.	<p>ENGINE COOLING SYSTEM</p> <p>There shall be a heavy-duty aluminum cooling system designed to meet the demands of the emergency response industry and the temperature extremes of Arizona. The cooling system shall have the capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and all EPA requirements. The complete cooling system shall be mounted to isolate the entire system from vibration or stress. The individual cores of the cooling system shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores.</p> <p>The cooling system shall utilize a charge air cooler to radiator serial flow package that provides the maximum cooling capacity for the specified engine as well as serviceability. The main components shall include a surge tank, an air to air charge air cooler bolted to the front of the radiator, recirculation shields, a shroud, a fan, and required tubing.</p> <p>The radiator shall be a down-flow design constructed with aluminum cores, plastic end tanks, and a steel frame. The radiator shall be equipped with a drain cock to drain the coolant for serviceability.</p> <p>The cooling system shall include a one piece injection molded polymer eleven (11) blade fan with a fiberglass fan shroud.</p> <p>The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and sight glass to monitor the level of the coolant. The surge tank shall have a dual seal cap that meets the engine manufacturer's pressure requirements, and allows for expansion and recovery of coolant into a separate integral expansion chamber.</p> <p>All radiator tubes shall be formed from aluminized steel tubing. Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting performance.</p> <p>The charge air cooler shall be a cross-flow design constructed completely of aluminum with cast tanks. All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicone hump hoses and stainless steel "constant torque" style clamps meeting the engine manufacturer's requirements.</p>	✓	



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88.	<u>ENGINE COOLING SYSTEM PROTECTION</u> The engine cooling system shall include a recirculation shield designed to act as a light duty skid plate below the radiator to provide additional protection for the engine cooling system from light impacts, stones, and road debris. The skid plate shall be painted to match the frame color.	✓	
89.	<u>ENGINE COOLANT</u> The cooling package shall include Extended Life Coolant (ELC). The use of ELC provides longer intervals between coolant changes over standard coolants providing improved performance. The coolant shall contain a 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees Fahrenheit. Proposals offering supplemental coolant additives (SCA) shall not be considered, as this is part of the extended life coolant makeup.	✓	
90.	<u>ENGINE COOLANT FILTER</u> An engine coolant filter with a shut-off valve for the inlet and outlet shall be installed on the chassis. The location of the filter shall allow for easy maintenance. Proposals offering engines equipped with coolant filters shall be supplied with standard non-chemical type particulate filters.	✓	
91.	<u>ELECTRONIC COOLANT LEVEL INDICATOR</u> The instrument panel shall feature a low engine coolant indicator light which shall be located in the center of the instrument panel. An audible tone alarm shall also be provided to warn of a low coolant incident.	✓	
92.	<u>ENGINE PUMP HEAT EXCHANGER</u> A single bundle type coolant to water heat exchanger shall be installed between the engine and the radiator. The heat exchanger shall be designed to prohibit water from the pump from coming in contact with the engine coolant. This shall allow the use of water from the discharge side of the pump to assist in cooling the engine.	✓	
93.	<u>COOLANT HOSES</u> The cooling systems coolant hoses shall be silicone heater hose and shall include silicone hoses for all radiator coolant plumbing including the surge tank hoses. The radiator coolant hoses shall be formed silicone with formed aluminized steel tubing. All radiator silicone coolant hose and tubing, heater hose, and surge tank plumbing shall be secured with stainless steel constant torque band clamps.	✓	
94.	<u>ENGINE COOLANT OVERFLOW BOTTLE</u> A remote engine coolant overflow bottle shall be provided in the case of over filling the coolant system. The overflow bottle shall capture the expansion fluid or overflow rather than allow the fluid to drain on the ground. The overflow bottle provided on the cooling system shall only be a catch bottle and shall not return excess coolant back into the surge tank.	✓	



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95.	<p><u>ENGINE AIR INTAKE</u></p> <p>The engine air intake system shall include an ember separator air intake filter which shall be located in the front of the cab. This filter shall protect the downstream air filter from embers using a combination of unique flat and crimped metal screens constructed into a corrosion resistant steel frame. This multilayered screen shall be designed to trap embers or allow them to burn out before passing through the pack, while creating only minimal air flow restriction through the system. Periodic cleaning or replacement of the screen shall be all that is required after installation.</p> <p>The engine shall also include an air intake filter which shall be bolted to the frame and located under the front of the cab on the right hand side. The system shall utilize a replaceable dry type filter which ensures dust and debris remains safely contained inside the housing during operation via leak-tight seals. The service cover shall be located on the bottom of the housing, eliminating the chance of contaminating the air intake system during air filter service.</p> <p>The air flow distribution and dust loading shall be uniform throughout the high-performance filter element, which shall result in pressure differential for improved horsepower and fuel economy. The air intake ember separator shall be mounted within easy access via a hinged panel behind the right hand side headlight module. The air intake system shall include a restriction indicator light in the warning light cluster on the instrument panel, which shall activate when the air cleaner element requires replacement.</p>	✓	
96.	<p><u>AIR INTAKE PROTECTION</u></p> <p>A light duty skid plate shall be supplied for the engine air intake system below the right front side of the cab. The skid plate shall provide protection for the air intake system from light impacts, stones, and road debris.</p>	✓	
97.	<p><u>ENGINE EXHAUST SYSTEM</u></p> <p>The exhaust system shall include all necessary components to meet current EPA standards.</p>	✓	
98.	<p><u>DIESEL EXHAUST FLUID TANK</u></p> <p>The exhaust system shall include a molded cross linked polyethylene tank for Diesel Exhaust Fluid (DEF). The tank shall have a capacity of six (6) usable gallons and shall be mounted on the left hand side of the chassis frame behind the batteries below the frame. There shall be a fill gauge on or around the DEF tank in order to inform the operator of the level when filling the DEF Tank. This is to reduce the amount of spillage that can occur during refill operations.</p> <p>The tank fill tube shall be routed under the rear of the cab with the fill neck and splash guard accessible in the top rear step.</p>	✓	
99.	<p><u>ENGINE EXHAUST ACCESSORIES</u></p> <p>Two (2) exhaust temperature mitigation devices shall be shipped loose for installation by the body manufacturer on the vehicle. The temperature</p>	✓	



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	mitigation devices shall lower the temperature of the exhaust by combining ambient air with the exhaust gasses at the exhaust outlet.	✓	
100.	<u>ENGINE EXHAUST WRAP</u> The exhaust tubing shall be wrapped with a thermal cover in order to retain the necessary heat for engine regeneration. The exhaust wrap shall also help protect surrounding components from radiant heat which can be transferred from the exhaust.	✓	
101.	<u>TRANSMISSION</u> The drive train shall include an Allison model EVS 3000 torque converting, six speed automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing. The transmission shall include two (2) internal oil filters and Castrol TranSynd™ synthetic TES 295 transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector. The transmission gear ratios shall be: 1st 3.49:1 2nd 1.86:1 3rd 1.41:1 4th 1.00:1 5th 0.75:1 6th 0.65:1 Rev 5.03:1	✓	
102.	<u>TRANSMISSION MODE PROGRAMMING</u> The transmission, upon start-up, will automatically select a four (4) speed operation. The fifth speed over drive shall be available with the activation of the mode button on the shifting pad.	✓	
103.	<u>TRANSMISSION FEATURE PROGRAMMING</u> The Allison Gen V-E transmission EVS group package number 127 shall contain the 198 vocational package in consideration of the duty of 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. This requires re-selecting 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. 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.	✓	



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A transmission interface connector shall be provided in the cab. This package shall contain the following input/output circuits to the transmission control module. The Gen V-E transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

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

104. TRANSMISSION SHIFT SELECTOR

An Allison pressure sensitive range selector touch pad shall be provided and located to the right of the driver within clear view and easy reach. The shift selector shall have a graphical Vacuum Florescent Display (VFD) capable of displaying two lines of text. The shift selector shall provide mode indication and a prognostic indicator (wrench symbol) on the digital display. The prognostics monitor various operating parameters and shall alert you when a specific maintenance function is required.

105. ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR

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

106. TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE

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

107. 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.



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108.	<u>TRANSMISSION DRAIN PLUG</u> The transmission shall include an original equipment manufacturer installed oil drain plug.	✓	
109.	<u>TRANSMISSION WARRANTY</u> The Allison EVS series transmission shall be warranted for a period of five (5) years with unlimited mileage. Parts and labor shall be included in the warranty.	✓	
110.	<u>PTO LOCATION</u> The transmission shall have two (2) power take off (PTO) mounting locations, one (1) in the 8:00 o'clock position and one (1) in the 4:00 o'clock position.	✓	
111.	<u>DRIVELINE</u> All drivelines shall be heavy duty metal tube and equipped with Spicer 1710 series universal joints. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®.	✓	
112.	<u>DRIVELINE RETARDER</u> A Telma electromagnetic driveline retarder shall be focal mounted on the rear axle to act as an auxiliary braking system.	✓	
113.	<u>REAR RETARDER CONTROL</u> There shall be four (4) stages of activation for the driveline retarder. The first stage shall be 25% activation, the second stage shall be 50% activation, the third stage shall be 75% activation and the fourth stage shall be 100% activation. All four stages shall work off pressure applied to the service brake. The first stage shall activate when the throttle pedal is released, the second stage shall activate with 5 PSI of pressure, the third stage shall activate with 7 PSI of pressure, and the fourth stage shall activate with 10 PSI of pressure. The driveline retarder shall be controlled by a virtual On/Off switch located on the Vista display. There shall be an indicator light mounted in the instrument panel. The indicator light shall indicate each of the four (4) stages of activation. The driveline retarder shall disengage in pump mode or during an ABS event. A positive activation of the driveline retarder shall activate the brake lights.	✓	
114.	<u>REAR MOUNTED PUMP / GEARBOX</u> A temporary jackshaft driveline shall be installed by the chassis manufacturer to accommodate the rear mounted split shaft pump as specified by the apparatus manufacturer.	✓	
115.	<u>REAR MOUNTED PUMP / GEARBOX MODEL</u> The rear mounted pump/gearbox provisions shall be for a Waterous CX series pump.	✓	
116.	<u>REAR MOUNTED PUMP GEARBOX DROP</u> The Waterous pump gearbox shall have a "C" (medium length) drop length.	✓	
117.	<u>REAR MOUNTED PUMP RATIO</u> The ratio for the rear mounted pump shall be 2.27:1.	✓	



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118.	<u>REAR MOUNTED PUMP LOCATION C/L SUCTION TO C/L REAR AXLE</u> The rear mounted pump shall be located so the dimension from the centerline of the suction to the centerline of the rear axle is 95.00 inches.	✓	
119.	<u>PUMP SHIFT CONTROLS</u> One (1) pump shift control panel shall be mounted on the upper left section of the center dash panel. The following shall be provided on the panel: a three (3) position locking toggle switch; an engraved PUMP ENGAGED identification light; and an engraved OK TO PUMP identification light. The pump shift control panel shall be black with a yellow border outline. One (1) label indicating pump instructions and the transmission shift selector position used for pumping shall be provided and located so it can be read from the driver's position per NFPA 16.10.1.3. The road mode shall be selected when the switch is in the up position and pump mode shall be selected when the switch is in the down position. The center switch position shall exhaust air from both pump and road sides of the pump gear box shift cylinder.	✓	
120.	<u>PUMP SHIFT CONTROL PLUMBING</u> Air connections shall be provided from the air supply tank to the pump shift control valve and from the pump shift control valve to the frame mounted bracket. The frame mounted bracket shall include labeling identifying the pump and road connection points with threaded 0.25 inch NPT fittings on the solenoid for attaching the customer installed pump. The air supply shall be pressure protected from service brake system.	✓	
121.	<u>FUEL FILTER/WATER SEPARATOR</u> The fuel system shall have a Racor S3201T fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve and a see through cover to allow visual inspection of fuel and filter condition. A secondary fuel filter shall be included as approved by the engine manufacturer. An instrument panel lamp and audible alarm which indicates when water is present in the fuel-water separator shall also be included.	✓	
122.	<u>FUEL LINES</u> The fuel system supply and return lines installed from the fuel tank to the engine shall be reinforced nylon tubing rated for diesel fuel. The fuel lines shall be brown in color and connected with brass fittings.	✓	
123.	<u>FUEL SHUTOFF VALVE</u> A fuel shutoff valve shall be installed in the fuel draw line, near the fuel tank to allow maintenance to be performed with minimal loss of fuel.	✓	
124.	<u>ELECTRIC FUEL PRIMER</u> Integral to the engine assembly is an electric lift pump that serves the purpose of pre-filter fuel priming.	✓	



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125.	<u>FUEL COOLER</u> An aluminum cross flow air to fuel cooler shall be provided to lower fuel temperature allowing the vehicle to operate at higher ambient temperatures. The fuel cooler shall be located above the fuel tank.	✓	
126.	<u>FUEL TANK</u> The fuel tank shall have a minimum capacity of sixty-five (65) gallons and shall measure 35.00 inches in width X 20.00 inches in height X 24.00 inches in length. The increased height and reduced length allows for the use of a shorter rear frame overhang on the chassis. The baffled tank shall be made of 14 gauge aluminized steel. The exterior of the tank shall be painted with a PRP Corsol™ black anti-corrosive exterior metal treatment finish. This results in a tank which offers the internal and external corrosion resistance. The tank shall have a vent port to facilitate venting to the top of the fill neck for rapid filling without "blow-back" and a roll over ball check vent for temperature related fuel expansion and draw. The tank is designed with dual draw tubes and sender flanges. The tank shall have 2.00 inch NPT fill ports for right or left hand fill. A 0.50 inch NPT drain plug shall be centered in the bottom of the tank. The fuel tank shall be mounted below the frame, behind the rear axle. Two (2) three-piece strap hanger assemblies with "U" straps bolted midway on the fuel tank front and rear shall be utilized to allow the tank to be easily lowered and removed for service purposes. Rubber isolating pads shall be provided between the tank and the upper tank mounting brackets. Strap mounting studs through the rail, hidden behind the body shall not be acceptable.	✓	
127.	<u>FUEL TANK FILL PORT</u> The fuel tank fill ports shall be offset with the left fill port located in the rearward position and the right fill port located in the middle position on the fuel tank.	✓	
128.	<u>FUEL TANK SERVICEABILITY PROVISIONS</u> The chassis fuel lines shall have additional length provided so the tank can be easily lowered and removed for service purposes. The additional 8.00 feet of length shall be located above the fuel tank and shall be coiled and secured. The fuel line fittings shall be pointed towards the right side (curbside) of the chassis.	✓	
129.	<u>FRONT AXLE</u> The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-20. The axle shall include a 3.74 inch drop and a 71.00 inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle.	✓	
130.	<u>FRONT AXLE WARRANTY</u> The front axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application.	✓	



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131.	<u>FRONT WHEEL BEARING LUBRICATION</u> 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.	✓	
132.	<u>FRONT SHOCK ABSORBERS</u> Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the front suspension system. The shocks shall be a monotubular design and fabricated using a special extrusion method, utilizing a single blank of steel without a welded seam, achieving an extremely tight peak-to-valley tolerance and maintains consistent wall thickness. The monotubular design shall provide superior strength while maximizing heat dissipation and shock life. The ride afforded through the use of a gas shock is more consistent and shall not deteriorate with heat, the same way a conventional oil filled hydraulic shock would. The Bilstein front shocks shall include a digressive working piston assembly allowing independent tuning of the compression and rebound damping forces to provide optimum ride and comfort without compromise. The working piston design shall feature fewer parts than most conventional twin tube and "road sensing" shock designs and shall contribute to the durability and long life of the Bilstein shock absorbers. Proposals offering the use of conventional twin tube or "road sensing" designed shocks shall not be considered.	✓	
133.	<u>FRONT SUSPENSION</u> The front suspension shall include a nine (9) leaf spring pack in which the longest leaf measures 54.00 inch long and 4.00 inches wide and shall include a military double wrapped front eye. Both spring eyes shall have a case hardened threaded bushing installed with lubrication counter bore and lubrication land off cross bore with grease fitting. The spring capacity shall be rated at 21,500 pounds.	✓	
134.	<u>STEERING COLUMN/ WHEEL</u> The cab shall include a Douglas Autotech steering column which shall include a seven (7) position tilt, a 2.25 inch telescopic adjustment, and an 18.00 inch, four (4) spoke steering wheel located at the driver's position. The steering wheel shall be covered with black polyurethane foam padding. The distance between the bottom of the steering wheel and the cab floor all the way in the UP position shall be 30 1/4". The distance between the bottom of the steering wheel and the cab floor all the way in the DOWN position shall be 28 1/2". The steering column shall contain a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.	✓	



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135.	<u>ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR</u> The power steering fluid shall be monitored electronically and shall send a signal to activate an audible alarm and visual warning in the instrument panel when fluid level falls below normal.	✓	
136.	<u>POWER STEERING PUMP</u> The hydraulic power steering pump shall be a TRW PS and shall be gear driven from the engine. The pump shall be a balanced, positive displacement, sliding vane type.	✓	
137.	<u>FRONT AXLE CRAMP ANGLE</u> The chassis shall have a front axle cramp angle of 48-degrees to the left and 44-degrees to the right.	✓	
138.	<u>POWER STEERING GEAR</u> The power steering gear shall be a TRW model TAS 65 with an assist cylinder as a minimum. Other steering gear configurations will be considered with no exceptions.	✓	
139.	<u>CHASSIS ALIGNMENT</u> The chassis frame rails shall be measured to insure the length is correct and cross checked to make sure they run parallel and are square to each other. The front and rear axles shall be laser aligned. The front tires and wheels shall be aligned and toe-in set on the front tires by the chassis manufacturer.	✓	
140.	<u>REAR AXLE</u> The rear axle shall be a Meritor model RS-24-160 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a rated capacity of 24,000 pounds. The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.50 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance. The axle shall have heavy-duty Hypoid gearing for longer life, greater strength and quieter operation. Industry-standard wheel ends for compatibility with both disc and drum brakes, and unitized oil seal technology to keep lubricant in and help prevent contaminant damage will be used.	✓	
141.	<u>REAR AXLE DIFFERENTIAL LUBRICATION</u> The rear axle differential shall be lubricated with oil.	✓	
142.	<u>REAR AXLE WARRANTY</u> The rear axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.	✓	
143.	<u>REAR WHEEL BEARING LUBRICATION</u> The rear axle wheel bearings shall be lubricated with oil.	✓	



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144.	<u>VEHICLE TOP SPEED</u> The top speed of the vehicle shall be approximately 68 MPH +/-2 MPH at governed engine RPM.	✓	
145.	<u>REAR SUSPENSION</u> The single rear axle suspension shall feature a Neway AD-127 air suspension. The suspension shall include optimized air springs mounted to the equalizing beams and integral transverse beam. An adjustable torque rod and adjustable track bar shall also be included. 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 is run flat capable at reduced speeds. The rear suspension capacity shall be rated at 24,000 to 27,000 pounds.	✓	
146.	<u>REAR SHOCK ABSORBERS</u> Shock absorbers shall be supplied by the suspension manufacturer and installed on the rear axle suspension.	✓	
147.	<u>FRONT TIRE</u> The front tires shall be Michelin 365/70R-22.5 20PR "L" tubeless radial XZA highway tread. The front tire stamped load capacity shall be 21,000 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 125 pounds per square inch. The Michelin Tire Intermittent Service Rating load capacity shall be 22,500 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 130 pounds per square inch. The Michelin Intermittent Service Rating limits the operation of the emergency vehicle to one (1) hour of loaded travel with a one (1) hour cool down prior to another loaded run.	✓	
148.	<u>REAR TIRE</u> The rear tires shall be Michelin 11R-22.5 16PR "H" tubeless radial XDN2 all-weather tread designed for exceptional traction and mileage. The rear tire stamped load capacity shall be 24,020 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch. The Michelin Tire Intermittent Service Rating load capacity shall be 24,820 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch. The Michelin Intermittent Service Rating limits the operation of the emergency vehicle to one (1) hour of loaded travel with a one (1) hour cool down prior to another loaded run.	✓	
149.	<u>REAR AXLE RATIO</u> The rear axle ratio shall be 5.13:1.	✓	



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150.	<p><u>FRONT WHEEL</u></p> <p>The front wheels shall be Alcoa hub piloted, 22.50 inch X 10.50 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 shall include Alcoa's Dura-Bright® finish with XBR technology as an integral part of the wheel surface. Alcoa Dura-Bright® wheels keep their shine without polishing. Brake dust, grime and road debris are easily removed by simply cleaning the wheels with soap and water.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
151.	<p><u>REAR WHEEL</u></p> <p>The outer rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch LVL One™ aluminum wheels with a polished outer surface and Alcoa Dura-Bright® wheel treatment with XBR® technology as an integral part of the wheel. The inner rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch aluminum wheels with a LVL One™ bright machine finish. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
152.	<p><u>BALANCE WHEELS AND TIRES</u></p> <p>All of the wheels and tires, including any spare wheels and tire assemblies, shall be dynamically balanced.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
153.	<p><u>BRAKE SYSTEM</u></p> <p>A rapid build-up air brake system shall be provided. The air brakes shall include a two (2) air tank, three (3) reservoir system with a total of 4152 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. An inversion valve shall be installed to provide a service brake application in the unlikely event of primary air supply loss. All air reservoirs provided on the chassis shall be labeled for identification.</p> <p>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.</p> <p>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.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



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	<p>Additional safety shall be accommodated through Automatic Traction Control (ATC) which shall be installed on the single rear axle. The ATC system shall apply the ABS when the drive wheels loose traction. The system shall scale the electronic engine throttle back to prevent wheel spin while accelerating on ice or wet surfaces.</p> <p>A virtual style switch shall be provided and properly labeled "mud/snow". When the switch is pressed once, the system shall allow a momentary wheel slip to obtain traction under extreme mud and snow conditions. During this condition the ATC light shall blink continuously notifying the driver of activation. Pressing the switch again shall deactivate the mud/snow feature.</p> <p>The Electronic Stability Control (ESC) unit is a functional extension of the electronic braking system. It is able to detect any skidding of the vehicle about its vertical axis as well as any rollover tendency. The control unit comprises an angular-speed sensor that measures the vehicle's motion about the vertical axis, caused, for instance, by cornering or by skidding on a slippery road surface. An acceleration sensor measures the vehicle's lateral acceleration. The Controller Area Network (CAN) bus provides information on the steering angle. On the basis of lateral acceleration and steering angle, an integrated microcontroller calculates a theoretical angular speed for the stable vehicle condition.</p>		
154.	<p>FRONT BRAKES</p> <p>The front brakes shall be Meritor EX225 Disc Plus disc brakes with 17.00 inch vented rotors.</p>		
155.	<p>REAR BRAKES</p> <p>The rear brakes shall be Meritor 16.50 inch X 7.00 inch S-cam drum type.</p>		
156.	<p>PARK BRAKE</p> <p>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.</p>		
157.	<p>PARK BRAKE CONTROL</p> <p>A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake system. The control shall be yellow in color.</p> <p>The parking brake actuation valve shall be mounted in the center switch panel within easy ergonomic reach.</p>		
158.	<p>REAR BRAKE SLACK ADJUSTERS</p> <p>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.</p>		



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159.	<u>AIR DRYER</u> The brake system shall include a Wabco System Saver 1200 air dryer with an integral heater with a Metri-Pack sealed connector. The air dryer incorporates an internal turbo cutoff valve that closes the path between the air compressor and air dryer purge valve during the compressor "unload" cycle. The turbo cutoff valve allows purging of moisture and contaminants without the loss of turbo boost pressure. The air dryer shall be mounted behind the battery box on the left hand side.	✓	
160.	<u>FRONT BRAKE CHAMBERS</u> The front brakes shall be provided with MGM type 24 long stroke brake chambers.	✓	
161.	<u>REAR BRAKE CHAMBERS</u> The rear axle shall include TSE 30/30 H.O.T. (High Output Technology) brake chambers shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake shoes against the brake drum. The TSE 30/30 H.O.T. chambers are designed to provide the same performance as 30/36 chambers in a smaller package.	✓	
162.	<u>AIR COMPRESSOR</u> 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.	✓	
163.	<u>AIR GOVERNOR</u> 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 located on the air dryer bracket on the left frame rail behind the battery box.	✓	
164.	<u>MOISTURE EJECTORS</u> Automatic moisture ejectors with a manual pet-cock type drain provision shall be installed on all reservoirs of the air supply system.	✓	
165.	<u>AIR SUPPLY LINES</u> The air system on the chassis shall be plumbed with color coded reinforced nylon tubing air lines. The primary (rear) brake line shall be green, the secondary (front) brake line red, the parking brake line orange and the auxiliary (outlet) will be blue. Brass compression type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses.	✓	
166.	<u>AIR INLET CONNECTION</u> An air connection for the shoreline air inlet shall be supplied.	✓	



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167.	<u>AIR INLET LOCATION</u> The air inlet shall be installed in the left hand side lower front step in the forward position.	✓	
168.	<u>PLUMBING AIR INLET CONNECTION</u> The air inlet connector shall be plumbed to the air system with a check valve to prevent air from escaping through the inlet connector.	✓	
169.	<u>AIR INLET/ OUTLET FITTING TYPE</u> The air connector supplied shall be a 0.25 inch size Tru-Flate Interchange style manual connection which is compatible with Milton 'T' style, Myers 0.25 inch Automotive style and Parker 0.25 inch 10 Series connectors.	✓	
170.	<u>AIR TANK SPACERS</u> There shall be spacers included with the air tank mounting. The spacers shall move the air tanks 1.50 inches inward towards the center of the chassis. This shall provide clearance between the air tanks and the frame for body U-bolt clearance.	✓	
171.	<u>WHEELBASE</u> The chassis wheelbase shall not exceed 193.50 inches.	✓	
172.	<u>REAR OVERHANG</u> The chassis rear overhang shall not exceed 54.00 inches.	✓	
173.	<u>FRAME</u> The frame shall consist of double rails running parallel to each other with cross members forming a ladder style frame. The frame rails shall be formed in the shape of a "C" channel, with the outer rail measuring 10.25 inches high X 3.50 inches deep upper and lower flanges X 0.38 inches thick with an inner channel of 9.44 inches high X 3.13 inches deep and 0.38 inches thick. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. Each double rail section shall be rated by a Resistance Bending Moment (RBM) minimum of 3,213,100 inch pounds and have a minimum section modulus of 29.21 cubic inches. The frame shall measure 35.00 inches in width. Proposals calculating the frame strength using the "box method" shall not be considered. Proposals including heat treated rails shall not be considered. Heat treating frame rails produces rails that are not uniform in their mechanical properties throughout the length of the rail. Rails made of high strength, low alloy steel are already at the required yield strength prior to forming the rail. A minimum of seven (7) fully gusseted 0.25 inch thick cross members shall be installed. The inclusion of the body mounting, or bumper mounting shall not be considered as a cross member. The cross members shall be attached using zinc coated grade 8 fasteners. The bolt heads shall be flanged type, held in place by distorted thread flanged lock nuts. Each cross member shall be mounted to the	✓	



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	<p>frame rails utilizing a minimum of 0.25 inch thick gusset reinforcement plates at all corners balancing the area of force throughout the entire frame.</p> <p>Any proposals not including additional reinforcement for each cross member shall not be considered.</p> <p>All relief areas shall be cut in with a minimum 2.00 inch radius at intersection points with the edges ground to a smooth finish to prevent a stress concentration point.</p> <p>The frame and cross members shall carry a lifetime warranty to the original purchaser. A copy of the frame warranty shall be made available upon request.</p> <p>Proposals offering warranties for frames not including cross members shall not be considered.</p>	✓	
174.	<p><u>FRAME WARRANTY</u></p> <p>Summary of Warranty Terms: The frame and cross members shall carry a limited lifetime warranty to the original purchaser. The warranty period shall commence on the date the vehicle is delivered to the first end user.</p>	✓	
175.	<p><u>FRAME CLEAR AREA</u></p> <p>The chassis frame shall be left clear of chassis mounted components inside or outside the frame rails within the first 30.00 inches behind the cab to allow space for OEM installed components. Cross members may be installed in the clear area if required for proper frame or driveline configuration.</p>	✓	
176.	<p><u>FRAME PAINT</u></p> <p>The frame shall be powder coated body color prior to any attachment of components.</p> <p>All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 shall not have a fail of more than ten (10) squares. The pencil hardness test per ASTM D3363 shall have a final post-cured pencil hardness of H- 2H. The direct impact resistance test per ASTM D2794 shall have an impact resistance of 120.00 inches per pound at 2 mils.</p> <p>Any proposals offering painted frame with variations from the above process shall not be accepted. The film thickness of vendor supplied parts shall also be sufficient to meet the performance standards as stated above.</p>	✓	
177.	<p><u>FRONT BUMPER</u></p> <p>A one piece, two (2) rib wrap-around style, polished stainless steel front bumper shall be provided. The material shall be 10 gauge 304 stainless steel, 12.00 inches high and 99.00 inches wide.</p>	✓	



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178.	<u>FRONT BUMPER EXTENSION LENGTH</u> The front bumper shall be extended approximately 21.00 inches ahead of the cab.	✓	
179.	<u>FRONT BUMPER EXTENSION FRAME WIDTH</u> The front bumper extension frame shall feature an overall width of 48.25 inches.	✓	
180.	<u>FRONT BUMPER APRON</u> The 21.00 inch extended front bumper shall include an apron constructed of 0.19 inch thick embossed aluminum tread plate. The apron shall be installed between the bumper and the front face of the cab affixed using stainless steel bolts attaching the apron to the top bumper flange.	✓	
181.	<u>MECHANICAL SIREN</u> The front bumper shall include an electro mechanical Federal Q2B™ siren, which shall be streamlined, chrome-plated and shall produce 123 decibels of sound at 10.00 feet. The mechanical siren shall include a rumbler device. The Q2B™ siren produces a distinctive warning sound that is recognizable at long distances. A unique clutch design provides a longer coast down sound while reducing the amp draw to 100 amps. The siren shall measure 10.50 inches wide X 10.00 inches high X 14.00 inches deep. The siren shall include a pedestal mount to surface mount on a horizontal surface.	✓	
182.	<u>MECHANICAL SIREN LOCATION</u> The siren shall be mounted on top of the bumper apron on the furthest outboard section of the bumper on the Engineer side.	✓	
183.	<u>AIR HORN</u> The front bumper shall include two (2) Hadley brand E-Tone air horns which shall measure 21.00 inches long with a 6.00 inch round flare. The air horns shall be trumpet style with a chrome finish on the exterior and a painted finish deep inside the trumpet.	✓	
184.	<u>AIR HORN LOCATION</u> The air horns shall be recess mounted in the front bumper face, one (1) on the right side of the bumper in the outboard position relative to the right hand frame rail and one (1) on the left side of the bumper in the outboard position relative to the left hand frame rail.	✓	
185.	<u>MECHANICAL SIREN AND AIR HORN ACTIVATION</u> The mechanical siren and air horn shall include pre-wiring for activation by a left hand side foot switch. There shall also be a switch on the horn button to allow the engineer to activate and or change from OEM horn to electronic siren.	✓	
186.	<u>AIR HORN RESERVOIR</u> One (1) air reservoir, with a 2084 cubic inch capacity, shall be installed on the chassis to act as a supply tank for operating air horns. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.	✓	



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187.	<u>ELECTRONIC SIREN SPEAKER</u> There shall be two (2) Cast Products Inc. model SA4301, 100 watt speakers provided. Each speaker shall measure 6.20 inches tall X 7.36 inches wide X 3.06 inches deep. Each speaker shall include a flat mounting flange which shall be polished aluminum.	✓	
188.	<u>ELECTRONIC SIREN SPEAKER LOCATION</u> The two (2) electronic siren speakers shall be located on the front bumper face outboard of the frame rails with one (1) on the right side and one (1) on the left side in the inboard positions.	✓	
189.	<u>FRONT BUMPER TOW HOOKS</u> Two (2) heavy duty tow hooks, painted to match the chassis frame, shall be installed in a rearward position out of the approach angle area, bolted directly to the side of the chassis frame with grade 8 bolts.	✓	
190.	<u>CAB TILT SYSTEM</u> The entire cab shall be capable of tilting approximately 45-degrees to allow for easy maintenance of the engine and transmission. The cab tilt pump assembly shall be located on the right side of the chassis above the battery box. The electric-over-hydraulic lift system shall include an ignition interlock and red cab lock down indicator lamp on the tilt control which shall illuminate when holding the "Down" button to indicate safe road operation. It shall be necessary to activate the master battery switch and set the parking brake in order to tilt the cab. As a third precaution the ignition switch must be turned off to complete the cab tilt interlock safety circuit. Two (2) spring-loaded hydraulic hold down hooks located outboard of the frame shall be installed to hold the cab securely to the frame. Once the hold-down hooks are set in place, it shall take the application of pressure from the hydraulic cab tilt lift pump to release the hooks. Two (2) cab tilt cylinders shall be provided with velocity fuses in each cylinder port. The cab tilt pivots shall be 1.90 inch ball and be anchored to frame brackets with 1.25 inch diameter studs. A steel safety channel assembly, painted safety yellow shall be installed on the right side cab lift cylinder to prevent accidental cab lowering. The safety channel assembly shall fall over the lift cylinder when the cab is in the fully tilted position. A cable release system shall also be provided to retract the safety channel assembly from the lift cylinder to allow the lowering of the cab.	✓	
191.	<u>CAB TILT LIMIT SWITCH</u> A cab tilt limit switch shall be installed. The switch will effectively limit the travel of the cab when being tilted. The limit adjustment of the switch shall be preset by the chassis manufacturer to prevent damage to the cab or any bumper mounted option mounted in the cab tilt arc. Further adjustment to the limit by	✓	



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	the apparatus manufacturer shall be available to accommodate additional equipment.	✓	
192.	<p><u>CAB TILT CONTROL RECEPTACLE</u></p> <p>The cab tilt control cable shall include a receptacle which shall be temporarily located on the right hand chassis rail rear of the cab to provide a place to plug in the cab tilt remote control pendant. The tilt pump shall include 8.00 feet of cable with a six (6) pin Deutsch receptacle with a cap.</p> <p>The remote control pendant shall include 20.00 feet of cable with a mating Deutsch connector. The remote control pendant shall be shipped loose with the chassis.</p>	✓	
193.	<p><u>CAB WINDSHIELD</u></p> <p>The cab windshield shall have a surface area of 2825.00 square inches and be of a two (2) piece wraparound design for maximum visibility.</p> <p>The glass utilized for the windshield shall include standard automotive tint. The left and right windshield shall be fully interchangeable thereby minimizing stocking and replacement costs.</p> <p>Each windshield shall be installed using black self-locking window rubber.</p>	✓	
194.	<p><u>GLASS FRONT DOOR</u></p> <p>The front cab doors shall include a window which is 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to go down completely into the door housing. This shall be accomplished electronically utilizing a switch located on the door. The driver shall have all four (4) window control switches located in the dash area. Each window operating switch shall be placed in a location so that it is easily accessible for the person to reach while in the seated position.</p> <p>There shall be an irregular shaped fixed window which shall measure 2.50 inches wide at the top, 8.00 inches wide at the bottom X 26.00 inches in height, more commonly known as "cozy glass" ahead of the front door roll down windows.</p> <p>The windows shall be mounted within the frame of the front doors trimmed with a black anodized ring on the exterior.</p>	✓	
195.	<p><u>GLASS TINT FRONT DOOR</u></p> <p>The windows located in the left and right front doors shall include a dark gray automotive tint which shall allow forty-five percent (33%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.</p>	✓	
196.	<p><u>GLASS REAR DOOR RH</u></p> <p>The rear right hand side door shall include a window which is 27.00 inches in width X 26.00 inches in height. This window shall move up and down electronically utilizing a switch on the inside of the door.</p>	✓	



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197.	<u>GLASS TINT REAR DOOR RIGHT HAND</u> The window located in the right hand side rear window shall include a dark gray automotive tint which shall allow forty-five percent (33%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.	✓	
198.	<u>GLASS REAR DOOR LH</u> The rear left hand side door shall include a window which is 27.00 inches in width X 26.00 inches in height. This window shall operate up and down electronically utilizing a switch on the inside of the door.	✓	
199.	<u>GLASS TINT REAR DOOR LEFT HAND</u> The window located in the left hand side rear door shall include a dark gray automotive tint which shall allow forty-five percent (33%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.	✓	
200.	<u>GLASS SIDE MID RH</u> The cab shall include a window on the right side behind the front and ahead of the crew door which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self-locking window rubber. The glass utilized for this window shall include a grey automotive tint unless otherwise noted.	✓	
201.	<u>GLASS TINT SIDE MID RIGHT HAND</u> The window located on the right hand side of the cab between the front and rear doors shall include a dark gray automotive tint which shall allow forty-five percent (33%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.	✓	
202.	<u>GLASS SIDE MID LH</u> The cab shall include a window on the left side behind the front door and ahead of the crew door and above the wheel well which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self-locking window rubber. The glass utilized for this window shall include a grey automotive tint unless otherwise noted.	✓	
203.	<u>GLASS TINT SIDE MID LEFT HAND</u> The window located on the left hand side of the cab between the front and rear doors shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.	✓	
204.	<u>CLIMATE CONTROL</u> The cab shall be equipped with a ceiling mounted combination defrost / heating and air-conditioning system mounted above the engine tunnel in a central location. The Air Conditioning unit will be appropriate for the Goodyear Arizona area where temperatures routinely exceed the 100 degree threshold and rarely drop below the 35 degree threshold. Air conditioning system must be	✓	



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	<p>capable of maintaining cab temperatures of 70 degrees during normal operations.</p> <p>The system shall offer sixteen (16) adjustable louvers. Six (6) of the louvers shall face forward towards the windshield, offering 45,000 BTU of heat at 320 CFM for defrosting. The system shall include six (6) rearward facing louvers to direct air for the crew area and four (4) for driver and officer comfort. The HVAC system shall be designed to produce 60,000 BTU of heat and 32,000 BTU of cooling. The HVAC cover shall be made of aluminum which shall be coated with a customer specified interior paint, or protective coating.</p> <p>All defrost/heating systems shall be plumbed with one (1) seasonal shut-off valve at the front corner on the right side of the cab.</p> <p>The air conditioner lines shall be a mixture of custom bent zinc coated steel fittings and Aero-quip GH 134 flexible hose with Aero-Quip EZ-Clip fittings.</p>		
205.	<p><u>CLIMATE CONTROL DRAIN</u></p> <p>The climate control system shall include a venturi pump for water management. The venturi pump drain shall remove condensation from the air conditioning system.</p>		
206.	<p><u>CLIMATE CONTROL ACTIVATION</u></p> <p>The heating, defrosting and air conditioning controls shall be on the dash next to driver panel. in a position which is easily accessible to the driver. The climate control shall be activated by a rotary switch.</p>		
207.	<p><u>HVAC OVERHEAD COVER PAINT</u></p> <p>The overhead HVAC cover shall be painted with a Zolatone #20-06 black-grey speckle texture finish.</p>		
208.	<p><u>A/C CONDENSER LOCATION</u></p> <p>A roof mounted A/C condenser shall be installed centered on the cab forward of the raised roof against the slope rise.</p>		
209.	<p><u>A/C COMPRESSOR</u></p> <p>The air-conditioning compressor shall be a belt driven, engine mounted, open type compressor that shall be capable of producing a minimum of 32,000 BTU at 1500 engine RPMs. The compressor shall utilize R- 134A refrigerant and PAG oil.</p>		
210.	<p><u>UNDER CAB INSULATION</u></p> <p>The underside of the cab tunnel surrounding the engine and the underside of the entire cab floor shall be lined with multi-layer insulation, engineered for application inside diesel engine compartments. In addition the insulation shall have an expanded aluminum overlay installed to assist in retaining the insulation tight against the engine tunnel surfaces and the underside of the cab floor.</p> <p>The insulation shall act as a noise barrier, absorbing noise thus keeping the decibel level in the cab well within NFPA recommendations. As an additional</p>		



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	<p>benefit. the insulation shall assist in sustaining the desired temperature within the cab interior.</p> <p>The engine tunnel insulation shall measure approximately 0.75 inch thick including a vertically lapped polyester fiber layer, a 1.0 lb/ft² PVC barrier layer, an open cell foam layer, and a moisture and heat reflective foil facing reinforced with a woven fiberglass layer. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.</p> <p>The cab floor insulation shall measure 0.56 inch thick including a 1.0#/sf PVC barrier and a moisture and heat reflective foil facing, reinforced with fiberglass strands. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.</p> <p>The insulation shall be cut precisely to fit each section and sealed for additional heat and sound deflection. The insulation shall be held in place by 3 mils of acrylic pressure sensitive adhesive and aluminum pins with hard hat. hold in place fastening heads.</p>		
211.	<p><u>INTERIOR TRIM FLOOR</u></p> <p>The floor of the cab shall be covered with a multi-layer mat consisting of 0.25 inch thick sound absorbing closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The covering shall be held in place by a pressure sensitive adhesive and aluminum trim molding. All exposed seams shall be sealed with silicone caulk matching the color of the floor mat to reduce the chance of moisture and debris retention.</p>		
212.	<p><u>INTERIOR TRIM</u></p> <p>The cab interior shall include trim on the front ceiling, rear crew ceiling, and the cab walls. It shall be easily removable to assist in maintenance. The trim shall be constructed of insulated vinyl over a hard board backing.</p>		
213.	<p><u>REAR WALL INTERIOR TRIM</u></p> <p>The rear wall of the cab shall be trimmed with vinyl.</p>		
214.	<p><u>HEADER TRIM</u></p> <p>The cab interior shall feature header trim over the driver and officer dash constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum.</p>		
215.	<p><u>TRIM CENTER DASH</u></p> <p>The main center dash area shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate. There shall be four (4) holes located on the top of the dash near each outer edge of the electrical access cover for ventilation.</p>		
216.	<p><u>TRIM LH DASH</u></p> <p>The left hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate for a perfect fit around the instrument panel. For increased occupant protection the extreme duty left hand dash utilizes patent</p>		



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	pending break away technology to reduce rigidity in the event of a frontal crash. The left hand dash shall offer lower vertical surface area to the left and right of the steering column to accommodate control panels.	✓	
217.	<u>TRIM RH DASH</u> The right hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate and shall include a glove compartment with a hinged door and a Mobile Docking Computer (MDC) provision. The glove compartment size will measure 14.00 inches wide X 6.38 inches high X 5.88 inches deep. The MDC provision shall be provided above the glove compartment, not to impeded line of sight for the Engineer.	✓	
218.	<u>ENGINE TUNNEL TRIM</u> The cab engine tunnel shall be covered with a multi-layer mat consisting of 0.25 inch closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The mat shall be held in place by pressure sensitive adhesive. The engine tunnel mat shall be trimmed with anodized aluminum stair nosing trim for an aesthetically pleasing appearance.	✓	
219.	<u>POWER POINT DASH MOUNT</u> The cab shall include two (2) 12 volt cigarette lighter type receptacles in the dash to provide a power source for 12 volt electrical equipment. The receptacles shall be wired battery direct. There shall also be two (2) USB ports located centrally on the dash in order for the Captain and Engineer to charge their necessary electronic devices.	✓	
220.	<u>AUXILIARY POWER POINT ENGINE TUNNEL</u> The cab interior shall include two (2) 12 volt cigarette lighter type receptacles to provide power sources for 12 volt electrical equipment. The receptacles shall be connected directly to the batteries. The receptacles shall be located on the rear of the engine tunnel near the top, one (1) near the left corner and one (1) near the right corner. The cab shall include two (2) USB power ports located on the rear of the engine tunnel to facilitate two (2) IPAD charging stations for the EPCR's. These shall be wired directly to the battery in order to charge IPAD mounts.	✓	
221.	<u>STEP TRIM</u> Each cab entry door shall include a three step entry. The first step closest to the ground shall be constructed of polished 5052 H32 aluminum Grip Strut® grating with angled outer corners. The grating shall allow water and other debris to flow through rather than becoming trapped within the stepping surface. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed in 0.08 inch thick 3003-H22 embossed aluminum tread plate.	✓	
222.	<u>UNDER CAB ACCESS DOOR</u> The cab shall include an aluminum access door in the left crew step riser painted to match the cab interior paint with a push and turn latch. The under cab access door shall provide access to the diesel exhaust fluid fill.	✓	



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223.	<u>INTERIOR DOOR TRIM</u> The interior trim on the doors of the cab shall consist of an aluminum panel constructed of Marine Grade 5052-H32 0.13 of an inch thick aluminum plate. The door panels shall include a painted finish.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
224.	<u>DOOR TRIM KICKPLATE</u> The inner door panels shall include an aluminum embossed tread kick plate which shall be fastened to the lower portion of the door panels.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
225.	<u>DOOR TRIM CUSTOMER NAMEPLATE</u> The interior door trim on the front doors shall include a customer nameplate which states the vehicle was custom built for their Department.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
226.	<u>CAB DOOR TRIM REFLECTIVE</u> The interior of each door shall include high visibility reflective tape. A white reflective tape shall be provided vertically along the rear outer edge of the door. The lowest portion of each door skin shall include a reflective tape chevron with red and white stripes. The chevron tape shall measure 6.00 inches in height.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
227.	<u>INTERIOR GRAB HANDLE "A" PILLAR</u> A grab handle on the inside of the cab on the hinge post at the driver and officer doors shall be located in such a fashion to assist the driver and officer into and out of the apparatus. These grab handles shall not obstruct the view of the driver or officer when looking into the side rearview mirrors.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
228.	<u>INTERIOR GRAB HANDLE FRONT DOOR</u> Each front door shall include one (1) ergonomically contoured 9.00 inch cast aluminum horizontal grab handle which shall be located at the upper-most center of the door panel, and one (1) 9.00 inch vertical grab handle which shall be located forward of the paddle latch at the upper most part of the door. Each handle shall feature a textured, black powder coated finish and shall be used to assist personnel entering and exiting the cab.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
229.	<u>INTERIOR GRAB HANDLE REAR DOOR</u> A black powder coated cast aluminum assist handle shall be provided on the inside of each rear crew door. A 30.00 inch long handle shall extend horizontally the width of the window just above the window sill. The handle shall assist personnel in exiting and entering the cab.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
230.	<u>ADDITIONAL INTERIOR GRAB HANDLE REAR DOOR</u> Each interior rear door shall include an additional grab handle. The handle shall be an ergonomically contoured 9.00 inch long cast aluminum grab handle. Each handle shall be mounted horizontally on the upper interior door trim panel. Each handle shall be textured and feature a black powder coat finish and shall assist personnel entering and exiting the cab.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
231.	<u>INTERIOR SOFT TRIM COLOR</u> The cab interior soft trim surfaces shall be black in color.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
232.	<u>INTERIOR TRIM SUNVISOR</u> The headliner shall include two (2) sun visors, one each side forward of the driver and officer seating positions above the windshield. Each sun visor shall be constructed of Masonite and covered with padded vinyl trim.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



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233.	<u>INTERIOR FLOOR MAT COLOR</u> The cab interior floor mat shall be black in color.	✓	
234.	<u>CAB PAINT INTERIOR DOOR TRIM</u> The inner door panel surfaces shall be painted with Zolatone #20-06 black/grey speckle texture finish.	✓	
235.	<u>HEADER TRIM INTERIOR PAINT</u> The metal surfaces in the header area shall be coated with Zolatone #20-06 black/grey speckle texture finish.	✓	
236.	<u>TRIM CENTER DASH INTERIOR PAINT</u> The entire center dash shall be coated with Zolatone #20-06 black/grey speckle texture finish. Any accessory pods attached to the dash shall also be painted this color.	✓	
237.	<u>TRIM LEFT HAND DASH INTERIOR PAINT</u> The left hand dash shall be painted with Zolatone #20-06 black/grey speckle texture finish.	✓	
238.	<u>TRIM RIGHT HAND DASH INTERIOR PAINT</u> The right hand dash shall be painted with Zolatone #20-06 black/grey speckle texture finish.	✓	
239.	<u>DASH PANEL GROUP</u> The main center dash area shall include three (3) removable panels located one (1) to the right of the driver position, one (1) in the center of the dash and one (1) to the left of the officer position. The center panel shall be a textured aluminum panel within comfortable reach of both the driver and officer.	✓	
240.	<u>SWITCHES CENTER PANEL</u> The center dash panel shall include no rocker switches or legends.	✓	
241.	<u>SWITCHES LEFT PANEL</u> The left dash panel shall include one (1) windshield wiper/washer control switch located in the left hand side of the panel. The switch shall have backlighting provided.	✓	
242.	<u>SWITCHES RIGHT PANEL</u> The right dash panel shall include no rocker switches or legends.	✓	
243.	<u>SEAT BELT WARNING</u> 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 provide a visual warning indicator in the Vista display and control screen(s), an indicator light in the instrument 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.	✓	



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244.	<u>SEAT MATERIAL</u> The seats shall be constructed of easily decontaminated, non-absorbing vinyl.	✓	
245.	<u>SEAT COLOR</u> All seats supplied with the chassis shall be black in color. All seats shall include red seat belts.	✓	
246.	<u>SEAT BACK LOGO</u> The seat backs shall include the logo for the Goodyear Fire Department of Goodyear, Arizona. The logo shall be centered on the standard headrest of the seat back and on the left side of a split headrest.	✓	
247.	<u>SEAT DRIVER</u> The driver's seat shall be an H.O. Bostrom Sierra model seat with air suspension. The four-way seat shall feature 3.00 inch vertical travel air suspension and manual fore and aft adjustment with 5.00 inches of travel. The suspension control shall be located on the seat below the left front corner of the bottom cushion. The seat shall also feature integral springs to isolate shock. The seat position shall include a three-point shoulder harness with lap belt and an automatic retractor attached to the cab. The buckle portion of the seat belt shall be mounted on a semi-rigid stalk extending from the seat base within easy reach of the occupant. The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 37.00 inches measured with the seat suspension height adjusted to the upper limit of its travel. This model of seat shall have successfully completed the static load tests set forth by FMVSS 207, 209, and 210 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. The materials used in construction of the seat shall also have successfully completed testing with regard to the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which dictates the allowable burning rate of materials in the occupant compartments of motor vehicles.	✓	
248.	<u>SEAT BACK DRIVER</u> The driver's seat shall feature a two (2) way adjustable lumbar support and offer an infinite fully reclining adjustable tilting seat back. The seat back shall also feature a contoured head rest.	✓	
249.	<u>SEAT MOUNTING DRIVER</u> The driver's seat shall be installed in an ergonomic position in relation to the cab dash.	✓	



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250.	<p><u>SEAT OFFICER</u></p> <p>The officer's seat shall be an H.O. Bostrom Sierra model seat with air suspension. The four-way seat shall feature 3.00 inch vertical travel air suspension and manual fore and aft adjustment with 5.00 inches of travel. The suspension control shall be located on the seat below the left front corner of the bottom cushion. The seat shall also feature integral springs to isolate shock. The seat position shall include a three-point shoulder harness with lap belt and an automatic retractor attached to the cab or integrated within the seat. The buckle portion of the seat belt shall be mounted on a semi-rigid stalk extending from the seat base within easy reach of the occupant.</p> <p>The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 37.00 inches measured with the seat suspension height adjusted to the upper limit of its travel.</p> <p>This model of seat shall have successfully completed the static load tests set forth by FMVSS 207, 209, and 210 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity.</p> <p>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.</p>		
251.	<p><u>SEAT BACK OFFICER</u></p> <p>The officer's seat shall feature a two (2) way adjustable lumbar support and offer an infinite fully reclining adjustable titling seat back. The seat back shall also feature a contoured head rest.</p>		
252.	<p><u>SEAT MOUNTING OFFICER</u></p> <p>The officer's seat shall be installed in an ergonomic position in relation to the cab dash.</p>		
253.	<p><u>POWER SEAT WIRING</u></p> <p>The power seat or seats installed in the cab shall be wired directly to battery power.</p>		
254.	<p><u>SEAT BELT ORIENTATION CREW</u></p> <p>The crew position seat belts shall follow the standard orientation which extends from the outboard shoulder extending to the inboard hip. The seat belt anchors shall be adjustable and mounted on the B-pillar for the Engineer and the Captain and on the C-pillar for the forward facing rear seats.</p>		
255.	<p><u>SEAT REAR FACING OUTER LOCATION</u></p> <p>The crew area shall include two (2) rear facing crew seats, which include one (1) located directly behind the left side front seat and one (1) located directly behind the right side front seat.</p>		



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256.	<p><u>SEAT CREW REAR FACING OUTER</u></p> <p>The crew area shall include a seat in the rear facing outboard position which shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat, and cushion. The seat and cushion shall be spring load hinged and compact in design for additional room and shall remain in the stored position until occupied.</p> <p>The seats shall feature a two (2) way adjustable lumbar support and offer an infinite fully reclining adjustable titling seat back. The seat back shall also feature a contoured head rest.</p> <p>The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.</p> <p>The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.</p> <p>This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.</p>		
257.	<p><u>SEAT BACK REAR FACING OUTER</u></p> <p>The rear facing outer seat(s) shall include a standard seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a contoured headrest.</p>		
258.	<p><u>SEAT MOUNTING REAR FACING OUTER</u></p> <p>The rear facing outer seat shall be mounted facing the rear of the cab.</p>		
259.	<p><u>SEAT FORWARD FACING CENTER LOCATION</u></p> <p>The crew area shall include two (2) forward facing center crew seats with both located at the center of the rear wall.</p>		
260.	<p><u>SEAT CREW FORWARD FACING CENTER</u></p> <p>The forward facing center seat shall be an H.O. Bostrom Firefighter model seat. The seat shall feature eight-way electric positioning. The eight (8)</p>		



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	<p>positions shall include up and down, fore and aft and front and rear tilt. The seat shall also feature integral springs to isolate shock.</p> <p>The seats shall feature a two (2) way adjustable lumbar support and offer an infinite fully reclining adjustable titling seat back. The seat back shall also feature a contoured head rest.</p> <p>The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.</p> <p>The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches measured with the seat height adjusted to the lowest position of travel.</p> <p>This model of seat shall have successfully completed the static load tests by FMVSS 207, 209, 210 and 302 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.</p>		
261.	<p><u>SEAT BACK FORWARD FACING CENTER</u></p> <p>The seat back in the rear facing center position shall be comprised of a standard seat back. The seat back shall feature an all belts to seat (ABTS) style safety restraint. The ABTS feature shall include a red, three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant. The seat back shall feature a contoured, adjustable head rest.</p>		
262.	<p><u>ARMREST FOWARD FACING CENTER</u></p> <p>All forward facing center crew seat positions shall include armrests on the inboard and outboard side of each seat. Each armrest shall be covered with black urethane material and shall be an integral part of the seat.</p>		
263.	<p><u>SEAT FRAME FORWARD FACING</u></p> <p>The forward facing center seating positions shall include an enclosed seat frame located and installed on the rear wall. The seat frame shall measure 48.00 inches wide X 12.38 inches high X 22.00 inches deep. The seat frame shall be constructed of Marine Grade 5052-H32 0.19 inch thick aluminum plate. The seat box shall be painted the same color as the remaining interior.</p>		
264.	<p><u>SEAT FRAME FORWARD FACING STORAGE ACCESS</u></p> <p>There shall be two (2) access points to the storage area one (1) each side of the seat frame. Each access point shall be covered by a hinged door which measures 18.00 inches wide X 8.63 inches high to allow access for storage in the seat box. The access door hinges shall be at the rear edge of the doors.</p>		



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265.	<u>SEAT MOUNTING FORWARD FACING CENTER</u> The forward facing center seats shall offer a special mounting. The seats shall be installed 2.25 inches apart offering the most available room for each occupant. The seats shall also include a custom mounting support on the face of the seat frame to mount forward and allow maximum fore/aft travel.	✓	
266.	<u>CAB FRONT UNDERSEAT STORAGE ACCESS</u> The left and right under seat storage areas shall have a solid aluminum hinged door with non-locking latch.	✓	
267.	<u>SEAT COMPARTMENT DOOR FINISH</u> All under seat storage compartment access doors shall have a Zolatone #20-06 black/grey speckle texture finish.	✓	
268.	<u>WINDSHIELD WIPER SYSTEM</u> The cab shall include a dual arm wiper system which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers which shall be affixed to a radial wet arm. The system shall include a single motor which shall initiate the arm in which both the left hand and right hand windshield wipers are attached, initiating a back and forth motion for each wiper. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver's position.	✓	
269.	<u>ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR</u> The windshield washer fluid level shall be monitored electronically. When the washer fluid level becomes low the yellow "Check Message Center" indicator light on the instrument panel shall illuminate and the message center in the dual air pressure gauge shall display a "Check Washer Fluid Level" message.	✓	
270.	<u>CAB DOOR HARDWARE</u> The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of aluminum with a chrome plated finish. The interior exit door handles shall be flush paddle type with a black finish, which are incorporated into the upper door panel. All cab entry doors shall include electronic locks which are coded alike. The door locks shall be designed to prevent accidental lockout. The exterior pull handles shall include a scuff plate behind the handle constructed of polished stainless steel to help protect the cab finish.	✓	
271.	<u>DOOR LOCKS</u> The cab entry doors shall include a Controller Area Network (CAN) based electronic door lock system which shall include two (2) external keypads, one (1) located on the left side next to the front grab handle and one (1) on the right side next to the front grab handle. There shall be one (1) red rocker switch provided on the inside of each front cab entry door to actuate the cab door locks. Each door lock may also be manually actuated from the inside of the cab by means of a red knob located on the paddle handle of the	✓	



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	<p>respective door. The electronic door lock system shall include four (4) key fobs for actuation with buttons for cab entry door locks and for compartment door locks.</p> <p>When the doors are unlocked using the external keypad or the key fobs the interior dome lights shall illuminate and remain on for a period of twenty (20) seconds.</p> <p>Wiring shall also be provided for all exterior cab compartments and all body compartments.</p>		
272.	<p><u>DOOR LOCK LH REAR CAB COMPARTMENT</u></p> <p>The left hand side rear compartment shall feature a power door lock actuator.</p>		
273.	<p><u>DOOR LOCK RH REAR CAB COMPARTMENT</u></p> <p>The right hand side rear compartment shall feature a power door lock actuator.</p>		
274.	<p><u>GRAB HANDLES</u></p> <p>The cab shall include one (1) 24.00 inch knurled, anti-slip, one-piece exterior assist handle behind each cab door. The grab handle shall be made of 14 gauge 304- stainless steel and be 1.25 inch diameter to enable non-slip assistance with a gloved hand.</p>		
275.	<p><u>POWER DOOR LOCK COMPARTMENT ACTIVATION</u></p> <p>The power door lock feature shall include activation for exterior compartment door locks through the key fob, keypads and through a virtual switch on the multiplex display.</p>		
276.	<p><u>REARVIEW MIRRORS</u></p> <p>Ramco model 6015-PCHR bus style mirrors shall be provided. The mirror heads shall be polished cast aluminum and shall measure 9.75 inches wide X 13.00 inches high. The mirrors shall be mounted one (1) on each front cab corner radius below the windshield with 15.00 inch long polished cast aluminum arms.</p> <p>The mirrors shall feature an upper remote controlled heated flat glass and a lower remote controlled heated convex glass. The mirror control switches shall be located within easy reach of the driver. The mirrors shall be manufactured using the finest quality non-glare glass and shall feature a rigid mounting thereby reducing vibration. The mirrors shall be corrosion free under all weather conditions.</p>		
277.	<p><u>REARVIEW MIRROR HEAT SWITCH</u></p> <p>The heat for the rearview mirrors shall be controlled through a virtual button on the Vista display and control screen.</p>		
278.	<p><u>EXTERIOR TRIM REAR CORNER</u></p> <p>There shall be mirror finish stainless steel scuff plates on the outside corners at the back of the cab. The stainless steel plate shall be affixed to the cab using two sided adhesive tape.</p>		



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279.	<u>CAB FENDER</u> Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Each two-piece liner shall consist of an inner liner 16.00 inches wide made of vacuum formed ABS composite and an outer fenderette 3.50 inches wide made of 14 gauge 304 polished stainless steel.	✓	
280.	<u>MUD FLAPS FRONT</u> The front wheel wells shall have mud flaps installed on them.	✓	
281.	<u>CAB EXTERIOR FRONT & SIDE EMBLEMS</u> The cab shall include three (3) Chassis manufacture emblems. There shall be one (1) for the front air intake grille and two (2) emblems with integrated model nameplates for the exterior sides of the cab shipped loose for installation by the body manufacturer.	✓	
282.	<u>CAB EXTERIOR MODEL NAMEPLATE</u> The cab shall include the cab manufacture model nameplates integrated into the side emblem.	✓	
283.	<u>IGNITION</u> A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a one-quarter turn Cole Hersee switch, both of which shall be mounted to the left of the steering wheel on the dash. A chrome push type starter button shall be provided adjacent to the master battery and ignition switches. Each switch shall illuminate a green LED indicator light on the dash when the respective switch is placed in the "ON" position. The starter button shall only operate when both the master battery and ignition switches are in the "ON" position.	✓	
284.	<u>BATTERY</u> The single start electrical system shall include six 950 CCA batteries with a minimum of 210 minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541.	✓	
285.	<u>BATTERY TRAY</u> The batteries shall be installed within two (2) steel battery trays located on the left side and right side of the chassis, securely bolted to the frame rails. The battery trays shall be coated with the same material as the frame. The battery trays shall include drain holes in the bottom for sufficient drainage of water. A durable, non-conducting, interlocking mat made by Dri-Dek shall be installed in the bottom of the trays to allow for air flow and help prevent moisture build up. The batteries shall be held in place by non-conducting phenolic resin hold down boards.	✓	
286.	<u>BATTERY BOX COVER</u> Each battery box shall include a steel cover which protects the top of the batteries. Each cover shall include flush latches which shall keep the cover	✓	



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	secure as well as a black powder coated handle for convenience when opening.	✓	
287.	<u>BATTERY CABLE</u> The starting system shall include cables which shall be protected by 275 degree F. minimum high temperature flame retardant loom, sealed at the ends with heat shrink and sealant.	✓	
288.	<u>BATTERY JUMPER STUD</u> The starting system shall include battery jumper studs. These studs shall be located on the rear face of the left hand battery tray. 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.	✓	
289.	<u>ALTERNATOR</u> The charging system shall include a 320 amp Leece-Neville 12 volt alternator. The alternator shall include a self-exciting integral regulator.	✓	
290.	<u>BATTERY CONDITIONER</u> A Kussmaul 1200 Pump Plus battery conditioner shall be supplied. The battery conditioner shall be mounted in the cab in the LH rear facing outer seating position. <u>BATTERY CONDITIONER DISPLAY</u> A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted in the cab, viewable through the cab mid side window behind the left front door.	✓	
291.	<u>AUXILIARY AIR COMPRESSOR</u> A Kussmaul Pump 12V air compressor shall be supplied. The air compressor shall be temporarily installed behind the driver's seat with 4 ft. additional hose length. The air compressor shall be plumbed to the air brake system to maintain air pressure.	✓	
292.	<u>ELECTRICAL INLET</u> A Kussmaul 30 amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed. A single item or an addition of multiple items must not exceed the rating of the electric inlet that it's connected to. <u>Amp Draw Reference List:</u> Kussmaul 1000 Charger - 3.5 Amps Kussmaul 1200 Charger - 10 Amps Kussmaul 35/10 Charger - 10 Amps 1000W Engine Heater	✓	



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	- 8.33 Amps 1500W Engine Heater - 12.5 Amps 120V Air Compressor - 4.2 Amps		
293.	<u>ELECTRICAL INLET LOCATION</u> An electrical inlet shall be installed on the left hand side of cab over the wheel well in the forward position 6.88" lower than the standard position.		
294.	<u>ELECTRICAL INLET CONNECTION</u> The electrical inlet shall be connected to the battery conditioner.		
295.	<u>ELECTRICAL INLET COLOR</u> The electrical inlet connection shall include a yellow cover.		
296.	<u>HEADLIGHTS</u> The cab front shall include four (4) rectangular LED headlamps with separate high and low beams mounted in bright chrome bezels.		
297.	<u>FRONT TURN SIGNALS</u> The front fascia shall include two (2) Whelen model 600 4.00 inch X 6.00 inch programmable LED amber turn signals which shall be installed in a chrome bezel outboard of the front warning and headlamps.		
298.	<u>HEADLIGHT LOCATION</u> The headlights shall be located on the front fascia of the cab directly below the front warning lights.		
299.	<u>SIDE TURN/MARKER LIGHTS</u> The sides of the cab shall include two (2) LED round side marker lights which shall be provided just behind the front cab radius corners.		
300.	<u>MARKER AND ICC LIGHTS</u> In accordance with FMVSS, there shall be five (5) LED cab marker lamps designating identification, center and clearance provided. These lights shall be installed on the face of the cab within full view of other vehicles from ground level.		
301.	<u>HEADLIGHT AND MARKER LIGHT ACTIVATION</u> The headlights and marker lights shall be controlled via a virtual button on the Vista display. There shall be a virtual dimmer control on the Vista display to adjust the brightness of the dash lights. The headlamps and markers lamps shall illuminate to 100% brilliance when the ignition switch is in the "On" position.		
302.	<u>GROUND LIGHTS</u> Each door shall include one (1) On-Scene brand Night Axe LED strip model ground light mounted to the underside of the cab step below each door. The ground light shall be mounted in a polished aluminum bezel. The ground lighting shall be activated by the opening of the respective side door, respective side turn signal, when the parking brake is set, as well as being activated through a virtual button on the Vista display and control screen.		



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303.	<u>STEP LIGHTS</u> The middle step located at each door shall include a recess mounted 4.00 inch round LED light which shall activate with the opening of the respective door.	✓	
304.	<u>ENGINE COMPARTMENT LIGHT</u> There shall be an incandescent NFPA compliant light mounted under the engine tunnel for area work lighting on the engine. The light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. The light shall activate automatically when the cab is tilted.	✓	
305.	<u>SIDE SCENE LIGHTS</u> The side of the cab shall include two (2) Whelen model 900 series scene lights, one (1) each side which shall be surface mounted. The Whelen lights shall offer LED lighting with 8 to 32-degree internal optics.	✓	
306.	<u>SIDE SCENE LIGHT LOCATION</u> The scene lighting located on the left and right sides of the cab shall be mounted rearward of the cab "B" pillar in the 10.00 inch raised roof portion of the cab between the front and rear crew doors.	✓	
307.	<u>SIDE SCENE ACTIVATION</u> The scene lights shall be activated by two (2) virtual buttons on the Vista display and control screen(s), one (1) for each light, and by opening the respective side cab doors.	✓	
308.	<u>INTERIOR OVERHEAD LIGHTS</u> The cab shall include a red/clear Whelen LED dome lamp located over each door. The dome lamps shall be rectangular in shape and shall measure approximately 7.00 inches in length X 3.00 inches in width with a black colored bezel. The clear function of each lamp shall be activated by opening the respective door. While the door is closed the individual red or clear function of each lamp can be activated dependently by switches on each lamp. An additional separately functioning red or clear Whelen LED dome lamp shall be provided over the engine tunnel. Each individual function can be activated dependently by switches on the lamp.	✓	
309.	<u>MAP LIGHTS</u> A Sunnex swivel map light shall be provided. The light shall have a clear lens and a control switch on the base. The light shall be mounted on the overhead HVAC cover on the right hand side.	✓	
310.	<u>DO NOT MOVE APPARATUS LIGHT</u> The front headliner of the cab shall include a flashing red Whelen 500 Series 5mm LED light clearly labeled "Do Not Move Apparatus". In addition to the flashing red light, an audible alarm shall be included which shall sound while the light is activated. The flashing red light shall be 5.40 inches long X 1.70 inches wide X 0.90 inches high and shall be located centered left to right for greatest visibility.	✓	



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	The light and alarm shall be interlocked for activation when either a cab door is not firmly closed or an apparatus compartment door is not closed, and the parking brake is released.	✓	
311.	<u>MASTER WARNING SWITCH</u> A master switch shall be included, as a virtual button on the Vista display and control screen which shall be labeled "E Master" for identification. The button shall feature control over all devices wired through it. Any warning device switches left in the "ON" position when the master switch is activated shall automatically power up.	✓	
312.	<u>HEADLIGHT FLASHER</u> An alternating high beam headlight flashing system shall be installed into the high beam headlight circuit which shall allow the high beams to flash alternately from left to right. Deliberate operator selection of high beams will override the flashing function until low beams are again selected. Per NFPA, these clear flashing lights will also be disabled "On Scene" when the park brake is applied.	✓	
313.	<u>HEADLIGHT FLASHER SWITCH</u> The flashing headlights shall be activated through a virtual button on the Vista display and control screen.	✓	
314.	<u>INBOARD FRONT WARNING LIGHTS</u> The cab front fascia shall include two (2) Whelen 600 series Super LED front warning lights in the left and right inboard positions. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the front fascia of the cab within a chrome bezel.	✓	
315.	<u>INBOARD FRONT WARNING LIGHTS COLOR</u> The warning lights mounted on the cab front fascia in the inboard positions shall be blue on the left and red on the right side.	✓	
316.	<u>FRONT WARNING SWITCH</u> The front warning lights shall be controlled through a virtual control on the Vista display and control screen. This switch shall be clearly labeled for identification.	✓	
317.	<u>INTERSECTION WARNING LIGHTS</u> The chassis shall include two (2) Whelen 600 series Super LED intersection warning lights, one (1) each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors.	✓	
318.	<u>INTERSECTION WARNING LIGHTS COLOR</u> The intersection lights shall be red/blue vertical split with a clear lens. The intersection lights located on the left side shall be red forward and the intersection lights on the right side shall be blue forward.	✓	
319.	<u>INTERSECTION WARNING LIGHTS LOCATION</u> The intersection lights shall be mounted on the side of the bumper in the rearward position.	✓	



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320.	<u>SIDE WARNING LIGHTS</u> The cab sides shall include two (2) Whelen 900 series Super LED warning lights, one (1) on each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the sides of the cab within a chrome bezel.	✓	✓
321.	<u>SIDE WARNING LIGHTS COLOR</u> The warning lights located on the side of the cab shall be blue/blue on the left side and red/red on the right side.	✓	✓
322.	<u>SIDE WARNING LIGHTS LOCATION</u> The warning lights on the side of the cab shall be mounted above the "B" pillar in the highest available position.	✓	✓
323.	<u>AUXILIARY SIDE WARNING LIGHTS</u> The cab side shall include an auxiliary set of Whelen 600 series 4.00 inch tall X 6.00 inch wide Super LED warning lights, one (1) each side, which shall feature fourteen (14) flash patterns plus a steady burn for solid colors and twenty (20) flash patterns plus a steady burn for split colors. The lights shall be surface mounted within a chrome bezel.	✓	✓
324.	<u>AUXILIARY SIDE WARNING LIGHTS COLOR</u> The auxiliary warning lights located on the left hand side of the cab shall be red and the auxiliary warning lights located on the right hand side of the cab shall be blue.	✓	✓
325.	<u>AUXILIARY SIDE WARNING LIGHTS LOCATION</u> The auxiliary warning lights on the side of the cab shall be mounted over the wheel well. The center line of the warning lights shall be 12.00 inches above the wheel well apex.	✓	✓
326.	<u>SIDE AND INTERSECTION WARNING SWITCH</u> The side warning lights shall be controlled through a virtual button on the Vista display and control screen. This button shall be clearly labeled for identification.	✓	✓
327.	<u>HORN BUTTON SELECTOR SWITCH</u> A virtual button on the Vista display and control screen shall be provided to allow control of either the electric horn or the air horn from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in either position to meet FMCSA requirements.	✓	✓
328.	<u>AIR HORN ACTIVATION</u> The air horn activation shall be accomplished by the steering wheel horn button and a left hand side Linemaster model SP491-S81 foot switch for the driver and a black momentary push button on the switch panel within reach of the Captain seat. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.	✓	✓
329.	<u>MECHANICAL SIREN ACTIVATION</u> The mechanical siren shall be actuated by a black push button in the switch panel on the dash and an additional button accessible to the Captain. A black push button siren brake control shall be provided in the switch panel on the dash.	✓	✓



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	The siren shall only be active when master warning switch is on to prevent accidental engagement.	✓	
330.	<u>ELECTRONIC SIREN AUXILIARY ACTIVATION</u> The electronic siren shall include pre-wiring for activation by a left hand side foot switch.	✓	
331.	<u>BACK-UP ALARM</u> A Preco-Matic model 270 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.	✓	
332.	<u>INSTRUMENTATION</u> An ergonomically designed instrument panel shall be provided. Each gauge shall be backlit with LED lamps. Stepper motor movements shall drive all gauges. The instrumentation system shall be multiplexed and shall receive ABS, engine, and transmission information over the J1939 data bus to reduce redundant sensors and wiring. The instrument panel shall contain the following gauges: One (1) electronic speedometer shall be included. The primary scale on the speedometer shall read from 0 to 100 MPH, and the secondary scale on the speedometer shall read from 0 to 160 KM/H. One (1) electronic tachometer shall be included. The scale on the tachometer shall read from 0 to 3000 RPM. One (1) two-movement gauge displaying primary system, and secondary system air volumes and integral LCD odometer/trip odometer shall be included on the lower portion of the LCD. The scale on the air pressure gauges shall read from 0 to 150 pounds per square inch (PSI). The air pressure scales shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate a low air pressure, as well as a message on the LCD screen. The odometer shall display up to 9,999,999.9 miles. The trip odometer shall display 9,999.9 miles. The LCD shall display Transmission Temperature in degrees Fahrenheit on the upper portion of the LCD. The LCD screen shall also be capable of displaying certain diagnostic functions. One (1) four-movement gauge displaying engine oil pressure, coolant temperature, fuel level, voltmeter, and an *indicator bar displaying Diesel Exhaust Fluid (DEF) LED bar shall be included. The scale on the engine oil pressure gauge shall read from 0 to 120 pounds per square inch (PSI). The engine oil pressure scale shall be linear to operate with an accuracy of 1 degree of the measured. A red indicator light in the gauge shall indicate a low engine oil pressure, as well as a message on the LCD screen. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (F). The	✓	



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	<p>coolant temperature scale shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate high coolant temperature, as well as a message on the LCD screen. The scale on the fuel level gauge shall read from empty to full as a percentage of fuel remaining. An amber indicator light shall indicate low fuel at 25% tank level. The scale on the voltmeter shall read from 10 to 16 volts with a red indication zone on the gauge showing critical levels of battery voltage.</p> <p>A red indicator light shall indicate high or low system voltage, as well as a message on the LCD screen. The scale on the DEF LED bar will consist of four (4) LEDs displaying levels in increments of 25% of useable DEF in green. Upon decreasing levels, the indicator bar will change colors to notify the driver of decreasing levels of DEF and action will be required. An amber indicator light shall indicate low levels of DEF, as well as a message on the LCD screen and an audible alarm.</p> <p>The instrument panel shall include a light bar that contains the following LED indicator lights and produce the following audible alarms in applicable configurations:</p>		
333.	<p>RED LAMPS</p> <p>Stop Engine-indicates critical engine fault Air Filter Restricted-indicates excessive engine air intake restriction Park Brake-indicates parking brake is set Seat Belt Indicator-indicates when a seat is occupied and corresponding seat belt remains unfastened Low Coolant-indicates engine coolant is required.</p>		
334.	<p>AMBER LAMPS</p> <p>MIL-indicates an engine emission control system fault Check Engine-indicates engine fault Check Trans-indicates transmission fault High Transmission Temperature-indicates excessive transmission oil temperature ABS-indicates anti-lock brake system fault HEST-indicates a high exhaust system temperature Water in Fuel-indicates presence of water in fuel filter *DPF-indicates a restriction of the diesel particulate filter *Regen Inhibit-indicates regeneration has been postponed due to user interaction Range Inhibit-indicates a transmission operation is prevented and requested shift request may not occur. *SRS-indicates a problem in the supplemental restraint system Check Message-Turn Signal On Check Message-Door Ajar Check Message-Cab Ajar *Check Message-ESC Active</p>		



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	*Check Message-DPF Regen Active Check Message-No Engine Data Check Message-No Transmissio Data Check Message-No ABS Data Check Message-No Data All Communication with the Vehicle Systems Has Been Lost Check Message-Check Engine Oil Level Check Message-Check Washer Fluid Level Check Message-Check Power Steering Fluid Level Check Message- Low Transmission Fluid Level Check Message- Check Coolant Level		
335.	<u>GREEN LAMPS</u> Left and Right turn signal indicators *ATC-indicates low wheel traction for automatic traction control equipped vehicles. also indicates mud/snow mode is active for ATC system High Idle-indicates engine high idle is active. Cruise Control-indicates cruise control is active OK to Pump-indicates the pump engage conditions have been met Pump Engaged-indicates the pump is currently in use Auxiliary Brake-indicates secondary braking device is active		
336.	<u>BLUE LAMP</u> High Beam Indicator		
337.	<u>WHITE LAMP</u> Wait to Start-indicates active engine air preheat cycle		
338.	<u>AUDIBLE ALARMS FROM GAUGE PACKAGE</u> High Trans Temp High or Low Voltage Check Engine Check Transmission Stop Engine Low Air Pressure Fuel Low Water in Fuel *ESC High Coolant Temperature Low Engine Oil Pressure Low Coolant Level *Low DEF Level Air Filter Restricted Extended Left and Right Turn Remaining On Cab Ajar		



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	Door Ajar ABS System Fault Seatbelt Indicator	✓	
339.	<u>EXTERNAL AUDIBLE ALARM</u> Air Filter Cab Ajar Door Ajar Check Engine Stop Engine Low Air Pressure Low Engine Oil Pressure Water in Fuel *Low DEF ABS System Fault Seatbelt Indicator *Items marked with an asterisk are provided only in applicable configurations.	✓	
340.	<u>LCD MESSAGES</u> Transmission Temperature Battery Voltage Engine Hours Vehicle Speed Engine RPMs Fuel Level DEF Level Engine Oil Pressure Ammeter (If quipped) Auxiliary Ammeter (If quipped) Engine Coolant Temp Primary System Air Pressure Secondary System Air Pressure Turbo Boost Pressure Exhaust Temperature Engine Load Engine Torque Average Fuel Economy	✓	
341.	<u>BACKLIGHTING COLOR</u> The instrumentation gauges and the switch panel legends shall be backlit using red LED backlighting.	✓	
342.	<u>RADIO</u> A Pioneer or equivalent radio with weather band, AM/FM stereo receiver, compact disc player, with and (4) speakers shall be installed in the cab. The radio shall be installed above the officer position. The speakers shall be installed inside the cab with two (2) speakers recessed within the headliner of the front	✓	



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	of the cab just behind the windshield and two (2) speakers on the upper rear wall of the cab. The radio shall be powered directly from the batteries.	✓	
343.	<u>AM/FM ANTENNA</u> A small antenna shall be located on the right hand side of the cab roof for AM/FM and weather band reception.	✓	
344.	<u>CAMERA</u> An Audiovox Voyager or equivalent heavy duty rearview camera system shall be supplied and installed by the manufacture. One (1) box shaped camera shall be for OEM installation in the body to afford a clear view of the rear of the vehicle and two (2) cameras with a teardrop shaped chrome plated housings shall be mounted on the left and right side of the cab below the windshield ahead of the front door at approximately the same level as the cab door handle. The side cameras shall afford a clear view of the area each side of the vehicle. The cameras shall be wired to dual Weldon Vista displays which shall be located on the left and right sides of the dash. The rear camera shall activate when the transmission is placed in reverse and the side cameras shall activate with the respective side turn signal. Each camera shall also be activated by a button on the Vista displays.	✓	
345.	<u>CAB EXTERIOR PROTECTION</u> The cab face shall have a removable plastic film installed over the painted surfaces to protect the paint finish during transport to the body manufacturer. The rear wall shall also include a removable plastic film installed on the exterior surface of the cab to protect the finish during transport.	✓	
346.	<u>FIRE EXTINGUISHER</u> A 2.50 pound D.O.T approved fire extinguisher with BC rating shall be shipped loose with the cab.	✓	
347.	<u>ROAD SAFETY KIT</u> The cab and chassis shall include one (1) emergency road safety triangle kit.	✓	
348.	<u>DOOR KEY PAD</u> The cab and chassis shall include a total of two (2) door key pads for the electronic door locks. These pads shall be located on the cab just to the rear of the front doors.	✓	
349.	<u>WARRANTY</u> Summary of Warranty Terms: The chassis manufacturer shall provide a limited parts and labor warranty to the original purchaser of the custom built cab and chassis for a period of twenty-four (24) months, or the first 36,000 miles, whichever occurs first. The warranty period shall commence on the date the vehicle is delivered to the first enduser.	✓	
350.	<u>CAB AND CHASSIS LABELING LANGUAGE</u> The cab and chassis shall include the applicable caution, warning, and safety notice labels with text to be written in English.	✓	



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351.	<u>CHASSIS OPERATION MANUAL</u> There shall be two (2) digital copies of the chassis operation manual provided with the chassis. The digital data shall include a parts list specific to the chassis model.	✓	
352.	<u>ENGINE AND TRANSMISSION OPERATION MANUALS</u> The following manuals specific to the engine and transmission models ordered will be included with the chassis in the ship loose items: (1) Digital copy of the Engine Owner's manual (1) Digital copy of the Transmission Operator's manual (1) Hard copy of the Engine Operation and Maintenance manual with CD	✓	
353.	<u>CAB/CHASSIS AS BUILT WIRING DIAGRAMS</u> The cab and chassis shall include two (2) digital copies of wiring schematics and option wiring diagrams.	✓	
354.	<u>SALES TERMS</u> The sale of the chassis shall be governed by the terms contained on the Sales Terms – Acceptance of Purchase Order document, a copy of which is attached to this option.	✓	
355.	<u>CAB TO AXLE DIMENSION</u> Cab to axle will be 126".	✓	
356.	<u>CAB/CHASSIS PREPAYMENT</u> The specified cab/chassis shall be prepaid by the Goodyear Fleet Division within 30 days of invoice. Goodyear Fleet Division understands that if payment is made after 30 days, additional interest charges may apply.	✓	
	<u>CHASSIS MODIFICATIONS</u>		
357.	<u>LUBRICATION AND TIRE DATA PLATE</u> A permanent label in the driving compartment shall specify the quantity and type of the following fluids used in the vehicle and tire information: <ul style="list-style-type: none">• Engine oil• Engine coolant• Chassis transmission fluid• Pump transmission lubrication fluid (if applicable)• Pump priming system fluid, if applicable (if applicable)• Drive axle(s) lubrication fluid• Air conditioning refrigerant (if applicable)• Air conditioning lubrication oil (if applicable)• Power steering fluid• Cab tilt mechanism fluid (if applicable)• Transfer case fluid (if applicable)• Equipment rack fluid (if applicable)• CAFS air compressor system lubricant (if applicable)• Generator system lubricant (if applicable)• Front tire cold pressure• Rear tire cold pressure• Maximum tire speed ratings	✓	



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358.	<p><u>VEHICLE DATA PLATE</u></p> <p>A permanent label in the driving compartment which indicates the following:</p> <ul style="list-style-type: none"> ◦ Filter part numbers for the: <ul style="list-style-type: none"> - Engine - Transmission - Air - Fuel ◦ Serial numbers: <ul style="list-style-type: none"> - Engine - Transmission ◦ Delivered Weights of the Front and Rear Axles ◦ Paint Brand and Code(s) ◦ Sales Order Number 		
359.	<p><u>OVERALL HEIGHT, LENGTH DATA PLATE (US)</u></p> <p>The fire apparatus manufacturer shall permanently affix a high-visibility label in a location visible to the driver while seated.</p> <p>The label shall show the height of the completed fire apparatus in feet and inches, the length of the completed fire apparatus in feet and inches, and the GVWR in pounds.</p> <p>Wording on the label shall indicate that the information shown was current when the apparatus was manufactured and that, if the overall height changes while the vehicle is in service, the fire department must revise that dimension on the plate.</p>		
360.	<p><u>ACCIDENT PREVENTION</u></p> <p>There shall be a placard in the cab seating area which reads, "ALL OCCUPANTS MUST BE SEATED AND BELTED WHEN THE APPARATUS IS IN MOTION".</p>		
361.	<p><u>PERSONNEL CAPACITY</u></p> <p>A label that states the number of personnel the vehicle is designed to carry shall be located in an area visible to the driver.</p>		
362.	<p><u>ACCIDENT PREVENTION</u></p> <p>If the rear bumper is 8" deep or more, there shall be a placard on the rear face of the body, in clear sight from the ground, which reads, "WARNING - DO NOT RIDE ON STEPS OR DECK AREAS WHILE THE APPARATUS IS IN MOTION. DEATH OR SERIOUS INJURY MAY RESULT".</p>		
363.	<p><u>WEARING HELMET WARNING</u></p> <p>A label stating "DO NOT WEAR HELMET WHILE SEATED" shall be visible from each seating location.</p>		
364.	<p><u>FINAL STAGE MANUFACTURER VEHICLE CERTIFICATION</u></p> <p>A final stage manufacturer vehicle certification label shall be provided and installed in the driver cab door jamb area.</p>		



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365.	<u>FRONT BUMPER</u> The front bumper shall be as provided by the cab/chassis manufacturer. No other alteration or modifications are required.	✓	
366.	<u>BUMPER GRAVEL SHIELD</u> The bumper extension gravel shield shall be provided by the cab/chassis manufacturer.	✓	
367.	<u>BUMPER PRE-CONNECT COMPARTMENT</u> The bumper extension shall have one (1) flat lid fire hose pre-connect compartment in center. The compartment shall be as large as room allows but at minimum facilitate the storage of 110' of 1-3/4" hose. Compartment door shall be 1/8" NFPA compliant aluminum tread plate with stainless steel hinge wrapped with vinyl and stainless steel D-ring handle. The fire hose swivel connection shall be located inside compartment. The compartment door shall have a gas shock type hold open device. This compartment shall not be watertight but shall include a compartment drain in order to prohibit rust and condensation. The top edges of the compartment shall be smooth as to not cut the hose during deployment and or staff reaching into the compartment to pull the hose. If the bumper compartment is greater than 4 cu.ft. in volume and has an opening greater than 144 sq.in. it shall have sufficient compartment lighting to provide a minimum of 2 fc (20 lx) at any location on the floor of the compartment without any equipment in the compartment. There shall be one (1) 9" OnScene LED type ground light mounted inside the bumper. A flashing warning light signal shall be provided indicating when a compartment door is not in a closed position as required by NFPA 1901 2016 edition.	✓	
368.	<u>AIR HORN(S)</u> The air horn(s) shall be supplied and installed by the cab/chassis manufacturer.	✓	
369.	<u>EXHAUST DIVERTER</u> An exhaust diverter valve shall be located in-line of exhaust tubing and controlled from driver's position to re-route exhaust discharge. Exhaust diverter valve shall be constructed from 14 gauge stainless steel material with air actuated control. A manual exhaust diverter switch shall be installed for the Engineer to select which side the exhaust will divert to. This will allow the exhaust to divert to the Streetside while on EMS operations. As a default, the exhaust shall always discharge to curbside just ahead of rear wheels without movement of the diverter when the ignition is turned on, and when the pump is engaged the exhaust shall discharge to curbside just ahead of rear wheels. The exhaust piping and discharge outlet shall be located or shielded so as not to expose any portion of the apparatus or equipment to excessive heating.	✓	



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	<p>Exhaust pipe discharge shall be directed away from any operator's position.</p> <p>Where parts of the exhaust system are exposed so that they are likely to cause injury to operating personnel, protective guards shall be provided.</p>	✓	
370.	<p><u>DOCKING STATION INSTALLATION</u></p> <p>There shall be two (2) IPAD docking stations mounted on backside of the engine tunnel and one (1) Havis CF 54 docking station mounted on a slide out tray in the Captain's seat area. This computer docking station will be mounted so that it does not impair the visibility or functions of the Captain when in the stowed position. Docking station for the Captain side will be provided by the City of Goodyear. Manufacture is responsible for pre-wire to termination point.</p> <p>Docking stations shall be installed per manufacturer's requirements and wired battery direct for proper 12 volt power and ground. Antennas shall be labeled and wired to cab roof per antenna layout.</p> <p>Two (2) power supplies and cellular antennas shall be provided and installed for above docking stations.</p>	✓	
371.	<p><u>12 VDC FUSE BLOCK</u></p> <p>There shall be two (2) 100 amp Blue Sea Systems ST Series blade type fuse block with screw type terminals for both positive and negative buss with cover provided for distribution of up to six (6) 30 amp, 12 VDC circuits. Fuse block shall be located per required circuits and be protected from damage.</p> <p>The terminal blocks will be located on the rear edge of the engine tunnel under the mounting platform and under the rear forward facing seat box located in such a manner that is it easy to access.</p>	✓	
372.	<p><u>FIVE (5) POSITION ANTENNA RAIL</u></p> <p>Two (2) radio antenna rail(s) shall be provided and installed on roof of vehicle. Each rail be constructed of aluminum, forming a two piece box design. The top section shall be removable for easy access to the individual antenna wiring. Five (5) antenna bases shall be provided and installed in each rail. Each antenna base shall include enough cable to reach radio location plus a service loop of at least 10' of LMR195 flexible communications cable. The antenna wiring shall enter the vehicle roof at a single point under the end of the rail. The end of each radio antenna shall be labeled and routed to radio mounting locations, or as determined by the Goodyear Fire Department.</p> <p>Due to the various configurations of antenna whips, the contractor shall provide the antenna base only, and Goodyear Fire Department shall provide the antenna whip.</p> <p>Locations as follows: <u>Rail #1</u></p> <p>#1. MCT-AVL Puck (to be routed down street-side "B" pillar to behind driver's seat)</p>	✓	



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	<p>#2. MCT-Antenna (to be routed down street-side "B" pillar to behind driver's seat)</p> <p>#3. Mobile 800 (to be terminated at the center cab dash)</p> <p>#4. Mobile 150 (to be terminated at the center cab dash)</p> <p>#5. To be determined.</p> <p><u>Rail #2</u></p> <p>#6. AVL-Antenna (to be routed down curb-side "B" pillar to behind officer's seat)</p> <p>#7. AVL Puck (to be routed down curb-side "B" pillar to behind officer's seat)</p> <p>*F.D. to provide the two (2) AVL Puck Antennas.</p> <p>#8. To be determined.</p> <p>#9. To be determined.</p> <p>#10. To be determined.</p>		
373.	<p><u>DOOR LOCK PROGRAMMING</u></p> <p>The supplied cab door locks shall be programmed with "1948" prior to delivery.</p>		
374.	<p><u>SEAT BELT COLOR</u></p> <p>Section 14.1.3.4 of the NFPA 1901, 2016 edition, requires all seat belt webbing in cab to be bright red in color, and the buckle portion of the seat belt shall be mounted on a rigid or semi rigid stalk such that the buckle remains positioned in an accessible location.</p>		
375.	<p><u>SEAT BELT WEB LENGTH - CUSTOM CAB</u></p> <p>Sections 14.1.3.2 and 14.1.3.3 of the NFPA 1901, 2016 edition, require the effective seat belt web length for a Type 1 lap belt for pelvic restraint to be a minimum of 60", and a Type 2 pelvic and upper torso restraint-style seat belt assembly to be a minimum of 110".</p> <p>The chassis seat belt web length as supplied by the custom chassis manufacturer shall be compliant to NFPA Standards 14.1.3.2 and 14.1.3.3.</p>		
376.	<p><u>SEAT BELT / VDR SYSTEM - CUSTOM CAB</u></p> <p>The seat belt warning and vehicle data recorder systems shall be provided by the cab/chassis manufacturer.</p>		
377.	<p><u>ENGINE TUNNEL ACCESSORY PLATFORM</u></p> <p>There will be a 3/16" smooth aluminum deck painted gray with a hammer tone finish located on top of the engine tunnel. The platform will extend from the bottom edge of the center switch panel to the map box of the engine tunnel. The platform will be mounted to that it provides a level surface for GFD supplied items.</p> <p>The platform will feature two (2) cup holders, one each side within easy reach of the front seat occupants.</p>		
378.	<p><u>MAP BOX</u></p> <p>A map box shall be provided in the cab with an open top and as deep as possible. The map box shall be securely fastened to the cab interior per</p>		



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	<p>NFPA 1901, 2016 edition standards. It shall be fabricated of 1/8" smooth aluminum and painted with a gray textured powder coat paint finish for durability and finished appearance.</p> <p>The mapbox will feature two (2) cup holders one each side and small storage bin between the cup holders.</p> <p>– There shall be one (1) OnScene Solutions cargo straps provided to secure the stored equipment.</p>		
379.	<p><u>CUP HOLDERS</u></p> <p>There will be two (2) cup holder located at the rear cab corners about 18" from floor for the forward facing crew seats, one (1) each side within easy reach while seated.</p>		
380.	<p><u>CREW STORAGE BINS</u></p> <p>There will be two (2) storage bins located on the back wall of the cab, one (1) each side of the rear forward facing seats. The bottom of the bin will be even with the bottom of the rear wall vinyl cover.</p> <p>The bins will be approximately 4" x 8" x 4". Each bin will be equally divided in two sections.</p> <p>The bins will be fabricated from smooth aluminum and will be powder coated gray with a hammer tone finish.</p>		
381.	<p><u>TRASH CAN HOLDER</u></p> <p>A trash can holder shall be provided and located behind driver seat full width of area. The trash can holder shall be fabricated from smooth aluminum and will be powder coated gray with a hammer tone finish.</p>		
382.	<p><u>EMS MASK HOLDER</u></p> <p>An EMS mask (N95 Style) holder shall be provided and located between the crew forward face seats. The EMS mask holder shall be fabricated from smooth aluminum and will be powder coated gray with a hammer tone finish.</p>		
383.	<p><u>SIX (6) – LED TIRE PRESSURE VISUAL INDICATORS</u></p> <p>Each tire shall be equipped with a VECSAFE heavy duty valve cap (or equal) LED indicator that indicates proper tire pressure. The VECSAFE valve cap is self-calibrating. When the cap is mounted on the valve stem the first time, it will memorize that tire pressure, and can be set to recognize a drop in pressure as little as 4 psi. It can be checked for functionality and battery condition by simply unscrewing the cap. If it is in working condition, it will immediately start blinking.</p>		
384.	<p><u>HELMET STORAGE</u></p> <p>No helmet storage is required in the cab driving or crew area.</p>		
385.	<p><u>CAB WINDOW TINT</u></p> <p>The cab side windows shall be provided with an aftermarket tint at 33% light transmission.</p>		



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386.	<p><u>CAB CRASH TEST CERTIFICATION</u></p> <p>A cab crash test certification from the fire apparatus manufacturer shall be provided with the equipment. A copy of this certification shall be included with the bid.</p> <p>The certification shall state that the cab does meet or exceed the requirements below:</p> <ol style="list-style-type: none"> 1. European Occupant Protection Standard ECE Regulation No. 29. 2. SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks. 	✓	
387.	<p><u>CAB MIRRORS, DRIVER ADJUSTABLE</u></p> <p>Section 14.3.5 of the NFPA 1901 Standards, 2016 edition, requires all primary rear view mirrors used by the driver to be adjustable from the driver's position.</p>	✓	
388.	<p><u>TOE KICK TRIM PROTECTION</u></p> <p>Brushed stainless steel toe kick protection shall be provided in the following locations:</p> <p>Six (6) total, one (1) at each Zolatone painted foot well at each cab door</p> <p>One (1) on the face of the rear cab forward facing seat box</p> <p>One (1) on all the surface area below and to the right of the officer's glove box</p> <p>Four (4) panels and a 1" x 1" angle on the top of the glove box</p>	✓	
389.	<p><u>HUB AND NUT COVERS</u></p> <p>Front and rear wheels shall be provided with stainless steel hub caps and wheel nut covers.</p>	✓	
390.	<p><u>MUDFLAPS</u></p> <p>There shall be 1/4" rubber mud flaps provided and installed behind each set of tires to prevent throwing road debris and lower road spray. In accordance with Arizona Revised Statue rear mud flaps can be no higher than 8" of the ground.</p>	✓	
391.	<p><u>AIR BRAKE SYSTEM QUICK BUILD-UP</u></p> <p>The air brake quick build-up system shall be supplied from the cab/chassis manufacturer.</p> <p>The quick buildup system shall provide sufficient air pressure so that the apparatus has no brake drag and is able to stop under the intended operating conditions following the 60-second buildup time.</p>	✓	
392.	<p><u>FUEL FILL – Street Side</u></p> <p>There shall be one (1) fuel fill door located in the street side exterior wheel well panel, behind the rear axle. The fill door shall be fabricated from brushed stainless steel. There shall be a permanent label with the text "DIESEL FUEL ONLY" located adjacent to the fuel fill access.</p>	✓	
393.	<p><u>FUEL FILL – Curb Side</u></p> <p>There shall be one (1) fuel fill door located in the curbside exterior wheel well panel, behind the rear axle. The fill door shall be fabricated from brushed</p>	✓	



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	stainless steel. There shall be a permanent label with the text "DIESEL FUEL ONLY" located adjacent to the fuel fill access.	✓	
394.	<p><u>BODY DESIGN</u></p> <p>The importance of public safety associated with emergency vehicles requires that the construction of this vehicle meet the following specifications. These specifications are written to establish the minimum level of quality and design. All Bidders shall be required to meet these minimum requirements.</p> <p>It is the intent of these specifications to fully describe the requirements for a custom built emergency type vehicle. In order to extend the expected service life of this vehicle, the body module shall be removable from the chassis frame and be capable of being installed on a new chassis.</p> <p>The sheet metal material requirements, including alloy and material thickness, throughout the specifications are considered to be a minimum. Since such materials are available to all Manufacturers, the material specifications shall be strictly adhered to.</p> <p>The fabrication of the body shall be formed or extruded sheet metal. Components shall allow the City of Goodyear to have the body repaired locally in the case where any object has struck the body and caused damage.</p> <p>Following construction of the subframe, which supports the apparatus body, the sheet metal portion of the body shall be built directly on the subframe. The joining of the subframe and body shall be of a welded integral construction.</p> <p>The sheet metal fabrication of the body shall be performed using inert gas continuous feed welders only. The entire body shall be welded construction. The use of pop rivets in any portion of structural construction may allow premature failure of the body structure. Therefore, pop rivets shall NOT be used in the construction of the structural portions of the body. This includes side body sheets, inner panels of compartment doors, and any other structural portions of the body.</p>	✓	
395.	<p><u>EXTERIOR BODY</u></p> <p>The fabrication of the body shall be constructed from aluminum 3003H-14 alloy or stainless steel smooth plate. This shall include compartment front panel, vertical side sheets, side upper rollover panels, rear panels and compartment door frames.</p> <p>The body compartment floors and exterior panels shall be constructed with not less than 3/16" (.187) aluminum 3003H-14 or stainless steel equivalent smooth plate. Interior compartment dividing walls shall be constructed with not less than 1/8" (.125) aluminum 3003H-14 smooth plate or stainless steel equivalent.</p>	✓	



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	<p>The front and rear corners of body shall be constructed in a manner which provides a stronger body corner and finished appearance.</p> <p>The door side frame openings shall be formed "C" channel design. An electrical wiring conduit raceway running the full length of exterior compartments shall be provided. This raceway shall contain all 12 volt wiring running to the rear of the apparatus, permitting easy accessibility to wiring.</p> <p>Individual compartment modules, with dead air space voids between compartments, will not be an acceptable method of compartment construction. The compartments shall be an integral part of the body construction. Compartment floors from front of body to ahead of rear axle, also from rear axle to rear of body shall be single one-piece sections. Compartment floors shall be performed, then positioned in body and welded into final position.</p> <p>Compartment floors shall have a "sweep-out" design with door opening threshold positioned lower than compartment floor, permitting easy cleaning of compartments. Angles, lips, or door moldings are not acceptable in the base of compartment door opening. One-way rubber drain valves shall be provided in compartment floors so that a water hose may be used to flush-out compartment area.</p> <p>All exterior seams in sheet metal below frame, and around the rear wheel well area shall be welded and caulked to prevent moisture from entering the compartments. All other interior seams and corners shall be sealed with silicone based caulk prior to painting.</p> <p>Only stainless steel bolts, nuts, and sheet metal screws shall be used in mounting exterior trim, hardware and equipment.</p> <p>Exterior compartments shall have louvers in lower back wall of compartment for ventilation.</p>		
396.	<p><u>DRIP RAILS</u></p> <p>The body shall have drip rails over the side full height compartments. The drip rails shall be formed into the upper body panels providing a ridged lower panel and a flat upper body panel surface. The use of mechanically fastened, taped or glued on drip rails will not be acceptable, No Exceptions.</p>		
397.	<p><u>ROOF CONSTRUCTION</u></p> <p>The roof shall be integral with the body and shall be all welded construction. The roof of the body shall not be less than 3/16" aluminum 3003H-14 or stainless steel equivalent, fully and continuously welded. The roof shall be reinforced with a minimum of 2" x 2" x 1/4" aluminum tubing or stainless steel equivalent running the full width of the body.</p>		



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	All seams in the roof area shall be welded to the radius and supports prior to paint to prevent entry of moisture. All roof seams shall be continuously welded.	✓	
	A 2" formed radius shall be provided along the body sides.		
398.	BODY SUBFRAME The chassis frame rails shall be fitted with 1/4" custom extruded UHMW polyethylene rail cap to isolate the body frame members from direct contact with chassis frame rails. The body subframe shall be constructed from 6061T6 aluminum alloy tubing or stainless steel equivalent. Subframe shall consist of two (2) 2" x 4" x 1/4" aluminum tubes or stainless steel equivalent as a minimum, the same width as the chassis frame rails. Welded to this tubing shall be cross members of 2" x 4" x 1/4" aluminum or stainless steel equivalent. <u>Smaller dimension, lighter gauge tubing or angle material subframe shall not be accepted.</u> These cross members shall extend the full width of the body to support the compartments. Cross members shall be located at front and rear of the body, below compartment divider walls, and in front and rear of wheel well opening. Additional aluminum cross members shall be located on 16" centers, or as necessary to support walkway or heavy equipment. To form the frame, the tubing shall be beveled and welded at each joint using 5356 aluminum alloy or stainless steel equivalent welding wire.	✓	
399.	BODY MOUNTING The body subframe shall be fastened to the chassis frame with a minimum of four (4) spring loaded body mounts. Each mount shall be configured using a two-piece encapsulated slide bracket. The two (2) brackets shall be fabricated of heavy duty 1/4" thick steel and shall have a powder coat finish to prevent any corrosion. Each mounting assembly shall utilize two (2) 3/4" diameter x 6" long grade 8 bolts and two (2) heavy duty springs. The assembly design shall allow the body and subframe to act as one (1) component, separate from the chassis. As the chassis frame twists under driving conditions, the spring mounting system shall eliminate any stress from being transferred into the body. The spring loaded body mounts shall also prevent frame side rail or body damage caused by unevenly distributed stress and strains due to load and chassis movement.	✓	
400.	16" REAR STEP BUMPER The full width rear bumper shall be constructed from 2" x 2" x 1/4" aluminum tubing frame and covered with 3/16" NFPA compliant aluminum tread plate. The bumper shall extend from the rear vertical body panel 16" and provide a rear step with a minimum of 1/2" space at body for water drainage. This 16" step will allow for safe hose and equipment retrieval from the rear of the apparatus.	✓	



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401.	<u>REAR TOW EYES</u> There shall be two (2) heavy duty rear mounted tow eyes securely attached to the body subframe, below the apparatus body. The tow eyes shall be fabricated from 3/4" thick steel plate and shall be painted body color with a powder coat finish.	✓	
402.	<u>GROUND LIGHTS</u> There shall be two (2) OnScene 9" Night Axe LED lights installed below bumper capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level. Lighting shall be switchable but activated automatically when the vehicle park brake is set.	✓	
403.	<u>WHEEL WELL EXTERIOR PANEL</u> The exterior panel of the body wheel well enclosure shall be constructed from 3/16" smooth aluminum panels.	✓	
404.	<u>STAINLESS STEEL BODY FENDERS</u> The body wheel well openings shall be provided with round radius, polished stainless steel fenderettes. The fenderettes shall be bolted and easily replaceable if damaged. The fenderettes shall be installed using a rubber gasket to reduce buildup of moisture and/or debris.	✓	
405.	<u>WHEEL WELL LINERS</u> The wheel wells shall be provided with an easily removable polymer, circular inner fender liner. The inner liner shall be bolted to the wheel well with stainless steel bolts and spaced away from the wheel well so the liner will not accumulate dirt or water.	✓	
406.	<u>SCBA CYLINDER COMPARTMENTS</u> There shall be five (5) SCBA tank storage compartments located on the body: two (2) on each side of body in the rear wheel well area, with the driver side supporting three (3) SCBA tanks and the Officers side supporting two (2) SCBA tanks. Compartment number 2 on the driver's side will support two (2) SCBA tanks. Compartment number 5 Drivers side pump panel compartment will support one (1) SCBA tank. Compartment number 8 officer's compartment shall support two (2) SCBA tanks. Each tube shall allow the storage of an SCBA cylinder up to 7-1/2" in diameter. Each compartment shall have a vertically hinged door with a positive catch latch installed and painted primary lower body color. The door shall activate the "Hazard Warning Light" in the cab when not in the closed position. Bottles are MSA H45 Low Profile model # 10127945	✓	
	<u>BODY PAINT SPECIFICATIONS</u>		
407.	<u>BODY PAINT PREPARATION</u> After the body and components have been fabricated they shall be disassembled prior to painting so when the vehicle is complete there shall be finish paint beneath the removable components. The body shall be	✓	



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	<p>totally removed from chassis during the paint process to insure the entire unit is covered. The body and components shall be metal finished as follows to provide a superior substrate for painting.</p> <p>The exterior body shall undergo a thorough cleaning process starting with a biodegradable phosphoric acid solution to begin the etching process followed by a complete clear water rinse. The next step shall consist of a chemical conversion coating applied to seal the metal substrate and become part of the metal surface for greater film adhesion. If the compartment interior is to be painted the interior shall be acid etched as described above then primed with an epoxy primer and all seams caulked.</p> <p>All bright metal fittings, if unavailable in stainless steel or polished aluminum, shall be chrome plated. Iron fittings shall be copper under plated prior to chrome plating.</p>		
408.	<p><u>PAINT PROCESS</u></p> <p>The paint process shall follow the strict standards set forth by PPG Industries guidelines. Painters applying PPG products will be PPG Certified Commercial Technicians, and re-certified every two (2) years.</p> <p>The body shall go through an eight-stage paint process;</p> <ol style="list-style-type: none">1) Clean bare metal using a solvent base wax & grease remover.2) Finish all exterior body seams as necessary, followed by a thorough sanding of all bare metal to be painted.3) Re-clean bare metal using a solvent base wax & grease remover.4) Bare Metal Epoxy Primer Coat - PPG Delfleet® Evolution corrosion resistance epoxy primer to be applied at 1.0-2.0 mills DFT over clean abraded bare metal.5) Primer Filler Coat - PPG Delfleet® Evolution urethane build primer to achieve total thickness of 3.0-6.0 mills DFT after sanding.6) Base coat (Color) - PPG Delfleet® Evolution High Solids Polyurethane Base coat. Apply 1.0-3.0 mills DFT of base coat color to achieve full hiding.7) Clear coat PPG Delfleet® Evolution polyurethane premium quality clear coat with improved mar resistant finish. The clear coat shall be applied to achieve a total dry film thickness of 2.0-3.0 mills.8) Curing process of the painted body shall go through a force dry/bake cycle process. The painted components shall be baked 180 degrees for 2 hours to achieve a complete coating cure on the finished product.		
409.	<p><u>MACHINE POLISHED</u></p> <p>After the force dry/bake cycle and ample cool down time, the coated surface shall be sanded using 1,000, 1,500, and or 3,000 grit sandpaper to remove surface defects. In the final step, the surface shall be buffed then polished to an</p>		



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	extra high gloss smooth finish. Total dry film thickness of paint will average between 8.0-12.0 mils.	✓	
410.	<u>PAINT - ENVIRONMENTAL IMPACT</u> The contractor shall meet or exceed all current State (his) regulations concerning paint operations. Pollution control shall include measures to protect the atmosphere, water and soil. PPG Delfleet® Evolution paint shall be free of all heavy metal (lead & chromate) components. Paint emissions from sanding and painting shall be filtered and collected. All paint wastes shall be disposed of in an environmentally safe manner. Solvents used in cleanup operations shall be collected, sent off-site for distillation and returned for reuse.	✓	
411.	<u>FASTENERS</u> Prior to the assembly and reinstallation of exterior components; i.e. warning and DOT lights, handrails, steps, door hardware, and miscellaneous items, an isolation tape, or gasket shall be used to prevent damage to the finish painted surfaces. These components shall be fastened to body using either a plastic insert into body metal with stainless steel screws or zinc coated nuts into body surface using stainless steel bolts to prevent corrosion from dissimilar metals.	✓	
412.	<u>ELECTROLYSIS CORROSION CONTROL</u> The apparatus shall be assembled using ECK or similar corrosion control on all high corrosion potential areas. ECK protects aluminum and stainless steel against electrolytic reaction, isolates dissimilar metals and gives bedding protection for hardware and fasteners. ECK contains anti-seizing lubricant for threads. ECK is dielectric and perfect for use with electrical connectors.	✓	
413.	<u>PAINT FINISH - SINGLE COLOR</u> The body shall be painted with a single color of PPG Delfleet® Evolution paint per approved customer sprayout. Touch-up paint shall be provided with completed vehicle. • Paint Color: Match cab/chassis supplied paint color.	✓	
414.	<u>BODY UNDERCOATING</u> The entire underside of body shall be sprayed with black automotive undercoating. Undercoating shall cover all areas underside of body and wheel well area to help prevent corrosion under the vehicle.	✓	
415.	<u>UNDERCOAT WARRANTY</u> The body undercoating shall have a warranty provided by the manufacturer for the lifetime of the vehicle or ten (10) years, whichever occurs first. The warranty shall be transferable between vehicle owners. Should the undercoating material applied to the underside of the body and wheel wells of the vehicle ever flake off, peel, chip or crack due to drying out, the damaged area shall be re-sprayed without charge to the vehicle owner.	✓	



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416.	<u>PAINT WARRANTY</u> The vehicle shall be provided with a ten (10) year non-prorated warranty to the original owner. Warranty is provided by PPG Inc. A warranty sheet with all conditions and maintenance procedures shall be provided with the delivered vehicle. Pro-rated warranties will not be acceptable.		✓
417.	<u>COMPARTMENT INTERIOR FINISH</u> The interior of all exterior body compartments shall be a "Maintenance Free" smooth painted a Zolotone light grey speckle finish. All body seams shall be finished with a caulk sealant for both appearance and moisture protection.	✓	
	<u>REFLECTIVE STRIPE REQUIREMENTS</u>		
418.	<u>Material</u> All retroreflective materials shall conform to the requirements of ASTM D 4956, <i>Standard Specification for Retroreflective Sheeting for Traffic Control</i> , Section 6.1.1 for Type I Sheeting. All retroreflective materials used that are colors not listed in ASTM D 4956, Section 6.1.1, shall have a minimum coefficient of retro reflection of 10 with observation angle of 0.2 degrees and entrance angle of - 4 degrees. Any printed or processed retroreflective film construction used shall conform to the standards required of an integral colored film as specified in ASTM D 4956, Section 6.1.1.		✓
419.	<u>Minimum Requirements</u> A retroreflective stripe(s) shall be affixed to at least 50 percent of the cab and body length on each side, excluding the pump panel areas, and at least 25 percent of the width of the front of the apparatus. The City of Goodyear intent is to meet or exceed all DOT, NFPA and State requirements for striping. The stripe or combination of stripes shall be a minimum of 4 in. (100 mm) in total width. The 4 in. (100 mm) wide stripe or combination of stripes shall be permitted to be interrupted by objects (i.e., receptacles, cracks between slats in roll up doors) provided the full stripe is seen as conspicuous when approaching the apparatus.	✓	
420.	<u>GRAPHICS PROOF</u> A color graphics proof of the reflective striping layout shall be provided for approval by the City of Goodyear prior to installation. The graphics proof shall be submitted to the City of Goodyear on 8.5" x 11" sheets with front, sides, rear and plan views, each on one (1) sheet. In addition if there is any special art work an additional sheet shall be provided showing all details.	✓	
421.	<u>REFLECTIVE STRIPE - CAB SIDE</u> The reflective stripe material shall be 6" wide, 3M Scotchcal 680 series. <ul style="list-style-type: none">• This reflective stripe shall be white in color.	✓	



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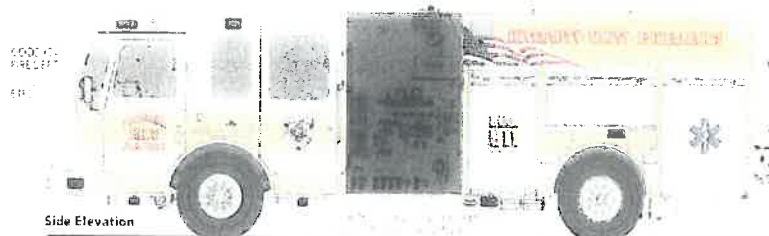
422.	<p><u>REFLECTIVE STRIPE - BODY SIDES</u></p> <p>The reflective stripe material shall be 6" wide, 3M Scotchcal 680 series.</p> <ul style="list-style-type: none">• This reflective stripe shall be white in color. <p>The stripe shall extend straight from front of cab, then ahead of the rear wheels, it shall form an "S" shape and extend straight back to the rear of the body. The "S" portion of the stripe shall remain a solid color.</p>		
423.	<p><u>CHEVRON REFLECTIVE STRIPE - REAR SIDES PANELS</u></p> <p>At least 50 percent of the rear-facing vertical surfaces, visible from the rear of the apparatus, excluding any pump panel areas not covered by a door, shall be equipped with retroreflective striping in a chevron pattern sloping downward and away from the centerline of the vehicle at an angle of 45 degrees. Each stripe shall be 6" width.</p> <p>The rear side panels only of the body shall have a Chevron style reflective stripe layout, and cover as much of the rear side panels as possible. Each chevron panel shall be a full sheet and shall have a 3M UV over laminate to protect from UV rays, scene damage, and everyday use. Chevron panel shall have a minimum 10 year warranty for material failure, and colorfastness.</p> <p>The stripe material shall be 3M Diamond Grade.</p> <p>This reflective chevron stripe shall alternate red and fluorescent yellow-green in color.</p>		
	<p style="text-align: center;"><u>LETTERING</u></p>		
424.	<p><u>GRAPHICS PROOF</u></p> <p>A color graphics proof of the lettering layout shall be provided for approval by Goodyear Fire Department prior to installation. The graphics proof shall be submitted to Goodyear Fire Department on 8.5" x 11" sheets with front, sides, rear and plan views, each on one (1) sheet. In addition if there is any special art work an additional sheet shall be provided showing all details.</p> <p>The following lettering shall be provided and installed on the completed unit as follows; See attached City of Goodyear graphics standard.</p>		



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EXTERIOR COMPARTMENT DOORS

425. ROLL-UP DOOR CONSTRUCTION - AMDOR

The apparatus shall be equipped with AMDOR roll-up exterior compartment doors. AMDOR roll-up doors shall be complete with the following features;

- Doors shall be front roll with drum positioned at upper front portion of compartment to afford maximum clearances and head room for mounting equipment to ceiling of compartment
- There shall be a non-abrasive side brush seals
- Every slat must have interlocking end shoes to prevent slat from moving side-to-side and binding the door
- Between each slat must be a co-extruded PVC inner seal to prevent metal-to-metal contact and to repel moisture. This inner seal is not visible to detract from appearance of door
- Slat are to have interlocking joints with a folding locking flange to provide security and prevent penetration by sharp objects



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- Slats to be double-wall extrusion 1.366" high by .315" thick. Exterior surface to be flat and interior surface to be concave to prevent loose equipment from interfering with door operation
- Latch system to be a full width one piece lift bar operable by one (1) hand
- A 2" wide finger pull integrated into the bottom rail extrusion for easy one (1) hand opening and closing
- Clip system that connects the curtain slats to the operator drum which allows for easy tension adjustment without tools
- Each roll-up door shall have a 4" diameter counterbalance operator drum to assist in lifting the door.
- Track shall be one-piece aluminum that has an attaching flange and finishing flange incorporated into its design
- Drip rail will have specially designed seal that prevents the seal from scratching the door
- Bottom rail extrusion must have smooth back to prevent loose equipment from jamming the door
- Bottom rail to have "V" shaped double seal to prevent water and debris from entering the compartment
- Standard replacement parts to be shipped from the United States and available in as little as 48 hours
- Will be free from manufacturing defects for a period of up to 7 years from date of purchase provided that the Product is used under conditions of normal use, that regular periodic maintenance and service is performed and that the product was installed in accordance with AMDOR's instructions.
- Exterior compartment doors will be painted to match the body color supplied by the City of Goodyear.

Each shutter door shall decrease the compartment door frame opening approximately 2.00" in width and approximately 4.50" in height for the bottom section of door assembly.

426.

BODY HEIGHT MEASUREMENTS

The vertical body dimensions shall be as follows:

AHEAD OF REAR AXLE

	Description	Dimension
A	Bottom of Subframe to Top of Body	74.0"
B	Bottom of Subframe to Bottom of Body	22.5"
C	Vertical Door Opening	
	-with roll-up door	67.5"
	-with hinged door	71.5"



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ABOVE REAR AXLE

	Description	Dimension
D	Vertical Door Opening - Above Rear Wheel	
	-with roll-up door	34.0"
	-with hinged door	37.0"

BEHIND REAR AXLE

	Description	Dimension
E	Bottom of Subframe to Bottom of Body	20.0"
F	Vertical Door Opening	
	-with roll-up door	62.0"
	-with hinged door	66.0"

GENERAL

	Description	Dimension
G	Bottom of Drip Rail to Top of Body	23.5"

(Dimensions are generic and subject to change during the actual design process)

427.

FOUR (4) UPPER BODY COMPARTMENTS (INDIVIDUAL)

There shall be four (4) compartments parallel to the sides of the body, two (2) on each side. Each of these compartments shall be approximately 79.0" long x 23.0" wide x 18.5" deep. The side compartments shall be open under each door sill to allow for long equipment. Each compartment shall be integral with the body construction, and will not be bolted or add-on modules. The outside walls of each compartment will be double walled to prevent equipment from denting the outside painted surface.

Each compartment shall have a lift-up type compartment door hinged on the outboard side. Each door shall be fabricated from 3/16" aluminum tread plate. Each door shall have two (2) pneumatic type cylinders, one (1) at each end, attached to cast aluminum brackets mounted to the interior surface of the door to hold the door in both the opened and closed positions. Each door shall be mounted using 16" long, equally spaced, 14 gauge stainless steel hinges, with 1/4" stainless steel pin. A polyester barrier film gasket shall be placed between stainless steel hinge and the body mounting surface as necessary to prevent corrosion caused by dissimilar metals.

Each compartment door shall overlap a 2" vertical lip on the body roof to prevent entry of moisture and sealed with automotive type rubber molding to provide a weather resistant seal.

Each compartment shall have a 13/16" drain hole located in floor of compartment with a 1" flexible drain tube that terminates below body.



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	<p>Each compartment shall have a horizontally mounted OnScene Solutions LED Night Stik on the underside of the door. The light and NFPA Door Ajar System shall be automatically activated by an individual switch per compartment.</p> <p>Each compartment will have a locking D-handle on the top face of the door.</p> <p>Each door will have a manual keyed style lock.</p> <p>Each compartment shall be constructed and designed to mitigate condensation and mold.</p>		
428.	<p><u>BODY WIDTH DIMENSIONS</u></p> <p>The body shall not exceed 100.0" wide, not including drip rail or non-permanent fixtures. Interior compartment depth and door opening shall be approved by the City of Goodyear. The contractor shall provide renderings for review based on below listed load plans and overall dimensions of the body.</p>		
429.	<p><u>STREETSIDE COMPARTMENT – FRONT ENGINEER THRU BODY(S1)</u></p> <p>This compartment will be a full body width compartment that tie into the opposite side Captain's compartment.</p> <p>This compartment shall have an AMDOR roll-up door.</p> <ul style="list-style-type: none">• The roll-up door slats and the door trim components shall be painted to match the body exterior color.• The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.• The roll-up doors shall be equipped with an electric power lock system. All doors shall be locked or unlocked with activation from a single switch located in the cab.• One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.• A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.		
430.	<p><u>COMPARTMENT LAYOUT</u></p> <ul style="list-style-type: none">• This compartment shall be designed to maximize its space and support the below listed equipment. The body manufacture shall produce a compartment layout that will accommodate the equipment below:<ul style="list-style-type: none">– Two (2) back boards– One (1) cheater hose- 5" diameter 25' section– One (1) cheater hose- 2 1/2" diameter 25' section		



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	<ul style="list-style-type: none"> One (1) high rise pack- 100' 13/4" hose with gated wye and nozzle in horseshoe One (1) light box- Honda EU2000 with light kit One (1) circular saw- Stihl st-400 cutoff saw One (1) saw bag- extra blades and tools One (1) traffic cones- set of 4 collapsible cones Two (2) tarps- triage tarps 15'x20' One (1) Dewalt tools- 24v Dewalt tool box 		
431.	<p><u>STREETSIDE COMPARTMENT - FRONT Engineer PPE (S2)</u> This compartment shall have an AMDOR roll-up door.</p> <ul style="list-style-type: none"> The roll-up door slats and the door trim components shall be painted to match the body exterior color. The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track. The roll-up doors shall be equipped with an electric power lock system. All doors shall be locked or unlocked with activation from a single switch located in the cab. One (1) aluminum drip pan/door finish guard shall be provided with the rollup door. A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish. 		
432.	<p><u>COMPARTMENT LAYOUT</u></p> <ul style="list-style-type: none"> This compartment shall be designed to maximize its space and support the below listed equipment. The body manufacture shall produce a compartment layout that will accommodate the equipment below: <ul style="list-style-type: none"> Two (2) Turnouts- 2 each jackets, pants, boots and helmets Three (3) SCBA tanks- MSA X1 packs One (1) box light- stream light box light Three (3) lights- stream light 90 degree flashlights 		
433.	<p><u>STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S3)</u> This compartment shall have a AMDOR roll-up door.</p> <ul style="list-style-type: none"> The roll-up door slats and the door trim components shall be painted to match the single tone exterior color. The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track. The roll-up doors shall be equipped with an electric power lock system. All doors shall be locked or unlocked with activation from a single switch located in the cab. 		



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	<ul style="list-style-type: none"> One (1) aluminum drip pan/door finish guard shall be provided with the rollup door. A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish. 	✓	
434.	<p><u>COMPARTMENT LAYOUT</u></p> <ul style="list-style-type: none"> This compartment shall be designed to maximize its space and support the below listed equipment. The body manufacture shall produce a compartment layout that will accommodate the equipment below: There shall be compartment LED strip lighting installed inside the compartment to allow for adequate lighting during night time operations. These LED strip lights will be located in such a manner as to not get damaged when equipment is inserted and removed from the compartment. 	✓	
435.	<p><u>STREETSIDE COMPARTMENT – Wheel Well Storage (S4)</u></p> <ul style="list-style-type: none"> This compartment shall be designed to maximize its space and support the below listed equipment. The body manufacture shall produce a compartment layout that will accommodate the equipment below: Will support three (3) SCBA tanks model MSA X1. 	✓	
436.	<p><u>STREETSIDE COMPARTMENT – REAR PUMP PANEL COMPARTMENT (S4)</u></p> <p>This compartment shall have an AMDOR roll-up door.</p> <ul style="list-style-type: none"> The roll-up door slats and the door trim components shall be painted to match the single tone exterior color. The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track. The roll-up doors shall be equipped with an electric power lock system. All doors shall be locked or unlocked with activation from a single switch located in the cab. One (1) aluminum drip pan/door finish guard shall be provided with the rollup door. A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish. 	✓	
437.	<p><u>COMPARTMENT LAYOUT</u></p> <ul style="list-style-type: none"> This compartment shall be designed to maximize its space and support the below listed equipment. The body manufacture shall produce a compartment layout that will accommodate the equipment below: <ul style="list-style-type: none"> Pump Panel One (1) Turnouts- 1 each jackets, pants, boots and helmet One (1) gated wye- 1-2 1/2" to 2- 1 3/4" 	✓	



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	<ul style="list-style-type: none">- One (1) gated wye- 1-3/4" to 2- 1"- One (1) rubber Mallet- One (1) hydrant wrench- Four (4) spanner wrenches- 2- 5" spanner and 2 2 1/2" spanner- Two (2) hose straps- One (1) nozzle- 2 1/2" fog nozzle- Two (2) adapter- 5" to 4 1/2" NS- One (1) adapter- 5" to 3 1/2"- Four (4) adapter- 2 1/2" NH to PHX- One (1) adapter- 5" to 3 1/2" NH- Two (2) adapter- 5" to 4"- One (1) gated wye- 1-2 1/2" to 2- 2 3/4"- One (1) adapter- 2 1/2" NH double female- One (1) MSA- G1 <ul style="list-style-type: none">• There shall be compartment LED strip lighting installed inside the compartment to allow for adequate lighting during night time operations. These LED strip lights will be located in such a manner as to not get damaged when equipment is inserted and removed from the compartment.		
438.	<p><u>CURBSIDE COMPARTMENT – CAPTAINS SIDE FRONT THRU BODY (C1)</u></p> <p>This compartment shall have an AMDOR roll-up door.</p> <ul style="list-style-type: none">• The roll-up door slats and the door trim components shall be painted to match the single tone exterior color.• The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.• The roll-up doors shall be equipped with an electric power lock system. All doors shall be locked or unlocked with activation from a single switch located in the cab.• One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.• A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.• There shall be compartment LED strip lighting installed inside the compartment to allow for adequate lighting during night time operations. These LED strip lights will be located in such a manner as to not get damaged when equipment is inserted and removed from the compartment.		
439.	<p><u>COMPARTMENT LAYOUT</u></p> <ul style="list-style-type: none">- Two (2) backboards- One (1) pike pole- 6' pike pole- One (1) trash hook- 6' trash hook- Four (4) spanner wrenches- 2- 5" spanners and 2- 2 1/2" spanners- One (1) haligan		



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	<ul style="list-style-type: none"> - One (1) flathead axe - One (1) pickhead axe - One (1) sledge hammer - One (1) prybar- 5' - One (1) bolt cutters- 36" cutters - One (1) bolt cutters- 12" cutters - One (1) snake pole- 4' snake pole - One (1) wire cutters- 10" wire cutters - One (1) vise grip- 8" vise grips - One (1) PW can - One (1) extinguisher 			
440.	<p><u>CURBSIDE COMPARTMENT – CAPTAIN COMPARTMENT (C2)</u></p> <p>This compartment shall have an AMDOR roll-up door.</p> <ul style="list-style-type: none"> • The roll-up door slats and the door trim components shall be painted to match the single tone exterior color. • The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track. • The roll-up doors shall be equipped with an electric power lock system. All doors shall be locked or unlocked with activation from a single switch located in the cab. • One (1) aluminum drip pan/door finish guard shall be provided with the rollup door. • A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish. • There shall be compartment LED strip lighting installed inside the compartment to allow for adequate lighting during night time operations. These LED strip lights will be located in such a manner as to not get damaged when equipment is inserted and removed from the compartment. 			
441.	<p><u>COMPARTMENT LAYOUT</u></p> <ul style="list-style-type: none"> - One (1) Turnouts- 1 each jackets, pants, boots and helmet - Two (2) SCBA tanks- MSA X1 packs - One (1) box light- stream light - One (1) lights- stream light 90 degree flashlight - One (1) tic camera- ISG Tic camera and charger - One (1) pike pole- 4' closet pike pole - One (1) ice chest- 24" ice chest - One (1) micr blaze can 			
442.	<p><u>CURBSIDE COMPARTMENT – CAPTAIN SIDE OVER THE WHEEL WELL (C3)</u></p> <p>This compartment shall have an AMDOR roll-up door.</p> <ul style="list-style-type: none"> • The roll-up door slats and the door trim components shall be painted to match the single tone exterior color. 			



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	<ul style="list-style-type: none"> The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track. The roll-up doors shall be equipped with an electric power lock system. All doors shall be locked or unlocked with activation from a single switch located in the cab. One (1) aluminum drip pan/door finish guard shall be provided with the rollup door. A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish. There shall be compartment LED strip lighting installed inside the compartment to allow for adequate lighting during night time operations. These LED strip lights will be located in such a manner as to not get damaged when equipment is inserted and removed from the compartment. 		
443.	<u>COMPARTMENT LAYOUT</u> - Hazmat storage		
444.	<u>CURBSIDE COMPARTMENT – REAR CAPTAIN SIDE (C4)</u> This compartment shall have a AMDOR roll-up door. <ul style="list-style-type: none"> The roll-up door slats and the door trim components shall be painted to match the single tone exterior color. The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track. The roll-up doors shall be equipped with an electric power lock system. All doors shall be locked or unlocked with activation from a single switch located in the cab. One (1) aluminum drip pan/door finish guard shall be provided with the rollup door. A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish. There shall be compartment LED strip lighting installed inside the compartment to allow for adequate lighting during night time operations. These LED strip lights will be located in such a manner as to not get damaged when equipment is inserted and removed from the compartment. The drug box cooler/safe needs to be large enough to facilitate the Pelican box and have enough height to store IV bags on top of the box. 		
445.	<u>COMPARTMENT LAYOUT</u> <ul style="list-style-type: none"> One (1) Monitor One (1) BLS box- Pelican box model 1550 One (1) Drug box-Pelican box model 1550 One (1) Airway box- Pelican box model 1550 One (1) PALS Bag One (1) Fido Bag 		



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	<ul style="list-style-type: none">- One (1) c-spine bag- One (1) hare traction splint- Four (4) splints- One (1) drug cooler with WIFI capability, 5 year manufacture warranty, programmable.	✓	
446.	<p><u>LADDER STORAGE REAR</u></p> <p>There will be a ladder storage compartment located on the rear of the apparatus. The compartment will be located behind the upper portion of the compartments.</p> <p>Access to the compartment shall be from a rear facing inboard vertically hinged compartment door. The door shall be fabricated from 3/16" smooth aluminum with full length 14 gauge stainless steel hinge, with 1/4" stainless steel pin, 6" locking stainless steel locking "D" ring handle. A polyester barrier film gasket shall be placed between stainless steel hinge and any dissimilar metals as necessary to prevent corrosion. Door shall overlap body surface to prevent entry of moisture and sealed with automotive type rubber molding to provide a weather resistant seal.</p> <p>Compartment shall have a flush mounted light near door opening that will be automatically activated when door is opened, and wired to compartment door ajar warning light provided in cab.</p> <p>Devices to secure equipment, compartment dividers, or UHMW plastic angles, or sheeting will be used for storage of specified equipment as required to prevent damage to equipment.</p> <p>The compartment will be designed to store the following equipment and labeled accordingly: Compartment layout:</p> <ul style="list-style-type: none">- One (1) Ext ladder- 24' extention ladder- One (1) Straight ladder- 14'- One (1) Attic ladder- 8' folding attic ladder- One (1) 8' D-Ring trash hook- One (1) Pike pole- 10' pike pole- One (1) Pike pole- 8' pike pole	✓	
447.	<p><u>PLASTIC FLOOR AND SHELF TILE</u></p> <p>All compartment floors, shelves, and trays shall be covered with Turtle Tile plastic interlocking grating.</p> <ul style="list-style-type: none">• The plastic floor tile shall be black.• The plastic edge trim shall be black.	✓	
448.	<p><u>SIDE BODY PROTECTION - RUB RAIL</u></p> <p>On Scene Solutions rub rails shall be provided below the compartment door openings on both the street side and curbside.</p>	✓	



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	<p>The rub rail shall be fabricated from 6063 extruded aluminum, measuring approximately 2-3/4" high x 1- 3/8" thick with tapered aluminum end caps. The rub rail shall be bolted to the body using stainless steel bolts and 1-1/2" diameter x 5/8" thick rubber mount isolators to prevent damage to the body.</p> <p>The rails shall incorporate LED clearance marker lighting recessed into the rail fascia to avoid damage to the light in case of impact. The rub rail shall have an accessory mounting track integrated into the backside of the rail to allow mounting of accessories such as ground lighting.</p> <p>3M™ Diamond Grade™ Conspicuity striping shall be provided in the rub rail. The striping shall be red/white in color.</p>		
449.	<p><u>ROOF ACCESS LADDER</u></p> <p>The ladder shall be weld constructed of vertical aluminum extrusion tubing and aluminum grip surface ladder rungs with slip resistant tread grip pattern. It shall be set off from body 8 inches and mounted to body with chrome plated end stanchions bolted to the body with stainless steel bolts. The ladder shall NOT extend above the body roof.</p> <p>The location shall be on the rear street side of the apparatus body.</p>		
450.	<p><u>HANDRAILS</u></p> <p>There shall be two (2) vertical handrails located, one (1) each side of the front of crosslay, and one (1) vertical handrail located on the curbside rear of the body and centered between the ladder compartment and the Engine Company ID decal. The handrails shall be NFPA compliant 1-1/4" 304 knurled stainless steel with welded end stanchions. The handrail shall be centered with the D-handle of the ladder compartment.</p>		
451.	<p><u>HOSEBED ACCESS HANDRAIL</u></p> <p>There shall be two (2) handrail(s) mounted on the body to assist in access to hose bed area and dunnage areas. The handrail shall be NFPA compliant 1-1/4" 304 knurled stainless steel with welded end stanchions.</p> <ul style="list-style-type: none"> Two (2) handrails shall be located on the upper hose bed doors. 		
452.	<p><u>FOLDING STEP(S)</u></p> <p>There shall be one (1) Cast Products polished cast aluminum folding step(s) provided and installed on completed vehicle. Each step shall be heavy duty with stainless steel spring and textured step surface meeting NFPA standards. Each step will include integrated upper and lower LED lights.</p>		
453.	<p><u>CAST STEP(S)</u></p> <p>One (1) Cast Products SP2014-1B 11" x 14" polished aluminum step(s) with hand hold shall be provided and installed on completed vehicle. Step(s) shall have an LED lighting area below step be wired to the headlight circuit of the chassis. Step(s) shall have a textured stepping surface meeting NFPA standards.</p>		



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	Light(s) shall be capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<u>LOW VOLTAGE ELECTRICAL SYSTEM- 12 VDC</u>		
454.	<p><u>General</u> Any low voltage electrical systems or warning devices installed on the fire apparatus shall be appropriate for the mounting location and intended electrical load.</p> <p>Where wire passes through sheet metal, grommets shall be used to protect wire and wire looms. Electrical connections shall be with double crimp water-tight heat shrink connectors.</p> <p>All 12 VDC wiring running from front to back of vehicle body shall be run in full length electrical wiring raceway down each side of body.</p>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
455.	<p><u>Wiring</u> All electrical circuit feeder wiring supplied and installed by the fire apparatus manufacturer shall meet the requirements of NFPA Chapter 13.</p> <p>The circuit feeder wire shall be stranded copper or copper alloy conductors of a gauge rated to carry 125% of the maximum current for which the circuit is protected. Voltage drops in all wiring from the power source to the using device shall not exceed 10 %. The use of star washers for circuit ground connections shall not be permitted.</p> <p>All circuits shall otherwise be wired in conformance with SAE J1292, <i>Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring</i>.</p>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
456.	<p><u>Wiring and Wire Harness Construction</u></p> <p>All insulated wire and cable shall conform to SAE J1127, <i>Low Voltage Battery Cable</i>, or SAE J1128, <i>Low Voltage Primary Cable</i>, type SXL, GXL, or TXL.</p> <p>All conductors shall be constructed in accordance with SAE J1127 or SAE J1128, except where good engineering practice dictates special strand construction. Conductor materials and stranding, other than copper, shall be permitted if all applicable requirements for physical, electrical, and environmental conditions are met as dictated by the end application. Physical and dimensional values of conductor insulation shall be in conformance with the requirements of SAE J1127 or SAE J1128, except where good engineering practice dictates special conductor insulation. The overall covering of conductors shall be moisture-resistant loom or braid that has a minimum continuous rating of 194°F (90°C) except where good engineering practice dictates special consideration for loom installations exposed to higher</p>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



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	<p>temperatures. The overall covering of jacketed cables shall be moisture resistant and have a minimum continuous temperature rating of 194°F (90°C), except where good engineering practice dictates special consideration for cable installations exposed to higher temperatures.</p> <p>All wiring connections and terminations shall use a method that provides a positive mechanical and electrical connection. The wiring connections and terminations shall be installed in accordance with the device manufacturer's instructions. All ungrounded electrical terminals shall have protective covers or be in enclosures. Wire nut, insulation displacement, and insulation piercing connections shall not be used.</p> <p>Wiring shall be restrained to prevent damage caused by chafing or ice buildup and protected against heat, liquid contaminants, or other environmental factors.</p> <p>Wiring shall be uniquely identified at least every 2 ft (0.6 m) by color coding or permanent marking with a circuit function code. The identification shall reference a wiring diagram.</p> <p>Circuits shall be provided with properly rated low voltage overcurrent protective devices. Such devices shall be readily accessible and protected against heat in excess of the overcurrent device's design range, mechanical damage, and water spray. Circuit protection shall be accomplished by utilizing fuses, circuit breakers, fusible links, or solid state equivalent devices.</p> <p>If a mechanical-type device is used, it shall conform to one of the following SAE standards:</p> <ol style="list-style-type: none">1) SAE J156, <i>Fusible Links</i>2) SAE J553, <i>Circuit Breakers</i>3) SAE J554, <i>Electric Fuses (Cartridge Type)</i>4) SAE J1888, <i>High Current Time Lag Electric Fuses</i>5) SAE J2077, <i>Miniature Blade Type Electrical Fuses</i> <p>Switches, relays, terminals, and connectors shall have a direct current (dc) rating of 125 % of maximum current for which the circuit is protected.</p>		
457.	<p><u>Power Supply</u></p> <p>A 12 V or greater electrical alternator shall be provided. The alternator shall have a minimum output at idle to meet the minimum continuous electrical load of the vehicle, at 200°F (93°C) ambient temperature within the engine compartment, and shall be provided with full automatic regulation.</p>		
458.	<p><u>Minimum Continuous Electrical Load</u></p> <p>The minimum continuous electrical load shall consist of the total amperage required to simultaneously operate the following in a stationary mode during emergency operations:</p>		



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	<ol style="list-style-type: none">1) The propulsion engine and transmission2) All legally required clearance and marker lights, headlights, and other electrical devices except windshield wipers and four-way hazard flashers3) The radio(s) at a duty cycle of 10 percent transmit and 90 % receive (for calculation and testing purposes, a default value of 5 A continuous)4) The lighting necessary to produce 2 fc (20 lx) of illumination on all walking surfaces on the apparatus and on the ground at all egress points onto and off the apparatus, 5 fc (50 lx) of illumination on all control and instrument panels, and 50 percent of the total compartment lighting loads5) The minimum optical warning system, where the apparatus is blocking the right-of way6) The continuous electrical current required to simultaneously operate any fire pumps, aerial devices, and hydraulic pumps7) Other warning devices and electrical loads defined by the purchaser as critical to the mission of the apparatus <p>The condition of the low voltage electrical system shall be monitored by a warning system that provides both an audible and a visual signal to persons on, in, or near the apparatus of an impending electrical system failure caused by the excessive discharge of the battery set.</p> <p>The charge status of the battery shall be determined either by direct measurement of the battery charge or indirectly by monitoring the electrical system voltage.</p> <p>If electrical system voltage is monitored, the alarm shall sound if the system voltage at the battery or at the master load disconnect switch drops below 11.8 V for 12 V nominal systems, 23.6 V for 24 V nominal systems, or 35.4 V for 42 V nominal systems for more than 120 seconds.</p> <p>A voltmeter shall be mounted on the driver's instrument panel to allow direct observation of the system voltage.</p>		
459.	<u>Electromagnetic Interference</u> Electromagnetic interference suppression shall be provided, as required, to satisfy the radiation limits specified in SAE J551/1, <i>Performance Levels and Methods of Measurement of Electromagnetic Compatibility of Vehicles. Boats (up to 15 m), and Machines (16.6 Hz to 18 GHz)</i> .		
460.	<u>Wiring Diagram</u> A complete electrical wiring schematic of actual system shall be provided with finished apparatus. Similar or generic type electrical schematics shall NOT BE ACCEPTABLE.		



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461.	<u>Low Voltage Electrical System Performance Test</u> A low voltage electrical system test certification shall be provided with delivered apparatus.	✓	
462.	<u>12 VOLT MULTIPLEX CONTROL CENTER</u> The apparatus shall be equipped with a Weldon V-MUX multiplexed 12 volt electrical system that will provide complete diagnostic capability. No Exception. The system shall have the capability of delivering multiple signals via a CAN bus, utilizing specifications set forth by SAE J1939. The system shall be node based to maximize stability so that failure of one node does not affect the operation of the other nodes. The system shall use shielded twisted-pair wire for transmission of system function signals. The shielded wire shall provide protection against EMI and RFI noise interruptions. The multiplex system shall be responsible for providing power management functions as well as load shedding. The warning light system shall be controlled by the multiplex system. The system shall be capable of displaying text and/or graphic messages on a display module. The system shall be based on solid-state technology and shall include self-contained diagnostic indicators. The main 12-volt electrical components will be located above the pump panel on the streetside of the apparatus with a removable access panel. There will be a label on the outside of the panel stating "12- VOLT ELECTRICAL DISTRIBUTION"	✓	
463.	<u>WELDON CERTIFICATION</u> A letter shall be provided with bid submittal that the Contractor has successfully completed the Weldon training requirements for Level 1 of the V-MUX Certified Supplier Program and is authorized to design, build, and service V-MUX electrical systems. The apparatus shall be equipped with a Weldon V-MUX multiplexed 12 volt electrical system that will provide complete diagnostic capability. No Exception. The system shall have the capability of delivering multiple signals via a CAN bus, utilizing specifications set forth by SAE J1939. The system shall be node based to maximize stability so that failure of one node does not affect the operation of the other nodes. The system shall use shielded twisted-pair wire for transmission of system function signals. The shielded wire shall provide protection against EMI and RFI noise interruptions. The multiplex system shall be responsible for providing power management functions as well as load shedding. The warning light system shall be controlled by the multiplex system. The system shall be capable of displaying text and/or graphic messages on a display module. The system shall be based on solid-state technology and shall include self-contained diagnostic indicators.	✓	



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464.	<p><u>CUSTOM PROGRAMMING</u></p> <p>Light controls from both Vista screens as follows:</p> <p>Position #1 All amber lights only</p> <p>Position #2 All colored lights including position #1 lights</p> <p>Position #3 All warning lights (Unitrol 480K electronic siren, Q2B siren, and clear lights wired to parking brake switch.)</p>		
465.	<p><u>BATTERY SYSTEM</u></p> <p>The battery connectors shall be heavy duty type with cables terminating in heat shrink loom. Heavy duty battery cables shall provide maximum power to the electrical system. Where required, the cables shall be shielded from exhaust tubing and the muffler. Large rubber grommets shall be provided where cables enter the battery compartment.</p> <p>Batteries shall be of the high-cycle type. With the engine off, the battery system shall be able to provide the minimum continuous electrical load for 10 minutes without discharging more than 50 percent of the reserve capacity and then to restart the engine. The battery system cold cranking amps (CCA) rating shall meet or exceed the minimum CCA recommendations of the engine manufacturer. The batteries shall be mounted to prevent movement during fire apparatus operation and shall be protected against accumulations of road spray, snow, and road debris. The batteries shall be readily accessible for examination, testing, and maintenance.</p> <p>A means shall be provided for jump-starting the engine if the batteries are not accessible without lifting the cab of a tilt-cab apparatus.</p> <p>Where an enclosed battery compartment is provided, it shall be ventilated to the exterior to prevent the buildup of heat and explosive fumes. The batteries shall be protected against vibration and temperatures that exceed the battery manufacturer's recommendation.</p> <p>A master load disconnect switch shall be provided between the starter solenoid(s) and the remainder of the electrical loads on the apparatus. The starter solenoids shall be connected directly to the batteries.</p> <p>Electronic control systems and similar devices shall be permitted to be otherwise connected if so specified by their manufacturer.</p> <p>The alternator shall be wired directly to the batteries through the ammeter shunt(s), if one is provided, and not through the master load disconnect switch.</p> <p>A green "battery on" pilot light that is visible from the driver's position shall be provided.</p>		



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	<ul style="list-style-type: none">• All equipment in the compartment is restrained so that nothing can fall out if the door is open while the apparatus is moving.• Manually raised pole lights with an extension of less than 5 ft (1.5 m). <p>The hazard light shall be labeled "DO NOT MOVE APPARATUS WHEN LIGHT IS ON".</p>	✓	
472.	<u>BACK-UP ALARM</u> An electronic back-up alarm shall be supplied and installed by the cab/chassis manufacturer. The back-up alarm shall actuate automatically when the transmission gear selector is placed in reverse.	✓	
473.	<u>TAIL LIGHTS</u> Rear body tail lights shall be vertically mounted and located per Federal Motor Vehicle Safety Standards, FMVSS and Canadian Motor Vehicle Safety Standards CMVSS. The following lights shall be furnished: <ul style="list-style-type: none">• Two (2) Whelen amber LED 600 Series 60A00TAR turn signal lights• Two (2) Whelen red LED 600 Series 60BTT stop/tail lights• Two (2) Whelen LED 600 Series 60C00WCR maximum intensity back-up lights with clear lens Each of the lights above shall be mounted in a 6EFLANGE, chrome finish bezel.	✓	
474.	<u>REAR MARKER/TURN SIGNAL</u> Two (2) Whelen model T0A00MAR 2" round amber LED REAR body clearance marker/turn signal lights shall be provided and installed, one (1) light on each side of the body, in forward wheel well of rear axle. Midship marker/turn lights shall be wired to the headlight circuit of the chassis.	✓	
475.	<u>MARKER LIGHTS</u> The body shall be equipped with all necessary clearance lights and reflectors in accordance with Federal Motor Vehicle Safety Standards (FMVSS) and Canadian Motor Vehicle Safety Standards (CMVSS) regulations. All body clearance lights shall be Truck-Lite Model 18 LED to reduce the need for maintenance and lower the amp draw. Clearance lights shall be wired to the headlight circuit of the chassis.	✓	
476.	<u>CAB STEP LIGHTS / GROUND LIGHTS</u> The step lights and/or ground lights shall be supplied and installed by the cab/chassis manufacturer. Light(s) shall be capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level. Lighting designed to provide illumination on areas under the driver and crew riding area exits shall be switchable but activated automatically when the exit doors are opened.	✓	
477.	<u>REAR STEP LIGHT</u> There will be one (1) OnScene 36" Access series light located under the hosebed step to illuminate the rear tailboard. The light will activate when the park break is set.	✓	



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	A sequential switching device shall be permitted to energize the optical warning devices and other high current devices required in minimum continuous electrical load, provided the switching device shall first energize the electrical devices required in minimum continuous electrical load within five (5) seconds.	✓	
466.	<u>BATTERY SWITCH</u> One (1) battery "On/Off" switch in cab located within easy reach of Driver with green "BATTERY ON" pilot light that is visible from the driver's position shall be provided. The switch and pilot light shall be supplied and installed by the cab/chassis manufacturer.	✓	
467.	<u>BATTERY SOLENOID</u> Battery switch shall consist of a minimum 200 ampere, constant duty solenoid to feed from positive side of battery.	✓	
468.	<u>BATTERY CONDITIONER</u> The battery conditioner shall be supplied and installed by the cab chassis manufacturer.	✓	
469.	<u>ENGINE COMPARTMENT LIGHT</u> Engine compartment light(s) shall be supplied and installed by the cab chassis manufacturer.	✓	
470.	<u>SCENE LIGHT SWITCH</u> There shall be a switch on the street side rear body panel to turn on scene lights during night operations. The switch shall be of momentary style and shall be connected to a bi-stable relay, allowing the light to also be switched from the cab V-Mux screen. The scene/reverse lights shall automatically shut off when the parking brake is disengaged.	✓	
471.	<u>CAB HAZARD WARNING LIGHT</u> A red flashing or rotating light, located in the driving compartment, shall be illuminated automatically whenever the vehicles parking brake is not fully engaged and any of the following conditions exist: <ul style="list-style-type: none">• Any passenger or equipment compartment door is not closed.• Any ladder or equipment rack is not in the stowed position.• Stabilizer system is not in its stowed position.• Powered light tower is not stowed.• Any other device permanently attached to the apparatus is open, extended, or deployed in a manner that is likely to cause damage to the apparatus if the apparatus is moved. Compartments and equipment meeting all of the following conditions shall be permitted to be exempt from being wired to the hazard light: <ul style="list-style-type: none">• The volume is less than or equal to 4 ft³ (0.1 m³).• The compartment has an opening less than or equal to 144 in.² (92,900 mm²).• The open door does not extend sideways beyond the mirrors or up above the top of the fire apparatus.	✓	



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478.	<p><u>LICENSE PLATE LIGHT</u></p> <p>One (1) Cast Products plated LED license plate light shall be installed on the rear of the body. License plate light shall be wired to the headlight circuit of chassis. A fastener system shall be provided for license plate installation.</p>	✓	
479.	<p><u>ELECTRONIC SIREN</u></p> <p>One (1) Federal/Unitrol U480K-15 electronic siren with sliding light control switch (60 amps maximum) shall be provided in the cab. Power shall be provided through the VMUX system "Master" warning lights. The VMUX menu provides selection of Position 1, 2, or 3 programming. Siren shall be wired as follows:</p> <ul style="list-style-type: none"> • Position 0 - <u>Blocked</u> • Position 1 - <u>Rear lighting only</u> • Position 2 - <u>360 degree lights : no pre-empt or siren</u> • Position 3 - <u>All Lights and siren.</u> <p>The siren shall be wired to the radio auxiliary speaker for the outside radio speaker in the "radio" mode. A Unitrol model UMNCT-B, noise canceling type microphone shall be provided for the PA system.</p>	✓	
480.	<p><u>SIREN SPEAKER</u></p> <p>The siren speaker(s) shall be supplied and installed by the cab/chassis manufacturer.</p>	✓	
481.	<p><u>SIDE SCENE LIGHTS</u></p> <p>There shall be four (4) Whelen Super LED 900 series (9" x 7") recess mounted scene lights (9SC0ENZR) provided on the upper body. Light quantity shall be divided equally per side. Each light will have twenty- four LED diodes that draw a total of 4.0 amps, with 3,000 lumens. The light shall be an 8-32 degree gradient lens and chrome flange.</p> <p>Two (2) switches shall be provided, one (1) for the street side scene lights, and one (1) for the curbside scene lights.</p> <p>The lights shall be switched at the Vista display in the cab.</p>	✓	
482.	<p><u>LIGHT TOWER</u></p> <p>One (1) Command Light Shadow, SL Series light tower(s) shall be provided and installed on the completed unit. A flashing warning light shall be provided in cab, indicating when a light tower is not in nested position as required by NFPA 1901, 2016 edition.</p> <p>The Command Light shall be covered by a five (5) year limited warranty from defects in materials and workmanship. An operation, maintenance, and parts manual shall be provided with the completed unit.</p> <p>The light tower shall extend 49 1/2" above the mounting surface and shall extend to full upright position in less than 15 seconds. The overall size of nested light</p>	✓	



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	tower shall be approximately 48" long x 24" wide x 9" high and weigh approximately 75 pounds.	✓													
483.	<p><u>Light Tower Construction and Design</u></p> <p>The Command Light assembly shall be of aluminum construction, with stainless steel shafts and bronze bushings for long life and low maintenance.</p> <p>The electrically controlled unit shall not require usage of the vehicle's air supply for operation, thereby eliminating the chance for air leaks in the vehicle braking system. Hydraulic or pneumatic type floodlights are not acceptable alternatives to the specified all electric light tower.</p> <p>The light tower shall be tested to in wind conditions of 90 mph (150 kph) minimum. Other type floodlights that have not been tested to these conditions are not acceptable.</p> <p>The light tower shall be capable of overhanging the side or back of the vehicle to provide maximum illumination to the vicinity adjacent to the vehicle for the safety of emergency personnel in high traffic conditions. Any tower that is only capable of rotations at the top of a pole is not an acceptable alternative to the specified tower.</p>	✓													
484.	<p><u>Light Tower Electrical System</u></p> <p>The light tower shall be a single-stage device with a lighting capable of 355 degree rotation. The light shall be elevated by an electric linear actuators, the actuator shall adjust the light bank angle from 0 to 110 degrees.</p> <p>The tower base shall have a light that illuminates the envelope of motion during any movement of the light tower mast per NFPA 1901, 2016.</p>	✓													
485.	<p><u>Light Tower Floodlights</u></p> <p>The Command Light model SL442D-RT-LED shall be equipped with the following bank of floodlights:</p> <table><tr><td>Floodlight manufacturer:</td><td>Whelen Engineering</td></tr><tr><td>Number of lamp heads:</td><td>Four (4) Pioneer Plus DC LED Voltage: 12 volts</td></tr><tr><td>Watts of each lamp head:</td><td>150 watt Total watts of light tower: 600</td></tr><tr><td>watts Total lumens of light tower:</td><td>60,000</td></tr><tr><td>Configuration:</td><td>The light heads shall be mounted with two (2) on each side of the</td></tr><tr><td></td><td>light tower, giving two (2) vertical lines of two (2) when the lights are in the upright position.</td></tr></table>	Floodlight manufacturer:	Whelen Engineering	Number of lamp heads:	Four (4) Pioneer Plus DC LED Voltage: 12 volts	Watts of each lamp head:	150 watt Total watts of light tower: 600	watts Total lumens of light tower:	60,000	Configuration:	The light heads shall be mounted with two (2) on each side of the		light tower, giving two (2) vertical lines of two (2) when the lights are in the upright position.	✓	
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486.	<u>Light Tower Paint</u> The light tower shall be electrostatically powder coated with a hammer tone gray color.	✓	
487.	<u>Light Tower Controls: Wired Hand-held and Multiplex</u> The light tower(s) shall be controlled by both the specified Weldon multiplex Vista displays in cab and with a hand-held 15-foot umbilical line remote control. The Vista display shall have a button programmed to take control from the wired controller. The program shall have five (5) different programmed quadrants to raise and face light tower too; Left Front - Center - Right Front - Left Rear - Right Rear. System shall require a Weldon Node to control light tower system. The wired hand-held storage station shall have a switch to take control from the Vista display in cab. The storage station for the remote control unit shall be equipped with a button to activate the "Auto-Park" automatic nesting feature. The remote control shall be located per the itemized compartment list and include; Three (3) switches: one (1) for each pair of lights. One (1) switch for light bank rotation. One (1) switch for elevating lower stage. One (1) switch for elevating upper stage. One (1) switch for <u>optional</u> light bank rotation. (REMOVE SWITCH FROM CONTROLLER) One (1) switch for the <u>optional</u> strobe. (REMOVE SWITCH FROM CONTROLLER) One (1) indicator light to indicate when light bank is out of the roof nesting position. One (1) indicator light to indicate when light bank is rotated to proper nesting position.	✓	
488.	<u>Light Tower Mounting</u> The light tower shall be mounted to roof of the custom cab which shall be reinforced as necessary to support weight of the light tower.	✓	
489.	<u>LIGHT TOWER TREE LIMB GUARD</u> A three sided tree limb guard shall be provided fabricated from 1/8" aluminum and painted to match the upper paint color to provide protection to the specified light tower from small tree branches.	✓	
490.	<u>REAR SCENE LIGHTS</u> Two (2) Whelen Super LED 600 series (6" x 4") recess mounted scene lights (60C0ELZR) shall be provided on the upper rear body to light the work area immediately behind the vehicle to a level of at least 3 fc (30 lx) within a 10 ft x 10 ft (3 m x 3 m) square. Each light will have twelve LED diodes. The light shall have an 8-32 degree gradient lens and chrome flange. The lights shall be switched at the Vista display in the cab and with a switch	✓	



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	located on the street side rear body panel between the rear warning light and taillights.		
	The rear scene lights shall also be activated when the apparatus is in reverse.		
491.	<p><u>DAVID CLARK INTERCOM SYSTEM</u></p> <p>The following David Clark intercom system shall be provided and installed to improve the safety of firefighters and rescue professionals through enhanced communication and hearing protection. System shall have the following major components as minimum;</p> <p>One (1) U3800 - Mater station Two (2) U3815 - Radio interface/headset station One (1) U3806 - Dual headset intercom station One (1) U3805 - Radio cord junction module Three (3) C3812 - Jumper cord 12' Two (2) C3821 - Radio interface cord 21' One (1) C3820 - Power cord 20' Six (6)- Standard style head sets Two (2) 18352G-07 - MS Connector - 5 pin for remote PTT Two (2) 18352G-17 - MS connector 6 socket for radio cords One (1) Standard "J" hook per headset will be mounted within reach on each occupant. This headset hangar/mount will be NFPA compliant.</p> <p>Intercom System Installation: <u>Front of Cab</u></p> <ul style="list-style-type: none">• Driver's - Mounted above the inboard shoulder position on the AC cover.• Officer's - Mounted above the inboard shoulder position on the AC cover. <p><u>Rear Crew Area</u></p> <ul style="list-style-type: none">• Driver's side rear facing - Above the right shoulder on the wall.• Officer's side rear facing - Above the left shoulder on the wall. <p>Forward facing center - Above the inboard shoulder on the front center face.</p>		
492.	<p><u>WARNING LIGHT PACKAGE</u></p> <p>Each apparatus shall have a system of optical warning devices that meets or exceeds the requirements of this section.</p> <p>The optical warning system shall consist of an upper and a lower warning level. The requirements for each level shall be met by the warning devices in</p>		



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	<p>that particular level without consideration of the warning devices in the other level.</p> <p>For the purposes of defining and measuring the required optical performance, the upper and lower warning levels shall be divided into four (4) warning zones. The four zones shall be determined by lines drawn through the geometric center of the apparatus at 45 degrees to a line drawn lengthwise through the geometric center of the apparatus. The four (4) zones shall be designated A, B, C, and D in a clockwise direction, with zone A to the front of the apparatus.</p> <p>Each optical warning device shall be installed on the apparatus and connected to the apparatus's electrical system in accordance with the requirements of this standard and the requirements of the manufacturer of the device.</p> <p>A master optical warning system switch that energizes all the optical warning devices shall be provided.</p> <p>The optical warning system on the fire apparatus shall be capable of two (2) separate signaling modes during emergency operations. One (1) mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right-of-way. One (1) mode shall signal that the apparatus is stopped and is blocking the right-of-way. The use of some or all of the same warning lights shall be permitted for both modes provided the other requirements of this chapter are met.</p> <p>A switching system shall be provided that senses the position of the parking brake or the park position of an automatic transmission. When the master optical warning system switch is closed and the parking brake is released or the automatic transmission is not in park, the warning devices signaling the call for the right-of-way shall be energized. When the master optical warning system switch is closed and the parking brake is on or the automatic transmission is in park, the warning devices signaling the blockage of the right-of-way shall be energized. The system shall be permitted to have a method of modifying the two signaling modes.</p> <p>The optical warning devices shall be constructed or arranged so as to avoid the projection of light, either directly or through mirrors, into any driving or crew compartment(s). The front optical warning devices shall be placed so as to maintain the maximum possible separation from the headlights.</p>		
493.	<p><u>UPPER LEVEL OPTICAL WARNING DEVICES</u></p> <p>The upper-level optical warning devices shall be mounted as high and as close to the corner points of the apparatus as is practical to define the clearance lines</p>		



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	of the apparatus. The upper-level optical warning devices shall not be mounted above the maximum height, specified by the device manufacturer.																																															
494.	<p><u>ZONE A - FRONT WARNING LIGHTS</u></p> <p>There shall be one (1) Whelen Edge FN72QLEDCUSTOM LED 72" light bar permanently mounted to the cab roof.</p> <p>The light bar configuration (street side to curbside) shall be:</p> <table><thead><tr><th><u>SECTION</u></th><th><u>INTERNAL COMPONENTS</u></th><th><u>LENS COLOR</u></th></tr></thead><tbody><tr><td>1</td><td>Red Linear LED - Side Facing</td><td>Clear</td></tr><tr><td>2</td><td>Red Corner LED</td><td>Clear</td></tr><tr><td>3</td><td>Blue Linear LED</td><td>Clear</td></tr><tr><td>4</td><td>Red Linear LED</td><td>Clear</td></tr><tr><td>5</td><td>Blue Liner LED</td><td>Clear</td></tr><tr><td>6</td><td>Red Linear LED</td><td>Clear</td></tr><tr><td>7</td><td>Tomar Traffic preemption</td><td>Clear</td></tr><tr><td>8</td><td>Tomar Traffic Preemption</td><td>Clear</td></tr><tr><td>9</td><td>Blue Linear LED</td><td>Clear</td></tr><tr><td>10</td><td>Red Linear LED</td><td>Clear</td></tr><tr><td>11</td><td>Blue Linear LED</td><td>Clear</td></tr><tr><td>12</td><td>Red Linear LED</td><td>Clear</td></tr><tr><td>13</td><td>Blue Corner LED</td><td>Clear</td></tr><tr><td>14</td><td>Blue Linear LED - Side Facing</td><td>Clear</td></tr></tbody></table> <p>All clear lights shall shut down when the parking brake is set to comply with "Blocking" mode requirements as outlined in NFPA 1901, 2016 edition.</p> <p>The lightbar shall be separately switched at the vista display in the cab.</p>	<u>SECTION</u>	<u>INTERNAL COMPONENTS</u>	<u>LENS COLOR</u>	1	Red Linear LED - Side Facing	Clear	2	Red Corner LED	Clear	3	Blue Linear LED	Clear	4	Red Linear LED	Clear	5	Blue Liner LED	Clear	6	Red Linear LED	Clear	7	Tomar Traffic preemption	Clear	8	Tomar Traffic Preemption	Clear	9	Blue Linear LED	Clear	10	Red Linear LED	Clear	11	Blue Linear LED	Clear	12	Red Linear LED	Clear	13	Blue Corner LED	Clear	14	Blue Linear LED - Side Facing	Clear		
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495.	<p><u>UPPER REAR CORNER WARNING LIGHTS</u></p> <p>There shall be two (2) Whelen 900 series (9" x 7") Linear Super-LED lights provided, one (1) each side. The driver side will be red with a red lens the officer side will be blue with a blue lens. Each light shall have a chrome flange.</p> <p>The lights shall be switched at the Vista display in the cab.</p>																																															



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496.	<p><u>UPPER FORWARD CORNER WARNING LIGHTS</u></p> <p>There shall be two (2) Whelen 900 series (9" x 7") Linear Super-LED lights provided, one (1) each side. The driver side will be blue with a blue lens the officer side will be red with a red lens. Each light shall have a chrome flange.</p> <p>The lights shall be switched at the Vista display in the cab.</p> <p>There shall be two (2) Whelen 500 series (5" x 2") amber Linear Super-LED lights (50A02ZCR) provided, one (1) each side of upper rear corners of cab. Each light shall be mounted in a white painted 45 degree bezel facing rear of vehicle. Each light shall have a clear lens and chrome flange.</p> <p>The lights shall be switched at the Vista display in the cab.</p>		
497.	<p><u>ZONE C - REAR WARNING LIGHTS</u></p> <p>There shall be four (4) Whelen 600 series (6" x 4") red Linear Super-LED lights provided, two (2) each side. The upper two (2) lights above the scene lights will be amber with amber lens. The other two (2) lights below the scene lights with the driver side blue with a blue lens and the officer side red with a red lens. Each light shall have a chrome flange.</p> <p>The lights shall be switched at the Vista display in the cab.</p>		
498.	<p><u>LOWER LEVEL OPTICAL WARNING DEVICES</u></p> <p>To define the clearance lines of the apparatus, the optical center of the lower-level optical warning devices in the front of the vehicle shall be mounted on or forward of the front axle centerline and as close to the front corner points of the apparatus as is practical.</p> <p>The optical center of the lower-level optical warning devices at the rear of the vehicle shall be mounted on or behind the rear axle centerline and as close to the rear corners of the apparatus as is practical. The optical center of any lower-level device shall be between 18 in. and 62 in. (460 mm and 1600 mm) above level ground for large apparatus, and 18 in. and 48 in. (460 mm and 1220 mm) above level ground for small apparatus.</p> <p>A midship optical warning device shall be mounted right and the left sides of the apparatus if the distance between the front and rear lower-level optical devices exceeds 25 ft (7.6 m) at the optical center.</p> <p>Additional midship optical warning devices shall be required, where necessary, to maintain a horizontal distance between the centers of adjacent lower-level optical warning devices of 25 ft (7.6 m) or less. The optical center of any midship mounted optical warning device shall be between 18 in. and 62 in. (460 mm and 1600 mm) above level ground.</p>		



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499.	<u>ZONE A - FRONT WARNING LIGHTS</u> The warning lights shall be supplied and installed by the cab/chassis manufacturer. They shall be Whelen lights to complete an NFPA compliant lower level warning light system. The lights shall be switched at the Vista display in the cab.	<input checked="" type="checkbox"/>	
500.	<u>ZONES B AND D - CAB INTERSECTOR LIGHT (CAB FRONT CORNERS)</u> The warning lights shall be supplied and installed by the cab/chassis manufacturer. They shall be Whelen lights to complete an NFPA compliant lower level warning light system. The lights shall be switched at the Vista display in the cab.	<input checked="" type="checkbox"/>	
501.	<u>ZONES B AND D - BODY INTERSECTOR LIGHT (BODY WHEELWELL AREA)</u> There shall be two (2) Whelen 500 series (5" x 2") Linear Super-LED lights provided, one (1) each side. The driver side will be blue with a blue lens and the officer side will be red with a red lens. Each light shall have a chrome flange. The lights shall be switched at the Vista display in the cab.	<input checked="" type="checkbox"/>	
502.	<u>ZONES B AND D - BODY INTERSECTOR LIGHT (BODY REAR CORNERS)</u> There shall be two (2) Whelen 500 series (5" x 2") Linear Super-LED lights provided, one (1) each side. The driver side will be blue with a blue lens the officer side will be red with a red lens. Each light shall have a chrome flange. The lights shall be switched at the Vista display in the cab.	<input checked="" type="checkbox"/>	
503.	<u>ZONE C - REAR WARNING LIGHTS (LOWER REAR CORNERS)</u> There shall be two (2) Whelen 600 series (6" x 4") Linear Super-LED lights provided, one (1) each side. The street side light will be red with a red lens. The curb side light will be blue with a blue lens. Each light shall have a chrome flange. The lights shall be switched at the Vista display in the cab.	<input checked="" type="checkbox"/>	
504.	<u>PUMP MODULE</u> The rear mount pump enclosure shall be removable and supported from the chassis frame rails with spring type body mounts. This enclosure shall 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 rear pump operator's panel so as to permit operation of the pump from a rear location. The fire pump, valves and controls shall be accessible for service and maintenance as required by applicable sections of NFPA standards.	<input checked="" type="checkbox"/>	



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	<p>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.</p> <p>The following controls and equipment shall be provided on the pump panel or within the pump enclosure:</p> <ol style="list-style-type: none">1) Electric primer.2) Pump and plumbing area service lights.3) Pressure control device and throttle control.4) Fire pump and engine instruments.5) Pump intakes, and discharge controls.6) Master intake and discharge gauges.7) Tank fill control.8) Tank suction control.9) Water tank level gauge.10) Pump panel lights.		
505.	<p><u>STREETSIDE 12 VDC DISTRIBUTION</u></p> <p>There will be a 12-Volt electrical compartment located above the pump operator master control/gauge panel on the streetside. The compartment will be used to house the 12-volt electrical distribution components. The compartment will have a mechanically fastened access panel on the outside. The panel will have a label stating "12-VOLT ELECTRICAL DISTRIBUTION".</p> <p>There will be a vertically hinged door with a locking push button latch or locking "D" handle keyed to 1250. The door will be hinged towards the front. The compartment will have one (1) LED light and open door sensor.</p> <p>The door and frame will be painted to match the body.</p>		
506.	<p><u>WATEROUS CX FIRE PUMP</u></p> <p>A rear mounted Waterous CX series fire pump shall be provided. The pump shall comply with all applicable requirements of the latest standards for automotive fire apparatus of the National Fire Protection Association, NFPA 1901, 2016 edition and shall have a rated capacity of 1,250 GPM (6,000 LPM) to 2,250 GPM (9,000 LPM) depending on final configuration.</p>		
507.	<p><u>WATEROUS PUMP ANODES</u></p> <p>There shall be two (2) anodes provided with the fire pump. One (1) anode shall be installed in the left steamer port and one (1) shall be installed in the right steamer port.</p>		



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508.	<p><u>IMPELLERS</u></p> <p>The pump impellers shall be bronze, specifically designed for the fire service and accurately balanced for vibration free running. The stripping edges shall be located on opposite sides of the impellers to reduce shaft deflection.</p> <p>The impeller shaft shall be stainless steel, accurately ground to size and supported at each end by oil or grease lubricated anti-friction ball bearings for rigid, precise support. The bearings used on the impeller shaft shall be automotive type bearings, easily cross-referenced and readily available at normal parts or bearing stores.</p>	✓	
509.	<p><u>FLAME PLATED IMPELLER HUBS</u></p> <p>The impeller hubs shall be flame plated with tungsten carbide to a hardness approximately twice that of tool steel to assure maximum pump life and efficiency. During the flame plating process the base metal shall not be allowed to exceed a temperature of 300 degrees Fahrenheit to prevent altering the metallurgical properties of the impeller material</p>	✓	
510.	<p><u>IMPELLER WEAR RINGS</u></p> <p>The pump shall be equipped with replaceable bronze wear rings for increased pump life and minimum maintenance cost. The wear rings shall be designed to fit into a groove in the face of the impeller hubs forming a labyrinth that, as the clearance increases with age, directs water from the discharge side in several directions eventually exiting outward, away from the eye of the impeller hub.</p>	✓	
511.	<p><u>PUMP CASING</u></p> <p>The pump casing shall be cast as two (2) horizontally split pieces. The casing shall be made of high tensile, close-grained gray iron with a minimum tensile strength of 40,000 PSI.</p>	✓	
512.	<p><u>PUMP MANUAL</u></p> <p>Two (2) Pump Operation & Maintenance manual(s) shall be supplied at the time of delivery.</p>	✓	
513.	<p><u>PAINT FINISH</u></p> <p>The paint finish shall match body color choice.</p>	✓	
514.	<p><u>PUMP TRANSMISSION</u></p> <p>The pump transmission shall be of the latest design, incorporating a high strength involute tooth-form Morse Hy-Vo chain capable of operating at high speeds while providing smooth and quiet transmission of power. Drive and driven sprockets shall be made of alloy steel with teeth of an involute form. Driveline shafts shall be made from alloy steel forgings, hardened and ground to size. Deep groove, anti-friction ball bearings shall be used throughout the pump transmission. The pump shift engagement shall be accomplished by a free sliding collar that uses an internal locking mechanism to insure that the collar will stay in road or pump position.</p> <p>Primary lubrication for the pump transmission bearings, sprockets and chain shall be provided by a splash system. A supplementary pressure system shall also be employed which shall include a strainer, an oil circulation pump</p>	✓	



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	driven by the impeller shaft, and a spray bar inside the case to apply oil to the inside of the chain just before it engages the driven sprocket.		
	All driveline components shall have a torque rating equal to or greater than the final net engine torque.		
515.	<u>PUMP LUBRICATION</u> Grease zerk(s) shall be installed in a convenient location and connected to the pump lubrication points by copper tubing.		
516.	<u>AIR OPERATED PUMP SHIFT</u> The pump shift actuating mechanism shall be air operated from a valve provided by cab/chassis manufacturer in cab identified as "PUMP SHIFT". Full instructions for shifting the pump shall be inscribed on the valve plate. Two (2) green indicator lights shall be supplied in the chassis cab. One (1) light shall be energized when the chassis transmission is in neutral and shall be labeled "OK TO PUMP", the second light shall engage when the pump drive (PTO) has been engaged and shall be labeled "PUMP ENGAGED". One (1) green indicator light shall be supplied at the Pump Operator's panel adjacent to the engine hand throttle. The green light shall be energized when both the chassis transmission is in neutral and the pump drive (PTO) has been engaged. Green light shall be labeled "OK TO PUMP".		
517.	<u>PUMP SHIFT MANUAL OVERRIDE</u> A manual pump shift override system shall be provided should a problem develop in the chassis air brake system. Controls for the override shall be located at the lower right hand corner of the left side pump panel. A "MANUAL PUMP SHIFT" label shall be provided near the pump shift controls.		
518.	<u>PAINT FINISH</u> The paint finish will be body color finish coat.		
519.	<u>PUMP DRIVELINE</u> The pump transmission driveline shall be supplied with 1710 series yokes and bearings to match the cab chassis driveline.		
520.	<u>PUMP PACKINGS</u> The stuffing boxes shall be equipped with two-piece adjustable Grafoil packing glands.		
521.	<u>SINGLE STAGE FIRE PUMP</u> The pump shall be a single stage centrifugal class "A" rated fire pump, designed specifically for the fire service		
522.	<u>1/2" PUMP COOLER LINE</u> There shall be a 1/2" line installed from the discharge side of the pump to the water tank. The line shall be used to cool the pump during long periods of pumping when water is not being discharged. The pump cooler shall be controlled with a quarter-turn ball valve on operator's panel, and shall be clearly labeled "Pump Cooler".		



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523.	<u>PUMP COOLER CHECK VALVE</u> 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.	✓	
524.	<u>PUMP OVERHEAT PROTECTION SYSTEM</u> The pump will have a overheat protection warning system. There will be an audible horn on the Engineers pump panel and an audible warning on the Vista screen for both the Captain and Engineer.	✓	
525.	<u>WATEROUS FIVE YEAR PUMP WARRANTY</u> The fire pump shall be warranted by Waterous for a period of five (5) years from 30 days after final invoice.	✓	
526.	<u>UNDERWRITERS LABORATORIES FIRE PUMP TEST</u> 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.	✓	
527.	<u>FIRE PUMP TEST LABEL</u> 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.	✓	
528.	<u>UL PUMP CERTIFICATION</u> The fire pump shall be tested and certified by Underwriters Laboratories, to perform as listed below: <ul style="list-style-type: none"> ◦ 100% of rated capacity at 150 psi, 1000 kPa net pressure. ◦ 70% of rated capacity at 200 psi, 1350 kPa net pressure. ◦ 50% of rated capacity at 250 psi, 1700 kPa net pressure. The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 500 PSI. The pump shall be free from objectionable pulsation under all normal operating conditions.	✓	
529.	<u>PUMP DRAIN VALVE</u> A manifold drain valve assembly shall be supplied. This drain shall provide the capability to drain the entire pump by rotating a wheel. The valve	✓	



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	assembly shall consist of a stainless steel plunger in a bronze body with multiple ports.	✓	
530.	<u>ELECTRIC PRIMING PUMP CONTROL AT PUMP PANEL</u> The Waterous priming system shall include an oil-free rotary vane priming pump rigidly attached to the pump transmission and activated by a vacuum-activated priming (VAP) valve. Valve actuation may be accomplished while the main pump is in operation, if necessary to assure a complete prime. The primer shall be capable of priming the pump through a 20' section of suction hose with a 10' lift within 30 seconds for pumps less than 1,250 gpm, and 45 seconds for pumps 1,250 gpm and larger.	✓	
531.	<u>PRIMER CONTROL</u> The priming system shall be controlled at the pump operator's panel. The control shall be provided in the form of a push control that is easily actuated with a gloved hand.	✓	
532.	<u>PRESSURE CONTROL SYSTEM:</u> Provide an intake relief valve system that will act as a safety valve by dumping excess pressure from the inlet side of the pump. Provide a discharge relief valve that provides pump controls to protect fire fighters from sudden pressure surges that may result from changes in discharge flows from the pump.	✓	
533.	<u>6" SUCTION INLET - REAR</u> One (1) 6" ungated suction intake shall be installed on the pump panel to supply the fire pump from an external water supply. The threads shall be 6" NST male threads. Shall include a 6" NST to 5" STORZ adapter. The intake shall be provided with a removable screen.	✓	
534.	<u>LONG SUCTION TUBE</u> The specified pump intake shall be provided with a long suction tube. Suction tube shall have built-in zinc anode protection and multiple suction flanges per pump configuration.	✓	
535.	<u>HEAT EXCHANGER</u> A heat exchanger shall be provided on the pump driving engine cooling system that uses water from the discharge side of the pump to cool the engine coolant through the use of a closed heat exchanger. The water from the pump and the engine coolant shall not be intermixed. This cooling system shall be controlled by a 1/4 turn valve on the pump operator's panel.	✓	
536.	<u>INTAKE RELIEF VALVE</u> There shall be an Akron model 59 intake relief valve factory set to 125 PSI installed on the suction side of the pump. The system shall be controlled by an adjustable valve and designed to prevent vibration from altering the setting of the valve. Provisions for adjusting or servicing the valve shall be provided. The relief outlet shall be directed below the pump with the discharge terminating in a 2-1/2" NSTM connection. The discharge shall be away from the pump operator and labeled "DO NOT CAP".	✓	



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No.		BIDDER COMPLIES	
		Yes	No
I.	<p>FOAM SYSTEM</p> <p>The apparatus shall be equipped with a FoamPro 2001 electronic, fully automatic, variable speed, direct injection, discharge side foam proportioning system. The system shall be capable of handling Class A foam concentrates and compatible with ARAFFF. The foam proportioning operation shall be based on direct measurement of water flows, and remain consistent within the specified flows and pressures. System must be capable of delivering accuracy to within 3% of calibrated settings over the advertised operation range when installed according to factory standards. The system shall be equipped with a digital electronic control display suitable for installation on the pump panel. Incorporated within the control display shall be a microprocessor that receives input from the system flowmeter(s), while also monitoring foam concentrate pump output, comparing values to ensure that the operator preset proportional amount of foam concentrate is injected into the discharge side of the fire pump.</p> <p>Paddlewheel-type flowmeter(s) shall be installed in the discharges specified to be "foam capable." When the use of more than one flowmeter is required, an interface electronics module will be provided to totalize these flows and send the flow total to the microprocessor in the computer control display.</p> <p>The digital computer control display shall enable the pump operator to perform the following control and operation functions for the foam proportioning system:</p> <ul style="list-style-type: none"> • Provide push-button control of foam proportioning rates from 0.1% to 9.9% in 0.1% increments • Show current flow-per-minute of water • Show total volume of water discharged during and after foam operations are completed • Show total amount of foam concentrate consumed • Simulate flow rates for manual operation • Perform setup and diagnostic functions for the computer control microprocessor • Flash a "low concentrate" warning when the foam concentrate tank(s) runs low • Flash a "no concentrate" warning and shut the foam concentrate pump off, preventing damage to the pump, should the foam tank(s) empty <p>A 12-volt electric motor drive positive displacement foam concentrate pump, rated up to 2.5 gpm (9.5 L/min) @ 150 psi with operating pressures up to 400 psi (27.6 BAR), shall be installed in a suitable, accessible location. The system will draw a maximum of 40 amps @ 12 VDC or 21 amps @ 24 VDC. A pump motor electronic driver (mounted to the base of the pump) shall receive signals from the computer control display and power the 1/2 hp (0.40 Kw) electric motor directly coupled to the concentrate pump in a variable speed duty cycle to ensure that the correct proportion of concentrate preset by the pump operator is injected into the water stream.</p>	✓	



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	<p>Full flow check valve shall be provided to prevent foam contamination of fire pump and water tank or water contamination of foam tank.</p> <p>Components of the complete proportioning system shall include:</p> <ul style="list-style-type: none">• Operator control and display• Paddlewheel flowmeter(s)• Pump and electric motor/motor driver• Wiring harnesses• Low level tank switch• Foam injection check valve• Main waterway check valve <p>An installation and operation manual shall be provided for the unit, along with a one-year limited warranty by the manufacturer. The system must be installed and calibrated by a Certified FoamPro Dealer.</p> <p>The system design shall have passed environmental testing which simulates heavy use on off-road mobile apparatus.</p> <p>Testing shall have been conducted in accordance to SAE standards.</p>		
2.	<p><u>PLUMBING SPECIFICATIONS</u></p> <p>The fire pump plumbing system shall be of rigid or flexible piping with stainless steel fittings. Victaulic 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 Victaulic connections.</p> <p>The fire pump and plumbing shall be designed and installed and hydrostatically tested to meet or exceed NFPA 1901, 2016 edition and with test results submit with the delivery documentation.</p>		
3.	<p><u>STAINLESS STEEL INTAKE MANIFOLD</u></p> <p>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.</p> <p>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.</p>		
4.	<p><u>STAINLESS STEEL DISCHARGE MANIFOLD</u></p> <p>The discharge 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 discharge manifold assembly shall have radiused sweep elbows to minimize water turbulence into the discharge header.</p> <p>The 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</p>		



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	Victaulic coupling.		
5.	<p><u>STAINLESS STEEL PLUMBING WARRANTY</u></p> <p>The stainless steel plumbing shall be free of defects in material and workmanship for a period of ten (10) years, or 100,000 miles (or 160,934 kilometers), whichever occurs first, starting thirty (30) days after the original invoice date.</p> <p>The contractor shall supply details of their warranty information with their bid submission.</p>	✓	
6.	<p><u>INTAKES</u></p> <p>The pump shall have a sufficient number and size of intakes to perform the apparatus pump system certification test. The intakes shall have male National Hose Threads (NST) if the apparatus is to be used in the United States.</p> <p>If the couplings on the suction hose carried on the apparatus are of a different size from that of the pump intake(s) or have means of hose attachment other than that provided on the intake(s), an adapter(s) shall be provided to allow connection of the suction hose to the pump intake(s).</p> <p>A sign shall be provided on the pump operator's panel that states the following:</p> <p>WARNING: Death or serious injury might occur if proper operating procedures are not followed. The pump operator as well as individuals connecting supply or discharge hoses to the apparatus must be familiar with water hydraulics hazards and component limitations.</p> <p>Each intake shall have a removable or accessible strainer inside the connection. The strainer(s) shall restrict spherical debris that is too large to pass through the pump.</p> <p>At least one valved intake shall be provided that can be controlled from the rear of the apparatus. The valve and piping shall be a minimum 2-1/2 in. (65 mm) nominal size.</p> <p>If the intake is 2-1/2 in. (65 mm) nominal size, the intake shall be equipped with a female swivel coupling with NH threads. Any 3 in. (75 mm) or larger intake valve except the tank-to-pump intake valve shall be a slow-operating valve.</p> <p>Each valved intake shall be equipped with a bleeder valve having a minimum 3/4 in. (19 mm) pipe thread connection to bleed off air or water. The bleeder valve shall be operational without the operator having to get under the apparatus. If a valved appliance is attached to an intake, it shall be equipped with a 3/4 in. (19 mm) bleeder valve on each intake. Bleeder valves for valved intakes 4 in. (100 mm) and larger not located at the pump operator's panel shall be located where the bleeder valve controls are visible and operationally functional while the operator remains stationary at the valved intake position.</p> <p>Each valved intake having a connection size larger than 3 in. (75 mm) shall be equipped with an adjustable automatic pressure relief device installed on the supply side of the valve to bleed off pressure from a hose connected to the valved intake.</p>	✓	



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	<p>All intakes shall be provided with caps or closures capable of withstanding a hydrostatic gauge pressure of 500 psi (3400 kPa). Intakes having male threads shall be equipped with caps; intakes having female threads shall be equipped with plugs. Where adapters for special threads or other means for hose attachment are provided on the intakes, closures shall be provided for the adapters in lieu of caps or plugs. Caps or closures for intake connections smaller than 4 in. (100 mm) shall remain secured to the apparatus when removed from the connection.</p> <p>If the suction inlets are to be equipped with a valve, siamese, or adapter that will remain in place while the apparatus is in motion that valve, siamese, or adapter shall not project beyond the apparatus running board. The purchaser shall specify if any valve, siamese, or adapter is to be permanently installed on an intake and identify the brand and model of such item.</p> <p>The completed apparatus shall have the following intake(s);</p>		
7.	<p><u>INTAKE - 6"</u></p> <p>There shall be one (1) 6" gated intake located on rear panel.</p> <ul style="list-style-type: none">• Valve(s) shall be controlled with a handle for direct valve operation through pump panel.• One (1) Innovative Controls model 3003000, 3/4" brass 90 degree ball type drain valve(s) with lift type handle which can be opened under pressure, with color coded label shall be provided. Valves shall be located on bottom of pump panel and plumbed to drain the lowest point in the plumbing.		
8.	<p><u>INTAKE- 2-1/2"</u></p> <ul style="list-style-type: none">• There shall be one (1) 2 1/2" gated intake located on rear panel.• Shall have a manually operated valve on the rear panel.		
9.	<p><u>TANK TO PUMP CHECK VALVE</u></p> <p>There shall be a check valve between the pump suction and the booster tank valve. The check valve shall eliminate back flow into the water tank when the pump is connected to a pressurized source.</p>		
10.	<p><u>TANK TO PUMP VALVE</u></p> <p>A 4" (100 mm) full flow ball valve shall be installed between the fire pump and the water tank. The connection between the tank and the pump shall be capable of the flow recommendations as set forth in the latest edition of NFPA 1901, 2016 edition. The valve shall be flanged to bolt directly to the pump and shall incorporate a chromium plated bronze ball. The remaining internal moving parts shall be stainless steel for years of dependable service. A non collapsible flexible hose shall be incorporated into the tank to pump plumbing to allow movement in the line as the chassis flexes to avoid damage during normal road operation.</p> <p>The tank to pump valve shall be controlled from the pump operator's panel.</p> <ul style="list-style-type: none">- Akron valve(s) shall be controlled with a remote switch connected to the air actuated valve.		



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	- A dual position air control switch shall be located on the pump operator's panel.	✓	
11.	<p>DISCHARGES</p> <p>A minimum of two 2-1/2 in. (65 mm) outlets shall be provided on any pump rated at 750 gpm (3000 L/min) or greater, and a minimum of one 2-1/2 in. (65 mm) outlet shall be provided on any pump rated at less than 750 gpm (3000 L/min).</p> <p>All 1-1/2" (65 mm) or larger discharge outlet connections shall be equipped with male National Hose Threads (NST). Adapters with special threads or other means for hose attachment shall be permitted to be attached to any outlets.</p> <p>The piping and valves supplying any pre-connected 1-1/2 in. (38 mm), 1-3/4 in. (45 mm), or 2 in. (52 mm) hose line, including the piping to the pre-connected hose storage areas shall be at least 2 in. (52 mm) in size.</p> <p>All discharge outlet connections, except connections to which a hose will be pre-connected, shall be equipped with caps or closures capable of withstanding a hydrostatic gauge pressure of 100 psi (700 kPa) over the maximum pump close-off pressure or 500 psi (3400 kPa), whichever is greater.</p> <p>Where adapters are provided on the discharge outlet connections, the closures shall fit on the adapters.</p> <p>Caps or closures for outlet connections smaller than 4 in. (100 mm) shall remain secured to the apparatus when removed from the connection.</p> <p>Each discharge outlet shall be equipped with a valve that can be opened and closed smoothly at pump discharge gauge pressures of 250 psi (1700 kPa).</p> <p>The flow-regulating element of each valve shall not change its position under any condition of operation that involves discharge pressures to the maximum pressure of the pump; the means to prevent a change in position shall be incorporated in the operating mechanism and shall be permitted to be manually or automatically controlled.</p> <p>Any 3 in. (75 mm) or larger discharge valve shall be a slow-operating valve.</p> <p>All 1-1/2 in. (38 mm) or larger discharge outlets shall be equipped with a drain or bleeder valve having a minimum 3/4 in. (19 mm) pipe thread connection for draining or bleeding off pressure from a hose connected to the outlet.</p> <p>Any 2 in. (52 mm) or larger discharge outlet that is located more than 42 in. (1070 mm) off the ground to which hose is to be connected and that is not in a hose storage area shall be supplied with a sweep elbow of at least 30 degrees downward.</p> <p>The completed apparatus shall have the following discharge(s);</p>	✓	



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12. REAR DISCHARGE

There shall be one (1) 3/4" (19 mm) garden hose thread with chrome cap and chain located on rear of the truck. Each discharge shall include:

- One (1) of the discharge(s) shall flow water only.
- One (1) manual type 3/4" (19 mm) valve(s). Each valve shall be equipped with a Class 1 stainless steel weld type valve adapter on inlet side, and discharge side with drain port labeled "WASH DOWN".
 - Valve(s) shall be controlled with a rotary wheel handle connected to the valve. The control handle shall be located adjacent to the plumbing connection, and labeled "WASH DOWN"

There shall be two (2) 2 1/2" gated discharge(s) located on the rear of the truck. Each discharge shall include:

- Two (2) of the discharge(s) shall flow water and or foam.
- Two (2) Akron Brass 8600 series slow-operating, actuated type 2 1/2" valve(s). Each valve shall be equipped with a Class 1 stainless steel weld type valve adapter on inlet side, and discharge side with drain port.
 - Akron valve(s) shall be controlled with a remote handwheel connected to the gear actuated valve.
 - An Akron portrait layout handwheel actuator with NFPA compliant valve position indicator shall be located on the pump operator's panel.
- Each discharge shall have a 2- 1/2" NSTF x 2-1/2" NSTM chrome plated 30 degree downsweep elbow provided.
 - The specified elbow shall be provided with a 2-1/2" NSTF chrome plated cap with chain.
- Two (2) Innovative Controls model 3003000, 3/4" brass 90 degree ball type drain valve(s) with lift type handle which can be opened under pressure, with color coded label shall be provided. Valves shall be located on bottom of pump panel and plumbed to drain the lowest point in the plumbing.
- Two (2) Innovative Controls/NoShok 2-1/2" liquid filled gauge(s)
 - This gauge(s) shall have a white background with black text.
 - The above gauge shall have a range from 0 to 400 PSI.

One (1) Large diameter discharge

- There shall be one (1) 5" gated discharge located on the rear of the truck.
- The discharge shall flow water only.
- Two (2) Akron Brass 8600 series slow-operating, actuated type 5" valve. Valve shall be equipped with a Class 1 stainless steel weld type valve adapter on inlet side, and discharge side with drain port.



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	<ul style="list-style-type: none"> ◦ Akron valve shall be controlled with a remote handwheel connected to the gear actuated valve. ◦ An Akron portrait layout handwheel actuator with NFPA compliant valve position indicator shall be located on the pump operator's panel and labeled large diameter discharge. 	✓	
13.	<p><u>FRONT DISCHARGE</u></p> <p>There shall be one (1) 1 3/4" gated discharge(s) located on pump panel. Each discharge shall include:</p> <ul style="list-style-type: none"> ◦ One (1) of the discharge(s) shall flow water and foam. The foam discharge labels will be orange with a white border and labeled "FRONT JUMP". ◦ One (1) Akron Brass 8600 series, actuated type 2" (52 mm) valve(s). Each valve shall be equipped with a Class 1 stainless steel weld type valve adapter on inlet side, and discharge side with drain port. <ul style="list-style-type: none"> – Akron valve(s) shall be controlled with a remote handwheel connected to the gear actuated valve. – An Akron portrait layout handwheel actuator with NFPA compliant valve position indicator shall be located on the pump operator's panel. ◦ There shall be a 2" (52 mm) VFC x 1-1/2" (38 mm) NSTM 90 degree swivel elbow provided for each discharge. ◦ One (1) Innovative Controls model 3003000, 3/4" brass 90 degree ball type drain valve(s) with lift type handle which can be opened under pressure, with color coded label shall be provided. Valves shall be located on bottom of pump panel and plumbed to drain the lowest point in the plumbing. ◦ One (1) Innovative Controls/NoShok 2-1/2" liquid filled gauge(s) <ul style="list-style-type: none"> – This gauge(s) shall have a white background with black text. <u>Foam Discharge to have Red text and red back light.</u> – The above gauge shall have a range from 0 to 400 PSI. 	✓	
14.	<p><u>HOSE BED DISCHARGE(S)</u></p> <p>There shall be two (2) 2-1/2" (65 mm) gated discharge(s) located in the hose bed area, one (1) on streetside, and one (1) on curbside. There shall be an additional (1) 1-3/4" gated discharge on the curbside. Hose bed should be large enough to support two (2) 2-1/2 200ft hose, one (1) 1-3'4" 100ft hose and one (1) 5" 850' hose. Each discharge shall include:</p> <ul style="list-style-type: none"> ◦ Two (2) of the discharge(s) shall flow water and or foam. ◦ Two (2) Akron Brass 8600 series, actuated type 2-1/2" (65 mm) valve(s). Each valve shall be equipped with a Class 1 stainless steel weld type valve adapter on inlet side, and discharge side with drain port. <ul style="list-style-type: none"> – Akron valve(s) shall be controlled with a remote handwheel connected to the gear actuated valve. – An Akron portrait layout handwheel actuator with NFPA compliant valve 	✓	



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	<p>position indicator shall be located on the pump operator's panel.</p> <ul style="list-style-type: none">There shall be a 2-1/2" (65 mm) NSTF x 2-1/2" (65 mm) NSTM chrome plated long adapter provided for hose bed discharge(s).Two (2) Innovative Controls model 3003000, 3/4" brass 90 degree ball type drain valve(s) with lift type handle which can be opened under pressure, with color coded label shall be provided. Valves shall be located on bottom of pump panel and plumbed to drain the lowest point in the plumbing.Two (2) Innovative Controls/NoShok 2-1/2" liquid filled gauge(s)<ul style="list-style-type: none">This gauge(s) shall have a white background with black text.The above gauge shall have a range from 0 to 400 PSI.		
15.	<p>2- 1 3/4" CROSSLAY(S)</p> <p>There shall be two (2) 200" speedlay(s) with 10" pigtails located per the itemized compartment list. The cross lay(s) shall be transverse of the apparatus body with access from either side. The cross lays shall be located immediately behind the cab external and as low as possible stacked on top of one another using a U-shaped polypropylene holder. Each holder shall be 8" wide by 18" tall. Cross lay #1 shall be labeled in red and cross lay #2 shall be labeled in yellow.</p> <p>Each cross lay shall have a minimum storage capacity of 200' of 1-3/4" and a 10 foot pigtail utilizing double jacket hose and nozzle.</p> <p>Each end having a black nylon webbing style covers. All pull tabs on webbing shall have reflective material sewn into them. The covers will be mechanically fastened at the top of the aluminum cover and the bottom edges will be secured using elastic cord and shoulder bolts.</p> <ul style="list-style-type: none">Two (2) of the discharge(s) shall flow water and foam. The foam discharge labels will be red with a white border.Two (2) Akron Brass 8600 series, actuated type 2" (52 mm) valve(s). Each valve shall be equipped with a Class 1 stainless steel weld type valve adapter on inlet side, and discharge side with drain port.<ul style="list-style-type: none">Akron valve(s) shall be controlled with a remote handwheel connected to the gear actuated valve.An Akron portrait layout handwheel actuator with NFPA compliant valve position indicator shall be located on the pump operator's panel.There shall be a 2" (52 mm) NSTF x 1-1/2" (38 mm) NSTM cast brass 90 degree swivel elbow provided for each discharge.Two (2) Innovative Controls model 3003000, 3/4" brass 90 degree ball type drain valve(s) with lift type handle which can be opened under pressure, with color coded label shall be provided. Valves shall be located on bottom of pump panel and plumbed to drain the lowest point in the plumbing.		



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	<ul style="list-style-type: none">• Two (2) Innovative Controls/NoShok 2-1/2" liquid filled gauge(s)<ul style="list-style-type: none">- This gauge(s) shall have a white background with black text. <u>Foam Discharge</u> to have Red text and red back light.- The above gauge shall have a range from 0 to 400 PSI.		
16.	<p>DECK GUN</p> <p>A deck gun discharge shall be plumbed from the pump to the Captain Side rear of the apparatus. The deck gun will be mounted in the cutout between the top cabinetry and the hose bed. The deck gun piping shall be firmly supported and braced. A pedestal type, 1/4" steel plate support assembly shall be provided to stabilize deck gun plumbing below deck gun mount flange.</p> <p>The deck gun discharge pipe shall terminate with 3" NST threads.</p> <p>The deck gun will manufactured by TFT or Elkhart. The City may request recommendations of which manufacture to use based on the location of the deck gun on the apparatus.</p> <p>The deck gun piping shall be design so the overall height of the deck gun in the mounted/stowed position does not exceed <u>120"</u>, measured from the ground to the highest point on the appliance.</p> <p>The deck gun discharge shall be plumbed utilizing 3" schedule 10 stainless steel piping, 45 degree threaded elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to the deck gun location.</p> <p>A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.</p> <p>An Akron Brass 3" Generation II Swing-Out™ Valve shall be provided for the deck gun discharge. The valve shall be equipped with the Akron "Tork-Lok" feature. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. All stainless steel parts shall be 316 grade for increased resistance to corrosion. The valve shall be compatible with a slow closing devise. The valve shall be quickly adjustable to one of eight handle options and require only 90° travel.</p> <p>The valve shall carry a 10 year manufacturer's warranty.</p> <p>The deck gun discharge valve shall be controlled by a push/pull handle located on the operator's panel.</p> <p>The deck gun discharge shall be equipped with a Class One Sub-Z II, 2 1/2" diameter silicone filled pressure gauge with pulse and vibration dampening. To prevent internal freezing, the stem and Bourdon tube shall be filled with low temperature oil</p>		



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	and be sealed from the water system using an isolating 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. The gauge face shall be white with black numerals.	✓	
17.	<u>ELECTRIC DECK GUN</u> A RC monitor shall be supplied and mounted on the deck gun discharge of the unit to provide the maximum travel clearance. The monitor shall be controlled from the pump operator's panel.	✓	
18.	<u>NOZZLE</u> A 1000 g.p.m. electric nozzle shall be supplied with the deck gun.	✓	
19.	<u>OPERATOR STATION</u> The electric deck gun shall be controlled using a panel mount controller and a wireless controller.	✓	
20.	<u>TANK FILL VALVE</u> There shall be one (1) 2" (52 mm) tank fill valve plumbed with 2" plumbing from the pump to the tank. Installation shall be completed with 2" rubber hose and stainless steel hose couplings. The tank fill valve shall be controlled from the operator's control panel. • One (1) Akron Brass 8600 series, actuated type 2" (52 mm) valve(s). Each valve shall be equipped with a brass type valve adapter on inlet side, and discharge side with drain port. – Akron valve(s) shall be controlled with a remote handwheel connected to the gear actuated valve. – An Akron portrait layout handwheel actuator with NFPA compliant valve position indicator shall be located on the pump operator's panel.	✓	
21.	<u>PUMP PANEL</u> The pump controls shall be mounted on an aluminum control panel which shall have a hammer tone gray powder coat painted finish. The panel shall be hinged, or bolted in place allowing it to be easily removed to gain access to plumbing components.	✓	
22.	<u>PUMP PANEL LOCATION</u> The pump control panel shall be rear mounted. All beauty rings to be installed with set screws on all intakes and discharges. The pump panel shall include the following items;	✓	
23.	<u>PUMP PANEL ACCESS</u> The pump panel shall be open to the rear of the truck. The Pump Operator shall be required to open a compartment door to access the pump control panel.	✓	
24.	<u>PRESSURE GOVENOR</u> The apparatus shall be equipped with the Class 1 Total Pressure Governor (TPG) connected to the Engine Control Module (ECM) mounted on the engine. The "TPG" will operate as a pressure sensor (regulating) governor (PSG) utilizing the engine's J1939 data for optimal resolution and response when supported by the engine manufacturer. If J-1939 engine control is not supported, then analog remote throttle control shall be provided by the "TPG" with the following features: • Audible alarm output • Easy set-up and configuration	✓	



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	<ul style="list-style-type: none"> • Large, easy to read alpha-numeric display • Improved ergonomic tactile feedback buttons • Totally integrated instruments including battery voltage, temperature, oil pressure, and RPM • Controls engine speed directly over the J1939 CAN bus for improved resolution and response • Integrated engine information reduces required pump panel space • Programmable presets 	✓	✓
25.	<u>MASTER DISCHARGE GAUGE</u> There shall be one (1) Innovative Controls/NoShok 4" liquid filled gauge to display the Master Discharge Pressure. Gauge shall be labeled "MASTER DISCHARGE".	✓	✓
26.	<u>MASTER INTAKE GAUGE</u> There shall be one (1) Innovative Controls/NoShok 4" liquid filled gauge to display the Master Intake Pressure. Gauge shall be labeled "MASTER INTAKE". -- This gauge(s) shall have a white background with black text. -- The above gauge(s) shall have a range from -30" to 600 PSI.	✓	✓
27.	<u>COLOR CODED LABELS</u> The pump panel shall have Innovative Controls Inc. color coded die cast zinc, chrome plated bezels with plastic labels inserts for each intake, discharge, master gauges, and drain. Labels shall be UV and scratch resistant and meet SAE standards where applicable. Labels and color codes shall be consistent with current fire apparatus within the City of Goodyear Fleet.	✓	✓
28.	<u>PUMP PANEL LIGHTING</u> All gauges and controls on the pump operator's panel shall be adequately illuminated by a full panel width shielded light assembly with full width OnScene Solutions LED light (each panel, if equipped). The light shall be activated by a weather-proof type switch on the pump operator's panel as well as automatically when pump is engaged. This switch shall also activate any area step lighting.	✓	✓
29.	<u>LOW PRESSURE AIR OUTLET</u> There shall be one (1) air outlet connection to supply low pressure air for general maintenance. The outlet shall terminate in a 1/4" NPT threaded port. Air outlet shall be located on lower pump operator's panel.	✓	✓
30.	<u>FUEL LEVEL GAUGE</u> An auxiliary fuel gauge shall be provided and located on pump operator's panel with other specified gauges to display the chassis fuel level.	✓	✓
31.	<u>CAB TILT CONTROL</u> A stainless steel door match fuel fill doors shall be provided on curbside pump panel with cab tilt controls plugged into a waterproof harness and stored behind it.	✓	✓
32.	<u>TEST TAPS</u> Test taps for pump intake and pump pressure shall be provided on the pump instrument panel and be properly labeled.	✓	✓
33.	<u>POLY WATER TANK</u> The water tank capacity shall be approximately 500 US gallon or 416 Imperial gallons. Certification of the tank capacity shall be recorded on the manufacturer's record of construction and shall be provided to the purchaser upon delivery of the apparatus.	✓	✓



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34.	<p>CONSTRUCTION</p> <p>The tank must be designed and fabricated by a tank manufacturer that is ISO 9001:2008 certified. The ISO certification must be to the current standard in effect at the time of the design and fabrication of the tank.</p> <p>The water tank shall be of a specific configuration and designed to be completely independent of the body and compartments. Joints and seams shall be fused using nitrogen gas as required and tested for maximum strength and integrity. 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 will provide a liquid barrier offering leak protection in the event of a weld compromise. The top of the booster tank is fitted with removable lifting assembly designed to facilitate tank removal. The transverse and longitudinal swash partitions shall be manufactured of a minimum of 3/8" PT3™ polypropylene. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions interlock with one another and are completely fused to each other as well as to the walls of the tank. All partitions and spacing shall comply with NFPA 1901, 2016 edition. The walls shall be welded to the floor of the tank providing maximum strength as part of the tank's unique Full Floor Design™. Tolerances in design allow for a maximum variation of 1/8" on all dimensions.</p>		
35.	<p>WATER FILL TOWER AND COVER</p> <p>The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" PT3™ polypropylene and shall be a minimum dimension of 8" x 8" outer perimeter. The fill tower shall be blue in color indicating that it is a water-only fill tower. The tower shall be located in the left front corner of the tank unless otherwise specified by the tank manufacturer to the purchaser. The tower shall have a 1/4" thick removable polypropylene screen and a PT3™ polypropylene hinged cover. The capacity of the tank shall be engraved on the top of the fill tower lid. Inside the fill tower there shall be a combination vent/overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I.D. of 4" that is designed to run through the tank, and shall be piped to discharge water behind the rear wheels as required in NFPA 1901, 2016 edition so as to not interfere with rear tire traction.</p> <p>The tank cover shall be constructed of 1/2" thick PT3™ polypropylene and UV stabilized, to incorporate a multi-piece locking design, which allows for individual removal and inspection if necessary. The tank cover(s) shall be flush or recessed 3/8" from the top of the tank and shall be fused to the tank walls and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2" minimum polypropylene dowels spaced a maximum of 40" apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall accommodate the necessary lifting hardware.</p>		



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36.	<p>SUMP</p> <p>There shall be one (1) sump standard per tank. The sump shall be constructed of a minimum of 1/2" PT3™ polypropylene and be located in the left front quarter of the tank, unless specified otherwise. On all tanks that require a front suction, a 3" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3" N.P.T. threaded outlet on the bottom for a drain plug per NFPA. This shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 3" above the inside floor.</p>	✓
37.	<p>OUTLETS</p> <p>There will be two (2) standard tank outlets: one for the tank-to-pump suction line, which shall be sized to provide adequate water flow to the pump; and, one for tank fill line, which shall be sized according to the NFPA minimum size chart for booster tanks. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and be capable of withstanding sustained fill rates of up to 1000 G.P.M. The addition of rear suction fittings, nurse valve fittings, dump valve fittings, and through-the-tank sleeves to accommodate rear discharge piping must be specified. All auxiliary outlets and inlets must meet all NFPA guidelines in effect at the time of manufacture.</p>	✓
38.	<p>MOUNTING</p> <p>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.</p> <p>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 Shore A Hardness of approximately 60 durometer. The rubber must be installed so it will not become dislodged during normal operation of the vehicle.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>These brackets must incorporate rubber isolating pads with a minimum thickness of</p>	✓



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	<p>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 Poly-Tank® III for that purpose. The tank shall be completely removable without disturbing or dismantling the apparatus structure.</p>	✓	
39.	<p><u>CENTER OF GRAVITY</u></p> <p>A center of gravity calculation shall be determined for each tank and provided as requested in order to provide the apparatus manufacturer with the necessary data to design and certify the apparatus with respect to the NFPA requirements regarding rollover stability.</p>	✓	
40.	<p><u>WATER TANK LEVEL GAUGE</u></p> <p>There shall be one (1) Class I "ITL-40B" tank level gauge for indicating water level and two LED multi-colored level water gauges mounted behind the C-pillar high on the cab. This external water gauge will be visible to the crew when during operations and away from the apparatus. The tank level gauge shall indicate the liquid level or volume on an easy to read blue LED display and show increments of 1/8 of a tank. Wired to dim setting.</p> <p>Each tank level gauge system shall include:</p> <ul style="list-style-type: none">• A pressure transducer that is mounted on the outside of the tank in an easily accessible area. Sealed foam tanks will require zero pressure vacuum vents.• A super bright LED display viewable from 180 degrees with a visual indication at nine accurate levels.• A set of weather resistant connectors to connect to the digital display, to the pressure transducer and to the apparatus power.• The system shall include the ability to display "text messages"• The system shall include built-in diagnostic capabilities.• The system shall display when the apparatus parking brake is applied. <p>Additional (slave) displays (if requested) are to be easily integrated and will receive data from the same source as the Master Display. No additional transducers shall be required.</p>	✓	
41.	<p><u>CLASS A POLYPROPYLENE FOAM CELL</u></p> <p>There shall be one (1) 40 US gallon polypropylene foam cell incorporated into the polypropylene water tank. This foam tank capacity shall be deducted from water tank size specified.</p> <p>There shall be one (1) pressure/vacuum vent installed on the foam tank.</p> <p>There shall be one (1) drain hose connected to the foam cell. The drain shall have a 1/4 turn valve installed inside the pump house and it shall drain below the frame rail of the chassis.</p>	✓	



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42.	<p><u>FOAM TANK LEVEL GAUGE</u> There shall be one (1) Class I "ITL-40R" tank level gauge for indicating foam level. The tank level gauge shall indicate the liquid level or volume on an easy to read red LED display and show increments of 1/8 of a tank located on the pump panel. Wired to dim setting.</p> <p>Each tank level gauge system shall include:</p> <ul style="list-style-type: none"> • A pressure transducer that is mounted on the outside of the tank in an easily accessible area. Sealed foam tanks will require zero pressure vacuum vents. • A super bright LED display viewable from 180 degrees with a visual indication at nine accurate levels. • A set of weather resistant connectors to connect to the digital display, to the pressure transducer and to the apparatus power. • The system shall include the ability to display "text messages" • The system shall include built-in diagnostic capabilities. <p>Additional (slave) displays (if requested) are to be easily integrated and will receive data from the same source as the Master Display. No additional transducers shall be required.</p>		
43.	<p><u>UPF POLY WATER TANK WARRANTY</u> The UPF poly water tank shall be provided with a lifetime material and workmanship limited warranty. The manufacturer shall supply details of their warranty information with their bid submission.</p>		
44.	<p><u>HOSE BED STORAGE AREA</u> Hose bed storage area shall be located over water tank and body, and shall exit at the rear of the apparatus. The interior of storage area shall be free from all projections such as nuts, sharp angles, or brackets that may damage equipment.</p> <p>Length of hose bed shall be approximately 96" deep. The bottom of hose bed shall be no more than 67" above the tailboard or 88" above road surface. All pre-connected hose line discharges shall be accessible just below the hose bed on the rear of the apparatus.</p> <p>Hose bed shall be laid out as follows:</p> <ul style="list-style-type: none"> • Left Side: 200' of 2½" Double Jacket Structure Hose Pre-Connected • Middle: 850' of 5" Rubber Jacket Supply Line • Far Right: 200' of 2½" Double Jacket Structure Hose Pre-Connected with gated wye, 100' of 1¾" Double Jacket Structure Hose Pre-Connected • Additional hose storage will be as follows: <ul style="list-style-type: none"> • Front Bumper: 110' of 1¾" in a flat or triple flat load • Cross Lay #1: 200' of 1¾" in a double stack flat load • Cross Lay #2: 200' of 1¾" in a double stack flat load 		



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45.	<p><u>ALUMINUM HOSE BED DECKING</u></p> <p>The hose bed deck shall be constructed from 3" x 3/4" hollow aluminum extrusions welded into a one-piece grid to allow ventilation and water drainage. The extrusions shall have an anodized radiused ribbed top surface. The deck will be completely removable for easy access to the booster tank. The booster tank fill tower shall be protected as necessary to prevent damage from equipment located in the storage area.</p>	✓	
46.	<p><u>INTERMEDIATE STEP</u></p> <p>There will be a stepping area located even with the bottom of the hose bed. The step will be made out of NFPA aluminum treadplate and will span the width of the hose bed.</p> <p>The step will have a slot to allow for a single folded section of supply hose to pass-thru on edge.</p>	✓	
47.	<p><u>HOSE BED LIGHTS</u></p> <p>There shall be four (4) OnScene Solutions 9" LED NightStik lights provided to illuminate the hose bed area. The lights shall be activated when the parking brake is set.</p> <p>Lights shall be mounted, two (2) on underside of each hose bed door.</p> <p>Lighting shall provide illumination at a minimum level of 2 fc (20 lx) on all work surfaces, steps, and walkways. Lighting shall be switchable but activated automatically when headlights are activated and vehicle park brake is set.</p>	✓	
48.	<p><u>HOSE BED DIVIDER(S)</u></p> <p>Two (2) adjustable aluminum hose bed partition(s) shall be provided in the hose storage area. The partition(s) shall be 3/16" smooth aluminum with split aluminum tubing welded to the top and rear edges.</p> <p>Hose bed dividers shall be designed only tall enough to contain the expected load to allow for easier loading of the hose.</p>	✓	
49.	<p><u>ALUMINUM HOSE BED COVER</u></p> <p>A two-section hose bed cover shall be provided. Each door shall be fabricated from 1/8" NFPA aluminum treadplate with formed hat sections for bracing. Doors shall be hinged along each side of the hose body using stainless steel piano hinge. The top surface of each section shall slant down with the highest point in the center of the hose bed area and shall be supported from underneath by at least one (1) adjustable hose bed divider.</p> <p>Each section shall be constructed to support the weight of a person (300 lbs).</p> <p>Each section shall utilize pneumatic cylinders to assist with opening and closing. There shall be a chrome grab handle on each section at the rear of the hose body.</p> <p>Each door shall have a horizontally mounted On Scene LED light on the underside of the door that will be automatically activated when the door is opened and wired to the compartment door ajar warning light provided in cab.</p>	✓	



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	The opening at the end of the hosebed will be covered with a black nylon style webbing. All pull tabs on webbing shall have reflective material sewn into them. It will be secured in place with bungee style cord on shoulder bolts.	✓	
50.	<u>EQUIPMENT PAYLOAD WEIGHT ALLOWANCE</u> In compliance with NFPA 1901 2016 edition standards, the pumper shall be designed for an equipment loading allowance of 2,500 lbs. of Goodyear Fire Department provided loose equipment based on the pumper body having more than 250 cu. ft. of storage space. Goodyear Fire Department has specified equipment weight of 4,500 pounds not inc. hose and ladders.	✓	
51.	<u>EQUIPMENT</u> The following equipment shall be furnished with the completed pumper vehicle:	✓	
52.	<u>EQUIPMENT MOUNTING</u> The Goodyear Fire Department supplied equipment shall be mounted at direction of Goodyear Fire Department including all necessary PAC or equivalent mounting brackets (see photos in file). <ul style="list-style-type: none">One (1) air bag holder fabricated from 3/16" aluminum 7" W x 3 3/8" D x 4" H and powder coated hammer tone gray, with mounting and drain holes (see drawings). Air bag holders will be located on slide-out tool board in C1.Four (4) spanner wrenches, 2-5", 2-2-1/2" and one (1) hydrant wrench shall be mounted in C1 and E1.One (1) "U" shaped sharp holder fabricated from un-painted 1/8" aluminum 11" W x 3-3/8" D. x 4" front and 5" back, with 1/4" mounting holes 1/2" down & inset 2". O.D on 5" leg (see drawings). Sharps holder to be mounted per Goodyear Fire Department.One (1) pieces of 1/4" aluminum angle 4" X 4" x 5-1/2". Mounted per Goodyear Fire Department.One (1) Big Easy tool holders 9" W x 10" H x 2 1/4" D fabricated from 3/16" aluminum and powder coated hammer tone gray, with mounting & drain holes (see drawings). Holders mounted per Goodyear Fire Department.One (1) K Tool holders 6 1/2" W x 4" H x 3 1/4" D fabricated from 3/16" aluminum and powder coated hammer tone gray, with mounting & drain holes (see drawings). Holders mounted per Goodyear Fire Department.Two (2) Big Easy tools shall be provided.Two (2) K Tools shall be provided.One (1) Igloo cooler square in shape, mounted in to Compt. C2.	✓	



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- There shall be two (2) Zico SAC-44-E NFPA approved folding aluminum wheel chocks provided for 44" diameter tires that together will hold the vehicle when loaded to its GVWR or GCWR, on a hard surface with a 20 % grade, with the transmission in neutral, and the parking brake released.
 - The wheel chock(s) shall be mounted behind rear wheels, below body on street side.
- One (1) Duo-Safety 900-A series 24' 2-section extension ladder(s) shall be provided with the completed unit.
 - The ladder(s) shall be mounted on vehicle, per itemized compartment list.
- One (1) Duo-Safety 775A series 14' aluminum roof ladder(s) shall be provided with the completed unit.
 - The ladder(s) shall be mounted on vehicle, per itemized compartment list.
- One (1) Duo-Safety 585-A 10' aluminum folding ladder(s) shall be provided with the completed unit.
 - The ladder(s) shall be mounted on vehicle, per itemized compartment list.
- One (1) Nupia 8' Trash/Arson hook with fiberglass handle shall be provided with the completed unit.
 - The above specified pike pole will have a D handle attached
 - The pike pole(s) shall be mounted on vehicle, per itemized compartment list.
- Two (2) Akron UT fiberglass pike poles, one (1) 8', and one (1) 10' shall be provided with the completed unit.
 - The above specified pike pole will not have a D handle attached
 - The pike pole(s) shall be mounted on vehicle, per itemized compartment list.
- Two (2) Streamlight FireBox LED flashlight(s) model #45865 shall be provided. Each flashlight shall be orange in color and have a 12 volt DC charger and vehicle mount kit. Each flashlight shall have a LED spotlight style bulbs and reflectors with 2 ultra-bright LED taillights. The flashlight(s) shall be wired to battery direct unless otherwise specified by Goodyear Fire Department.
 - The flashlight(s) shall be mounted on the completed unit, one (1) on upper front wall of S1, and one (1) on upper front wall of C2.
- Four (4) Streamlight Survivor, LED flashlight(s) model #90503 shall be provided. Each flashlight shall be orange in color and have a 12 volt DC charger and vehicle mount kit. Each flashlight shall have an LED spotlight style bulbs and reflectors. The flashlight(s) shall be wired to battery direct unless otherwise specified by Goodyear Fire Department.
- The flashlights shall be mounted in the compartments as specified.

END OF SCOPE OF WORK