Bid 152-2022
Seagrave Fire Apparatus, LLC
Supplier Response

Event Information

Number: Bid 152-2022
Title: Ladder Truck
Type: Competitive Bid
Issue Date: 11/17/2022
Deadline: 12/8/2022 02:00 PM (ET)
Notes: ONLY ONLINE BIDS WILL BE ACCEPTED FOR THIS SOLICITATION. PRICING SHOULD BE SUBMITTED ON THE LINE ITEMS TAB ONLY. PRICING WITHIN SUBMITTALS WILL NOT BE ACCEPTED AND MAY MAKE YOUR BID NON-RESPONSIVE.

Contact Information

Contact: Jessica Allinder
Address: Central Purchasing
Government Center Building
Room 338
200 East Main Street
Lexington, KY 40507
Fax: (859) 2583322
Email: jallinder@lexingtonky.gov

Seagrave Fire Apparatus, LLC Information

Contact: Marianne
Address: 105 East 12th Street
Clintonville, WI 54929
Phone: (914) 238-9622
Email: marianne.thiex@seagrave.com
Web Address: Seagrave.com

ONLY ONLINE BIDS WILL BE ACCEPTED! By submitting your response, you certify that you are authorized to represent and bind your company and that you agree to all bid terms and conditions as stated in the attached bid/RFP/RFQ/Quote/Auction documents.

Scott Adkins
Signature

scott.adkinsfse@gmail.com
Email

Submitted at 12/8/2022 01:27:27 PM (ET)

Response Attachments

Lexington KY Bid 152-2022 Bid Bond_signed truck.zip

Bid Package

Bid Lines

1	pricing as per specifications Quantity: 1 UOM: EA Price: $1,624,683.00 Total: $1,624,683.00 Supplier Notes: Prepay Program price

Response Total: $1,624,683.00

Fire & Specialty Equipment Company, LLC
Bells Mill Industrial Park
235 Rogers Drive
Shepherdsville, Kentucky 40165
502.957.2145 (p) 502.957.2146 (f)

Table of Contents

Fire & Specialty Equipment Company, LLC

December 8,2022

Division of Central Purchasing
200 East Main Street, Room
338
Lexington, Kentucky 40507

Reference: # 152-2022 Ladder Truck

Ladies & Gentlemen,

On behalf of Seagrave Fire Apparatus, LLC and your local Seagrave Dealer, Fire & Specialty Equipment Company LLC, I am pleased to submit the enclosed proposal for consideration for the purchase of one (1) Seagrave Capital Force Ladder Truck. We have reviewed your specifications in full and have prepared a proposal, which meets or exceeds the specified requirements.

The cab we are proposing is our "Top of the line" Stainless Steel Capital cab that is well known throughout the industry as the strongest and safest cab available. Your apparatus will be designed, engineered, and manufactured with the most utmost attention to your personal's safety and the day to day demands of Lexington Fire Department. Seagrave is the oldest manufacturer of Fire Apparatus in the United States since 1881.

I have included with the proposal Lexington Fire complete specifications along with clarifications and exemptions, warranty information, service center and dealer capabilities, PE drawing which represents the vehicle dimensions and layout. Along with a turning radius drawing. As well copies of Insurance certification, Bid Bond, and Boilerplate information.

Delivery will be as follows: Unit will be ready for shipment in approximately Seven Hundred and ninety (790) calendar days once the order is fully specified and completely defined and with receipt of the approved update and a signed PE drawing.

1. Prices include 10% Bid Bond and 100 % Performance Bond.
2. Approved price: One Million Six Hundred Twenty-Four Thousand, Six Hundred Eighty Three Dollars. ($1,624,683.00)
3. If more than one (1) Ladder Truck is ordered on the same Purchase Order, 1 ½% can be deducted for the 2ND or more identical Ladder Truck.
4. Please review PREPAY PROGRAM document on 100% Prepay.
5. Price provided includes delivery to the Fire Department.
6. Price provided includes three (3) Familiarization session conducted by Fire & Specialty Equipment Company.
7. See Seagrave proposal on Factory Representatives Training session.

Unless this proposal is accepted within the dates listed, the right is reserved to withdraw this proposition.

Once you have had an opportunity to review the enclosed information, please feel free to contact me with any questions and/or clarifications you may have. We look forward to working with you on this most important investment into your community's future.

Respectfully,

Scott Adkins, Sales Representative
Fire & Specialty Equipment Company, LLC
Kentucky & Indiana Authorized Seagrave
Dealer scott.adkinsfse@gmail.com
502-957-2145

1 (800) 506-0702

SEAGRAVE FIRE APPARATUS, LLC

PREPAY PROGRAM

Date: 12/6/2022

Customer: Lexington, KY **Model & (Quantitiy):** Force

Representative Fire & Specialty

Sales Person: Scott Adkins

Delivery 790 days prior to expected progress payment date

Advance Payment	**100%**
Amount of Contract	**$ 1,715,139**
Net Discount to Customer	***$ 90,456***
Prepay Amount to Seagrave	**$ 1,624,683**

Anything less than 100% Prepay the discount is given at final invoicing.

Prepay proposal does not include cost of Performance Bond, because it is already included in the Quoted Price

105 East 12th Street - Clintonville, WI 54929-1518
PHONE: 715-823-2141 - FAX: 715-823-5769 Main Office/Purchasing
FAX: 715-823-5767 Parts and Service - www.seagrave.com

LEXINGTON

Lexington-Fayette Urban County Government

Lexington, Kentucky
Horse Capital of the World

Division of Central Purchasing

Date of Issue: November 17, 2022

INVITATION TO BID # 152-2022 Ladder Truck

Bid Opening Date: **December 8, 2022** **Bid Opening Time: 2:00 PM**
Address: 200 East Main Street, 3rd Floor, Room 338, Lexington, Kentucky 40507

Type of Bid: Firm Bid

Pre Bid Meeting: Month XX, 20XX Pre Bid Time: X:XX xm
Address: XXXXXXXXX Street

Sealed bids will ONLY be received online at https://lexingtonky.ionwave.net/ until **2:00 PM**, prevailing local time on **12/08/2022**. Bids must be submitted/uploaded by the above-mentioned date and time.

Bids are to include all shipping, handling and associated fees to the point of delivery located at: XXXXXXXXX, Lexington, KY 405XX

Bid Security and Performance Bond Required for all bids over $50,000.

Check One:	**Proposed Delivery:**
_____Bid Specifications Met __X___ Exceptions to Bid Specifications. *Exceptions shall be itemized and attached to bid proposal submitted.*	790 days after acceptance of bid.
Procurement Card Usage—The Lexington-Fayette Urban County Government may be using Procurement Cards to purchase goods and services and also to make payments. Will you accept Procurement Cards? ___X___Yes _____ No	

Submitted by: Seagrave Fire Apparatus, LLC
Firm Name

105 East 12th Street
Address

Clintonville, WI 54929
City, State & Zip

Bid must be signed:
(original signature)

President and CEO
Signature of Authorized Company Representative – Title

Ulisses D. Parmeziani
Representative's Name (Typed or printed)

715-823-2141 715-823-5768
Area Code - Phone – Extension *Fax #*

ulisses.parmeziani@seagrave.com
E-Mail Address

I. GREEN PROCUREMENT

A. ENERGY

The Lexington-Fayette Urban County Government is committed to protecting our environment and being fiscally responsible to our citizens.

The Lexington-Fayette Urban County Government mandates the use of Energy Star compliant products if they are available in the marketplace (go to **www.Energystar.gov**). If these products are available, but not submitted in your pricing, your bid will be rejected as non-compliant.

ENERGY STAR is a government program that offers businesses and consumers energy-efficient solutions, making it easy to save money while protecting the environment for future generations.

Key Benefits

These products use 25 to 50% less energy
Reduced energy costs without compromising quality or performance
Reduced air pollution because fewer fossil fuels are burned
Significant return on investment
Extended product life and decreased maintenance

B. GREEN SEAL CERTIFIED PRODUCTS

The Lexington-Fayette Urban County Government is also committed to using other environmentally friendly products that do not negatively impact our environment. Green Seal is a non-profit organization devoted to environmental standard setting, product certification, and public education.

Go to **www.Greenseal.org** to find available certified products. These products will have a reduced impact on the environment and on human health. The products to be used must be pre-approved by the LFUCG prior to commencement of any work in any LFUCG facility. If a Green Seal product is not available, the LFUCG must provide a signed waiver to use an alternate product. Please provide information on the Green Seal products being used with your bid response.

C. GREEN COMMUNITY

The Lexington-Fayette Urban County Government (LFUCG) serves as a principal, along with the University of Kentucky and Fayette County Public Schools, in the Bluegrass Partnership for a Green Community. The Purchasing Team component of the Partnership collaborates on economy of scale purchasing that promotes and enhances environmental initiatives. Specifically, when applicable, each principal is interested in obtaining best value products and/or services which promote environment initiatives via solicitations and awards from the other principals.

If your company is the successful bidder on this Invitation For Bid, do you agree to extend the same product/service pricing to the other principals of the Bluegrass Partnership for a Green Community (i.e. University of Kentucky and Fayette County Schools) if requested?

Yes X **No**_____

II. Bid Conditions

A. No bid may be withdrawn for a period of sixty (60) days after the date and time set for opening.

B. No bid may be altered after the date and time set for opening. In the case of obvious errors, the Division of Central Purchasing may permit the withdrawal of a bid. The decision as to whether a bid may be withdrawn shall be that of the Division of Central Purchasing.

C. Acceptance of this proposal shall be enactment of an Ordinance by the Urban County Council.

D. The bidder agrees that the Urban County Government reserves the right to reject any and all bids for either fiscal or technical reasons, and to award each part of the bid separately, all parts to one vendor or all parts to multiple vendors.

E. Minor exceptions may not eliminate the bidder. The decision as to whether any exception is minor shall be entirely that of the head of the requisitioning Department or Division and the Director of the Division of Central Purchasing. The Urban County Government may waive technicalities and informalities where such waiver would best serve the interests of the Urban County Government.

F. Manufacturer's catalogue numbers, trade names, etc., where shown herein are for descriptive purposes and are to guide the bidder in interpreting the standard of quality, design, and performance desired, and shall not be construed to exclude proposals based on furnishing other types of materials and/or services. However, any substitution or departure proposed by the bidder must be clearly noted and described; otherwise, it will be assumed that the bidder intends to supply items specifically mentioned in this Invitation for Bids.

G. The Urban County Government may require demonstrations of the materials proposed herein prior to acceptance of this proposal.

H. Bids must be submitted on this form and must be signed by the bidder or his authorized representative. Unsigned bids will not be considered.

I. Bids must be submitted prior to the date and time indicated for opening. Bids submitted after this time will not be considered.

J. All bids mailed must be submitted in the Ion Wave online portal at https://lexingtonky.ionwave.net/

K. Bidder is requested to show both unit prices and lot prices. In the event of error, the unit price shall prevail.

L. A certified check or Bid Bond in the amount of **5** percent of the bid price must be attached hereto for bids greater than $50,000. This check must be made payable to the Lexington-Fayette Urban County Government, and will be returned when the material and/or services specified herein have been delivered in accordance with specifications. In the event of failure to perform within the time period set forth in this bid, it is agreed the certified check may be cashed and the funds retained by the Lexington-Fayette Urban County Government as liquidated damages. Checks of unsuccessful bidders will be returned when the bid has been awarded.

M. The delivery dates specified by bidder may be a factor in the determination of the successful bidder.

N. Tabulations of bids received may be mailed to bidders. Bidders requesting tabulations must enclose a stamped, self-addressed envelope with the bid.

O. The Lexington-Fayette Urban County Government is exempt from Kentucky Sales Tax and Federal Excise Tax on materials purchased from this bid invitation. Materials purchased by the bidder for construction projects are not tax exempt and are the sole responsibility of the bidder.

P. All material furnished hereunder must be in full compliance with OSHA regulations.

Q. If more than one bid is offered by one party, or by any person or persons representing a party, all such bids shall be rejected.

R. Signature on the face of this bid by the Bidder or his authorized representative shall be construed as acceptance of and compliance with all terms and conditions contained herein.

S. The Entity (regardless of whether construction contractor, non-construction contractor or supplier) agrees to provide equal opportunity in employment for all qualified persons, to prohibit discrimination in employment because of race, color, religion, sex (including pregnancy, sexual orientation or gender identity), national origin, disability, age, genetic information, political affiliation, or veteran status, and to promote equal employment through a positive, continuing program from itself and each of its sub-contracting agents. This program of equal employment opportunity shall apply to every aspect of its employment policies and practices.

T. The Kentucky Equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) requires that any county, city, town, school district, water district, hospital district, or other political subdivision of the state shall include in directly

or indirectly publicly funded contracts for supplies, materials, services, or equipment hereinafter entered into the following provisions:

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin;

(2) The contractor will state in all solicitations or advertisements for employees placed by or on behalf of the contractors that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age or national origin;

(3) The contractor will post notices in conspicuous places, available to employees and applicants for employment, setting forth the provisions of the non-discrimination clauses required by this section; and

(4) The contractor will send a notice to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding advising the labor union or workers' representative of the contractor's commitments under the nondiscrimination clauses.

The Act further provides:

KRS 45.610. Hiring minorities - Information required

(1) For the length of the contract, each contractor shall hire minorities from other sources within the drawing area, should the union with which he has collective bargaining agreements be unwilling to supply sufficient minorities to satisfy the agreed upon goals and timetable.

(2) Each contractor shall, for the length of the contract, furnish such information as required by KRS 45.560 to KRS 45.640 and by such rules, regulations and orders issued pursuant thereto and will permit access to all books and records pertaining to his employment practices and work sites by the contracting agency and the department for purposes of investigation to ascertain compliance with KRS 45.560 to 45.640 and such rules, regulations and orders issued pursuant thereto.

KRS 45.620. Action against contractor - Hiring of minority contractor or subcontractor

(1) If any contractor is found by the department to have engaged in an unlawful practice under this chapter during the course of performing under a contract or subcontract covered under KRS 45.560 to 45.640, the department shall so certify to the contracting agency and such certification shall be binding upon the contracting agency unless it is reversed in the course of judicial review.

(2) If the contractor is found to have committed an unlawful practice under KRS 45.560 to 45.640, the contracting agency may cancel or terminate the contract, conditioned upon a program for future compliance approved by the contracting agency and the department. The contracting agency may declare such a contractor ineligible to bid on further contracts with that agency until such time as the contractor complies in full with the requirements of KRS 45.560 to 45.640.

(3) The equal employment provisions of KRS 45.560 to 45.640 may be met in part by a contractor by subcontracting to a minority contractor or subcontractor. For the provisions of KRS 45.560 to 45.640, a minority contractor or subcontractor shall mean a business that is owned and controlled by one or more persons disadvantaged by racial or ethnic circumstances.

KRS 45.630 Termination of existing employee not required, when

Any provision of KRS 45.560 to 45.640 notwithstanding, no contractor shall be required to terminate an existing employee upon proof that that employee was employed prior to the date of the contract.

KRS 45.640 Minimum skills

Nothing in KRS 45.560 to 45.640 shall require a contractor to hire anyone who fails to demonstrate the minimum skills required to perform a particular job.

It is recommended that all of the provisions above quoted to be included as special conditions in each contract.

In the case of a contract exceeding $250,000, the contractor is required to furnish evidence that his work-force in Kentucky is representative of the available work-force in the area from which he draws employees, or to supply an Affirmative Action plan which will achieve such representation during the life of the contract.

U. Any party, firm or individual submitting a proposal pursuant to this invitation must be in compliance with the requirements of the Lexington-Fayette Urban County Government regarding taxes and fees before they can be considered for award of this invitation and must maintain a "current" status with regard to those taxes and fees throughout the term of the contract. The contractor must be in compliance with Chapter 13 from the Code of Ordinances of the Lexington-Fayette Urban County Government. The contractor must be in compliance with Ordinance 35-2000 pursuant to contractor registration with the Division of Building Inspection. If applicable, said business must have a Fayette County business license.

Pursuant to KRS 45A.343 and KRS 45A.345, the contractor shall

(1) Reveal any final determination of a violation by the contractor within the previous five year period pursuant to KRS Chapters 136 (corporation and utility taxes), 139 (sales and use taxes), 141 (income taxes), 337 (wages and hours), 338 (occupational safety and health of employees), 341 (unemployment and compensation) and 342 (labor and human rights) that apply to the contractor; and

(2) Be in continuous compliance with the above-mentioned KRS provisions that apply to the contractor for the duration of the contract.

A contractor's failure to reveal the above or to comply with such provisions for the duration of the contract shall be grounds for cancellation of the contract and disqualification of the contractor from eligibility for future contracts for a period of two (2) years.

V. Vendors who respond to this invitation have the right to file a notice of contention associated with the bid process or to file a notice of appeal of the recommendation made by the Director of Central Purchasing resulting from this invitation.

Notice of contention with the bid process must be filed within 3 business days of the bid/proposal opening by (1) sending a written notice, including sufficient documentation to support contention, to the Director of the Division of Central Purchasing or (2) submitting a written request for a meeting with the Director of Central Purchasing to explain his/her contention with the bid process. After consulting with the Commissioner of Finance the Chief Administrative Officer and reviewing the documentation and/or hearing the vendor, the Director of Central Purchasing shall promptly respond in writing findings as to the compliance with bid processes. If, based on this review, a bid process irregularity is deemed to have occurred the Director of Central Purchasing will consult with the Commissioner of Finance, the Chief Administrative Officer and the Department of Law as to the appropriate remedy.

Notice of appeal of a bid recommendation must be filed within 3 business days of the bid recommendation by (1) sending a written notice, including sufficient documentation to support appeal, to the Director, Division of Central Purchasing or (2) submitting a written request for a meeting with the Director of Central Purchasing to explain his appeal. After reviewing the documentation and/or hearing the vendor and consulting with the Commissioner of Finance and the Chief Administrative Officer, the Director of Central Purchasing shall in writing, affirm or withdraw the recommendation.

The Affidavit in this bid must be completed before your firm can be considered for award of this contract.

AFFIDAVIT

Comes the Affiant, Ulisses D. Parmeziani, and after being first duly sworn under penalty of perjury as follows:

1. His/her name is Ulisses D. Parmeziani and he/she is the individual submitting the bid or is the authorized representative of Seagrave Fire Apparatus, LLC, the entity submitting the bid (hereinafter referred to as "Bidder")
2. Bidder will pay all taxes and fees, which are owed to the Lexington-Fayette Urban County Government at the time the bid is submitted, prior to award of the contract and will maintain a "current" status in regard to those taxes and fees during the life of the contract.
3. Bidder will obtain a Lexington-Fayette Urban County Government business license, if applicable, prior to award of the contract.
4. Bidder has authorized the Division of Central Purchasing to verify the above-mentioned information with the Division of Revenue and to disclose to the Urban County Council that taxes and/or fees are delinquent or that a business license has not been obtained.
5. Bidder has not knowingly violated any provision of the campaign finance laws of the Commonwealth of Kentucky within the past five (5) years and the award of a contract to the Bidder will not violate any provision of the campaign finance laws of the Commonwealth.
6. Bidder has not knowingly violated any provision of Chapter 25 of the Lexington-Fayette Urban County Government Code of Ordinances, known as "Ethics Act."
7. Bidder acknowledges that "knowingly" for purposes of this Affidavit means, with respect to conduct or to circumstances described by a statute or ordinance defining an offense, that a person is aware or should have been aware that his conduct is of that nature or that the circumstance exists.

Further, Affiant sayeth naught.

Ulisses D. Parmeziani, President and Chief Executive Officer

STATE OF WISCONSIN

COUNTY OF WAUPACA

The foregoing instrument was subscribed, sworn to and acknowledged before me by Kathleen H. A. Kettenhoven on this the 6th day of December, 2022.

KATHLEEN H. A. KETTENHOVEN
Notary Public
State of Wisconsin

My Commission expires: April 12, 2024

Kathleen H. A. Kettenhoven
NOTARY PUBLIC, STATE AT LARGE
STATE OF WISCONSIN

Please refer to Section II. Bid Conditions, Item "U" prior to completing this form.

LFUCG Non-Appropriation Clause

Contractor acknowledges that the LFUCG is a governmental entity, and the contract validity is based upon the availability of public funding under the authority of its statutory mandate.

In the event that public funds are unavailable and not appropriated for the performance of the LFUCG's obligations under this contract, then this contract shall automatically expire without penalty to the LFUCG thirty (30) days after written notice to Contractor of the unavailability and non-appropriation of public funds. It is expressly agreed that the LFUCG shall not activate this non-appropriation provision for its convenience or to circumvent the requirements of this contract, but only as an emergency fiscal measure during a substantial fiscal crisis, which affects generally its governmental operations.

In the event of a change in the LFUCG's statutory authority, mandate and mandated functions, by state and federal legislative or regulatory action, which adversely affects the LFUCG's authority to continue its obligations under this contract, then this contract shall automatically terminate without penalty to the LFUCG upon written notice to Contractor of such limitation or change in the LFUCG's legal authority.

SPECIAL INSTRUCTIONS TO THE BIDDER

(DO NOT SUBMIT PERFORMANCE SECURITY WITH BID)

Performance Security: The APPARENT LOW BIDDER shall furnish, before recommendation by the Division of Central Purchasing to the Urban County Council that the BIDDER'S bid be accepted, a Performance Bond, Certified Check or Cashier's Check, payable to the Lexington-Fayette Urban County Government, in the penal sum of 100% of the price of the materials and/or services proposed in the bid.

The performance bond will not be returned to the bidder after delivery of the materials/services specified herein unless the bidder requests that the performance bond be returned.

The certified / cashier's check will be returned when the materials and/or services specified herein have been delivered.

In the event of bidder's failure to perform as specified herein, it is agreed that the monies represented by the performance bond or certified / cashier's check shall be retained by the Lexington-Fayette Urban County Government as liquidated damages.

Contracts that are less than $50,000 will not require a 5% bid security or a performance and payment bond.

EQUAL OPPORTUNITY AGREEMENT

Standard Title VI Assurance

The Lexington Fayette-Urban County Government, (hereinafter referred to as the "Recipient") hereby agrees that as a condition to receiving any Federal financial assistance from the U.S. Department of Transportation, it will comply with Title VI of the Civil Rights Act of 1964, 78Stat.252, 42 U.S.C. 2000d-4 (hereinafter referred to as the "Act"), and all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, (49 CFR, Part 21) Nondiscrimination in Federally Assisted Program of the Department of Transportation – Effectuation of Title VI of the Civil Rights Act of 1964 (hereinafter referred to as the "Regulations") and other pertinent directives, no person in the United States shall, on the grounds of race, color, national origin, sex, age (over 40), religion, sexual orientation, gender identity, veteran status, or disability be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Recipient receives Federal financial assistance from the U.S. Department of Transportation, including the Federal Highway Administration, and hereby gives assurance that will promptly take any necessary measures to effectuate this agreement. This assurance is required by subsection 21.7(a) (1) of the Regulations.

The Law

- Title VII of the Civil Rights Act of 1964 (amended 1972) states that it is unlawful for an employer to discriminate in employment because of race, color, religion, sex, age (40-70 years) or national origin.

- Executive Order No. 11246 on Nondiscrimination under Federal contract prohibits employment discrimination by contractor and sub-contractor doing business with the Federal Government or recipients of Federal funds. This order was later amended by Executive Order No. 11375 to prohibit discrimination on the basis of sex.

- Section 503 of the Rehabilitation Act of 1973 states:

  The Contractor will not discriminate against any employee or applicant for employment because of physical or mental disability.

- Section 2012 of the Vietnam Era Veterans Readjustment Act of 1973 requires Affirmative Action on behalf of disabled veterans and veterans of the Vietnam Era by contractors having Federal contracts.

- Section 206(A) of Executive Order 12086, Consolidation of Contract Compliance Functions for Equal Employment Opportunity, states:

  The Secretary of Labor may investigate the employment practices of any Government contractor or sub-contractor to determine whether or not the contractual provisions specified in Section 202 of this order have been violated.

The Lexington-Fayette Urban County Government practices Equal Opportunity in recruiting, hiring and promoting. It is the Government's intent to affirmatively provide employment opportunities for those individuals who have previously not been allowed to enter into the mainstream of society. Because of its importance to the local Government, this policy carries the full endorsement of the Mayor, Commissioners, Directors and all supervisory personnel. In following this commitment to Equal Employment Opportunity and because the Government is the benefactor of the Federal funds, it is both against the Urban County Government policy and illegal for the Government to let contracts to companies which knowingly or unknowingly practice discrimination in their employment practices. Violation of the above mentioned ordinances may cause a contract to be canceled and the contractors may be declared ineligible for future consideration.

Please sign this statement in the appropriate space acknowledging that you have read and understand the provisions contained herein. Return this document as part of your application packet.

Bidders

I/We agree to comply with the Civil Rights Laws listed above that govern employment rights of minorities, women, veteran status, disability and age.

Signature Ulisses D. Parmeziani, President & CEO

Seagrave Fire Apparatus, LLC
Name of Business

WORKFORCE ANALYSIS FORM

Name of Organization: Seagrave Fire Apparatus, LLC

Categories	Total	White (Not Hispanic or Latino)		Hispanic or Latino		Black or African-American (Not Hispanic or Latino		Native Hawaiian and Other Pacific Islander (Not Hispanic		Asian (Not Hispanic or Latino		American Indian or Alaskan Native (not Hispanic or Latino		Two or more races (Not Hispanic or Latino		Total	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Administrators	42	38	3			1										39	3
Professionals	47	38	7	1								1				40	7
Superintendents	9	5	3									1				6	3
Supervisors	0																0
Foremen	0																0
Technicians	32	26		2		3								1		32	0
Protective Service	0																0
Para-Professionals	0																0
Office/Clerical	30	10	17					2				1				13	17
Skilled Craft	242	199	31			1	1			1		9				210	32
Service/Maintenanc	4	3	1													3	1
Total:	406	319	62	3	0	5	1	2	0	1	0	12	0	1	0	343	63

Prepared by: X Todd Woodward

(Name and Title) Todd Woodward, Director Human Resources

Date: 11 / 29 / 22

Revised 2015-Dec-15

THE AMERICAN INSTITUTE OF ARCHITECTS

AIA Document A310
Bid Bond

KNOW ALL MEN BY THESE PRESENTS, THAT WE Seagrave Fire Apparatus, LLC
105 East 12th Street, Clintonville, WI 54929
as Principal, hereinafter called the Principal, and Lexon Insurance Company
a corporation duly organized under the laws of the State of TX
as Surety, hereinafter called the Surety, are held and firmly bound unto Lexington Fayette Urban County Government
200 East Main Street Room 338, Lexington, KY 40507
as Obligee, hereinafter called the Obligee, in the sum of Five Percent of Amount Bid
Dollars ($ 5%),
for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for 152-2022 Ladder Truck; Capitol 100' Force Aerial

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and materials furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this 30th day of November, 2022

Kathleen Kettenhoven
Kathleen Kettenhoven (Witness)
WITNESS

Seagrave Fire Apparatus, LLC
(Principal) (Seal)
By: U. D. P.
Ulisses D. Parmeziani President and CEO (Title)

Lisa Baranzyk (Witness)

Lexon Insurance Company
(Surety)
By: Cathy Hutson
Attorney-in-Fact Cathy Hutson

LEXON INSURANCE COMPANY CORPORATE SEAL MARCH 16, 1984 STATE OF TEXAS

This bid bond is given with the condition that should Seagrave Fire Apparatus, LLC be low bidder and/or awarded this contract, the Surety's obligation does not extend to the warranty provision of the contract and any performance/payment bond will have the same condition.

SOMPO INTERNATIONAL
INSURANCE

POWER OF ATTORNEY

9109

KNOW ALL BY THESE PRESENTS, that **Endurance Assurance Corporation**, a Delaware corporation, **Endurance American Insurance Company**, a Delaware corporation, **Lexon Insurance Company**, a Texas corporation, and/or **Bond Safeguard Insurance Company**, a South Dakota corporation, each, a "Company" and collectively, "**Sompo International**," do hereby constitute and appoint: **Cathy Hutson, Sarah E. DeYoung, Daniel J. Kwiecinski, Daniel J. Sapiro** as true and lawful Attorney(s)-In-Fact to make, execute, seal, and deliver for, and on its behalf as surety or co-surety; bonds and undertakings given for any and all purposes, also to execute and deliver on its behalf as aforesaid renewals, extensions, agreements, waivers, consents or stipulations relating to such bonds or undertakings provided, however, that no single bond or undertaking so made, executed and delivered shall obligate the Company for any portion of the penal sum thereof in excess of the sum of **ONE HUNDRED MILLION Dollars ($100,000,000.00)**.

Such bonds and undertakings for said purposes, when duly executed by said attorney(s)-in-fact, shall be binding upon the Company as fully and to the same extent as if signed by the President of the Company under its corporate seal attested by its Corporate Secretary.

This appointment is made under and by authority of certain resolutions adopted by the sole shareholder of each Company by unanimous written consent effective the 15th day of June, 2019, a copy of which appears below under the heading entitled "Certificate".

This Power of Attorney is signed and sealed by facsimile under and by authority of the following resolution adopted by the sole shareholder of each Company by unanimous written consent effective the 15th day of June, 2019 and said resolution has not since been revoked, amended or repealed:

RESOLVED, that the signature of an individual named above and the seal of the Company may be affixed to any such power of attorney or any certificate relating thereto by facsimile, and any such power of attorney or certificate bearing such facsimile signature or seal shall be valid and binding upon the Company in the future with respect to any bond or undertaking to which it is attached.

IN WITNESS WHEREOF, each Company has caused this instrument to be signed by the following officers, and its corporate seal to be affixed this 15th day of June, 2019.

Endurance Assurance Corporation
By: Richard M Appel
Richard Appel; SVP & Senior Counsel

Endurance American Insurance Company
By: Richard M Appel
Richard Appel; SVP & Senior Counsel

Lexon Insurance Company
By: Richard M Appel
Richard Appel; SVP & Senior Counsel

Bond Safeguard Insurance Company
By: Richard M Appel
Richard Appel; SVP & Senior Counsel

ACKNOWLEDGEMENT

On this 15th day of June, 2019, before me, personally came the above signatories known to me, who being duly sworn, did depose and say that he/they is/are officer of each of the Companies; and that he executed said instrument on behalf of each Company by authority of his office under the by-laws of each Company.

By: Amy Taylor
Amy Taylor, Notary Public - My Commission Expires 5/9/23

CERTIFICATE

I, the undersigned Officer of each Company, DO HEREBY CERTIFY that:

1. That the original power of attorney of which the foregoing is a copy was duly executed on behalf of each Company and has not since been revoked, amended or modified; that the undersigned has compared the foregoing copy thereof with the original power of attorney, and that the same is a true and correct copy of the original power of attorney and of the whole thereof;
2. The following are resolutions which were adopted by the sole shareholder of each Company by unanimous written consent effective June 15, 2019 and said resolutions have not since been revoked, amended or modified:

   "RESOLVED, that each of the individuals named below is authorized to make, execute, seal and deliver for and on behalf of the Company any and all bonds, undertakings or obligations in surety or co-surety with others: RICHARD M. APPEL, BRIAN J. BEGGS, CHRISTOPHER DONELAN, SHARON L. SIMS, CHRISTOPHER L. SPARRO, MARIANNE L. WILBERT

   ; and be it further

   RESOLVED, that each of the individuals named above is authorized to appoint attorneys-in-fact for the purpose of making, executing, sealing and delivering bonds, undertakings or obligations in surety or co-surety for and on behalf of the Company."
3. The undersigned further certifies that the above resolutions are true and correct copies of the resolutions as so recorded and of the whole thereof.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal this 30th day of November, 2022.

By:
Daniel S. Lurie, Secretary

NOTICE: U. S. TREASURY DEPARTMENT'S OFFICE OF FOREIGN ASSETS CONTROL (OFAC)

No coverage is provided by this Notice nor can it be construed to replace any provisions of any surety bond or other surety coverage provided. This Notice provides information concerning possible impact on your surety coverage due to directives issued by OFAC. **Please read this Notice carefully.**

The Office of Foreign Assets Control (OFAC) administers and enforces sanctions policy, based on Presidential declarations of "national emergency". OFAC has identified and listed numerous foreign agents, front organizations, terrorists, terrorist organizations, and narcotics traffickers as "Specially Designated Nationals and Blocked Persons". This list can be located on the United States Treasury's website – https://www.treasury.gov/resource-center/sanctions/SDN-List.

In accordance with OFAC regulations, if it is determined that you or any other person or entity claiming the benefits of any coverage has violated U.S. sanctions law or is a Specially Designated National and Blocked Person, as identified by OFAC, any coverage will be considered a blocked or frozen contract and all provisions of any coverage provided are immediately subject to OFAC. When a surety bond or other form of surety coverage is considered to be such a blocked or frozen contract, no payments nor premium refunds may be made without authorization from OFAC. Other limitations on the premiums and payments may also apply.

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 12/1/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Sara Schmidt
Hays Companies Inc. 1200 North Mayfair Road Suite #100 Milwaukee WI 53226	PHONE (A/C, No, Ext): (414)443-0000 FAX (A/C, No): E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A: Hartford Fire Insurance Company	19682
INSURER B: Travelers Property Casualty Co of Amer	25674
INSURER C: Indian Harbor Insurance Co.	
INSURER D: Twin City Fire Insurance Company	
INSURER E: Great American E&S Insurance Co.	
INSURER F:	

INSURED
Seagrave Fire Apparatus, LLC
105 E. 12th Street
Clintonville WI 54929

COVERAGES **CERTIFICATE NUMBER: 22-23** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	[X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [ ] PRO-JECT [X] LOC [ ] OTHER:	X		83 UEN OK9956	6/1/2022	6/1/2023	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 300,000 $ 10,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
B	AUTOMOBILE LIABILITY [X] ANY AUTO [ ] ALL OWNED AUTOS [ ] SCHEDULED AUTOS [X] HIRED AUTOS [X] NON-OWNED AUTOS			TJ-CAP-BE090058-TIL-22	1/1/2022	1/1/2023	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
C	[ ] UMBRELLA LIAB [X] OCCUR [X] EXCESS LIAB [ ] CLAIMS-MADE [ ] DED [ ] RETENTION $			SXS005675002	6/1/2022	6/1/2023	EACH OCCURRENCE AGGREGATE	$ 5,000,000 $ 5,000,000
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N [ ] If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		UB-1L956215-22-51-H	1/1/2022	1/1/2023	[X] PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 500,000 $ 500,000 $ 500,000
D	Excess Liability			83 XS ON2173	6/1/2022	6/1/2023	Limit	$5,000,000
E	Excess Liability			XS 3402987-02	6/1/2022	6/1/2023	Limit	$10,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
Lexington-Fayette Urban County Government is included as Additional Insured on the General Liability policy when required by written contract. A 30 Day Notice of Cancellation applies for any reason, except 10 days for non-payment of premium, and will be provided to those parties listed in the written contract.

CERTIFICATE HOLDER

Lexington-Fayette Urban County Government
200 East Main Street
3rd floor, Room 338
Lexington, KY 40507

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
James Hays/ABTHIE

2022 AERIAL SPECIFICATIONS

	Yes	No

2022 Aerial Specifications

SPECIFICATIONS FOR One (1) HEAVY DUTY 100' AERIAL
FOR THE LEXINGTON KY FIRE DEPARTMENT

Please indicate your verification of the outlined specifications by placing a checkmark next to each section.

INTENT OF SPECIFICATIONS

Y

It shall be the intent of these specifications to cover the furnishing and delivery of one (1) complete apparatus equipped as hereinafter specified. These apparatus will be front-line apparatus and subjected to daily use responding to various emergency incidents. These specifications cover only the general requirements as to the type of construction and test to which the apparatus shall conform, together with certain details as to finish, equipment and appliances with which the successful bidder shall conform. Minor details of construction and materials, which are not otherwise specified, are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features. Apparatus and loose equipment proposed by the bidder shall meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current editions at the time of contract execution. Loose equipment shall be provided as stated in the following pages.

Bids shall only be considered from companies that have an established reputation in the field of fire apparatus construction and have been in business for a minimum of 20 years. Further, the bidder shall maintain dedicated service facilities for the repair and service of products. Evidence of such a facility shall be included in the bidder proposal.

Each bidder shall furnish satisfactory evidence of their ability to construct the apparatus specified and shall state the location of the factory where the apparatus is to be built. The bidder shall also show that the company is in position to render prompt service and to furnish replacement parts for said apparatus.

Each bid shall be accompanied by a set of Specifications consisting of a detailed description of the apparatus and equipment proposed and to which the apparatus furnished under the contract shall conform. These specifications shall indicate size, type, model and make of all parts and equipment, and shall provide specifics of construction, construction methods, components and operational data with the bid. Each bidder shall provide two hard copies and one electronic copy of their complete bid proposal. A drawing of the proposed apparatus along with turn radius analysis report (including both curb to curb and wall to wall measurements) shall be provided with each bid.

	Yes	No

PROJECT FUNDING

Fulfillment of this project will be contingent on funding avenues yet to be determined and committed. Final Project funding may potentially be dependent upon bid pricing. Once the bid is submitted and opened at a time, date and location provided by the Lexington Fayette Urban County Government, the bid may not be withdrawn and will stand for ninety (90) calendar days.

Fifty percent (50%) of bid price will be issued upon completion of the chassis; final payment will be issued upon apparatus delivery and satisfactory inspection by the Division of Fire. Bidders shall provide an option to negotiate a 100% pre-payment for the apparatus. — N

QUALITY AND WORKMANSHIP

The design of the apparatus shall embody the latest approved automotive engineering practices. The workmanship shall be of the highest quality in its respective field. Special consideration shall be given to the following points: Accessibility of the various units that require periodic maintenance, ease of operation, and symmetrical proportions. Construction shall be rugged and ample safety factors shall be provided to carry the loads specified and to meet both on and off road requirements and speed conditions as set forth under "Performance Tests and Requirements." Welding shall not be employed in the assembly of the apparatus in a manner that shall prevent the ready removal of any part for service or repair. All welding personnel that shall be utilized in the fabrication and construction of structural components of the apparatus chassis, body and aerial device shall hold a valid certificate from the AWS - American Welding Society. The manufacturer is required to have an American Welding Society certified welding inspector in the plant during working hours to monitor welding quality. — Y

DELIVERY SCHEDULE

The apparatus shall be delivered to the Lexington Fire Department within 600 days of bid acceptance, or the bidder shall be penalized $500.00 per day for each day over the number of days specified in the bid that the apparatus is not delivered. — N

DELIVERY

Apparatus, to ensure proper break-in of all components while still under warranty, **s**hall be delivered under its own power - rail or truck freight shall not be acceptable. A qualified representative shall deliver the apparatus and remain for a sufficient length of time to instruct — Y

	Yes	No
personnel in the proper operation, care and maintenance of the equipment delivered.		
MANUFACTURER SPONSORED TRAINING The manufacturer will provide to the Lexington KY Division of Fire's Mechanical Bureau, factory level or equivalent repair and or maintenance related training on fire apparatus and or apparatus components within one year of delivery. This training will be the equivalent of eight (8) man days. All expenses associated with providing this training including registration, travel, lodging, meals course materials, etc. shall be the sole responsibility of the manufacturer.		N
APPARATUS FAMILIARIZATION An experienced and qualified distributor or sales representative shall familiarize Fire Department personnel (as designated by the authority in charge) in the proper operation, care and maintenance of the apparatus delivered. The representative must be a qualified, trained agent of the local authorized distributor or sales representative, or a direct employee of the manufacturer of the apparatus. A factory field service technician shall provide instruction to the Fire Department regarding the aerial device. The familiarization period shall consist of up to three (3) daytime sessions over a period of three (3) consecutive days during the normal work week (Monday - Friday).	Y	
INFORMATION REQUIRED The manufacturer shall supply at the time of delivery, complete operation and maintenance manuals covering the completed apparatus as delivered, including as-built wiring diagrams, as-built electrical harness drawings, and as-built air system schematics. A Copy of the manuals shall be provided in both hard copy and electronic format. A permanent plate shall be mounted in the driver's compartment which specifies the quantity and type of fluids required including engine oil, engine coolant, air conditioning, transmission, aerial hydraulics and drive axle. The location of the plate shall be determined at the pre-construction conference.	Y	
SAFETY VIDEO Documentation provided at the time of delivery shall also include an apparatus safety video, in flash drive. This video shall address key safety considerations for personnel to follow when they are driving, operating, and maintaining the apparatus. Safety procedures for the following shall be included: vehicle pre-trip inspection, chassis operation, aerial operation, and maintenance.		N

Yes	No

ACCEPTANCE TEST

At final inspection, a road test shall be conducted with the apparatus fully loaded and a continuous run of ten (10) miles or more shall be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts, and rear axles shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus. The vehicle shall adhere to the following parameters:

Y

- The apparatus, when fully equipped and loaded, shall have not less than 25% or more than 50% of the weight on the front axle, and not less than 50% nor more than 75% on the rear axle.
- The apparatus shall be capable of accelerating to 35 mph from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed rpm of the engine.
- The service brakes shall be capable of stopping a fully loaded vehicle in 35 feet at 20 mph on a level concrete highway. The air brake system shall conform to Federal Motor Vehicle Safety Standards (FMVSS) 121.
- The apparatus, fully loaded, shall be capable of obtaining a speed of 67 to 70 mph on a level concrete highway with the engine not exceeding its governed rpm (full load).
- The apparatus shall be tested and approved in accordance with NFPA Standard Practices and Federal Motor Vehicle Safety Standards (FMVSS).

The manufacturer shall provide a complete demonstration of the fire fighting systems during the final inspection of the completed apparatus. Final acceptance of the apparatus is subject to passing all required third party tests.

FAILURE TO MEET TEST

In the event the apparatus fails to meet the test requirements of these specifications on the first trial, second trials may be made at the option of the bidder within 30 days of the date of the first trial. Such trials shall be final and conclusive, and failure to comply with these requirements shall be cause for rejection. Failure to comply with changes to conform to any clause of the specifications, within 30 days after the notice is given to the bidder of such changes, shall also be cause for rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser or its use by the purchaser during the above-specified period with the permission of the bidder shall not constitute acceptance.

Y

	Yes	No

LIABILITY

The successful bidder shall defend any and all suits and assume all liability for the use of any patented process including any device or article forming a part of the apparatus or any appliance furnished under the contract.

Y

SPECIFICATION BID REQUIREMENTS

Proposals taking total exception to specifications shall not be acceptable.
Also, bidders shall submit a detailed proposal. Bid proposals shall be submitted in the same sequence as specifications for ease of evaluation, comparison and checking of compliance. A letter only, even though written on company letterhead, shall not be sufficient.
Any bid indicating that the manufacturer's proposal shall supersede the purchaser's specifications will be immediately rejected

N

EXCEPTIONS

All exceptions shall be stated no matter how seemingly minor. Any exceptions not taken shall be assumed by the purchaser to be included in the proposal, regardless of the cost to the bidder.
Bidders shall also indicate in the "yes/no" column if their bid complies on each item specified. Exceptions shall be clearly identified and fully explained on a separate page. Exceptions shall be allowed if they are equal to or superior to that specified and provided they are listed and fully explained on a separate page. The decision as to whether an exception is approved as being equivalent shall be entirely that of the Chief of the Division of Fire.

Y

COMMERCIAL GENERAL LIABILITY INSURANCE

The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of commercial general liability insurance:

Products/Completed Operations Aggregate	$2,000,000
Personal and Advertising Injury	$1,000,000
Each Occurrence	$ 1,000,000

Y

Coverage shall be written on a Commercial General Liability form. The policy shall be written on an occurrence form and shall include Contractual Liability coverage for bodily injury and property damage subject to the terms and conditions of the policy. The policy shall

	Yes	No
include owner as an additional insured when required by written contract. The policy shall include the owner as an additional insured as their interest may appear. The required limits can be provided by one or more policies provided all other insurance requirements are met.		
COMMERCIAL AUTOMOBILE INSURANCE The successful bidder shall, during the performance of the contract keep in force at least the following minimum limits of commercial automobile insurance: Combined Single Limit: $1,000,000 Coverage shall be written on a Commercial Automobile form.	Y	
UMBRELLA/EXCESS LIABILITY INSURANCE The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of umbrella liability insurance: Aggregate: $25,000,000 Each Occurrence: $25,000,000 The policy shall be written on an occurrence basis and at a minimum provide the same coverage's as Bidder's General Liability, Automobile Liability and Employer's Liability policies. The owner shall be included as an additional insured on the General Liability and Automobile Liability policies as their interest may appear. The required limits can be provided by one or more policies provided all other insurance requirements are met. Bidder agrees to furnish the owner with a current Certificate of Insurance with the coverage's listed above along with its bid. The certificate shall be made out to the purchaser and be an original; no photocopies shall be accepted. The Certificate of Insurance shall provide that owner be given 30 days advance notice of cancellation, nonrenewal or material change in coverage.	Y	
SINGLE SOURCE MANUFACTURER Bids shall only be accepted from a single source apparatus manufacturer. The definition of a single source is a manufacturer that designs and manufactures its products using an integrated approach, including the chassis, cab, body, and aerial is fabricated and assembled on the bidder's premises. The manufacturing process for the chassis, cab, body, and aerial shall be viewable by the purchaser during the pre-construction conference. The warranties relative to the chassis, cab, aerial and body design (excluding major component warranties such as the engine, transmission, axles, hydraulic pump, etc.) must be from a single source manufacturer	Y	

	Yes	No
and not split between manufacturers (i.e., body and chassis). The bidder shall provide evidence that they comply with this requirement.		
NFPA STANDARDS		
This unit shall comply with the current NFPA standards in effect at the time of the bid except for fire department specifications that differ from NFPA specifications. These exceptions shall be set forth in the Statement of Exceptions and shall be indicated in the proposal as "non-NFPA."		
Certification of slip resistance of all stepping, standing, and walking surfaces shall be supplied with the delivery of the apparatus.	Y	
A plate that is highly visible to the driver while seated shall be provided. This plate shall show the overall height, length, and gross vehicle weight rating.		
The manufacturer shall have programs in place for training, proficiency testing and performance for any staff involved with certifications.		
An official of the company shall designate, in writing, who is qualified to witness and certify test results.		
TOTAL VEHICLE ASSESSMENT CERTIFICATION		
The apparatus shall be audit-certified by an independent third-party, approved by the fire department, to the current edition of NFPA 1901 standards. The certification includes all design, production, operational, and performance testing of the apparatus (No Exception).	Y	
AERIAL TEST		
The aerial device shall be tested, approved, and certified by a third-party, approved by the fire department at the manufacturer's expense, conforming to NFPA requirements and standards. Copies of all tests shall be provided with the delivery documentation.	Y	
INSPECTION TRIPS		
The bidder shall provide three (3) factory inspection trips. The inspection trip(s) shall be scheduled at times mutually agreed upon between the manufacturer's representative and the customer, typically pre-construction, post-paint and final inspection. All costs such as travel, lodging, and meals shall be the responsibility of the bidder. Transportation is to be commercial air from Lexington, Kentucky, to the nearest commercial airport and ground transportation from the time of arrival until departure.	Y	

	Yes	No
Pre-construction The bidder shall plan on four (4) LFD personal traveling for the pre-construction conference. There should be adequate time provided to meet with engineers, project managers, and conduct facility tours. Mid-Point (Cab mounted, body not mounted) Four (4) LFD members will travel for the in-process inspection. Final Four (4) LFD members will travel for the final inspection. Adequate time shall be provided for demonstration of firefighting systems and designated electrical options as specified. During "Final" Inspection, the complete vehicle shall be raised, allowing the Fire Department Inspection team to walk under the apparatus to review the complete underside.	Y	
WEBSITE A Customer Service website shall provide authorized dealers access to comprehensive information pertaining to the maintenance and service of their customer's apparatus. This tool shall provide the authorized dealer the ability to service and support their customers to the best of their ability with factory support at their fingertips. This website shall also be accessible to the end user through the guest login. Limited access is available and vehicle-specific parts information accessible by entering a specific VIN number. All end users should see their local authorized dealer for additional support and service. The website shall provide the following to the designated individuals: Ability to access truck detail information on the major components of the vehicle, warranty information, available vehicle photographs, vehicle drawings, sales options, applicable vehicle software downloads, etc. Parts look-up capability, with the aid of digital photographs, part drawings assembly drawings. Ability to electronically submit warranty claims directly to the factory for reimbursement. Accessibility to multiple dealer reports that allow the dealership to maintain communication with the customer on the status of orders, claims, and phone contacts. Access to all currently published Operation and Maintenance and Service publications. Access to manufacturer Service Bulletins and Work Instructions containing information on current service topics and recommendations provided. Access to upcoming training classes offered by the manufacturer. Access to interactive electronic learning modules (Operators Guides) covering the operation of major vehicle components.		N

Yes	No

Access to customer service articles, corporate news, quarterly newsletters, and key contacts.

SERVICE CENTER

In order to maintain this complex piece of apparatus, the experience and reliability of the factory authorized service center is of major concern to the purchaser. The service facility must comply with the following criteria in order to be considered:

- Must have a minimum of five (5) years' experience repairing and maintaining fire apparatus of the make and type of apparatus being bid.
- Must have adequate indoor heated service facility and factory-trained technicians to perform repairs, including powertrain, chassis, hydraulic, generator, aerial, and controls must be provided. Must be within 120 miles of Lexington, Kentucky (No Exception).
- Must have a fully equipped mobile shop vehicle available for warranty work in Lexington, KY (No Exception).

Y

The bidder shall submit the location and recent photos of the service center and mobile service unit(s) along with the bid. Purchaser reserves the right to visit and inspect the service center prior to awarding bid.

The contractor is required to provide all warranty service at the Lexington Fire vehicle maintenance facility whenever major shop work is not involved. For warranty service involving transportation to the shop, the apparatus shall be picked up in Lexington, KY and returned from the contractor's facility by their personnel.

While under warranty, if towing or flat bedding of the apparatus to the repair facility is required, it shall be the responsibility of the bidder to provide such service at his cost.

The contractor agrees to keep the apparatus in a secure, indoor heated area at all times while in their possession. It shall be understood that the contractor is responsible for the apparatus and all articles of equipment from the time the apparatus is picked up until is returned to Lexington, KY.

The contractor shall provide proof of insurance coverage of the apparatus to LFD before the apparatus is transported.

REPLACEMENT PARTS

LFD intends to assure that parts and service are readily available, due to concerns over having vehicles, out-of-service for extended periods related to replacement parts availability.

Y

The apparatus shall be furnished with major parts commonly used in manufacturing of heavy-duty trucks and fire apparatus. This helps to ensure replacements parts are more readily available and at a reduced cost to the city. The use of proprietary parts such as axles,

	Yes	No
suspensions, engines, transmissions, supplemental restraints, electronic controls, seats, pumps, gauges, etc. shall not be acceptable. A description shall be provided explaining the parts replacement capabilities of the bidder including information regarding cross referencing part numbers from the apparatus manufacturer's part number to the vendor's parts. Replacement part availability and service capabilities will be a major criterion for the award of the bid.		
APPROVAL DRAWING A drawing of the proposed apparatus shall be provided with the bid. The sales representative shall also have a copy of the same drawing. The finalized and approved drawing shall become part of the contract documents. This drawing shall indicate the chassis make and model, the location of the lights, siren, horns, compartments, major components, etc. A "revised" approval drawing of the apparatus shall be prepared and submitted by the manufacturer to the purchaser showing any changes made to the approval drawing.	Y	
BID BOND All bidders shall provide a bid bond as security for the bid in the form of a 5% bid bond to accompany their bid. This bid bond shall be issued by a Surety Company who is listed on the U.S. Treasury Departments list of acceptable sureties as published in Department Circular 570. The bid bond shall be issued by an authorized representative of the Surety Company and shall be accompanied by a certified power of attorney dated on or before the date of the bid. The bid bond shall include language, which assures that the bidder/principal shall give a bond or bonds as may be specified in the bidding or contract documents, with good and sufficient surety for the faithful performance of the contract, including the Basic Two (2) Year Limited Warranty, and for the prompt payment of labor and material furnished in the prosecution of the contract. Notwithstanding any document or assertion to the contrary, any surety bond related to the sale of a vehicle shall apply only to the Basic Two (2) Year Limited Warranty for such vehicle. Any surety bond related to the sale of a vehicle shall not apply to any other warranties that are included within this bid (OEM or otherwise) or to the warranties (if any) of any third party of any part, component, attachment or accessory that is incorporated into or attached to the vehicle. In the event of any contradiction or inconsistency between this provision and any other document or assertion, this provision shall prevail.	Y	
PERFORMANCE BOND The successful bidder shall provide a signed contract and performance and payment bond,	Y	N

	Yes	No

which guarantees the performance of all terms and conditions of the contract and warranty agreement before a purchase order can be issued. The performance bond will specifically cover the performance of the contract according to its terms and conditions, as well as payment of all related bills and encumbrances. This performance bond shall be issued by a surety company which is listed by the U.S. Treasury Department's list of approved sureties, as published in Circular 570, as of the bid date. The performance bond shall be issued in an amount equal to 100% of the contract amount and shall be dated concurrent to, or subsequent to, the date of the contract.

GENERAL CONSTRUCTION

The design and construction of the apparatus shall embody standard automotive heavy vehicle engineering practices. The apparatus shall be designed, engineered and constructed with due consideration for the severe service nature of the fire service. All parts of the apparatus shall be installed in accordance with the OEM specifications.

Distribution of load between the front and rear axles shall be engineered so that all specified equipment and a full complement of personnel shall be carried without damage to the apparatus. Weight balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association and current standard automotive practices. Y

The apparatus shall be designed to conform to applicable ANSI and NFPA 1901 standards. The following design criteria shall be applicable to this specification to the extent specified herein:

- American Society for Testing Materials (ASTM) - A-36, Specification for Structural Steel
- Society of Automotive Engineers, Inc. (SAE) - SAE Handbook
- American Welding Society (AWS) - AWSO14.4-77 Classification and Application of Welded Joints for Machinery and Equipment
- American Society for Non-Destructive Testing (ASNT)

All sensitive components shall be protected against adverse weather conditions. Any exposed metal surface which is not painted or otherwise coated shall have a bright finish. Corrosion protection shall be provided between any dissimilar metals joined in the construction of this apparatus.

The specified apparatus shall be a custom cab type; designed, engineered and manufactured specifically for the fire service in North America. The apparatus meets or exceeds the

	Yes	No
requirements of the NFPA 1901, current edition, in all respects. The cab shell incorporates a protective safety-cage design that totally surrounds and protects the seat belted driver, officer and crew.		
Chassis shall be a new, heavy-duty, custom fire apparatus design built expressly for the fire service. All standard components that have not been specified shall be provided.		
Chassis shall be designed, engineered and built by the bidder and be the manufacturer's first line custom chassis.		
The chassis shall be suitable for heavy duty service with all components having adequate strength and capacity for the intended load to be sustained and the type of service required.		
Options for all possible access panel for ease of maintenance shall be listed with bid.		
CORROSION PROTECTION There shall be a system to prevent corrosion of all underbody components. The builder shall provide a detailed description of the corrosion protection process.	Y	
SIGN – VEHICLE DIMENSION AND WEIGHT A sign shall be provided in the front cab area, visible to driver while the apparatus is in operation, indicating the height of the completed apparatus in feet and inches, length of the completed apparatus in feet and inches, and the gross vehicle weight rating (GVWR) in tons.	Y	
SEATING CAPACITY The seating capacity in the cab shall be five (5). A sign visible to the driver, that states the number of personnel the vehicle is designed to carry, shall be provided.	Y	
APPROACH/DEPARTURE ANGLES An angle of approach and an angle of departure of at least 8 degrees shall be maintained at the front and the rear of the vehicle when it is loaded to the estimated in-service weight, as defined by NFPA 1901 current edition.	Y	
MAXIMUM OVERALL HEIGHT		N

	Yes	No
The maximum overall height of the apparatus shall be 136” (No Exceptions).		
WHEELBASE		
The wheelbase of the vehicle shall be no greater than 245”.	Y	
GVW RATING		
The manufacturer shall be responsible for proper weight distribution upon the chassis and axles. The apparatus when loaded, shall have not less than 25% nor more than 45% of the weight on the front axle and not less than 55% nor more than 75% on the rear axle. A certified weight certificate showing weights on the front axle, rear axles and total weight for the completed apparatus with the fuel tank full, but without personnel and equipment shall be provided at the time of delivery. In accordance with NFPA 1901, it shall be the responsibility of the purchaser to notify the manufacturer in the purchaser's specification of any ground ladders, or equipment to be carried by the apparatus that exceeds the minimum requirements of the NFPA 1901 standard in effect at the time of the bid.	Y	
GROSS VEHICLE WEIGHT RATINGS		
Front Vehicle Weight Rating shall be: [22,800#]	Y	
Rear Vehicle Weight Rating shall be: [50,000#]	Y	
Gross Vehicle Weight Rating shall be: [72,800#]		N
VEHICLE PERFORMANCE ANALYSIS REPORT		
A performance analysis report shall be run on the vehicle, as ordered, using computer software to determine top speed, grade ability, optimum shift points and acceleration on various grades. The report shall be delivered with the completed vehicle, but shall be available prior to engineering of the vehicle.	Y	
FRAME		
The frame is to be specifically designed and produced for the vehicle as specified. Each hole made in the frame rails must be used for a specific chassis component and any holes for non-required options are not acceptable.	Y	

	Yes	No
The chassis frame shall be built using two variable section steel channels and a minimum of six (6) formed steel cross members. The frame rails shall be 120,000 psi heat treated steel alloy with tapering measurements and continuous top and bottom flanges. The cross members shall be of heavy duty, fabricated, all-welded design, made out of a minimum of 50,000 psi material.	Y	
A "C" straight channel frame inner liner with top and bottom flanges shall be provided. It shall extend from behind the front suspension shackle to the end of the frame rail.		
Each rail shall have a minimum section modulus of 25.9 and a combined minimum resisting bending moment of 3,119,040 inch pounds over critical areas of the frame assembly.		
The frame rails and cross members shall be assembled using 5/8" flange head, grade eight bolts and "Spiralock®" flange nuts. Spiralock® nuts shall be used exclusively in the frame assembly for mounting spring hangers, steering gear, engine, transmission, etc. to maintain constant torque tension and prevent loosening from vibration. Spiralock® nuts shall provide even thread load over the bolt, increased fatigue strength and clamping torque.		
Frame rails less than or equal to 480" in length shall receive a duo-coat primer: an E-coat followed by a powder coating. This duo-coat process meets 1000 hours of salt spray testing per ASTM B117 test procedure. Frame rails greater than 480" in length shall be powder coated only. The inside of the rails shall be hand re-sprayed to insure coverage. This process meets 240 hours of salt spray testing per ASTM B117 test procedure.		
The frame rails shall then receive an additional paint coat.		

FRONT NON-DRIVE AXLE

A Dana D2200 front axle with a 22,800 pound rating shall be provided. It shall include composite low-friction bushings with diagonal grooves to better distribute lube, camber settings of +1/4 degree for both left and right sides to help improve tire life and a large diameter, heat treated kingpin with a lube retaining seal. Front oil seals with clear viewing window shall be provided on the front axle.	Y	
Shock Absorbers Gabriel heavy-duty telescoping shock absorbers shall also be provided on the front axle.		

	Yes	No
Electronic Roll Stability (ESC) - for Tandem Axles In compliance with NFPA 1901, current edition standard 4.13.1, the vehicle, as specified, shall be equipped with a Meritor-WABCO electronic Roll Stability Control system that shall utilize a centrally mounted pitch and yaw sensor and steering shaft position sensor interacting with the chassis' ABS traction control, auxiliary braking system and the engine ECM to minimize the vehicle's potential for rollover in a turning at speed maneuver.	Y	
REAR AXLES The rear tandem drive axle shall be a Dana model D50-172 with a capacity of 50,000 pounds at the hub.		
An inter-axle differential control switch shall be provided on the cab dash, easily accessible from the driver's seating position.		N
All axles shall be purchased complete from and certified by the axle manufacturer for the specific application. Brake chamber brand and size shall be determined by the axle manufacturer.		
REAR AXLE RATIO The rear axle ratio shall be determined by the manufacturer to match NFPA top speed of 60 m.p.h.	Y	
SUSPENSION The front suspension shall be taper leaf 4" x 52" constant rate type springs with a military wrapped eye. The correct material, spring length, width, thickness and number shall be provided to match the leaf spring rating with that of the gross axle weight rating of the vehicle.		
The rear suspension shall be a Neway ADZ-252 heavy duty 52,000 lb capacity air ride suspension. The assembly utilizes air springs and a parallelogram framework design that reduces drive line wear and vibration while maintaining a constant pinion angle. The air ride offers a smoother ride with less stress on truck components. It eliminates tire hopping and helps provide superior traction to the wheels.		N
BRAKES		

	Yes	No
The vehicle shall be equipped with a WABCO 4S4M anti-lock braking system (ABS). The ABS shall provide six (6) channel anti-lock-up braking control on the (2) front and (4) rear wheels. The system shall employ a digital electronics system with microprocessor controls divided into two (2) diagonal circuits. In the event of one circuit malfunction the second circuit shall operate unaffected. Each wheel shall be constantly monitored by the system when the vehicle is in motion. When any wheel begins to lock-up during braking, a signal shall be transmitted to the processor from the wheel sensor. The control unit shall instantly reduce the braking force applied to the wheel and immediately re-apply braking force so that the wheel rapidly slows without locking. The system shall control all wheels simultaneously to provide maximum vehicle braking in a relatively straight line. An ABS warning light shall be installed in the warning light panel of the driver's dash. The ABS system shall automatically disengage the auxiliary braking system whenever the anti-lock braking mode is active.	Y	
The service brake system shall be full air type.		
The front axle shall be provided with Bendix #ADB22X air disc brakes with internal automatic adjustment, sealed synchronized twin pistons and robust sealing of slide pins for environmental protection. The #ADB22X air disc brakes shall have 17" rotors and a fully sealed lever mechanism with variable mechanical ratio. A visual indicator of brake wear shall also be provided.	Y	
The rear brakes shall be Bendix #ADB22X air disc brakes with internal automatic adjustment, sealed synchronized twin pistons and robust sealing of slide pins for environmental protection. The #ADB22X air disc brakes shall have 17" rotors and a fully sealed lever mechanism with variable mechanical seal. A visual indicator of brake wear shall also be provided.	Y	
The brake system shall be certified, third-party inspected, for improved stopping distance.		
Brake Lines Color-coded nylon brake lines shall be provided. The lines shall be wrapped in a heat protective loom where necessary in the chassis.	Y	
All airline fittings shall be compression type (No exceptions). No push-fit fittings shall be used.	Y	

ELECTROMAGNETIC BRAKE

	Yes	No
A Telma electromagnetic, driveline retarder shall be furnished and mounted within the driveline system. This system shall automatically activate in four-stages to achieve 100% capacity when the brake pedal is applied. The system shall have an on/off switch and a four-stage indicator to show retarder activation stages mounted on the dash. The magnetic retarder control shall be through a switch on the dash, with activation of the retarder in conjunction with the brake pedal. The application shall be in progressive stages, (1/4, 1/2, 3/4 & 100 percent). The system shall disengage with the activation of ABS. Telma operation shall be determined at the pre-construction conference. The electromagnetic brake shall be controlled by the Telma integrated Retarder Control system (IRCS) that integrates both the control and power functions into a single module.	Y	
AUTOMATIC TRACTION CONTROL (ATC) W/ DEEP MUD & SNOW SWITCH Automatic Traction Control, working in concert with the ABS system, shall be provided which shall reduce wheel slip on acceleration on wet or slippery road conditions. A light shall illuminate on the driver's dash when the drive wheels slip during acceleration. A deep snow and mud option switch shall be provided in addition to the ATC option. This function increases available traction on extra soft surfaces like snow, mud or gravel by slightly increasing the permissible wheel spin.	Y	
INTER-AXLE DIFFERENTIAL LOCK The rear tandem axle set shall be equipped with an air actuated primary traction device that allows for speed differences between the forward and rear tandem axles while providing equal pulling power from each axle. When disengaged, one wheel set of the forward drive axle and the opposite side wheel set of the rear drive axle shall operate in drive action to minimize wear on drive components. When the IAD lock is engaged, both wheel sets of each tandem axle provides drive action and does so until one side encounters slip or the vehicle is turning, thereby maximizing traction without diminishing turn radius. A dash mounted locking rocker switch shall engage and disengage the IAD lock. While the IAD lock may be engaged or disengaged at rest or at road speed, it should not be engaged whenever any drive wheel is slipping. It is understood that the IAD should be unlocked for normal dry road condition operation to avoid premature ring gear, clutch and tire wear.	Y	

	Yes	No
AIR COMPRESSOR, BRAKE SYSTEM The air compressor shall be a Cummins/Wabco with 25.9 cubic feet per minute output. All airline connections shall be of the compression type. “Push on” fittings shall not be used for any air application, brakes or accessories (No Exceptions).	Y	
AIR SYSTEM One (1) air inlet with male Type “A” coupling shall be provided. It shall allow station air to be supplied to the apparatus brake system through a shoreline hose. The inlet shall be located in the driver side lower step well of the cab. A check valve shall be provided to prevent the reverse flow of air. The inlet shall discharge into the "wet" tank of the brake system. A mating female Type “A” coupling shall also be provided with the loose equipment Air Outlet One (1) female Type “A” coupling shall be provided adjacent to the Air Inlet. Air supply shall be dried and filtered. A 1/4 turn shutoff valve shall be located adjacent to the outlet. The outlet shall be located in the driver’s side lower step well of cab.	Y	
Air Tank (Additional) An additional air tank shall be provided to increase the capacity of the air system. This tank shall be dedicated to air horn use.	Y	
Air Tank Drains Heavy duty manual drain valves with pull cables shall be provided on each tank to drain condensation. Drain cables shall be routed to readily accessible location on outer cab/body. Drain cables shall also have sufficient slack built into the design to prevent unintended activation as a result of body flex/movement. The location shall have a permanently placed placard that reads “Drain Daily.”	Y	
Air Tank Mounting To reduce the effects of corrosion, all air tanks shall be mounted with stainless steel brackets.		N
AUXILIARY AIR COMPRESSOR A Kussmaul model #091-9B-1 "Auto Pump AC" redundant air compressor shall be installed. The Auto Pump shall be wired to 120 VAC shoreline. Operation shall be automatic with the pressure switch sensing the system pressure and controlling the power input. The compressor shall automatically replace air lost due to leakage in the brake system without any interference to engine mounted air compressor functions. Access for maintenance must be designed such	Y	

	Yes	No
that no other components must be dismantled to service the air compressor. Final location to be determined at preconstruction conference.		
AUXILIARY AIR APPLIED FRONT AXLE PARKING BRAKE An auxiliary air applied front axle parking brake shall be supplied with a separate control switch and properly labeled indicator light in the cab. This front parking brake will only be able to be activated when the parking brake for the rear axle is set.	Y	
OFFICER EMERGENCY BRAKE An additional emergency brake control shall be provided on the right hand side of the cab dash in easy reach of the officer. Control shall actuate the rear axle spring brakes only. In addition, the control shall disable the driver's accelerator pedal and shift the transmission into neutral. Brake control shall be a heavy duty toggle type electrical switch equipped with a spring loaded safety cover to prevent accidental brake engagement. Cover shall be red in color. Control switch shall have an identification label and a warning that it is "For Emergency Use Only". A red LED light shall illuminate when the brake is activated.	Y	
ENGINE INSTALLATION CERTIFICATION The fire apparatus manufacturer shall provide certification, along with a letter from the engine manufacturer stating they approve of the engine installation in the bidder's chassis. The certification shall be provided at the time of delivery.	Y	
ENGINE The chassis shall be powered by an electronically controlled engine as described below: • Make: Cummins • Model: X12 • Power: 525 @ 1900 RPM • Torque: 1695 ft.lb. @ 1000 RPM • Governed Engine Speed: 2000 RPM • Emissions Level: EPA 2010 • Fuel: Diesel • Cylinders: Six (6) • Displacement: 11.8 cu.in. • Starter: Delco 39 MT-HD	Y	

- Fuel Filters: Spin-on style primary filter with water separator & water-in-fuel sensor.
- Coolant Filter: Spin-on style with shut off valves on the supply and return line.

A dry-type air cleaner, suitable for the engine being proposed, shall be installed and mounted as to provide easy access for serviceability. An air restriction indicator shall be mounted in the dash panel to provide a warning indication of a clogged air filter. The air intake with ember separator shall be provided and be easily accessible. Y
A Racor Ecolite® dry type engine air cleaner shall be provided. It shall be installed in a location above the chassis frame rails and no less than 40" above the ground. A visual inspection shall be possible without tilting the cab. The air cleaner shall be serviceable through an access opening in the engine cowling.

EXHAUST SYSTEM

The exhaust system shall be stainless steel from the turbo to the inlet of the selective catalytic reduction (SCR) device, and shall be 4.00" in diameter. The exhaust system shall include a diesel particulate filter (DPF) and an SCR device to meet current EPA standards. An insulation wrap shall be provided on all exhaust pipe between the turbo and SCR to minimize the transfer of heat to the cab. The exhaust shall terminate horizontally ahead of the passenger side rear wheels. A tailpipe diffuser shall be provided to reduce the temperature of the exhaust at the exit. Heat deflector shields shall be provided to isolate chassis and body components from the heat of the tailpipe diffuser. Y

Exhaust Modification

The exhaust pipe shall be brought out from under the body at a 90-degree angle from the truck. The tailpipe shall extend a minimum of 2.00" past the body, terminating with a flange for a Plymovent magnetic attachment system. The diameter of the pipe shall be 6.00". There shall be a clearance of 4.00" completely around the pipe once past the side of the body. Y

DIESEL EXHAUST FLUID TANK

A minimum 10 gallon diesel exhaust fluid (DEF) tank, constructed of polyethylene, shall be provided and mounted in the driver's side rear cab step area. There shall be an access door that provides easy access for refilling the DEF tank. The tank shall be fillable without lifting cab (NO EXCEPTIONS). The tank shall be easy to remove for service. The tank shall be fully accessible when the cab is raised. There shall be a DEF fluid level sensor provided in the tank and connected to a gauge on the dash of the cab. All metal mounting components shall be stainless steel. A .50" drain plug shall be provided in a low point of the tank for drainage. The tank shall meet the engine manufacturer's requirement for 10% expansion space in the event Y

	Yes	No

of tank freezing. The tank shall include an integrated heater unit that utilizes engine coolant to thaw the DEF in the event of freezing.

ENGINE BRAKE

A Cummins engine brake shall be installed with controls within easy reach of the driver. Brake shall automatically be actuated when the accelerator pedal is released. The engine brake shall be wired in conjunction with the rear brake lights so that they are activated when the engine brake is engaged. It shall have a three position switch; "LOW", "MEDIUM" and "HIGH" along with an "OFF" and "ON" switch. — N

COOLANT OVERFLOW RESERVOIR

A six (6) quart coolant overflow reservoir shall be provided. It shall be accessed in the officer's step well. A hinged aluminum tread plate door with small D-ring handle shall be provided for access, separate from the officer's door. The aluminum tread plate door shall be properly labeled. — Y

A visual inspection of the fluid level shall be possible without tilting the cab (NO EXCEPTIONS).

RADIATOR

The radiator and the complete cooling system shall meet or exceed NFPA and engine manufacturer cooling system standards. For maximum cooling performance, the radiator core shall be made of aluminum fins having a serpentine design, soldered to brass tubes. The tubes shall be welded to brass headers using the patented "Beta-Weld" process for increased strength, longer road life, and solder-bloom corrosion protection. Steel supply and return tanks shall be bolted to the core headers and steel side channels to complete the radiator assembly. The radiator shall be compatible with commercial antifreeze solutions. The radiator shall be mounted in such a manner as to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven ground. The radiator assembly shall be isolated from the chassis frame rails with rubber isolators. — Y — N

The radiator shall include an integral de-aeration tank, with a remote-mounted overflow tank. For visual coolant level inspection, the radiator shall have a built-in sight glass that is located higher than the low coolant level sensor. The radiator shall be equipped with a 15 psi pressure relief cap. A drain port shall be located at the lowest point of the cooling system and the bottom of the radiator to permit complete flushing of the coolant from the system. A heavy-

duty fan shall draw in fresh, cool air through the radiator. Shields or baffles shall be provided to prevent recirculation of hot air to the inlet side of the radiator.

COOLANT LINES

Silicone hoses shall be used for all engine/heater coolant lines installed by the chassis manufacturer.
Hose clamps shall be stainless steel "constant torque type" to prevent coolant leakage. They shall react to temperature changes in the cooling system and expand or contract accordingly while maintaining a constant clamping pressure on the hose. Y
All fittings and adapters in the cooling system shall be manufactured from aluminum, brass or bronze. Plastic or composite materials shall not be acceptable.

SKID PLATE

A removable radiator skid plate shall be provided to protect the radiator from debris. The skid plate shall cover the lower radiator tank and shall be painted to match the frame rails. Y

FAN CLUTCH

A viscous style thermostatically controlled, clutch shall be provided for the engine cooling fan. The clutch shall be of a failsafe design, in that it shall fail in the "on" mode and thus prevent overheating. Manufacturer shall also wire the clutch so that it remains "on" constantly when aerial PTO is engaged. It shall not be load managed. Y

ACCESS TO ENGINE DIPSTICKS

For access to the engine oil and transmission fluid dipsticks, there shall be a door on the engine tunnel, inside the crew cab. The engine oil dipstick shall allow for checking only. The transmission dipstick shall allow for both checking and filling. An additional tube shall be provided for filling the engine oil. The door shall have a rubber seal for thermal and acoustic insulation. One (1) flush latch shall be provided on the access door. Y

FUEL TANK

The vehicle shall be furnished with a minimum 65 gallon fuel tank mounted behind the rear axle and just below the frame rails. The tank shall be constructed of stainless steel and equipped with a swash partition and vent. The fuel tank shall meet all FHWA requirements including a fill capacity of 95% of tank volume and all DOT and FMVSS regulations for Y

rollover protection. A 2" diameter fill inlet shall be provided. Fuel cap shall be of brass or bronze construction, non-vented and have lead safety fuses. It shall be chained to inlet tube or to the body sheet metal to prevent loss. Braided hoses shall be provided for the fuel lines. A 1/2" NPT drain plug shall be located at the bottom of the tank. The tank shall be installed using stainless steel straps and hardware, separated from the tank by a rubber insulating strip to prevent against chaffing. The stainless steel fuel fill inlet shall be located on the left (drivers) side of the apparatus. It shall be concealed behind a door. The inside of the door shall be marked "ULTRA LOW SULFUR DIESEL FUEL ONLY". The fuel inlet area, recessed behind the door, shall be completely enclosed to prevent dirt and debris from entering. Provision shall be provided inside the fill recess for drainage of any spilled fuel within the cavity. Y

The fuel door shall be constructed of stainless steel and shall have a brushed finish. It shall be hinged along the vertical side towards the front. A magnet shall hold the door in the closed position. The door shall be kinked along 3 edges with the fourth side being used as s finger grab for opening and closing it. A stainless steel trim ring shall encircle the opening to prevent the fuel nozzle from damaging the surrounding surface when it is opened. The fuel shelf shall be made from a high impact polyethylene material. Four (4) feet of extra fuel line shall be provided, coiled, and secured to the top of the tank.

Fuel Water Separator With Alarm & Heater

A Racor Greenmax™ model 4400R1210 fuel water separator with 10 micron Aquabloc filter, water sensor alarm and heater shall be provided Y

Fuel Line Shutoff Valve

A fuel line shutoff valve shall be provided to prevent fuel from draining back while changing fuel filters. The fuel line shutoff valve shall be located near the fuel water separator. Y

Fuel Cooler

An engine fuel cooler shall be provided on the apparatus. The engine fuel cooler shall cool the returning fuel from the engine using the water from the water pump. Y

Transmission

An Allison electronic automatic transmission shall be provided. The transmission shall be the most current generational design by Allison. Y

	Yes	No
The transmission shall be rated to handle the weight of the apparatus when fully loaded. The transmission shall be rated to handle the maximum rated torque output as produced by the chassis engine in all power ranges.		
A transmission temperature gauge shall be installed on the cab instrument panel. The transmission shall be programmed for Fire Service / aggressive downshifting application.	Y	
Transmission Shifter		
A six (6)-speed push-button shift module with the 4 + 2 "Mode" button shall be mounted to the right of the driver on the console. Shift position indicator shall be indirectly lit for after dark operation.	Y	
The Allison shifter shall be a "double-digit" display model.		
Transmission Cooler	Y	
A transmission oil cooler shall be mounted externally.		

DRIVELINE

Drivelines shall be a heavy-duty metal tube and be equipped with Spicer 1710 universal joints. The shafts shall be dynamically balanced before installation. A splined slip joint shall be provided in each driveshaft, slip joint shall be coated with Glide coat or equivalent. A grease zerk shall be provided for lubrication of the slip joint.	Y	N

POWER STEERING SYSTEM

A heavy duty power steering system shall be provided. The apparatus shall be equipped with an integral power steering unit which is rated to steer the front axle capacity.		
The hydraulic pump shall be engine gear driven. The steering gear "box", or fixture that the gear is mounted to, shall be fabricated in the factory of the bidder. It shall be a welded assembly constructed of 3/8" formed steel with a 3/4" face plate. Vertical gussets shall be provided between the face plate and the frame mounting plate to insure against frame flex while the vehicle is stationary.	Y	
The system will operate mechanically should the hydraulic system fail.		

AUXILIARY CYLINDER FOR POWER STEERING

An auxiliary power assist cylinder shall be provided in the power steering system.	Y	

POWER STEERING COOLER

	Yes	No
A power steering cooler shall be provided. Power steering oil temperature shall not exceed 225°F with an ambient air temperature of 115°F under any operating conditions. The cooler shall be of oil to air type.	Y	
FRONT TIRES The two (2) front tires shall be Continental 425/65R22.5, Conti HAC3, load range "L", with a nominal rating of 11,400 pounds at a top speed of 68 mph.	Y	
REAR TIRES The eight (8) rear tires shall be Continental 315/80R22.5, Conti HSC3, load range "L", with a nominal rating of 9,090 pounds at a top speed of 68 mph.	Y	
TIRE PRESSURE INDICATORS Tires shall have non-pressure indicators installed for shipment. Accu-Pressure Heavy Duty Safety Caps shall be provided and shipped loose. This valve stem inflation pressure sensitive monitor shall provide a visual color indication of when the tire pressure is below the manufacturers recommended level. The chrome safety cap shall show green when the tire is properly inflated and red once the tire becomes under inflated. All inner wheels shall be equipped with a valve stem extension that shall allow the inner wheel to be filled without removing the outer wheel.	Y	
WHEELS All tires shall be mounted on Alcoa Dura-Bright polished aluminum disc-type wheels with a ten (10) I-stud 11.25" bolt circle.	Y	
MUD FLAPS Front and rear heavy duty mud flaps shall be provided. Mud flaps shall be mounted such that they do not interfere with raising or lowering the cab or require physical manipulation to raise or lower the cab.	Y	
CAB INTEGRITY CERTIFICATION The cab shall be certified for the following tests: SAE J2420: Cab Over Engine (COE) Front Strength Evaluation - Dynamic	Y	

	Yes	No
Loading - Heavy Trucks SAE J2422: Cab Roof Strength Evaluation - Quasi Static Loading - Heavy Trucks ECE Regulation 29: Protection of Occupants of Cab in Commercial Vehicle Performance Measure: 1. After undergoing each test, the cab of the vehicle shall exhibit a survival space accommodating a 50th percentile male ATD in the median position without contact between the manikin and non-resilient parts for all seating positions. 2. None of the doors shall open during the tests. 3. The cab attachments may be distorted or fractured, however, the cab shall remain attached to the vehicle frame in at least one attachment location.	Y	
FRONTAL IMPACT The cab shall withstand a frontal force produced from 65,200 ft-lbs of energy using a swing-bob type platen. The same cab shall withstand all tests without any measurable intrusion into the survival space of the occupant area. There shall be no exception to any portion of the cab integrity certification. Nonconformance shall lead to immediate rejection of the bid.	Y	N
CAB The cab shall be designed specifically for the fire service and shall provide roll cage strength and safety. The cab shall be made in the factory of the bidder and must be the bidder's top-of-the-line stainless steel model. The cab shall be of the open interior design. The entire cab shall tilt forward 45 degrees for engine access. No plastic or fiberglass shall be used in the construction of the cab sub-frame, floor assembly, front assembly, side assemblies, back wall assemblies or roof assembly. Front Cab Dimensions The front face of the forward cab shall measure a minimum of 58" from the center of the front axle. The cab shall have an outside minimum width of 94". Entrance step wells to the driver's and officer's positions shall be a minimum of 24" wide. Entrance steps shall be made of stainless steel grating. Crew Cab Dimensions The back wall of the cab shall measure a minimum of 58" from the center of the front axle. The cab shall have an outside minimum width of 94". Entrance step wells to the crew cab positions shall be a minimum of 21" wide. Entrance steps shall be made of stainless steel grating.	Y	

	Yes	No
Cab Mounting A four point mounting system shall be provided for the front cab. The mounting system shall consist of two (2) front pivot mounts fabricated of steel and two (2) rearward lock plates attached to the rear cab sub-structure. Each front pivot mount shall consist of a greaseless pin and a multi-layered, self-lubricating, composite bearing. The outer layer of the bearing shall be high-durometer rubber to isolate road vibrations and shock. Each rear lock plate assembly shall consist of two hydraulic actuated locks isolated from the chassis by center bonded rubber mounts. Sub-Frame The sub-frame shall be stainless steel reinforced welded safety-cage construction utilizing a 3” x 4” rectangular structural steel tube sub-frame. All joints shall have continuous welds; stitch welding shall not be acceptable. The sub-frame shall be designed as a one-piece structure from the front to the back of the cab. It shall be used to support the cab while tilting, join front pivots to the cab locks, and to join the cab to the chassis. Front Assembly The safety-cage section at the front of the cab shall be constructed of 1.25” stainless steel tubing and shall join the front door posts together with the main sub-frame. There shall be a 2.50” x 1.50” x .25” heavy wall lower cross tube that joins the cab sills together to prevent cab twisting when tilting the cab. The front fire walls shall be set back from the front assembly structure to provide added protection in a frontal crash. The outer cab skin shall not be an integral structural member, although it shall help stiffen the cab front face. The front cab door hinge mount (aka “A” pillar) shall be a 2” x 2” tube with a .19” thick wall. Cab Floors All floor components shall be welded directly to the sub-frame. The floor shall be constructed of 50,000 psi stainless steel. Cab floors shall be covered with a sound barrier mat with a heavy-duty wear surface. Side Wall Assemblies The safety-cage on the sides shall be constructed of 1.25” stainless steel tubing. Both side wall assemblies shall be joined to the sub-frame via thick tubular structures, using heavy fillet welds. This shall strengthen the walls to withstand high roof loading. The side wall outer skins shall be integral with the cab structure as well as additional formed components to help stiffen side wall assemblies. There shall be 1.25” of insulating foam between the exterior and interior side walls. The structure shall be reinforced for cab entry grab handle mountings. The rear cab door hinge mount (aka “C” pillar) shall be equivalent to a 2.5mm formed channel with .19” thick tapping bar. Roof Assembly The 1.25” stainless steel tubing used in the construction of the roof section of the safety-cage shall support 2 psi of loading across the whole roof. The fabricated and welded roof sills and front header shall be made of 50,000 psi stainless steel material. The corner caps shall utilize	Y	

	Yes	No
spun metal technology thus retaining the metal's strength while producing a very rigid corner joint. The side roof covering (rolled edges) shall be constructed of stainless steel formed in a quarter round. It shall form a hollow double wall, angle reinforced roof edge with an integral drip rail. The roof top outer wall shall not be an integral structural member, although it shall stiffen the roof. There shall be 1.25" of insulating foam between the exterior roof and interior ceiling.	Y	
A flat roof shall be provided with an interior floor to ceiling height of no less than 54". The exterior surface of the cab roof shall be painted in compliance with the cab paint specifications detailed elsewhere in this specification document.		
BACK WALL ASSEMBLY		
The safety-cage on the back wall shall be constructed of 1.25" stainless steel tubing. It shall join the roof to the floor assembly. Construction of the back wall assembly shall utilize a minimum of 2.5mm 3CR12 material and the design shall provide crush protection in the event of a rollover. The back wall structure shall be uniform, regardless of the seating choices. All seat mounts and seatbelt mounts shall use weld nuts to eliminate pullouts and stripped threads. The outer skin shall not be an integral structural member, although it shall stiffen the back wall. 1.25" of insulating foam shall be located between the exterior and interior back walls.	Y	
Cab Grille		
The cab front opening shall be covered with a custom made polished stainless steel grille that shall be fabricated in the bidder's factory. The grille shall have formed vertical bars spaced apart on 2" centers. The upper polished stainless steel grille shall have a matching lower counterpart to further facilitate engine cooling. The two (2) stainless grilles shall be housed in a custom, raised and chrome plated bezel. Both the upper and lower front, center raised surround bezels and the two (2) grilles shall have a polished chrome finish.	Y	
UPPER RAISED BEZEL SURROUNDS, WITH PANELS		
A custom raised bezel shall be installed on the front face of the cab, on each side of the front grille. Housed within each bezel shall be a removable panel, painted job color. The removable panel shall provide service access to the forward side, firewall mounted electrical connections and wiring harness. The upper raised headlight bezel surrounds shall have a bright chrome finish.	Y	
Engine Air Inlet Grille & Ember Separator		
A highly polished stainless steel removable grille for engine air intake shall be provided. The air intake grille shall contain the replaceable water and ember separator filter in an integral housing. The air intake grille and water/ember separator cartridge shall be located on the side of the cab, above and to the rear of the driver's side steer axle. The engine air intake grill shall be no less than 60" above the ground. The cab engine air inlet shall be painted (JOB COLOR) RED	Y	

	Yes	No
## ENGINE TUNNEL The engine enclosure structure shall have a 1-1/4" thick inner lining, on the engine side, comprised of aluminized foil and foam/barrier composite for heat insulation. The tunnel cover shall have 1/2" decoupled foam lower and 1" decoupled foam upper covering, on the cab interior side, for noise insulation. The top forward portion of the hood shall have a full-width riser with a sloped face for the installation of the switch panel. The sloped panels shall be used for vehicle accessory controls. A minimum of 1" shall be provided between the right edge of the accelerator pedal and the side of the engine hood. A removable cover over the engine enclosure and insulation shall be coated with black LINE-X to act as an insulator for sound and engine temperature, as well as to provide an easy-to-clean work surface.	Y	
## ACCESSORY MOUNTING STRUCTURE The top portion of the engine enclosure shall have a channel frame located between the engine tunnel structure and the cover to support the cover and facilitate mounting of accessories and equipment.	Y	
## CREW CAB ENGINE COMPARTMENT ACCESS DOOR An access door shall be provided at the rear of the engine enclosure for routine engine fluid checks. The access door shall be insulated from engine heat with aluminized foil/foam/barrier composite and sealed to prevent exhaust fumes from entering the crew cab.	Y	
## FORWARD CAB CENTER TUNNEL REMOVABLE OVERLAY PLATE FOR POWERPOINT ACCESS A removable aluminum plate cover shall be provided for access to beneath the rearmost center tunnel cover immediately to the rear of the center tunnel cover. This accesses the power point/distribution area for center tunnel accessory potential. This plate shall be attached directly to the tunnel cover surface and the plate finish shall match the engine tunnel cover.	Y	
## FORWARD CAB CENTER TUNNEL COVER REMOVABLE PLATE-CENTER DASH A removable 27" long x 27" wide x .13" aluminum plate square cover shall be provided for access to two (2) equal spaces of approximately 10" long x 24" wide each beneath the center tunnel cover immediately to the rear of the center dash switch panel area and between the	Y	

	Yes	No
forward cab seating. This plate shall be attached directly to the tunnel cover surface. Its finish shall match that of the engine tunnel cover.		
STEERING WHEEL A padded steering wheel with center horn ring shall be provided. The upper steering column shall be of the tilt and telescopic type. A self-canceling directional switch with wiper control and headlight dimmer control shall be mounted on the steering column with an ICC four way flash switch. The self-canceling directional switch shall be easily removable and replaceable without removing the steering wheel or column assembly. The junction of the shaft and the cab floor shall be sealed to prevent air exchange between the cab interior and exterior.	Y	
CAB FLOOR The cab floors shall be covered with a black mat that functions as a sound dampening barrier. The mat shall have a pebble textured heavy-duty wear surface and be laminated to a foam underlay. The mat shall be composed of a vinyl-nitrile blend, which is the base material used in IV tubes and blood bags; it is not affected by blood or other body fluids.	Y	
REAR WALL COVERING A 3-piece aluminum tread plate overlay shall be provided over the entire exterior rear wall of the cab.	Y	
PAC TRAC ON INTERIOR REAR CAB WALL A Pac Trac 7000 assembly shall be installed on the interior rear cab wall, on both the driver's side and the officer's side outboard positions, starting at floor level. The Pac Trac on each side shall measure approximately 20" wide overall by 51.75" high.	Y	
CAB DOORS The four (4) forward and crew cab doors shall be barrier clearing. The forward and crew cab doors shall be a minimum 34.5” wide. The interior and exterior door handles to be flush mounted paddle style with a Trimark TM202 keyed lock incorporated in the exterior handle and lever control lock incorporated in the interior handle. One (1) key per door shall be provided. The door check straps shall be six (6) inch wide 9800 lb woven nylon strap with sewn integral steel reinforcement bars for attachment to cab and cab door. The door's latch locking	Y	

	Yes	No
mechanism shall make it impossible to lock oneself out of the cab unless locked with the supplied key. The door rotary latch mechanisms latch linkage shall be accessible through an access panel integral to the interior door panel. Doors shall be hung on stainless steel full length hinges attached to cab and door with .25" bolts. The hinges for each door shall be of one-piece 304-2B stainless steel construction with stainless steel pins and 0.090 gauge leaves with 2" joints and a 3" width opening. Doors shall meet Federal Motor Vehicle Safety Standard #206. All piano hinges on the exterior cab doors shall be mill finished. The doors shall be designed so as to allow the tempered laminate windows to roll completely down.	Y	
Cab Door Opening The front cab doors shall open approximately 90 degrees.		
Inner Cab Door Panels The upper inside bolt-on panel on each cab door shall be removable and shall be constructed of aluminum covered with black LINE-X.	Y	
Reflective Chevron All four (4) cab passenger compartment doors shall have at least 96 square inches of reflective material affixed to the inside of each door to alert traffic when the door is open. The reflective material shall be a chevron design that complies with NFPA requirements.	Y	
Doors - (2) Cab Two (2) cab side access doors shall be provided on the cab, one each side, to the rear of the front cab entrance doors. Door openings shall be approximately 13.00" wide x 27.00” high. The doors shall fit flush with the exterior skin of the cab and be hung on 304 stainless steel full length hinges attached to the cab and door by 0.25” bolts. The doors shall open a minimum of 90 degrees. The cab side access doors shall be vertically hinged at the front edge. The doors shall each have a chain style door stay.		
Cab Side Access Door Latch Position - Lower Part of Door Trimark paddle style latches shall be provided on the lower part of the door.	Y	
Keyed Locks for (2) Cab Side Access Doors (#1250 Keys) There shall be keyed locks for both the cab side access doors. The driver's side and officer's side access doors shall be keyed alike with #1250 keys.	Y	
Sill Protectors - (2) Cab Side Access Door, Brushed S/S Brushed stainless steel sill protectors, approximately .50" wide, shall be provided on the cab side access door sills to protect the painted finish.	Y	
Cab Side Access Inner Door Frame Scuff Plates A brushed stainless steel scuff plate shall be installed on the striker side of each cab side access inner door frame and shall run the full height of the door opening. The scuff plate shall be a single bend configuration that guards the outer door frame post from damage and chips to the paint.	Y	
CAB DOOR FRAME SCUFF PLATES		

	Yes	No
A highly polished stainless steel scuff plate shall be installed on the striker side of each cab door frame and shall run the full height of the door opening. The scuff plate shall be a single bend configuration that guards the outer door frame surface from damage and chips to the paint.		
Cab Side Access Door Lights - (2) ROM LED, (1) Strip Light Per Door Each cab side access door shall have a ROM LED lighting strip installed. The full height lighting strip shall be mounted vertically at the hinged side of the cab door. The LED lights shall be mounted in an anodized aluminum track. A switch, installed in the door jam, shall be used to activate light.	Y	

CAB INTERIOR

The cab shall be provided with an aluminum tread plate removable back liner. The back liner shall be the multi-piece type (minimum of three (3) sections) so that the entire liner does not have to be removed for localized maintenance.	Y	

INTERIOR CAB INSULATION

The cab shall include minimum 1.50" insulation in the ceiling and side walls, and 2.00" insulation in the rear wall to maximize acoustic absorption and thermal insulation.		
The cab shall be provided with a removable black headliner for ease of servicing the electrical wiring placed in the cab roof. The headliner shall consist of 3 layers of material. Next to the roof shall be a layer of acoustical insulation made of polyester and polypropylene fibers. The next layer is 1/4" thick Luann. Finally, there is a 1/4" thick layer of foam/perforated acoustical vinyl. The headliner shall be the multi-piece type (minimum of three (3) sections) so that the entire liner does not have to be removed for localized maintenance.	Y	

CAB DASH FINISH

The cab dash shall be sprayed with black LINE-X having a high resistance to abrasion and tearing. The LINE-X shall absorb impact without surface damage. The LINE-X shall be resistant to gasoline, diesel fuel, paints, bleaches, organic solvents and other cleaning agents and chemicals. It shall include sound dampening and vibration elimination properties. The LINE-X shall be solvent free and be environmentally safe to apply with no VOC or CFC hazards. Its surface shall have a non-glare, granular texture and be easily cleaned with common cleansing compounds.	Y	

OVERHEAD DASH

	Yes	No
The overhead dash shall be made of metal. It shall have a black LINE-X coating. Forward Cab Center Overhead Dash Open Retention Strap A removable, replaceable limit strap assembly shall be provided to prevent contact with the lower center dash panel and to retain the center overhead dash assembly in an open position when open for inspection or when access to the upper center power distribution is required. The strap assembly shall consist of a 2" wide, sewn, nylon strap with a steel footman loop inserted in each sewn looped end of the nylon strap. Each of the two (2) footman loops shall be anchored by two (2) 1/4 inch machine screws. The upper anchor assembly shall be attached to the cab roof structure and the lower anchor assembly shall be attached to the hinged power distribution access panel.	Y	

CAB INTERIOR PAINT

	Yes	No
The cab interior metal surfaces shall be painted black vinyl texture paint, unless finished in Line-X as otherwise specified. The following components shall always be black in color: • Floor matting and floor mat edging • Headliner trim • Back liner trim • Crew heater, complete assembly • Electrical panels • Plastic snap plugs for wire access holes • Door seals • Seat risers • Under seat compartments • Rubber covered grab handles • Map desk, if present • Tilt control storage door The following item shall always be gray in color: • Seat belt retractor cover.	Y	

WINDSHIELD

	Yes	No
The windshield shall be of tinted automotive laminated safety plate glass with a curved two-piece design. The windshield shall have approximately 2900 square inches of visual area. Right and left hand windshield glass shall be symmetrical and interchangeable from side to	Y	

	Yes	No
side to minimize spare parts stock and expense. Windshield shall be installed and held in place by an extruded rubber molding with a bright finish, decorative, locking bead. Cab shall be finish painted prior to windshield glass being installed. Glass shall be available from a local vendor.		
DOOR GLASS		
A retractable window with automotive type laminated safety glass shall be provided in all four (4) forward hinged cab doors. All glass shall be tinted. Glass shall slide in stainless steel side channels with cloth/fiber liners. Rubberized fiber seals shall be located at the bottom of the window opening to prevent water and debris from entering the interior of the door when the glass is up (or down). A seal shall be placed on both sides (interior and exterior) of the glass. The front door glass shall be approximately 23.75" high x 25.75" wide upper and 27.50" wide lower. The rear door glass shall be approximately 23.75" high x 30" wide. The door window openings shall be trimmed on the exterior side with a smooth, black, poly vinyl chloride (PVC) molding. Electric power window regulator shall be manufactured by the Muncy Corporation and shall be the enclosed, sliding flexible shaft, gear type for ease of operation and reliability. The shaft shall enter a vinyl plastic protective sheath whenever it is exposed. A 12 volt electric motor with gear reduction box to slow driven gear rpm and increase power transmission shall be provided.	Y	
DRIVER'S DOOR GLASS SWITCH An individual switch for the driver's electric door window shall be provided on the driver's dash, wired to the ignition. Aftermarket add-on type electric power window conversion devices like the type that replaces the crank arm will not be acceptable.	Y	
OFFICER'S DOOR GLASS SWITCH An individual switch for the officer's electric door window shall be provided on the officer's dash, wired to the ignition. Aftermarket add-on type electric power window conversion devices like the type that replaces the crank arm will not be acceptable.	Y	
CREW DOOR GLASS SWITCHES An individual switch for the crew electric door windows shall be provided on the crew doors, wired to the ignition. Aftermarket add-on type electric power window conversion devices like the type that replaces the crank arm will not be acceptable.	Y	
ADDITIONAL SWITCHES Three (3) additional switches, wired to the ignition, shall be provided to allow the driver to operate all power cab door windows.	Y	
CREW CAB SIDE GLASS There shall be a side window on each side of the cab between the doors. They shall be tinted and be manufactured of automotive laminated safety glass. Each window shall measure 23” high x 12” wide. They shall be installed and held in place by an extruded rubber molding with	Y	

	Yes	No
a chrome plated, decorative, locking bead. The cab shall be finish painted prior to window glass being installed.		
CREW CAB WINDOWS TINT The crew cab windows shall have a green tint laminate.	Y	
WINDSHIELD WIPERS One (1) wet arm operated windshield wiper shall be provided for each plate of windshield glass for accessibility and optimum windshield wiping surface areas. Wipers shall be two speed type with intermittent wiping feature. One (1) control switch shall be provided and located on the self-canceling directional switch for both wiper arms. The switch shall combine the on/off (automatic park position), two speed, intermittent and washer functions in one control. The turning switch shall activate the wipers and control speed, and pushing it shall operate the washers. The wiper arms shall park in a low, horizontal position to provide an unobstructed view when not in use. The wipers shall be wired through the parking brake, so they discontinue operation when the parking brake is set.	Y	
WINDSHIELD WASHER FLUID RESERVOIR A five (5) quart windshield washer fluid reservoir shall be provided. It shall be accessed in the officer's step well. A hinged aluminum tread plate door with small D-ring handle shall be provided for access. The aluminum tread plate door shall be properly labeled. A visual inspection shall be possible without tilting the cab.	Y	
SUN VISORS Two (2) approximately 8" x 28" padded, black sun visors shall be provided, one on the driver's side and one on the officer's side. Visor shall be supported at both ends to prevent drooping. The sun visors shall each have an adjustment knob that locks the visor position.	Y	
MDC NOTCH Provision for the installation of a mobile data computer (MDC) shall be provided in front of the officer seat. There shall also be provided the required wiring for the MDC on the right side of the cab dash. This shall consist of a 12-volt power and ground pigtail and GPS / data antenna wiring. The location of this power and antenna wiring shall be demonstrated at the final inspection. Access panel shall be installed in the top portion of the dash		N

	Yes	No
CAB STEPS The forward cab and crew cab access steps shall be a full-size two-step design to provide the largest possible stepping surfaces for safe ingress and egress. Four (4) fold up Eberhard intermediate cab steps shall be provided in the step well beneath each door. One (1) step shall be mounted on the forward vertical surface of the step well for each of the cab doors. The steps shall not interfere with the operation of any access doors built into the step wells when folded. The folding intermediate step shall be positioned to divide the height of the step well in half.	Y	
STIRRUP STEPS WITH GRIP STRUT Auxiliary cab entrance steps shall be provided at each cab door opening, below the cab, to reduce the cab entrance step height by approximately 9.50”.	Y	
CAB INTERIOR UPHOLSTERY Two (2) black "head bumper style" elbow pads shall be installed on the engine tunnel inboard of the officer and the driver. They shall be covered in Durawear™ and be fastened to a bracket outboard to the engine tunnel. The finish of the bracket shall match that of the engine tunnel. The assembly shall be positioned approximately 6 inches rearward of the center dash vertical surface. A customer patch shall be sewn to five (5) seat head rest(s) in place of the Manufacturer Logo. If a head rest is not present, then the customer's patch shall be sewn onto the front of the seat back cushion.	Y	
DRIVER SEAT One (1) H.O. Bostrom Sierra EX8/ABTS seat with high back styling shall be provided for the driver’s position. Seat Belt The driver's seat shall have a 3-point vertically adjustable D Loop style shoulder harness using integrated dual retractor, to meet FMVSS and NFPA 1901 current edition requirements. The seat belt shall be red in color.		N
OFFICER SEAT The officer’s seat shall be a Bostrom model Tanker 550 rigid mount seat. The seat back shall include a spring loaded flip up headrest and an SCBA bracket designed to accommodate a 1,800 liter cylinder @4,500 psi cylinder. Seat shall be mounted as far back as possible.		N

	Yes	No
SCBA Bracket One (1) NFPA compliant IMMI SmartDock universal SCBA bracket shall be installed in the seat(s).	Y	
Seat Belt The officer's seat shall have a 3-point vertically adjustable D Loop style shoulder harness using integrated dual retractor, to meet FMVSS and NFPA 1901 current edition requirements. The seat belt shall be red in color.		
SEAT CUSHION ADDITIONAL WIDTH Rear seat model Tanker 550 seats shall have the 22" wide cushion. Front seats shall be provided standard 20" cushion.		N
REAR CREW SEATS Three (3) Bostrom model Tanker 550 non-suspension seats shall be provided, two (2) forward-facing, centered on the rear wall of the apparatus, and one (1) rear-facing outboard on officer's side. One (1) NFPA compliant IMMI SmartDock universal SCBA bracket shall be provided in each seat.		N
Seat Belts - Inboard, Forward Facing, 3 Point, Vertically Adjustable (Ea.) The forward facing seat(s) shall have a 3-point vertically adjustable D Loop style shoulder harness using integrated dual retractor, to meet FMVSS and NFPA 1901 current edition requirements. The seat belts shall be red in color.	Y	
HEAD BUMPERS Two (2) padded black vinyl head bumpers shall be provided each side on the interior of the cab above the crew doors in the header area.	Y	
DOOR JAM SCUFF PLATES All cab door jambs shall be furnished with a stainless steel scuff plate, mounted on the striker side of the jam.	Y	
MIRRORS		

	Yes	No
Two (2) Rosco Accustyle heated mirrors with remote shall be installed on the cab doors, one on each side of the cab. The flat upper mirror shall measure 7" x 14" and the lower convex section shall measure 6.5" x 6". The mirrors shall have a black finish.	Y	
CROSSOVER MIRROR An eight (8) inch crossover convex mirror (K-10 P/N 512115-50S) will be installed on cab officer's side top corner that will allow the driver to have visual access of front bumper from the seated position. The mirror shall have a minimum of two attachment points to the body of the cab. The crossover mirror bracket shall have an outboard location.	Y	
FENDERETTES All wheel well openings shall be trimmed with replaceable, bolt-in, molded black rubber fenderettes. The fenderettes shall be secured to the cab with stainless steel threaded fasteners along the internal perimeter of the wheel well. Rubber welting shall be installed between the fenderettes and the cab side panel. They shall be installed with 1/4" hex head bolts (self-tapping sheet metal screws are not acceptable). There shall be a stainless steel backing strip between the rubber and the mounting flange to add support. Fenderette shall incorporate a vertical flange to cover the area where the cab side and wheel opening mounting surface meet. The fenderettes shall be a minimum of 1/4" thick, have a mold formed outer radius and a rounded bead at the wheel opening edge.	Y	
FENDER LINERS Semi-circular inner liners shall be provided in each wheel housing. They shall be constructed of aluminum and shall be bolted in place so they may be removed if damaged. Self-tapping sheet metal screws are not acceptable. The bottom edge of the liner shall be reinforced along its full length however, not have a formed reinforcement flange to avoid trapping dirt and debris.	Y	
CUP HOLDERS Four (4) cup holder(s) with a black Line-X finish shall be installed in the cab. The cup holder shall be designed for mounting on top of the engine tunnel. The cup holder shall be shipped loose.	Y	
MAP BOX		

	Yes	No
A map box shall be provided and installed between the driver and officer on top of the engine hood. The box shall have four (4) angled vertical slots space on 2.75 inch centers. The rear interior of the slots shall be 14.25 inches wide by 8.00 inches deep and shall run crossways of the cab. The front two (2) slots shall be 4.00 inches deep. The box shall be constructed of a 0.125 inch thick aluminum sheet metal welded assembly. It shall be covered with black LINE-X®. A velcro retaining strap shall be provided. The location of the map box shall be determined at the Final Inspection.	Y	
HELMET HOLDER The helmets shall be stored in the body in accordance with NFPA 1901 current regulations: NFPA 14.1.8.4.1 A location for helmet storage shall be provided. NFPA 14.1.8.4.2 If helmets are to be stored in the driving or crew compartment, the helmets shall be secured in compliance with 14.1.11.2. Caution labels shall be posted in the cab so that they shall be visible from each seat position. The labels shall read: "Do Not Wear Helmets While Seated".	Y	
MECHANICAL SIREN A Federal Signal Model Q2B® siren with chrome plated housing shall be recessed mounted in the front bumper extension with front and vane grille exposed. The siren activation switches shall only be active when the emergency master is activated. The Q2B® siren shall be mounted in the center of the bumper, forward section extended through the bumper. Two (2) Linemaster® Model 632-S momentary foot operated switch(es) to activate the mechanical Q2B® siren shall be installed on the toe board of the cab floor. A siren brake rocker switch shall be installed in the cab switch panel on each side for driver and officer, properly labeled. A master switch for the Federal Signal Q2B® siren shall be provided under the driver's side dash. Activation of the master switch shall remove all power including line supply to the solenoid. The foot switch shall be deactivated when the parking brake is set. The foot switch shall be located on the driver's side, outboard of the steering column. An aluminum tread plate angle panel shall be installed to hold a single foot switch shall be installed on the officer's side towards the door opening.	Y	
ELECTRONIC SIREN A Whelen electronic siren shall be provided in the cab dash. The siren has a selectable output of 100 or 200 Watts. The microphone shall be removable.	Y	

	Yes	No
The siren head shall be wired battery switched. Auxiliary activation switches shall only be active when the emergency master and ignition are activated. Model and location shall be determined at pre-construction conference. Two (2) Whelen Projector Series SA-315P, 100-watt speaker(s) with a polished grille shall be recess mounted in the front bumper extension.		
HANDHELD LIGHT There shall be four (4) hand lights provided, Stream light Vulcan lights with the orange thermoplastic body and a 20-watt spot bulb. Carrying straps with buckles shall be provided for each light. The four (4) hand lights shall be mounted rear crew cab area. The exact location of the hand lights shall be discussed at the pre-construction meeting.	Y	
CAB LIFT The cab shall tilt a minimum of 45 degrees for normal servicing of the engine and other equipment. The tilt cab locking system shall be a two-point type that locks automatically when the cab is lowered into its nested position. The cab tilt package is custom designed for safety and ease of vehicle maintenance. The hydraulic tilting system consists of two (2) heavy-duty single acting cylinders. The power supply is a high efficiency electric over hydraulic system with an integral mechanical override in case of battery failure. All components and parts are designed for installation with a minimum of 3 to 1 safety factor based on current S.A.E. standards. In addition to the velocity fuses, a secondary safety system shall be provided to hold cab in the fully raised position in the event of a failure in the primary lift mechanism. It shall consist of a metal channel device, which automatically drops over the extended rod of the right side hydraulic lift cylinder thereby preventing its retraction. The safety channel can only be released through an overt action made by the operator such as pulling a lever or cable from the right side of the apparatus, near the safety channel. Automatic release of the safety system shall not be acceptable. There shall be a small compartment under the officer's side, rear facing seat area. The compartment door opens rearward into the crew area. Stored in this compartment is the "manual tilt bar", in clips. The manual tilt bar actuates the manual hydraulic pump to tilt the cab. The cab tilt system shall be remotely controlled utilizing a cable with a hand held push button device. The cable shall be of sufficient length so as to be able to see both sides of the cab. The cab tilt control shall be located, stored, and tethered directly to a compartment beneath the officer side floor, forward step well area. The compartment shall have a hinged door with a latch. The door shall have the same finish as the surrounding step well area.	Y	
INTERLOCK CAB LIFT TO PARKING BRAKE		

	Yes	No
The cab lift system shall be interlocked to the parking brake. The cab tilt mechanism shall be active only when the parking brake is set, and the ignition switch is in the on position, if the parking brake is released the cab tilt mechanism shall be disabled. The cab lift control connection shall be moisture proof.		
BUMPER		
A heavy duty 0.25” thick painted steel bumper shall be mounted to the front of the chassis and be fabricated in the factory of the bidder. The bumper shall be channel-shaped with a minimum dimension of 10” high with 1.5" flanges and its ends shall be angled 45 degrees for a distance of 5". The bumper shall be painted to match the lower cab color.	Y	
A bumper extension shall be installed at the front of the cab. The front of the bumper shall be approximately 16" from the front face of the cab. A gravel pan made of 3/16" aluminum tread plate shall be installed between the front bumper and the cab. The bumper extension shall be designed and constructed so that the apparatus can be pulled by the extension.		
As part of the bumper extension, a second formed channel with 2" flanges shall be provided directly behind the full width of the flat portion of the bumper. The bumper extension support shall be of channel (minimum 9-7/16" x 3" x 3/8") construction, bolted to the chassis frame stub. A 3/16" aluminum tread plate gravel pan (deck) contoured to fit just below the front face above of the cab and just the upper bumper flange shall be provided. The gravel pan shall not be fastened to the top flange of the bumper.		
LIFT AND TOW MOUNTS		
The bumper extension shall be designed and constructed so that the apparatus can be lifted and towed by the extension. The bumper extensions shall be constructed with a heavy duty structure so as to allow the gravel pan to support weight and additional options. The only holes made in the bumper extension shall be those required for requested options.	Y	
Front Tow Eyes Two (2) painted "cut plate" type tow eyes shall be furnished. They shall be installed under the aluminum tread plate "gravel" pan, behind bumper, and securely attached to the bumper extension frame. The eyes shall be fabricated of 1" thick steel plate with a 3" diameter opening. They shall be painted to match the lower body color	Y	
Rear Tow Loops Two (2) painted rear tow loops shall be provided, welded to the underside of the rear step subframe. The loops shall be rated at 9000 pounds straight pull. They shall be painted to match the frame/undercarriage. They shall be painted to match the lower body color	Y	

	Yes	No

GRAB HANDLES AND HANDRAILS - CAB

Handrails shall be 1-1/4" diameter extruded aluminum, knurled, with a bright anodized finish. All handrail stanchions shall be chrome plated. They shall be bolted to the body with 1/4" stainless steel hex head bolts. Stanchions shall have a rubberized gasket placed between them and the body surface they are mounted on. A drain hole shall be provided in each bottom stanchion.

Handrails shall be installed as follows:

	Yes	No
• Four (4) 24" handrails shall be installed on the side of the cab, one just to the rear of each cab door.	Y	
• Handrails shall have stainless steel sill plates installed on the cab sides behind handles.	Y	
• Two (2) 6" chrome grab handles shall be provided, one on the inside of each front cab door.	Y	
• Two (2) 12" rubber covered grab handles shall be provided, one on the inside of each crew cab door.		
• Two (2) 12" rubber covered grab handles shall be provided, one on the driver's side and officer's side front A-pillar, above the door hinge, to assist in entry to the cab.	Y	
• Two (2) 12" rubber covered grab handles shall be provided, one on each rear crew door hinged-pillar, on the hinged side of the door, to assist in entry to the cab.	Y	
• One (1) 24” chrome grab handle shall be installed centered on the front face of the cab, between the grill and windshield.		N

VEHICLE DATA RECORDER

Fire Research series SBA200-A00 seat monitor display and vehicle data recorder kit shall be installed. The kit shall include a seat monitor display module, a vehicle data recorder, and cables. The seat monitor display shall be programmable for up to twelve (12) seats and have a seatbelt icon for each. A message display, push buttons for navigating through programs, and vehicle system warning indicators shall be located on the front of the seat monitor display. The data recorder case shall be waterproof. It shall have inputs for monitored information from the vehicle J1939 CAN bus, independent sensors, seatbelt and seat occupied switches, outputs for audible alarms, and two-way FRC datalink connectors. Y

The vehicle data recorder shall record the following data once per second and store it in a 48 hour loop:

- Vehicle Speed
- Acceleration
- Deceleration
- Engine Speed

	Yes	No
• Engine Throttle Position • ABS Event • Seat Occupied Status • Seat Belt Status • Master Optical Warning Device Switch • Time • Date • The vehicle data recorder shall record the following data once per minute and have memory to store it for 100 engine hours: • Maximum Vehicle Speed • Maximum Acceleration • Maximum Deceleration • Maximum Engine Speed • Maximum Engine Throttle Position • ABS Event • Seat Occupied with Seat Belt Unbuckled • Master Optical Warning Device Switch • Time • Date The oldest data shall be erased first when memory capacity is reached. All data shall be password protected and uploadable from the vehicle data recorder to a computer.		
UTILITY COMPARTMENT The officer's seat shall be held at NFPA regulated height by a frame which creates an enclosed compartment. The compartment measures approximately 18" wide x 11" high x 18" deep, front to back at the top and 10" deep front to back at the bottom. Access to this compartment shall be through a front drop-down door, measuring approximately 8.5" high and 14.5" wide.		N
INTERIOR STORAGE COMPARTMENT One (1) storage compartment shall be provided in the cab. The compartment shall be rear facing and in the outboard position on the driver's side. The compartment opening shall be covered with a webbing cargo net with metal buckles to secure the contents. The compartment shall be constructed of 1/8" smooth aluminum. The overall outside dimensions shall be 18"widex18" deep x 21" high. The compartment exterior shall have a LINE-X finish that shall match the lower cab dash/engine tunnel. The door interior finish shall match the compartment	Y	

	Yes	No
interior finish. Final dimensions shall be determined at the pre-construction conference. A black cargo net shall be provided over the cabinet front opening to secure stored equipment. The netting shall be made of two (2) inch wide black cargo netting with approximately two (2) inch square openings. The netting shall be fastened on the bottom with footman's loops. The top of the netting shall have two (2) seat belt buckles to secure/release the cover, one (1) in each corner. The male portion of each buckle shall be secured to the top of the netting, the female receiver portion shall be secured to the header of the compartment. A pull strap with loop handle shall be attached to each female receiver to release the cover. Velcro fold overs to the interior of the compartment shall be located on the bottom of the netting to facilitate removal.	Y	

CLIMATE CONTROL SYSTEM

A front cab heater / defroster / air conditioning unit shall be provided. The HVAC unit shall distribute filtered, heated or cooled, fresh and / or recirculated, air through ducting of the cab front dash panels. Heating capacity shall be rated at 46,000 BTU minimum. Cooling capacity shall be rated at 33,000 BTU minimum. The HVAC unit shall be located in the cab RH firewall and have a variable speed 625 CFM blower assembly. The HVAC unit shall be designed for serviceability and be located behind a removable panel. Access to air intake filter, heater core, evaporator core, and fan assembly shall be provided without removing the HVAC housing from the installed location. Intake air shall be filtered by a commercially available filter and can be mixed between fresh and recirculated for vent / defrost and heat / cool selections. Output air can be distributed between the four (4) defroster vent located at the base of the windshield, four (4) rear facing dash vents, and two (2) lower rear facing vents. Defrost function selection can provide heated or cooled output air, fresh or recirculated intake air, and utilizes the AC system for drying air to the windshield. Output air will be directed through six (6) vents. Four (4) fixed flow vents located at the base of the windshield positioned and designed to distribute the air up. Two (2) adjustable vents located, one (1) at the LH edge of the dash directed at the LH driver’s door glass and one (1) at the RH edge of the RH passenger’s door glass. Vent function selection can provide heated or cooled output air, fresh or recirculated intake air. Output air shall be directed rearward through four (4) adjustable vents. Two (2) adjustable vents shall be located in the center dash panel with positioning optimized for LH driver and RH passenger air flow direction to the upper torso. Two (2) adjustable vents shall be located, one (1) each forward seating position, in the upper outboard area of each forward seating kick panel, below the dash. The front HVAC unit shall utilize a dedicated condenser located beside the aerial. The condenser shall be a stacked type, low profile and feature two fans. All connections, hose and	Y	

	Yes	No
harness, shall be through weatherproof bulkheads. The condenser assembly shall include an aluminum tread plate (ATP) cover over the stacked condenser coils and an ATP cover over the Freon hoses, dryer, valves, switches and / or solenoids above the cab roof and connected to the condenser body. Condenser and cover mounting shall be made without perforating the cab roof skin for maximum resistance to water intrusion to the cab interior. A crew cab heater shall be provided. The heater unit shall provide filtered, engine coolant heated, air to the crew cab area through a ducted enclosure. Crew heating capacity shall be rated at 35,000 BTU minimum and the combined heating capacity of the cab HVAC units shall be 81,000 BTU minimum. The heater unit shall have a variable speed 430 CFM blower assembly. The heater unit shall be designed for serviceability and be located against the rear crew cab wall on the inboard officer side forward facing position in a vented and ducted enclosure approximately 16" deep x 14.5" high x 20" wide. Access to air intake filter, heater core, and fan assembly shall be provided. If the heater unit is centered on the back wall, an additional cover shall be provided to cover the hoses on the floor. This cover finish shall match the crew heater assembly. Crew heater function shall feature two (2) controls with backlighting. One (1) rotary fan control switch with four positions (OFF, LOW, MEDIUM, and HIGH) and one (1) rotary temperature control coupled to an electronic water valve. The heater control shall be located near the ceiling above the rear engine access door. The forward cab heater and crew cab heater inlet flow and return flow shall be interrupted by one (1) manual engine coolant shutoff valve mounted on a plate utilized specifically for auxiliary engine coolant flow control. The mounting plate and valve location shall be in the forward, RH side of the chassis engine area. Valve to be 1/4 turn style with label for ease of identification. The valve shall be a Hale 12BV nickel-plated brass ¼ turn valve with reinforced Teflon seals and operated by a chrome-plated rectangular handle (NO EXCEPTIONS). AIR CONDITIONING SYSTEM ADDITION - CREW CAB A crew cab air conditioning unit shall be provided on the cab ceiling, above the rear portion of the engine enclosure. The AC unit shall distribute cooled recirculated, air through six (6) outlets. The six air outlets include four (4) adjustable rear facing air diffusers and two (2) adjustable side outboard facing vents. Cooling capacity of the crew AC evaporator unit shall be rated at 39,500 BTU minimum and the combined cooling capacity of the cab HVAC evaporator units shall be 72,500 BTU minimum.	Y	

Yes | No

The crew AC unit shall have a variable speed 577 CFM blower assembly. Intake air shall be filtered by a commercially available and serviceable filter. The AC unit shall feature independent fan speed and temperature controls. Evaporator condensate shall be evacuated by two independent drain hoses, each routed inside a stainless pipe located beneath the AC unit, between the AC unit and the top of the engine enclosure. The two independent hoses route through the top of the engine enclosure cover, behind the engine block, and terminate outboard the chassis frame rail.

The crew AC unit shall utilize a dedicated condenser located on the, rear, crew cab roof beside the aerial. The condenser shall be a stacked type, low profile and feature two fans. All connections, hose and harness, shall be through weatherproof bulkheads. The condenser assembly shall include an aluminum tread plate cover over the stacked condenser coils and an aluminum tread plate protective cover over Freon hoses, dryer, valves, switches and / or solenoids above the cab roof and connected to the condenser body. Condenser and cover mounting shall be made without perforating the cab roof skin for maximum resistance to water intrusion to the cab interior.

The air conditioning system, front and rear combined, shall exceed the performance standard of cooling the cab from an ambient temperature of 100 degrees Fahrenheit at 50% relative humidity to an average cab temperature of 75 degrees Fahrenheit in less than 30 minutes.

All condensate drains shall be gravity type. No condensate pumps shall be accepted (NO EXCEPTIONS).

HVAC Control - Forward Cab

HVAC controls shall feature rotary switches, function labeling, backlighting, and have colored indicators. Y
A single, lighted, AC engagement push switch shall be provided for engaging the AC system components as needed.

The HVAC panel shall have four (4) rotary control switches inline, from left to right, in the following order:

· Fan Speed (OFF, LOW, MEDIUM, HIGH)
· Water Temperature Blend Control (HEAT-COOL)
· Outlet Air Blend Control (DEFROST-VENT)
· Intake Air Blend Control (FRESH-RECIRC)

	Yes	No
The HVAC panel shall have one (1) raised, “push to engage”, switch that illuminates when the air conditioning is engaged. This switch shall be centrally located on the control panel, between the second and third rotary control switches, along the top edge of the control panel.		
The HVAC control panel shall allow the operator to make selections or adjustments to any one of the four (4) selectors without resetting or disturbing the selections of other three (3) controls.		
The HVAC control shall feature an override to engage the air conditioning system when the operator has selected 100% Defrost on the Outlet Air Blend Control.		

General Wiring And Wire Harness Construction

	Yes	No
Unless otherwise specified by the component supplier, all insulated wire and cable shall conform to SAE J1127 Low Voltage Battery Cable type SGX or STX, or SAE J1128 Low Voltage Primary Cable type SXL, GXL, or TXL. Circuit feeder wires shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for which the circuit is protected. 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. 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 temperatures.	Y	
Electrical Wiring - 12V General The apparatus shall be equipped with a heavy-duty 12-volt electrical system. All 12-volt electrical equipment installed by the apparatus manufacturer shall conform to modern automotive practices. All electrical wiring and components installed in the apparatus shall be suitable for use in severe duty emergency vehicle applications.	Y	
Circuit Identification All wiring shall be uniquely identified by a circuit number and color coding. The identification shall be referenced on a wiring diagram. Wires less than 8 AWG shall be permanently identified at least every 2.0 inches (50.8 mm) by a circuit and function code. Cables equal to or larger than 8 AWG and wires included in jacketed cables shall be permanently identified by circuit number at all terminations.	Y	
Wiring Connections 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. Secondary locks shall be	Y	

	Yes	No
utilized on all connectors that are secondary lock capable. Exterior exposed wire connectors shall be environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids. Seal plugs shall be installed in all unused sealed connector cavities. All ungrounded electrical terminals shall have covers or be in enclosures to protect against corrosion, excessive heat, excessive vibration, physical damage, liquid contaminants, dust, and other environmental factors. Wiring splices shall be crimp-type, molded, or sonic weld type. Adhesive lined heat shrink tubing shall be used to seal and insulate splice joints. Wire and Cable Routing Wiring routed through holes in sheet metal or castings shall have edges protected by an appropriately sized grommet. Wiring shall be routed to avoid metal edges, screws, trim fasteners and abrasive surfaces. When such routings are not possible, protective devices (shields, caps, etc.) shall be used to protect the wires. When wires must cross a metal edge the edge shall be covered with a protective shield. Wiring shall be routed to provide at least 3 inches (76.2 mm) clearance to moving parts, unless positively fastened or protected by a conduit. Wire routings should avoid areas where temperatures exceed 180° F (82.2° C) and a minimum clearance of 6 inches (152.4 mm) shall be maintained from exhaust system components. Where compliance with this requirement is not possible, high temperature insulation and heat shields shall be utilized. When wiring is routed between two members where relative motion can occur the wiring shall be secured to each member, with enough wire slack to allow flexing without damage to the wires. Wiring to all circuit components (switches, relays, etc.) in exposed locations shall provide a drip loop to prevent moisture from being conducted into the device via the wire connection. Routing wires into areas exposed to wheel wash shall be avoided if possible. When such routings cannot be avoided, adequate clipping or protective shields shall protect the wires from stone and ice damage. Wiring shall be secured in its intended location with appropriately sized bolt-on clips and nylon wire ties. Electrical components designed to be removed for maintenance shall include a sufficient length of wire to allow the component to be pulled away from the mounting area for inspection and service work. Bulkhead type connectors or sealed fittings shall be used to prevent the entry of liquid contaminants into weather tight enclosures. **Wiring at all connectors will have sufficient length to allow wiring to enter connectors as straight as possible.**	Y	
Spare Wires Wiring harnesses from/to major power and signal distribution areas of the apparatus shall include spare wires for future expansion of the system.	Y	

	Yes	No
Electrical System Components Serviceable components shall be readily accessible. Switches, relays, terminals and connectors shall have a dc rating of 125% of the maximum current for which the circuit is protected. A distributed power and signal system shall be utilized on the apparatus to minimize power supply voltage drops. Power and signal distribution areas in the cab shall be concentrated in five (5) areas. A lower cab power and signal distribution center shall be located in the center forward portion of the cab "dash". It shall be hinged and opened by unlocking two (2) top mounted, double hinged, lift and pull latches. This area shall contain relays and circuit breakers installed in a logical and serviceable fashion. An upper power and signal distribution area shall be located in the forward portion of the cab ceiling, above the engine tunnel. Components in this area shall be permanently labeled and easily accessible by opening a hinged cover. An additional lower cab power and signal distribution center shall be located below the officer's dash behind the kick plate. An upper power and signal distribution area shall be located in the forward portion of the cab ceiling, above the engine tunnel. Components in this area shall be permanently labeled and easily accessible by opening a hinged cover. A power and signal distribution area shall be located on the front of the forward body compartments. Components in these areas shall be permanently labeled and easily accessible. All electrical components or devices installed in an exposed area on the outside of the cab or body shall be mounted in such a manner, or protected by a gasket, caulking or other means, so that moisture shall not accumulate in it.	Y	
Corrosion Protection Externally exposed, non-plug type, electrical connections shall be given a hand applied or sprayed application of an industrial standard insulation coating with a minimum rating of 2100 volts per mil thickness. Insulation shall protect the connection from water induced electrical corrosion and accidental short circuiting. Should the connection be loosened or removed during the manufacturing process another coating shall be applied after it has been refastened or replaced. General protection circuit breakers shall be Type-I automatic reset (continuously resetting). When required, automotive type fuses shall be utilized to protect electronic equipment. Control relays and solenoid shall have a direct current rating of 125 percent of the maximum current for which the circuit is protected per NFPA.	Y	
Electrical Wiring Requirements - 12V INTELEX™ PLUS The apparatus shall be equipped with an INTELEX™ PLUS management system for control of the electrical system devices, where applicable.		
Circuit Protection Circuit protection devices shall be utilized to protect each electrical circuit. All circuit protection devices shall be sized according to 125% of the anticipated load to prevent wire		

	Yes	No
and component damage when subjected to extreme current overload. Solid State Circuit Protection Intelex power distribution modules shall utilize solid state output channels and feature fully protected high-side drivers (+12V) to protect wiring. High-side drivers shall provide overload protection, current limitation, transient protection, and replicate the function of an automatic reset circuit breaker. If output current exceeds the rated amperage, the output shall automatically turn off. After 30 seconds, the module shall attempt to re-energize the load. If the output is still overloaded, it shall remain off until the power is cycled. In the event of a communications loss with the vehicle's control module, all outputs not controlling a moving device shall remain in their previous state until communication is restored or the power is cycled.	Y	
Non-Solid State Circuit Protection Circuit breakers shall be Type-I automatic reset (continuously resetting) and conform to SAE J553 or J258 unless operational requirements and/or safety concerns dictate Type-III manual reset type conforming to SAE J1625. Automotive-type fuses conforming to SAE J554, J1284, J1888 or J2077 shall be utilized when required to protect electronic equipment.	Y	
Power Control Relays and Solenoids Power control relays and solenoids shall have a direct current (dc) rating of 125 percent of the anticipated current load.		
Bussmann mVEC Relays and Circuit Protection Manufactured as a hardened and weather tight module, the Mvec is rated at 200 Amps. The mVEC is configured to provide various OEM circuit protection and switching functions, using industry standard fuses, relays and breakers, with the status and control of each circuit accessible through J1939 CAN open messages. Each mVEC is rated at 200 Amps, with individual outputs rated up to 30 Amps. Waterproof to high pressure spraying (IP66 equivalent). The mVEC is designed and manufactured with robust features such as heavy-duty housing, silicon and Gortex gaskets, and protective conformal coated electronics, to operate in demanding vehicle environments such as those found in fire apparatus.	Y	
LOAD MANAGEMENT SYSTEM The apparatus shall be equipped with an automated load management system. The load management system shall monitor battery voltage and activate the engine high idle system (provided NFPA interlocks have been established) before disabling any electrical loads. If engine high idle is not available or activation does not result in sufficient battery system voltage, individual electrical loads shall be automatically and sequentially deactivated until voltage returns to an acceptable level. Loads shall be sequentially reactivated to avoid a sudden large voltage demand on the system. Electrical loads defined in NFPA 1901 as "minimum continuous" shall not be subject to automatic load management. Load	Y	

	Yes	No

prioritization shall be independently field programmable by authorized users. If the load management system becomes active, the “LOAD MANAGE” indicator shall illuminate on the "Warnings" page of the INTELEX™ PLUS cab mounted display.

MULTIPLEX DISPLAY

A 5" color display capable of displaying graphical images as well as text messages shall be located on the cab dash. The main display page shall include the date, time and ambient air temperature in Fahrenheit. Additional information pages shall be provided for the warning indications, not stowed indications, and open doors. The display shall be dimmable with a Rheostat control on the dash and shall have an override button on the control to dim to ten (10) percent. The Display shall provide an auxiliary video input. Y

CAB INSTRUMENTATION

A non-glare instrument panel, custom designed to accommodate the appropriate functions, shall be provided. Illumination shall be provided for controls, switches, instruction plates, gauges, and instruments necessary for the operation of the apparatus. The cab dash shall be forward slanted, and constructed of aluminum. Rocker switches that have integral lights shall be as follows when applicable: red indicator lights shall be provided for warning light and engine/mechanical functions, green indicator lights shall be provided for scene and auxiliary lighting and general functions; selection shall be at the manufacturer's discretion. A system shall be provided that interacts with the engine electronics and eliminates redundant senders and switches. The electronic engine gauges shall receive information on the SAE J1939 data link to improve reliability and gauge accuracy. Connectors shall be utilized for ease of service. The dial face shall be black with white lettering. The primary letters shall be in Imperial with the secondary, smaller letters in metric. The dial shall have international non-language symbols for the gauge function (except speedometer). Gauges shall have illumination with a monochrome LCD display located on the speedometer gauge. They shall also have a 250 degree dial sweep for greater definition of scale. SAE J1939 Faults and Warnings shall be displayed on the LED display. Y

Driver’s Instrumentation

The following individually mounted gauges shall be provided: (all-inclusive gauge clusters not accepted, no exceptions)

Main Gauges

- 3” Speedometer: 0-85 mph with built-in LCD display
- 3” Tachometer: 0-4000 rpm Satellite Gauges

	Yes	No
• 2” Fuel Level: Empty – full with low level warning indicator • 2” Voltmeter: 10-18 VDC Satellite Gauges • 2” Fuel Level: Empty – full with low level warning indicator • 2” Voltmeter: 10-18 VDC • 2” Coolant Temperature: 100-280 Degrees Fahrenheit • 2" Engine Oil Pressure: 0-100 psi • 2” Transmission Oil Temp: 100-320 Degrees Fahrenheit • 2” Front Air Pressure: 0-150 psi • 2” Rear Air Pressure: 0-150 psi • 2” DEF Level: Empty – full with low level warning indicator	Y	
Driver's Indicator Light Module The following indicators shall be mounted in a removable modular panel in front of the steering column. The indicators shall be identified with universal ISO 2575 symbols where applicable and visible to the driver while seated. All applicable indicators in the modular panel shall automatically illuminate for 1 second upon activation of the ignition switch to verify operation: • Battery Switch “On” green indicator light • Ignition Switch "On" green indicator light • Check Transmission amber indicator light • High Transmission Temperature amber indicator light • Check Engine amber indicator light • High Coolant Temperature red indicator light • Low Coolant Level red indicator light • Stop Engine (Engine Warning) red indicator light • High Exhaust Temperature (HEST) amber indicator light • Diesel Particulate Filter Regeneration (DPF) amber indicator light • Diesel Exhaust Fluid (DEF) Level amber indicator light • Wait-to-Start amber indicator light • Malfunction Indicator Light (MIL) amber indicator light • ABS warning amber indicator light • Automatic Traction Control activated amber indicator light	Y	

	Yes	No

- Electronic Stability Control activated amber indicator light
- Spring (Parking) Brake "On" red indicator light
- High Beam “On” blue indicator light
- Low air pressure red indicator light
- Left Turn signal green indicator light
- Right Turn signal green indicator light
- Panel Fault amber indicator light
- Cab Not Locked red indicator light

CONTROL SWITCHES

The following rocker style control switches shall be identified and accessible to the driver while seated. Switches shall include integral indicator lights (where applicable) to advise that the switch has been energized and identification labels shall be illuminated for night driving.

- Ignition switch with green indicator light
- Engine Start switch
- Headlight / Tail-Marker-ID light switch
- Instrument Panel Dimmer control rheostat

Y

The following controls shall be stalk mounted on the steering column and identified and visible to the driver while seated:

- Turn Signal Control and 4-Way Hazard Warning switch
- High-beam headlight switch
- Windshield wiper control switch
- Windshield washer control switch

The following controls shall be identified and accessible to the driver while seated:

- Parking (Spring) Brake Control
- Front Axle Parking Brake
- High Idle control switch
- Other controls (as defined elsewhere in this specification)

An overhead switch panel shall be located in the "overhead" position above the windshield on the driver's side shall have the following switches

- Siren brake
- A.T.C.
- Rear locking differential
- Telma Brake Control
- White light disable

The following controls shall be identified and accessible to both the driver and officer while

	Yes	No

seated. Controls shall be identified and illuminated for night driving.

- HVAC control panel
- Siren brake
- Other controls (as defined elsewhere in this specification)

EMERGENCY & WORK LIGHT SWITCH PANEL - DRIVER

All emergency light and work area lighting control switches shall be mounted in a removable panel located in the overhead position on the driver's side of the cab. The light switches shall be maintained rocker type with an internal indicator light (where applicable) to show when the switch is energized. All switches shall be properly identified by an illuminated label for night driving. A master warning light switch shall be provided for emergency lighting. Work lights are defined as ground, step, rear pick up, and dunnage area. Y

ALARMS

The following conditions shall cause the audible alarm to sound “steady” (not an intermittent beep); signifying a “mission critical” condition exists that requires immediate attention.

- STOP ENGINE
- LOW AIR
- LOW COOLANT
- CAB NOT LATCHED
- LOW VOLT
- ABS FAULT
- LOW OIL PRESSURE

Y

Corresponding “Low Air”, “Stop Engine” visual indicators shall be located in the dash gauge panel in front of the driver.

The following conditions shall cause a chime alarm to sound “intermittently” (i.e., beep), once the parking brake is released, signifying a condition exists that may become “mission critical” if not quickly addressed. A “Do Not Move Apparatus” red flashing indicator shall be located in the driver’s compartment to indicate

- ANY LIGHT NOT STOWED
- ANY BODY DOOR OPEN
- ANY CAB OR CREW CAB DOOR OPEN

	Yes	No
The light shall be activated only when the parking brake is released. An override switch to silence an audible alarm in case of malfunction shall be provided.		
An audible alarm shall sound if any of the seat belts are not properly closed and the vehicle is going 5 mph or greater. The sound shall be different from all other audible alarms in the cab.		
INDICATOR LAMP AND ALARM PROVE-OUT A system shall be provided which automatically tests telltale indicator lights and alarms located on the cab instrument panel. Telltale indicators and alarms shall perform prove-out when the ignition switch is held in the up position for three (3) to five (5) seconds to ensure proper performance.	Y	
SECOND SWITCH PANEL There shall be a secondary (redundant) switch panel located in the officer console area of the cab. The light switches shall be rocker type with an internal indicator light (where applicable) to show when the switch is energized. Switches shall be maintained rocker type with an indicator light of which is an integral part of the switch. All switches shall be properly identified by an illuminated label for night driving.	Y	
The switches in this panel will control the front cab brow light and the side mounted cab floodlights.		
POWERPOINTS Six (6) 12 volt DC / USB utility plugs shall be installed in the cab interior. Two (2) 12 volt DC / USB utility plugs shall be installed in a designated body compartment. The location of the 12 volt DC / USB utility plugs shall be determined at the pre-construction conference.	Y	
12 VOLT PLUG(S) AND RECEPTACLE(S) Three (3) 12 volt power plug receptacle(s) and cover(s) shall be provided and shall be wired battery direct, with a fused circuit, through a Havis Charge Guard Select. The plug and receptacle are made from corrosion resistant marine grade materials. The plug locks into the receptacle providing a positive moisture proof connection.	Y	

	Yes	No
Location of the 12V plugs shall be on the officer's side console of the engine tunnel to allow powering of monitors and electronic devices.		
12 VOLT PLUG(S) AND RECEPTACLE(S)		
Two (2) 12 volt power plug receptacle(s) and cover(s) shall be provided and shall be wired battery direct, with a fused circuit, through a Havis Charge Guard Select. The plug and receptacle are made from corrosion resistant marine grade materials. The plug locks into the receptacle providing a positive moisture proof connection.	Y	
Location of the 12V plugs shall be in the rear of the cab, accessible to the crew. Final location determined at the pre-build conference.		
RADIO ANTENNA MOUNT		
The apparatus will require four (4) communications antennas mounted on the roof of the apparatus.		
The antenna mounting base shall be NMO type mounts designed for use with the thickness of the material used for the roof of the apparatus (Model MATM). The antenna mounts shall be provided with twenty-five (25) feet of coaxial cable installed to locations in the apparatus determined by the Radio Communications Section of the Lexington Division of Fire and Emergency Services. The coaxial cable shall be RG58/U with 95% braided shield minimum. The coaxial cable shall have a solid copper center conductor with a Polyethylene or Teflon dielectric.	Y	
The location of the antennas on the roof of the apparatus shall be determined in consultation with the Radio Communications Section of the Lexington Division of Fire and Emergency Services (Radio Communications Section). The manufacturer shall provide the Radio Communications Section a detailed diagram on the apparatus cab area including the layout of the roof area, the interior consoles, seats and interior compartments. The diagram of the roof shall include the location of the structural members, light fixtures, and interior headliners. A means of access shall be provided to the inside location of each antenna mounting location selected by the radio communications personnel. Headliner removal shall not be required to service the underside of antenna mounts. All factory installed antenna mounts shall have an antenna or an antenna mount rain cap installed to protect the antenna mount from damage.		
RADIO EQUIPMENT POWER		
A minimum of 6 (six) constantly hot and 6 (six) ignition switched fuse panel connections, and grounds for customer-installed radios and chargers shall be provided at the electrical distribution area. Electrical noise suppression shall be sufficient to allow radio equipment	Y	

	Yes	No
operation without interference. Electrical noise suppression shall be accomplished by using a filter on power supply.		
DASH CUTOUTS FOR RADIOS The cab dash shall be manufactured with cutouts and mounting ears for the following two (2) purchaser-supplied mobile radios. Top Slot: Harris XG25M Bottom Slot: ICOM ICF121	Y	
ELECTRICAL POWER CONTROL SYSTEM A compartment shall be provided in or under the cab to house the vehicle's electrical power and signal circuit protection and control components. The power and signal protection and control compartment shall contain circuit protection devices and power control devices. Power and signal protection and control components shall be protected against corrosion, excessive heat, excessive vibration, physical damage and water spray. Serviceable components shall be readily accessible. Circuit protection devices, which conform to SAE standard, shall be utilized to protect each circuit. All circuit protection devices shall be sized to prevent wire and component damage when subjected to extreme current overload. General protection circuit breakers shall be Type-I automatic reset (continuously resetting) and conform to SAE J553 or J258. PTO power circuits shall be protected by Type III manual reset non-cycling circuit breakers conforming to SAE J553 or J258 which remain open until manually reset. When required, automotive type fuses conforming to SAE J554, J1284, J1888 or J2077 shall be utilized to protect electronic equipment. Power control relays and solenoids shall have a direct current (dc) rating of 125 percent of the maximum current for which the circuit is protected. Visual status indicators shall be supplied to identify control safety interlocks and vehicle status. In addition to visual status indicators, audible alarms designed to provide early warning of problems before they become critical shall be used.	Y	
EMI/RFI EMISSIONS-SUSCEPTIBILITY-PROTECTION State-of-the-art electrical system design and components shall be utilized to ensure the suppression of radiated and conducted EMI (electromagnetic interference) and RFI (radio frequency interference) emissions that may cause communication and navigation	Y	

Yes	No

radio-reception interference. EMI/RFI susceptibility shall be controlled by applying immune circuit designs, shielding, twisted pair wiring and filtering. Harness and cable routing shall be given careful attention to minimizing the potential for conducting and radiated EMI-RFI susceptibility. The apparatus proposed shall have the ability to operate in the electromagnetic environment typically found in fire ground operations.

The electrical system and related components shall comply with the applicable sections of J551/1 *Performance Levels and Methods of Measurement of Electromagnetic Compatibility of Vehicles, Boats (up to 15 m), and Machines (16.6 Hz to 18 GHz).* The contractor shall be able to demonstrate the EMI and RFI testing has been done on similar apparatus and certifies that the vehicle proposed meets SAE J551 requirements.

Electrical / electronic equipment on the apparatus shall not be susceptible to radiated and conducted EMI/RFI emissions from on-board high powered two-way radio transmitter(s) and shall comply with the requirements of SAE J551-12 *Vehicle Electromagnetic Immunity--On-Board Transmitter Simulation*.

BATTERY SYSTEM

Six (6) 12V Group 31 950 CCA batteries shall be installed, three each side of the cab under the rear entrance way. Heavy-duty battery cables shall be provided to maximize power available to the electrical system. A pair of jumper cable studs with color coded covers shall be provided under the driver's side battery storage area. Battery and electrical component storage areas shall be constructed of stainless steel with structural steel tubes at the corner mounting points and shall be located one (1) each side mounted on the vehicle frame. They shall be well ventilated and enclosed to protect against road splash and debris. Suitable provisions shall be provided for drainage.

Y

The batteries shall be held firmly in place by providing a full frame type top clamp which encloses the battery set on all four (4) upper corner sides. The one piece clamp shall be fabricated of 3/4" angles and be held in place by four (4) "J" shaped clamping bolts placed in the corners, retained within the battery box to prevent retrieval from underside the apparatus. Battery inspection shall be provided through latched drop down doors in the lower step area of the crew cab. Battery replacement shall be possible without tilting the cab. The interior of the battery box where the batteries are installed shall be painted gloss black. The batteries shall be installed on a non-corrosive Turtle Tile mat. Batteries shall be contained in a box made of stainless steel.

	Yes	No
BATTERY DISCONNECT SWITCH A master load disconnect switch shall be provided between the battery positive buss bar and the remainder of the switched battery electrical loads on the apparatus. A green "battery on" pilot light that is visible from the driver's position shall be provided. One (1) single battery system switch mounted near the driver's side front entrance in a location so it may be turned off by a person standing on the ground outside the vehicle. It shall have the capacity to handle 350 amps of continuous power. An additional master disconnect switch shall be provided between the batteries and the battery positive buss bar to facilitate ease of maintenance. This disconnect shall be located on the officer's side near the batteries and shall be accessible when the cab is tilted.	Y	
BATTERY CABLE INSTALLATION Battery cables and battery cable harnessing shall be installed utilizing the following guidelines: • All battery cables and battery harnesses shall have a permanent label attached for easy identification of the harness part number and fabrication date. • Splices shall not be allowed on battery cables or battery cable harnesses. • For ease of identification and simplified use, battery cables shall be color coded. All positive battery cables shall be red in color or wrapped in red loom the entire length of the cable. All negative battery cables shall be black in color. For increased reliability and reduced maintenance, all electrical buss bars located on the exterior of the apparatus shall be coated to prevent corrosion.	Y	
ALTERNATOR A 430 amp Delco alternator, model 55SI, shall be provided.	Y	
STARTER SYSTEM All positive cables from the batteries shall be connected directly to a battery positive buss bar located as close to the batteries as practical. The alternator shall be wired directly to the battery positive buss bar through the ammeter shunt, if one is provided. The starter solenoid(s) shall be connected directly to the battery positive buss bar. An interlock shall be provided to prevent the operator from engaging the starter when the engine is running. All negative (ground) cables from the batteries shall be connected directly to a	Y	

	Yes	No
battery negative buss bar located as close to the batteries as practical. Appropriately sized ground feeder cables shall be utilized to provide a low impedance ground path to the negative buss bar for all electrical devices on the apparatus. The battery negative buss bar shall be connected to the chassis frame. The cab, transverse module, and body structure shall be electrically bonded to the vehicle frame with braided copper grounding straps.		
BATTERY CHARGER A Kussmaul Auto charge 1200, Model 091-53-12-Remote battery charger shall be provided. A bar graph display indicating the state of the charge shall be provided. The charger shall have a maximum output of 40 amps and a fully automatic regulation. The battery charger shall be wired to the AC shoreline inlet through an AC receptacle adjacent to this battery charger. Battery charger shall be located in the cab, in an area that will not: obstruct crew activities or space, create a hazard for crew while riding or operating, or obstruct space for crew PPE (turnout gear) or usable compartment space. The battery charger must be mounted in a location that accessible and serviceable without removing or dismantling of any other components. A protective cover is acceptable. Wires shall have sufficient slack to allow charger to be removed easily. The battery charger indicator shall be located beneath the driver's seat on the inside of the cab and visible from the ground with the door open.	Y	
HUBBELL STYLE RECEPTACLE A non-ejecting Hubbell style receptacle shoreline inlet. Cover to be painted job color red. There is to be a relay to inhibit the starter from engaging unless the shoreline is disconnected from the inlet. There shall also be a mechanics switch in dash with a missile switch cover to override this relay should a failure occur. Shoreline inlet to be located on driver's side of cab as directed on a stainless steel mounting plate.	Y	
GENERATOR/INVERTER TEST AND CERTIFICATION The generator/inverter shall be third party tested at the manufacturer's facility and shall conform to NFPA requirements and standards. Copies of all tests shall be provided with the delivery documentation.	Y	
HYDRAULIC GENERATOR A Harrison 8.0 kW hydraulic generator system shall be provided and installed on the apparatus. The system shall be capable of producing the nominal output power of 8.0 kW, 120V/240V, single phase, 60 Hz. The generator shall be installed per the manufacturer recommendations and shall be capable of supplying full power during all engine speeds or operation modes.	Y	

Yes	No

The generator shall be placed in a tray frame assembly which affords protection to the components and provides a unitized mounting module containing the motor/generator, reservoir, oil cooler, filtration system, and a manifold containing a cross-port check valve plus system relief valve. The generator shall be a commercial type with a heavy-duty bearing and of brushless design to ensure low maintenance. The reservoir shall include an oil level gauge, oil temperature gauge, fill cap, fill strainer, and a boost unit to provide a positive pressure to the pump suction port. The generator and hydraulic motor shall be close coupled and permanently aligned using a Morse taper with a through bolt to secure the motor to the generator.

The PTO driven hydraulic pump and motor shall be of axial piston design to provide low internal leakage and a high degree of frequency stability. The pump will match to the system with the proper orifice, pressure compensator and load sensing to provide a stable output over the rated speed range of the pump and with electrical loads from no load to full-load. The PTO ratio shall be selected to allow operation throughout the entire engine RPM range; idle to full throttle.

A display meter consisting of (4) numeric LED displays shall be used. The meter shall simultaneously display system voltage, frequency and amperage in each of the two 120V legs. The display meter shall be located in close proximity to the breaker box.

A high temperature visual indicator and audible alarm shall be provided and installed.

The hydraulic generator shall be located in the open bin over the torque box.

The generator enable switch shall be installed on the cab dash.

BREAKER BOX

A twenty (20) place Square D brand, QO series, or approved equal, gray colored circuit breaker box shall be provided and installed in the front upper left hand side compartment. Manual reset circuit breakers, matching the rated output of each specific outlet or device shall be provided. All power supply assembly conductors, including neutral and grounding conductors from the line voltage power source to the circuit breaker box shall have an equivalent amperage rating and shall be sized to carry not less than 115 percent of the amperage of the nameplate current rating of the power source. Power supply conductors shall be run in nonmetallic liquid tight flexible conduit or type SO/SEO cord with a WA suffix. Conduit shall have a temperature range of -67°F (-55°C) to 221°F (105°C). Wiring from the circuit breaker box to the individual outlets and devices shall be sized in accordance with NFPA 70, *National Electrical Code* requirements. Branch circuit wiring conductors shall be run in (1) metallic or nonmetallic liquid tight flexible conduit rated for use in a temperature range of -67°F (-55°C) to 221°F (105°C) with stranded copper wire rated for wet locations and temperatures not less than 194°F (90°C) or (2) Type SOW,

Yes	No
Y	

	Yes	No
SOOW, SEOW, or SEOOW flexible cord, rated at 600 volts and at temperatures not less than 194°F (90°C). A power source specification label shall be permanently attached to the apparatus near the operators control panel.		
The door of the breaker box shall have a side hinge.		
The load center shall be located in the forward left side compartment, up high.		
Ten (10) 20 amp breaker(s) with ground fault interrupter shall be installed		
KUSSMAUL AUTO TRANSFER SWITCH		
One (1) Kussmaul 091-134 Auto Interlock II switch(es) shall be provided to allow the receptacle to be fed from shore power through the Hubbell style shoreline inlet when the generator is not in use. The switch(es) shall be installed near the breaker box.	Y	
120 VOLT RECEPTACLE(S) IN CAB INTERIOR FOR AUTO TRANSFER RELAY		
One (1) 120-volt, 20 amp, 3-wire receptacle(s) shall be provided in the cab interior in accordance with NFPA guidelines. A brushed stainless steel cover plate shall be provided to protect the receptacle. When the generator is shut down, the load is automatically returned to the shoreline. The receptacle shall be labeled accordingly.	Y	
NEMA Rating: 5-20R (20 Amp) Non-Twist-Lock, Single.		
Two (2) plastic flip lid single receptacle cover(s) shall be installed.		
One (1) stainless steel wall plate(s) shall be installed.		
The receptacle(s) shall be located at preconstruction conference.		
IN-COMPARTMENT 120V AC RECEPTACLES FOR AUTO TRANSFER RELAY		
Two (2) AC 120V, NEMA 5-15R, 15 amp straight blade duplex receptacles, one (1) provided in each compartment in front of rear axle (R2, L2). Outlets mounted in the top 25% of the vertical compartment walls to minimize the likelihood of damage to receptacles by equipment	Y	

	Yes	No

storage. When the generator is shut down, the load is automatically returned to the shoreline. The receptacle shall be labeled accordingly.

Details to be discussed in the prebuild conference.

CORD REELS

Two (2) Hannay Model ECR1618-17-18 power rewind cord reels for live electric cable shall be provided. The reel(s) shall be 12 volt electric rewind and be equipped with an electrical collector ring with a minimum #10 gauge, 4-conductor wiring. Capacity of each reel shall be 200 feet 10/4 gauge electric cable. Y

Each cord reel will be wired to the breaker box with 2 individual 20-amp circuits.

Final location to be determined at prebuild conference.

CORD REEL CABLES

One (1) 200 foot length(s) of 10/4 type SO electric cable shall be provided and installed on each cord reel. The color of the cord cable shall be yellow.

The working end of each cord reel cable shall have a Hubbell heavy duty, twist-lock female watertight L14-20 connector installed. Y

ELECTRICAL JUNCTION BOXES

One (1) Akron Brass 4-receptacle junction box shall be provided per **each** mounted cord reel for distribution of electrical power on the fire ground. Each box shall be constructed of aluminum and shall be completely powder coated gray with gray hinged protective receptacle covers and the full length carry handle. Internally lighted faceplates shall provide sufficient light to make connections and alert the crew that the box is in “power-on" status. Each junction box shall have dimensions of 9.25" long x 5.5" wide x 8.5" high. Each box shall be equipped with a cable strain relief and a Hubbell model watertight twist lock male L14-20 connection. Y

For each junction box, a total of four (4) duplex receptacles shall be provided, NEMA Rating 5-20R non-twist-lock, straight blade. Each receptacle shall be rated for 20 amps at 125 Volts.

Each junction box shall be configured with a separate circuit on each side of the box.

	Yes	No
A mounting box, with brushed stainless finish, shall be provided for each junction box. The junction box mount shall be located at preconstruction conference. The junction box mount shall be placed vertically.		
AMP DRAW REPORT The bidder shall provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system. The manufacturer of the apparatus shall provide the following: • Documentation of the electrical system performance tests. • A written load analysis, which shall include the following: o The nameplate rating of the alternator. o The alternator rating under the conditions specified per: o Applicable NFPA 1901 or 1906 (Current Edition). o The minimum continuous load of each component that is specified per: o Applicable NFPA 1901 or 1906 (Current Edition). o Additional loads that, when added to the minimum continuous load, determine the total connected load. o Each individual intermittent load. o All of the above-listed items shall be provided by the bidder per the applicable NFPA 1901 or 1906 (Current Edition).	Y	
ELECTRICAL WIRING DIAGRAMS One (1) hard copies and one (1) electronic format **as-built** electrical wiring diagrams, prepared for the chassis, body, and aerial shall be provided.	Y	
BODY The body shall be designed and built to acceptable industry standards and shall be of sufficient construction and integrity to prevent cracking at welds, warping, metal fatigue and stress under rough road conditions and extreme temperatures encountered in our area. The body shall be designed and constructed of stainless steel to provide an expected service life of at least 25 years. Body structural analysis shall be fully tested. Proven engineering and test techniques such as finite element analysis, stress coating and strain gauging shall be performed with special attention given to fatigue, life and structural integrity of the cab, body, and substructure. The	Y	

body shall be tested while loaded to its greatest in-service weight. The criteria used during the testing procedure shall include:

- The raising of opposite corners of the vehicle tires 9.00" to simulate the twisting a truck may experience when driving over a curb.
- Making a 90-degree turn, while driving at 20 mph to simulate aggressive driving conditions
- Driving the vehicle at 35 mph on a "washboard" road
- Driving the vehicle at 55 mph on a smooth road
- Accelerating the vehicle fully, until reaching the approximate speed of 45 mph on rough pavement
- Evidence of actual testing techniques shall be made available upon request.

The body and compartments shall be constructed of heavy duty stainless steel. The body shall be welded on external or hidden surfaces wherever possible to insure a clean compartment interior look. The compartments shall be a "sweep out" design with the floor higher than the door sill. All compartment seams shall be caulked with gray adhesive/sealant. Each compartment shall be rated for 500 lbs. of storage. False bulkhead panels shall be provided on the inside of the forward and rearward wall of the side compartment panel to cover and protect all electrical wiring and components. This also provides a clean interior for equipment mounting. These panels shall be removable. Removable service panels shall be placed within each of the false bulkhead panels. Door frames on compartments with hinged doors shall be fabricated by flanging the door opening edges inward 1.88" and bending out again .75" to form an angle.

A bright aluminum tread plate cover shall be installed over the side compartments. The cover shall not form the compartment top but shall be an overlay. The forward and rearward edges of the cover shall be folded down 1.5" to cap the forward and rearward ends of the side compartment panel. The outside edge of the cover shall be folded down 1.5" to cap the outside of the side compartment panel and shall have a 45 degree outward bend to provide drip protection over any compartment doors which are immediately below the cover.

Extruded aluminum drip molding with a bright anodized finish shall provide drip protection for any compartment doors that are not directly below an aluminum tread plate cover. The forward face of the side compartments and the face of the front cross panel above the operator stand shall be covered with a bright aluminum tread plate overlay. All body components covered with aluminum tread plate overlays shall be coated with an anti-corrosion compound prior to installation. All tread plate shall be secured with threaded fasteners.

Fender compartments shall be integral with the body side compartmentation. There shall be no sharp objects protruding into the wheel well area that could cause injury while cleaning or doing other maintenance in this area.

	Yes	No
The front portion of the right and left hand side compartments shall mount to a front cross panel. The front cross panel assembly shall rest on two (2) heavy duty rubber isolators. These isolators shall be bolted to brackets mounted to the chassis frame, as close to the center line of the chassis frame as possible. These center mounted isolators shall provide a pivot point which shall allow chassis movement without introducing stresses into the body. The rear portion of each side compartment shall bolt directly to the rear step support assembly, which is bolted directly to the chassis frame. The rear steel step/body support assembly shall be constructed of formed .25" and .375" plate, 2" X 3" tubes, 2" X 2" angles, and 3" structural channels in a welded assembly. The rear wall shall be reinforced with formed heavy duty panels.		
TRANSVERSE COMPARTMENT		
One (1) transverse compartment shall be located directly behind the cab in place of a pump module. Minimum acceptable measurements of the transverse module shall be 48.00" wide x 64.00" high x 94.00" wide. The full height compartment shall have minimum doorframe to doorframe dimensions of 45.00" wide x 56" high. This compartment shall have vertically hinged double doors. (Note: The usable height of the right hand compartment may be adjusted to provide body clearance around engine exhaust system).	Y	
LEFT SIDE COMPARTMENTS		
All measurements shall be considered to be the minimum accepted. The left side panel consists of one (1) full height compartment ahead of the rear wheels, one (1) full height compartment behind the rear wheels, and two (2) upper compartments above the rear wheels. All compartments shall have vertically hinged doors with D- handle latches.		
The full height compartment ahead of the rear wheels shall have a doorframe to doorframe dimension of no less than 41.00" wide x 63.75" high. This compartment shall have double three prong outlet in the top right corner. This compartment shall have vertically hinged double doors with D- Handle latch. The full height compartment behind the rear wheels shall have a doorframe to doorframe dimension of no less than 42.00" wide x 47.75" high. This compartment shall have vertically hinged doors with D – handle latch. The compartments above the rear wheels shall be equal in width, but the upper front compartment shall be 6.00" greater in height. The upper front compartment shall have a doorframe to doorframe dimension of 53.50" wide x 30.50" high. The upper rear	Y	

	Yes	No
compartment shall have a doorframe to doorframe dimension of 53.50" wide x 24.50" high. These compartments shall have vertically hinged doors with D- handle latches.		
RIGHT SIDE COMPARTMENTS		
All measurements shall be considered to be the minimum accepted. The right side panel consists of one (1) full height compartment ahead of the rear wheels, one (1) full height compartment behind the rear wheels, and two (2) upper compartments above the rear wheels. All compartments shall have vertically hinged doors with D- handle latches.		
The full height compartment ahead of the rear wheels shall have a doorframe to doorframe dimension of no less than 41.00" wide x 63.75" high. This compartment shall have double three prong outlet in the top right corner. This compartment shall have vertically hinged double doors with D- Handle latch. The full height compartment behind the rear wheels shall have a doorframe to doorframe dimension of no less than 42.00" wide x 47.75" high. This compartment shall have vertically hinged doors with D – handle latch. The compartments above the rear wheels shall be equal in width, but the upper front compartment shall be 6.00" greater in height. The upper front compartment shall have a doorframe to doorframe dimension of 53.50" wide x 30.50" high. The upper rear compartment shall have a doorframe to doorframe dimension of 53.50" wide x 24.50" high. These compartments shall have vertically hinged doors with D- handle latches.		
REAR COMPARTMENTS		
One (1) compartment shall be provided at the rear of the apparatus, on the left side of the torque tube ladder storage compartment. This compartment, accessed from the rear, shall be 12.5" wide x 27.50" high x 34.25" deep to accommodate electrical cord reel. It shall have (1) smooth aluminum pan style vertically hinged door with a D-handle latch. The door pan shall have an Etch finish as standard.	Y	
One (1) compartment shall be provided at the rear of the apparatus, on the right side of the torque tube ladder storage compartment. This compartment, accessed from the rear, shall be 12.5" wide x 27.50" high x 34.25" deep to accommodate electrical cord reel. It shall have (1) smooth aluminum pan style vertically hinged door with a D-handle latch. The door pan shall have an etch finish as standard.		N

	Yes	No

HINGED COMPARTMENT DOORS

The side compartment doors shall be lap type, double panel construction. Outer pan edges that form the lap portion of the door shall be "hemmed" (bent over and back 180 degrees) over the inner pan edges. Inside corners, at the hem area, shall be welded and ground smooth.

The doors shall be weather stripped with an automotive bulb type extruded rubber inner seal. A second outer seal of closed cell rubber shall be placed on the lap edge of the door to prevent damage to the paint finish. Outer seal shall have corrugated surface to prevent sticking. — Y

The doors shall be mounted on stainless steel piano hinges with a pin diameter of .25". Mounting holes shall be slotted vertically on one side of the hinge and horizontally on the other side to provide for proper adjustment of the door. The hinge pins shall have spun ends (crowns) at both ends to hold them in place and provide a finished look. Eberhard 206 latches with stainless steel "D" ring handles shall be provided on the lift, single, drop down, and lock door (double door set-up). The free door (double door set-up) shall have an Eberhard latches top and bottom with a single “D” handle located on the outside of the door even with the lock door handle. Isolation tape shall be furnished between the door hinge and door jam. A rubber gasket shall be provided between the "D" ring handle and the door.

Vertically hinged doors shall be equipped with Hansen 5EZ or Thomas EZ spring type door checks that also hold the doors in the open and closed position. Checks shall be the two point mounting type for simplicity. Spring tension (15 lb.) shall be easily adjustable. Checks shall have black zinc mounting brackets with stainless steel springs, 11" long rods and clamps. Springs shall be polished. Horizontally hinged doors shall be held in the opened position with gas cylinder type stays. Switches for automatic compartment light operation shall be installed in the door hinge area.

Brushed stainless steel overlay shall be provided on the inside of all compartment door(s) to protect the painted finish and to cover inside door hardware.

ADJUSTABLE SHELVES

Ten (10) adjustable shelf or shelves made from 3/16" smooth aluminum sheet metal shall be provided in the body compartment(s). The shelf lip shall be 1.75" high. Each shelf shall be supported by four (4) stainless steel angles bolted to Aluma-Strut tracks. — Y

When in a split depth compartment, the Aluma-Strut tracks shall only be provided in the area where adjustable shelve(s) are located. The LOCATION OF ADJUSTABLE SHELVES WILL BE DETERMINED AT PRE-CONSTRUCTION CONFERENCE.

	Yes	No
FLOOR-MOUNT ROLL OUT TRAYS		
Four (4) Floor Mount Roll Out Tray - Base Depth, shall be installed in body compartments.		
Four (4) SlideMaster model AM2 aluminum base depth slide mechanisms shall be bolted to the compartment floor. It shall allow the tray to extend 70% of the slide length. The tray/compartment shall be able to support a 500 pound load.	Y	
The SlideMaster slide mechanism shall be secured with a SlideMaster 2-rail IMS spring lock.		
Location of the floor mount roll out trays will be determined at pre-construction conference.		
ROLL OUT – DROP DOWN TRAYS		
Two (2) roll out drop down tray assembly(s) shall be provided in the body compartment(s). Each tray shall be vertically adjustable on Aluma-Strut attached to the sides of the compartment.		
Two (2) SlideMaster model MT aluminum base depth slide mechanisms shall be installed allowing each tray to slide out and tip down. The tray shall be able to support a 200 pound load.	Y	
The SlideMaster slide mechanism shall be secured with a SlideMaster Rotating Lock.		
Location of the roll out-drop down tray assemblies will be determined at pre-construction conference.		
TRANSVERSE FULL WIDTH ROLL OUT TRAY(S)		
Two (2) transverse full width roll out tray assemblies shall be provided in the front transverse compartment module.		
Two (2) sets SlideMaster model M2D aluminum transverse slide mechanisms shall be installed allowing the trays to extend 70% of the slide length to either side of the vehicle. The tray/compartment shall be able to support a 1000 pound load, evenly distributed .	Y	
The SlideMaster slide mechanism shall be secured with a SlideMaster 2-rail IMS spring lock.		

	Yes	No
Location of the transverse full width roll out trays will be determined at pre-construction conference.		
SHELF AND TRAY CONSTRUCTION All base depth tray(s) shall be constructed of 0.188" aluminum and shall have edges on all four sides for added strength. The corners shall be welded. The tray lip shall be 1.75" high.	Y	
PAC TRAC IN BODY COMPARTMENTS Pac Trac assemblies consisting of extruded aluminum tool mounting tracks and "Z" shaped mounting brackets shall be located on the back wall of four (4) compartment(s). Pac Trac shall be 25.88" in height and as wide as the compartment door opening (maximum of minus 2.5"). Pac Trac in the full height compartments shall be located in the upper portion only. The compartments which will locate the Pac Trac will be determined at pre-construction conference.	Y	
REAR LADDER COMPARTMENT DOOR The rear ladder compartment door on the apparatus shall be an R.O.M./Robinson aluminum shutter roll-up type door, made in the U.S.A. with a painted finish. A magnetic door ajar and compartment light system designed within the door to conceal moving parts and prevent parts exposure in the compartment shall be provided. Slats shall be double-wall box frame extrusion and must be anodized to eliminate oxidation and rusting. Exterior surface shall be flat and interior surface to be concave to help loose equipment from jamming the door. The latch system shall be a full width, one piece, lift bar, enabling operation with one hand. The manufacturer's standard door frame design may be altered or modified to accommodate the roll-up doors. The roll-up door shall be equipped with a model 1250 cam style lock. The locking mechanism shall consist of 2 locking rods that shall slide into pre-drilled holes in each of the door tracks. All locks shall be keyed alike (to use the same #1250 key).	Y	
RUB RAIL There shall be a rub rail installed on both sides of the lower body compartments. The rub rail assembly shall be constructed of solid polypropylene, Black in color and approximately 2.5" x 1" solid. The rub rail shall be bolted in place with stainless steel bolts, and spaced from the	Y	

	Yes	No
fire body to provide body protection. The rub rail shall serve as protection to the side doors when encountering close objects. The assembly shall have 45 degree angles on the end of assemblies and should be installed in a way that allows easy removal from the apparatus.		
HANDRAILS - BODY The handrails shall be 1.25" diameter anodized aluminum extrusion, with a ribbed design, to provide a positive gripping surface. Chrome plated end stanchions shall support the handrail. Plastic gaskets shall be used between end stanchions and any painted surfaces. Drain holes shall be provided in the bottom of all vertically mounted handrails. Location of handrails shall be finalized at the pre-construction conference.	Y	
EXTINGUISHER STORAGE One (1) extinguisher compartment shall be provided located on the passenger's side between the rear wheels. One (1) extinguisher compartment shall be located on the driver's side between the rear wheels. The compartments shall be of an adequate depth to accommodate different size extinguishers. Flooring shall be rubber lined and have a drain hole. A painted door with a chrome-plated latch shall be provided. A dielectric barrier shall be provided between the door hinges, hinge fasteners, and the body sheet metal. Purchaser desires the largest compartment possible in this location.	Y	
AIR CYLINDER STORAGE Storage for a minimum of eight air cylinders shall be provided. The air cylinder compartments shall be located on each side, One (1) located in front of the rear wheels on each side. One (1) located behind the rear wheels on each side. Each air cylinder compartment shall be of adequate size to accommodate at least two (2) 45 minute air cylinders. Flooring shall be rubber lined and furnished with a drain hole. A brushed stainless steel door with a chrome-plated latch shall be provided. A dielectric barrier shall be provided between the door hinge, hinge fasteners, and the body sheet metal. Purchaser desires the largest compartment possible in this location.	Y	

	Yes	No
AIR CYLINDER STORAGE INSERT A minimum of two (2) inserts shall be provided for the air cylinder storage compartments. The inserts shall accommodate 45 minute @ 4,500 psi SCBA cylinders. Purchaser desires to carry a maximum number of cylinders in each compartment, the appropriate number of inserts to be proposed by the bidder. The exact configuration of Extinguisher and Air Cylinder storage shall be determined at the pre-construction conference.	Y	
AERIAL LADDER DESIGN AND PERFORMANCE A telescoping steel aerial ladder shall be mounted on the rear of the apparatus. An aluminum ladder will not be accepted. The ladder shall reach a minimum height of 100 feet, with a minimum 500 lb. tip load. The ladder structure shall be of an open truss design and shall meet or exceed the requirements of all applicable sections of the current edition of NFPA 1901. The aerial ladder and turntable design shall provide continuous egress for civilians and firefighters through any angle of elevation to the ground as defined by NFPA 1901. The ladder shall be designed with a structural safety factor of two to one (2:1) based on the dead and live loads and shall meet ANSI A92.2 Standard for Vehicle Mounted Aerial Devices and NFPA 1901 which requires a static stability safety factor of one and one half to one (1.5:1) based on the rated load. These capabilities shall be established in the unsupported configuration. The aerial device and all supporting structure shall be third party tested to confirm that the aerial meets the original design criteria and the intent of the latest recommended NFPA standard for aerial devices. Such testing shall include the use of brittle lacquer stress coating to identify all stress concentrations, followed by strain gauging to verify that all nominal stresses and stress concentrations have a safety factor that is equal to or greater than 2:1 based on the dead and live load. The aerial ladder shall be comprised of four (4) sections and extend to a minimum nominal working height of 100 feet above the ground as measured by NFPA 1901 recommendations. The aerial ladder shall have a rated minimum horizontal reach of 91 feet measured in the horizontal plane at zero (0) degrees from the centerline of the turntable rotation, as defined by NFPA 1901. The aerial ladder shall be capable of continuous operation through 360 degrees of rotation and from minus five (-5) degrees to plus eighty (+80) degrees elevation.	Y	
AERIAL LADDER CERTIFIED RATED CAPACITY		

	Yes	No
The rated capacity of the aerial ladder shall be a minimum of a 500 pound tip load while flowing a maximum of 1000 GPM of water at any extension, any angle in accordance with NFPA 1901, current edition. There shall be no nozzle orientation restrictions while flowing 1000 GPM of water. The aerial device will be capable of operating with the maximum rated tip load in either of the two (2) following conditions: • Conditions of high wind up to 50 mph • Conditions of icing, up to a coating of .25" over the entire aerial structure All aerial ladder certifications shall be based on the ladder being properly deployed in an unsupported configuration. The capacities shall be based upon 360 degree rotation, up to full extension, and from -5 degrees to + 80 degrees.	Y	
OPERATION ON GRADES The aerial is capable of being operated at full rated capacity in every position in which the aerial device can be placed when the apparatus is on a slope of 5 degrees (8.7%) in accordance with NFPA 1901 (19.21.3.1)	Y	
AERIAL TORQUE BOX An aerial torque box sub-frame, incorporating two sets of stabilizers and the aerial turntable pedestal structure, shall be provided. The sub-frame shall be constructed of a minimum 5/16", T-1, 100,000 PSI yield steel plate. Chassis mounting plates shall be welded to the sides of the torque box and then it shall be bolted to the frame rails using SAE grade 8 bolts and nuts. The torque box assembly shall be capable of withstanding all torsional and horizontal loading when the unit is supported by the outriggers and the aerial device is fully extended and loaded to capacity. The turntable riser or pedestal shall be incorporated into the rear of the torque box. The entire assembly shall be welded together in one unit.	Y	
OUTRIGGERS A minimum of one (1) set of double box beam type out-and-down outriggers shall be provided behind the rear axle. Each horizontal cylinder extends to provide a maximum of 16 foot stance across the outriggers. All cylinders shall be equipped with integral (on the cylinder) holding valves which shall hold it either in the stowed position or the working position should a pressurized hydraulic line be severed at any point within the system. The	Y	

Yes	No

extension of the horizontal beams shall be accomplished by a horizontal jack cylinder. All the horizontal jack cylinders shall be totally enclosed within the extension beam housings. The horizontal jack cylinder shall be equipped with a trombone type tube to supply hydraulic oil to the vertical jack cylinders to eliminate wear and potential failure of hydraulic hoses. The extension of the vertical housing shall be accomplished by a vertical jack cylinder. All the vertical jack cylinders shall be totally enclosed within the outer and telescoping inner jack tubes to protect them against damage that may occur while on the fire ground. Each vertical jack tube structure shall be equipped with a mechanical pin lock.

The bidder may use either of the following for stabilizers forward of the rear axle:

- One (1) set of modified "A" frames shall be provided and located just behind the cab. When extended the outrigger feet shall not extend beyond the outside of the truck. These cylinders shall also be equipped with integral holding valves that shall hold the jacks in the stowed or deployed position should a pressurized hydraulic line be severed. These jacks shall be equipped with a mechanical pin lock.
- One (1) set of double box beam type out-and-down outriggers shall be provided forward of the rear axle. Each horizontal cylinder extends to provide a maximum of 16 foot stance across the outriggers. All cylinders shall be equipped with integral (on the cylinder) holding valves which shall hold it either in the stowed position or the working position should a pressurized hydraulic line be severed at any point within the system. The extension of the horizontal beams shall be accomplished by a horizontal jack cylinder. All the horizontal jack cylinders shall be totally enclosed within the extension beam housings. The horizontal jack cylinder shall be equipped with a trombone type tube to supply hydraulic oil to the vertical jack cylinders to eliminate wear and potential failure of hydraulic hoses. The extension of the vertical housing shall be accomplished by a vertical jack cylinder. All the vertical jack cylinders shall be totally enclosed within the outer and telescoping inner jack tubes to protect them against damage that may occur while on the fire ground. Each vertical jack tube structure shall be equipped with a mechanical pin lock.

OUTRIGGER CONTROLS

The outrigger controls shall be provided at the rear of the apparatus in enclosed compartments with D-ring latches. There shall be a controls on each side of the rear so that the operator can see the outrigger being maneuvered. Out-and-down outrigger functions shall be operated by joysticks or toggle switches. A short jack switch shall be provided so that the vehicle may be set up in restricted areas or on uneven terrain. A bubble type level shall be furnished to aid in leveling the unit side to side. Each outrigger shall have an indicator light that illuminates

Y	

	Yes	No
when proper ground jack placement has been achieved. An automatic high idle switch and indicator shall be provided so that automatic engine RPM ramp up from hydraulic requests can be disabled. The compartment shall be illuminated by a TecNiq EON LED light engaged by the aerial PTO switch in the cab. An electric safety diverter valve shall also be provided in conjunction with the outrigger controls. The diverter valve shall allow the hydraulic fluid to flow either to the outrigger hydraulic circuit or the turntable and aerial circuit but not simultaneously.		
OUTRIGGER ALARM		
An automatic electronic warning device (horn) shall be provided to warn personnel when the outriggers leave their nested position. Alarm shall operate only when outriggers are moving.	Y	
OUTRIGGER PADS AND BRACKETS		
A set of four (4) auxiliary outrigger pads shall be installed on the apparatus. The pads shall be 24" x 24" and shall be made of 3/8" aluminum with a bent rod style carrying handle. There shall be two (2) pads stacked within a bracket. One bracket shall be mounted to the underside of the body just aft of each rear axle.	Y	
LADDER CRADLE		
A heavy-duty rest shall be provided to support the aerial in the travel position. Wear strips shall be attached to the aerial cradle to protect the aerial when the unit is in the travel position. The cradle pivots to conform to the nested ladder, providing support over the full width of the cradle.	Y	
LADDER CRADLE INTERLOCK SYSTEM		
A ladder cradle interlock system shall be provided which automatically prevents the operator from lifting the aerial device from the cradle unless all outriggers are fully extended and placed in a load supporting configuration. An additional interlock shall be provided that prevents outrigger operation when the aerial device is not fully stowed in the cradle.	Y	
SHORT-JACK OPERATIONS		

	Yes	No
The aerial device shall be capable of operating in a “short-jacked” stance. The aerial device shall require only one operator to lift the ladder from the cradle, as long as the outriggers are in a load supporting configuration. Once the ladder is lifted from the cradle, the aerial device shall be fully operational by a single operator to the side of the apparatus with fully deployed outriggers, and shall be denied operation to the short set side. In the event both sides are short set, the operator will automatically be denied operation to both sides. Two methods of overriding the interlock are available: an electric switch, or mechanically moving the solenoid. Both are available to the single operator located at the primary operator's station.	Y	

MANUAL OVERRIDES

The manual overrides for the aerial device (clockwise and counterclockwise rotation and ladder lowering interlocks) shall be in the turntable control pedestal. Operation of the ladder without the outriggers properly set requires the operation of a diverter valve and requires a second operator. The overrides for the outriggers shall be conveniently located at the rear of the apparatus. The outrigger overrides can be operated by one person, but requires the simultaneous activation of two separate controls to override any safety system.	Y	

AERIAL HYDRAULIC SYSTEM

HOSE

High pressure hydraulic hose used for the circuits of the hydraulic system shall have a minimum burst strength of four (4) times operating pressure.	Y	

FILTER

An easily accessible 6 micron replaceable filter, with remote filter condition indicator, shall be installed in the hydraulic pressure line. A 10 micron return filter shall be installed in the reservoir.	Y	

RESERVOIR

The hydraulic oil tank shall have a sufficient capacity to operate the aerial while allowing the oil to cool and shall be located behind the cab and mounted to the A-Frame structure and be	Y	

	Yes	No
under the Aerial cradle. There shall be a means provided to remove the tank, if needed. The connection points to the tank shall be easily accessible, with internal baffles separating the intake and return. There shall be shut-off valves to isolate the tank, if needed. A filtered breather cap and a basket strainer shall be located in the filler neck. A dip stick shall verify the oil level. There shall be a plaque mounted next to the fill cap labeled “Hydraulic Fluid Only”.		
PUMP		
The system shall be powered by a pressure compensated load sensing hydraulic pump. The pump shall be sized to operate all boom functions simultaneously. The load sense feature operates any function at the optimum pressure to maximize efficiency and minimize heat build-up.	Y	
HOUR METER		
An aerial hydraulics hour meter shall be provided to accumulate hours when the transmission provides pressure to engage the PTO and the aerial enable switch is engaged.	Y	
EMERGENCY PUMP		
The apparatus shall be equipped with an emergency hydraulic pump. The pump shall be driven by a 12 volt electric motor with power from the truck batteries. It shall be capable of providing hydraulic power for limited (slower) ladder functions and for stowage of the unit in case of prime power failure. A control switch for the emergency pump shall be located at the outrigger control station and at the aerial control. The control switch shall be a spring loaded momentary type to prevent prolonged operation of the emergency pump.	Y	

HOT SHIFT PTO FOR AERIAL

The apparatus shall be equipped with a power (hot) shift PTO driven by the chassis transmission. An indicator shall be located in the cab to indicate when the PTO is engaged.	Y	
The following conditions apply for use of the PTO:		
• If the PTO is used to power the generator only, then the PTO can be engaged by the generator switch when the truck is in motion.		

2022 AERIAL SPECIFICATIONS

	Yes	No

2022 Aerial Specifications

SPECIFICATIONS FOR One (1) HEAVY DUTY 100' AERIAL
FOR THE LEXINGTON KY FIRE DEPARTMENT

Please indicate your verification of the outlined specifications by placing a checkmark next to each section.

INTENT OF SPECIFICATIONS

Y

It shall be the intent of these specifications to cover the furnishing and delivery of one (1) complete apparatus equipped as hereinafter specified. These apparatus will be front-line apparatus and subjected to daily use responding to various emergency incidents. These specifications cover only the general requirements as to the type of construction and test to which the apparatus shall conform, together with certain details as to finish, equipment and appliances with which the successful bidder shall conform. Minor details of construction and materials, which are not otherwise specified, are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features. Apparatus and loose equipment proposed by the bidder shall meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current editions at the time of contract execution. Loose equipment shall be provided as stated in the following pages.

Bids shall only be considered from companies that have an established reputation in the field of fire apparatus construction and have been in business for a minimum of 20 years. Further, the bidder shall maintain dedicated service facilities for the repair and service of products. Evidence of such a facility shall be included in the bidder proposal.

Each bidder shall furnish satisfactory evidence of their ability to construct the apparatus specified and shall state the location of the factory where the apparatus is to be built. The bidder shall also show that the company is in position to render prompt service and to furnish replacement parts for said apparatus.

Each bid shall be accompanied by a set of Specifications consisting of a detailed description of the apparatus and equipment proposed and to which the apparatus furnished under the contract shall conform. These specifications shall indicate size, type, model and make of all parts and equipment, and shall provide specifics of construction, construction methods, components and operational data with the bid. Each bidder shall provide two hard copies and one electronic copy of their complete bid proposal. A drawing of the proposed apparatus along with turn radius analysis report (including both curb to curb and wall to wall measurements) shall be provided with each bid.

	Yes	No

PROJECT FUNDING

Fulfillment of this project will be contingent on funding avenues yet to be determined and committed. Final Project funding may potentially be dependent upon bid pricing. Once the bid is submitted and opened at a time, date and location provided by the Lexington Fayette Urban County Government, the bid may not be withdrawn and will stand for ninety (90) calendar days.

Fifty percent (50%) of bid price will be issued upon completion of the chassis; final payment will be issued upon apparatus delivery and satisfactory inspection by the Division of Fire. Bidders shall provide an option to negotiate a 100% pre-payment for the apparatus. — N

QUALITY AND WORKMANSHIP

The design of the apparatus shall embody the latest approved automotive engineering practices. The workmanship shall be of the highest quality in its respective field. Special consideration shall be given to the following points: Accessibility of the various units that require periodic maintenance, ease of operation, and symmetrical proportions. Construction shall be rugged and ample safety factors shall be provided to carry the loads specified and to meet both on and off road requirements and speed conditions as set forth under "Performance Tests and Requirements." Welding shall not be employed in the assembly of the apparatus in a manner that shall prevent the ready removal of any part for service or repair. All welding personnel that shall be utilized in the fabrication and construction of structural components of the apparatus chassis, body and aerial device shall hold a valid certificate from the AWS - American Welding Society. The manufacturer is required to have an American Welding Society certified welding inspector in the plant during working hours to monitor welding quality. — Y

DELIVERY SCHEDULE

The apparatus shall be delivered to the Lexington Fire Department within 600 days of bid acceptance, or the bidder shall be penalized $500.00 per day for each day over the number of days specified in the bid that the apparatus is not delivered. — N

DELIVERY

Apparatus, to ensure proper break-in of all components while still under warranty, **s**hall be delivered under its own power - rail or truck freight shall not be acceptable. A qualified representative shall deliver the apparatus and remain for a sufficient length of time to instruct — Y

	Yes	No
personnel in the proper operation, care and maintenance of the equipment delivered.		
MANUFACTURER SPONSORED TRAINING The manufacturer will provide to the Lexington KY Division of Fire's Mechanical Bureau, factory level or equivalent repair and or maintenance related training on fire apparatus and or apparatus components within one year of delivery. This training will be the equivalent of eight (8) man days. All expenses associated with providing this training including registration, travel, lodging, meals course materials, etc. shall be the sole responsibility of the manufacturer.		N
APPARATUS FAMILIARIZATION An experienced and qualified distributor or sales representative shall familiarize Fire Department personnel (as designated by the authority in charge) in the proper operation, care and maintenance of the apparatus delivered. The representative must be a qualified, trained agent of the local authorized distributor or sales representative, or a direct employee of the manufacturer of the apparatus. A factory field service technician shall provide instruction to the Fire Department regarding the aerial device. The familiarization period shall consist of up to three (3) daytime sessions over a period of three (3) consecutive days during the normal work week (Monday - Friday).	Y	
INFORMATION REQUIRED The manufacturer shall supply at the time of delivery, complete operation and maintenance manuals covering the completed apparatus as delivered, including as-built wiring diagrams, as-built electrical harness drawings, and as-built air system schematics. A Copy of the manuals shall be provided in both hard copy and electronic format. A permanent plate shall be mounted in the driver's compartment which specifies the quantity and type of fluids required including engine oil, engine coolant, air conditioning, transmission, aerial hydraulics and drive axle. The location of the plate shall be determined at the pre-construction conference.	Y	
SAFETY VIDEO Documentation provided at the time of delivery shall also include an apparatus safety video, in flash drive. This video shall address key safety considerations for personnel to follow when they are driving, operating, and maintaining the apparatus. Safety procedures for the following shall be included: vehicle pre-trip inspection, chassis operation, aerial operation, and maintenance.		N

Yes	No

ACCEPTANCE TEST

At final inspection, a road test shall be conducted with the apparatus fully loaded and a continuous run of ten (10) miles or more shall be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts, and rear axles shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus. The vehicle shall adhere to the following parameters:

Y

- The apparatus, when fully equipped and loaded, shall have not less than 25% or more than 50% of the weight on the front axle, and not less than 50% nor more than 75% on the rear axle.
- The apparatus shall be capable of accelerating to 35 mph from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed rpm of the engine.
- The service brakes shall be capable of stopping a fully loaded vehicle in 35 feet at 20 mph on a level concrete highway. The air brake system shall conform to Federal Motor Vehicle Safety Standards (FMVSS) 121.
- The apparatus, fully loaded, shall be capable of obtaining a speed of 67 to 70 mph on a level concrete highway with the engine not exceeding its governed rpm (full load).
- The apparatus shall be tested and approved in accordance with NFPA Standard Practices and Federal Motor Vehicle Safety Standards (FMVSS).

The manufacturer shall provide a complete demonstration of the fire fighting systems during the final inspection of the completed apparatus. Final acceptance of the apparatus is subject to passing all required third party tests.

FAILURE TO MEET TEST

In the event the apparatus fails to meet the test requirements of these specifications on the first trial, second trials may be made at the option of the bidder within 30 days of the date of the first trial. Such trials shall be final and conclusive, and failure to comply with these requirements shall be cause for rejection. Failure to comply with changes to conform to any clause of the specifications, within 30 days after the notice is given to the bidder of such changes, shall also be cause for rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser or its use by the purchaser during the above-specified period with the permission of the bidder shall not constitute acceptance.

Y

	Yes	No

LIABILITY

The successful bidder shall defend any and all suits and assume all liability for the use of any patented process including any device or article forming a part of the apparatus or any appliance furnished under the contract.

Y

SPECIFICATION BID REQUIREMENTS

Proposals taking total exception to specifications shall not be acceptable.
Also, bidders shall submit a detailed proposal. Bid proposals shall be submitted in the same sequence as specifications for ease of evaluation, comparison and checking of compliance. A letter only, even though written on company letterhead, shall not be sufficient.
Any bid indicating that the manufacturer's proposal shall supersede the purchaser's specifications will be immediately rejected

N

EXCEPTIONS

All exceptions shall be stated no matter how seemingly minor. Any exceptions not taken shall be assumed by the purchaser to be included in the proposal, regardless of the cost to the bidder.
Bidders shall also indicate in the "yes/no" column if their bid complies on each item specified. Exceptions shall be clearly identified and fully explained on a separate page. Exceptions shall be allowed if they are equal to or superior to that specified and provided they are listed and fully explained on a separate page. The decision as to whether an exception is approved as being equivalent shall be entirely that of the Chief of the Division of Fire.

Y

COMMERCIAL GENERAL LIABILITY INSURANCE

The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of commercial general liability insurance:

Products/Completed Operations Aggregate	$2,000,000
Personal and Advertising Injury	$1,000,000
Each Occurrence	$ 1,000,000

Y

Coverage shall be written on a Commercial General Liability form. The policy shall be written on an occurrence form and shall include Contractual Liability coverage for bodily injury and property damage subject to the terms and conditions of the policy. The policy shall

	Yes	No
include owner as an additional insured when required by written contract. The policy shall include the owner as an additional insured as their interest may appear. The required limits can be provided by one or more policies provided all other insurance requirements are met.		
COMMERCIAL AUTOMOBILE INSURANCE The successful bidder shall, during the performance of the contract keep in force at least the following minimum limits of commercial automobile insurance: Combined Single Limit: $1,000,000 Coverage shall be written on a Commercial Automobile form.	Y	
UMBRELLA/EXCESS LIABILITY INSURANCE The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of umbrella liability insurance: Aggregate: $25,000,000 Each Occurrence: $25,000,000 The policy shall be written on an occurrence basis and at a minimum provide the same coverage's as Bidder's General Liability, Automobile Liability and Employer's Liability policies. The owner shall be included as an additional insured on the General Liability and Automobile Liability policies as their interest may appear. The required limits can be provided by one or more policies provided all other insurance requirements are met. Bidder agrees to furnish the owner with a current Certificate of Insurance with the coverage's listed above along with its bid. The certificate shall be made out to the purchaser and be an original; no photocopies shall be accepted. The Certificate of Insurance shall provide that owner be given 30 days advance notice of cancellation, nonrenewal or material change in coverage.	Y	
SINGLE SOURCE MANUFACTURER Bids shall only be accepted from a single source apparatus manufacturer. The definition of a single source is a manufacturer that designs and manufactures its products using an integrated approach, including the chassis, cab, body, and aerial is fabricated and assembled on the bidder's premises. The manufacturing process for the chassis, cab, body, and aerial shall be viewable by the purchaser during the pre-construction conference. The warranties relative to the chassis, cab, aerial and body design (excluding major component warranties such as the engine, transmission, axles, hydraulic pump, etc.) must be from a single source manufacturer	Y	

	Yes	No
and not split between manufacturers (i.e., body and chassis). The bidder shall provide evidence that they comply with this requirement.		
NFPA STANDARDS		
This unit shall comply with the current NFPA standards in effect at the time of the bid except for fire department specifications that differ from NFPA specifications. These exceptions shall be set forth in the Statement of Exceptions and shall be indicated in the proposal as "non-NFPA."		
Certification of slip resistance of all stepping, standing, and walking surfaces shall be supplied with the delivery of the apparatus.	Y	
A plate that is highly visible to the driver while seated shall be provided. This plate shall show the overall height, length, and gross vehicle weight rating.		
The manufacturer shall have programs in place for training, proficiency testing and performance for any staff involved with certifications.		
An official of the company shall designate, in writing, who is qualified to witness and certify test results.		
TOTAL VEHICLE ASSESSMENT CERTIFICATION		
The apparatus shall be audit-certified by an independent third-party, approved by the fire department, to the current edition of NFPA 1901 standards. The certification includes all design, production, operational, and performance testing of the apparatus (No Exception).	Y	
AERIAL TEST		
The aerial device shall be tested, approved, and certified by a third-party, approved by the fire department at the manufacturer's expense, conforming to NFPA requirements and standards. Copies of all tests shall be provided with the delivery documentation.	Y	
INSPECTION TRIPS		
The bidder shall provide three (3) factory inspection trips. The inspection trip(s) shall be scheduled at times mutually agreed upon between the manufacturer's representative and the customer, typically pre-construction, post-paint and final inspection. All costs such as travel, lodging, and meals shall be the responsibility of the bidder. Transportation is to be commercial air from Lexington, Kentucky, to the nearest commercial airport and ground transportation from the time of arrival until departure.	Y	

	Yes	No
Pre-construction The bidder shall plan on four (4) LFD personal traveling for the pre-construction conference. There should be adequate time provided to meet with engineers, project managers, and conduct facility tours. Mid-Point (Cab mounted, body not mounted) Four (4) LFD members will travel for the in-process inspection. Final Four (4) LFD members will travel for the final inspection. Adequate time shall be provided for demonstration of firefighting systems and designated electrical options as specified. During "Final" Inspection, the complete vehicle shall be raised, allowing the Fire Department Inspection team to walk under the apparatus to review the complete underside.	Y	
WEBSITE A Customer Service website shall provide authorized dealers access to comprehensive information pertaining to the maintenance and service of their customer's apparatus. This tool shall provide the authorized dealer the ability to service and support their customers to the best of their ability with factory support at their fingertips. This website shall also be accessible to the end user through the guest login. Limited access is available and vehicle-specific parts information accessible by entering a specific VIN number. All end users should see their local authorized dealer for additional support and service. The website shall provide the following to the designated individuals: Ability to access truck detail information on the major components of the vehicle, warranty information, available vehicle photographs, vehicle drawings, sales options, applicable vehicle software downloads, etc. Parts look-up capability, with the aid of digital photographs, part drawings assembly drawings. Ability to electronically submit warranty claims directly to the factory for reimbursement. Accessibility to multiple dealer reports that allow the dealership to maintain communication with the customer on the status of orders, claims, and phone contacts. Access to all currently published Operation and Maintenance and Service publications. Access to manufacturer Service Bulletins and Work Instructions containing information on current service topics and recommendations provided. Access to upcoming training classes offered by the manufacturer. Access to interactive electronic learning modules (Operators Guides) covering the operation of major vehicle components.		N

Yes	No

Access to customer service articles, corporate news, quarterly newsletters, and key contacts.

SERVICE CENTER

In order to maintain this complex piece of apparatus, the experience and reliability of the factory authorized service center is of major concern to the purchaser. The service facility must comply with the following criteria in order to be considered:

- Must have a minimum of five (5) years' experience repairing and maintaining fire apparatus of the make and type of apparatus being bid.
- Must have adequate indoor heated service facility and factory-trained technicians to perform repairs, including powertrain, chassis, hydraulic, generator, aerial, and controls must be provided. Must be within 120 miles of Lexington, Kentucky (No Exception).
- Must have a fully equipped mobile shop vehicle available for warranty work in Lexington, KY (No Exception).

Y

The bidder shall submit the location and recent photos of the service center and mobile service unit(s) along with the bid. Purchaser reserves the right to visit and inspect the service center prior to awarding bid.

The contractor is required to provide all warranty service at the Lexington Fire vehicle maintenance facility whenever major shop work is not involved. For warranty service involving transportation to the shop, the apparatus shall be picked up in Lexington, KY and returned from the contractor's facility by their personnel.

While under warranty, if towing or flat bedding of the apparatus to the repair facility is required, it shall be the responsibility of the bidder to provide such service at his cost.

The contractor agrees to keep the apparatus in a secure, indoor heated area at all times while in their possession. It shall be understood that the contractor is responsible for the apparatus and all articles of equipment from the time the apparatus is picked up until is returned to Lexington, KY.

The contractor shall provide proof of insurance coverage of the apparatus to LFD before the apparatus is transported.

REPLACEMENT PARTS

LFD intends to assure that parts and service are readily available, due to concerns over having vehicles, out-of-service for extended periods related to replacement parts availability.

Y

The apparatus shall be furnished with major parts commonly used in manufacturing of heavy-duty trucks and fire apparatus. This helps to ensure replacements parts are more readily available and at a reduced cost to the city. The use of proprietary parts such as axles,

	Yes	No
suspensions, engines, transmissions, supplemental restraints, electronic controls, seats, pumps, gauges, etc. shall not be acceptable. A description shall be provided explaining the parts replacement capabilities of the bidder including information regarding cross referencing part numbers from the apparatus manufacturer's part number to the vendor's parts. Replacement part availability and service capabilities will be a major criterion for the award of the bid.		
APPROVAL DRAWING A drawing of the proposed apparatus shall be provided with the bid. The sales representative shall also have a copy of the same drawing. The finalized and approved drawing shall become part of the contract documents. This drawing shall indicate the chassis make and model, the location of the lights, siren, horns, compartments, major components, etc. A "revised" approval drawing of the apparatus shall be prepared and submitted by the manufacturer to the purchaser showing any changes made to the approval drawing.	Y	
BID BOND All bidders shall provide a bid bond as security for the bid in the form of a 5% bid bond to accompany their bid. This bid bond shall be issued by a Surety Company who is listed on the U.S. Treasury Departments list of acceptable sureties as published in Department Circular 570. The bid bond shall be issued by an authorized representative of the Surety Company and shall be accompanied by a certified power of attorney dated on or before the date of the bid. The bid bond shall include language, which assures that the bidder/principal shall give a bond or bonds as may be specified in the bidding or contract documents, with good and sufficient surety for the faithful performance of the contract, including the Basic Two (2) Year Limited Warranty, and for the prompt payment of labor and material furnished in the prosecution of the contract. Notwithstanding any document or assertion to the contrary, any surety bond related to the sale of a vehicle shall apply only to the Basic Two (2) Year Limited Warranty for such vehicle. Any surety bond related to the sale of a vehicle shall not apply to any other warranties that are included within this bid (OEM or otherwise) or to the warranties (if any) of any third party of any part, component, attachment or accessory that is incorporated into or attached to the vehicle. In the event of any contradiction or inconsistency between this provision and any other document or assertion, this provision shall prevail.	Y	
PERFORMANCE BOND The successful bidder shall provide a signed contract and performance and payment bond,	Y	N

	Yes	No

which guarantees the performance of all terms and conditions of the contract and warranty agreement before a purchase order can be issued. The performance bond will specifically cover the performance of the contract according to its terms and conditions, as well as payment of all related bills and encumbrances. This performance bond shall be issued by a surety company which is listed by the U.S. Treasury Department's list of approved sureties, as published in Circular 570, as of the bid date. The performance bond shall be issued in an amount equal to 100% of the contract amount and shall be dated concurrent to, or subsequent to, the date of the contract.

GENERAL CONSTRUCTION

The design and construction of the apparatus shall embody standard automotive heavy vehicle engineering practices. The apparatus shall be designed, engineered and constructed with due consideration for the severe service nature of the fire service. All parts of the apparatus shall be installed in accordance with the OEM specifications.

Distribution of load between the front and rear axles shall be engineered so that all specified equipment and a full complement of personnel shall be carried without damage to the apparatus. Weight balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association and current standard automotive practices. Y

The apparatus shall be designed to conform to applicable ANSI and NFPA 1901 standards. The following design criteria shall be applicable to this specification to the extent specified herein:

- American Society for Testing Materials (ASTM) - A-36, Specification for Structural Steel
- Society of Automotive Engineers, Inc. (SAE) - SAE Handbook
- American Welding Society (AWS) - AWSO14.4-77 Classification and Application of Welded Joints for Machinery and Equipment
- American Society for Non-Destructive Testing (ASNT)

All sensitive components shall be protected against adverse weather conditions. Any exposed metal surface which is not painted or otherwise coated shall have a bright finish. Corrosion protection shall be provided between any dissimilar metals joined in the construction of this apparatus.

The specified apparatus shall be a custom cab type; designed, engineered and manufactured specifically for the fire service in North America. The apparatus meets or exceeds the

	Yes	No
requirements of the NFPA 1901, current edition, in all respects. The cab shell incorporates a protective safety-cage design that totally surrounds and protects the seat belted driver, officer and crew.		
Chassis shall be a new, heavy-duty, custom fire apparatus design built expressly for the fire service. All standard components that have not been specified shall be provided.		
Chassis shall be designed, engineered and built by the bidder and be the manufacturer's first line custom chassis.		
The chassis shall be suitable for heavy duty service with all components having adequate strength and capacity for the intended load to be sustained and the type of service required.		
Options for all possible access panel for ease of maintenance shall be listed with bid.		
CORROSION PROTECTION There shall be a system to prevent corrosion of all underbody components. The builder shall provide a detailed description of the corrosion protection process.	Y	
SIGN – VEHICLE DIMENSION AND WEIGHT A sign shall be provided in the front cab area, visible to driver while the apparatus is in operation, indicating the height of the completed apparatus in feet and inches, length of the completed apparatus in feet and inches, and the gross vehicle weight rating (GVWR) in tons.	Y	
SEATING CAPACITY The seating capacity in the cab shall be five (5). A sign visible to the driver, that states the number of personnel the vehicle is designed to carry, shall be provided.	Y	
APPROACH/DEPARTURE ANGLES An angle of approach and an angle of departure of at least 8 degrees shall be maintained at the front and the rear of the vehicle when it is loaded to the estimated in-service weight, as defined by NFPA 1901 current edition.	Y	
MAXIMUM OVERALL HEIGHT	Y	

	Yes	No
The maximum overall height of the apparatus shall be 136” (No Exceptions).		
WHEELBASE		
The wheelbase of the vehicle shall be no greater than 245”.	Y	
GVW RATING		
The manufacturer shall be responsible for proper weight distribution upon the chassis and axles. The apparatus when loaded, shall have not less than 25% nor more than 45% of the weight on the front axle and not less than 55% nor more than 75% on the rear axle. A certified weight certificate showing weights on the front axle, rear axles and total weight for the completed apparatus with the fuel tank full, but without personnel and equipment shall be provided at the time of delivery. In accordance with NFPA 1901, it shall be the responsibility of the purchaser to notify the manufacturer in the purchaser's specification of any ground ladders, or equipment to be carried by the apparatus that exceeds the minimum requirements of the NFPA 1901 standard in effect at the time of the bid.	Y	
GROSS VEHICLE WEIGHT RATINGS		
Front Vehicle Weight Rating shall be: [22,800#]	Y	
Rear Vehicle Weight Rating shall be: [50,000#]	Y	
Gross Vehicle Weight Rating shall be: [72,800#]		N
VEHICLE PERFORMANCE ANALYSIS REPORT		
A performance analysis report shall be run on the vehicle, as ordered, using computer software to determine top speed, grade ability, optimum shift points and acceleration on various grades. The report shall be delivered with the completed vehicle, but shall be available prior to engineering of the vehicle.	Y	
FRAME		
The frame is to be specifically designed and produced for the vehicle as specified. Each hole made in the frame rails must be used for a specific chassis component and any holes for non-required options are not acceptable.	Y	

	Yes	No
The chassis frame shall be built using two variable section steel channels and a minimum of six (6) formed steel cross members. The frame rails shall be 120,000 psi heat treated steel alloy with tapering measurements and continuous top and bottom flanges. The cross members shall be of heavy duty, fabricated, all-welded design, made out of a minimum of 50,000 psi material.	Y	
A "C" straight channel frame inner liner with top and bottom flanges shall be provided. It shall extend from behind the front suspension shackle to the end of the frame rail.		
Each rail shall have a minimum section modulus of 25.9 and a combined minimum resisting bending moment of 3,119,040 inch pounds over critical areas of the frame assembly.		
The frame rails and cross members shall be assembled using 5/8" flange head, grade eight bolts and "Spiralock®" flange nuts. Spiralock® nuts shall be used exclusively in the frame assembly for mounting spring hangers, steering gear, engine, transmission, etc. to maintain constant torque tension and prevent loosening from vibration. Spiralock® nuts shall provide even thread load over the bolt, increased fatigue strength and clamping torque.		
Frame rails less than or equal to 480" in length shall receive a duo-coat primer: an E-coat followed by a powder coating. This duo-coat process meets 1000 hours of salt spray testing per ASTM B117 test procedure. Frame rails greater than 480" in length shall be powder coated only. The inside of the rails shall be hand re-sprayed to insure coverage. This process meets 240 hours of salt spray testing per ASTM B117 test procedure.		
The frame rails shall then receive an additional paint coat.		

FRONT NON-DRIVE AXLE

A Dana D2200 front axle with a 22,800 pound rating shall be provided. It shall include composite low-friction bushings with diagonal grooves to better distribute lube, camber settings of +1/4 degree for both left and right sides to help improve tire life and a large diameter, heat treated kingpin with a lube retaining seal. Front oil seals with clear viewing window shall be provided on the front axle.	Y	
Shock Absorbers Gabriel heavy-duty telescoping shock absorbers shall also be provided on the front axle.		

	Yes	No
Electronic Roll Stability (ESC) - for Tandem Axles In compliance with NFPA 1901, current edition standard 4.13.1, the vehicle, as specified, shall be equipped with a Meritor-WABCO electronic Roll Stability Control system that shall utilize a centrally mounted pitch and yaw sensor and steering shaft position sensor interacting with the chassis' ABS traction control, auxiliary braking system and the engine ECM to minimize the vehicle's potential for rollover in a turning at speed maneuver.	Y	
REAR AXLES The rear tandem drive axle shall be a Dana model D50-172 with a capacity of 50,000 pounds at the hub.		
An inter-axle differential control switch shall be provided on the cab dash, easily accessible from the driver's seating position.		N
All axles shall be purchased complete from and certified by the axle manufacturer for the specific application. Brake chamber brand and size shall be determined by the axle manufacturer.		
REAR AXLE RATIO The rear axle ratio shall be determined by the manufacturer to match NFPA top speed of 60 m.p.h.	Y	
SUSPENSION The front suspension shall be taper leaf 4" x 52" constant rate type springs with a military wrapped eye. The correct material, spring length, width, thickness and number shall be provided to match the leaf spring rating with that of the gross axle weight rating of the vehicle.		
The rear suspension shall be a Neway ADZ-252 heavy duty 52,000 lb capacity air ride suspension. The assembly utilizes air springs and a parallelogram framework design that reduces drive line wear and vibration while maintaining a constant pinion angle. The air ride offers a smoother ride with less stress on truck components. It eliminates tire hopping and helps provide superior traction to the wheels.		N
BRAKES		

	Yes	No
The vehicle shall be equipped with a WABCO 4S4M anti-lock braking system (ABS). The ABS shall provide six (6) channel anti-lock-up braking control on the (2) front and (4) rear wheels. The system shall employ a digital electronics system with microprocessor controls divided into two (2) diagonal circuits. In the event of one circuit malfunction the second circuit shall operate unaffected. Each wheel shall be constantly monitored by the system when the vehicle is in motion. When any wheel begins to lock-up during braking, a signal shall be transmitted to the processor from the wheel sensor. The control unit shall instantly reduce the braking force applied to the wheel and immediately re-apply braking force so that the wheel rapidly slows without locking. The system shall control all wheels simultaneously to provide maximum vehicle braking in a relatively straight line. An ABS warning light shall be installed in the warning light panel of the driver's dash. The ABS system shall automatically disengage the auxiliary braking system whenever the anti-lock braking mode is active.	Y	
The service brake system shall be full air type.		
The front axle shall be provided with Bendix #ADB22X air disc brakes with internal automatic adjustment, sealed synchronized twin pistons and robust sealing of slide pins for environmental protection. The #ADB22X air disc brakes shall have 17" rotors and a fully sealed lever mechanism with variable mechanical ratio. A visual indicator of brake wear shall also be provided.	Y	
The rear brakes shall be Bendix #ADB22X air disc brakes with internal automatic adjustment, sealed synchronized twin pistons and robust sealing of slide pins for environmental protection. The #ADB22X air disc brakes shall have 17" rotors and a fully sealed lever mechanism with variable mechanical seal. A visual indicator of brake wear shall also be provided.	Y	
The brake system shall be certified, third-party inspected, for improved stopping distance.		
Brake Lines Color-coded nylon brake lines shall be provided. The lines shall be wrapped in a heat protective loom where necessary in the chassis.	Y	
All airline fittings shall be compression type (No exceptions). No push-fit fittings shall be used.	Y	

ELECTROMAGNETIC BRAKE

	Yes	No
A Telma electromagnetic, driveline retarder shall be furnished and mounted within the driveline system. This system shall automatically activate in four-stages to achieve 100% capacity when the brake pedal is applied. The system shall have an on/off switch and a four-stage indicator to show retarder activation stages mounted on the dash. The magnetic retarder control shall be through a switch on the dash, with activation of the retarder in conjunction with the brake pedal. The application shall be in progressive stages, (1/4, 1/2, 3/4 & 100 percent). The system shall disengage with the activation of ABS. Telma operation shall be determined at the pre-construction conference. The electromagnetic brake shall be controlled by the Telma integrated Retarder Control system (IRCS) that integrates both the control and power functions into a single module.	Y	
AUTOMATIC TRACTION CONTROL (ATC) W/ DEEP MUD & SNOW SWITCH Automatic Traction Control, working in concert with the ABS system, shall be provided which shall reduce wheel slip on acceleration on wet or slippery road conditions. A light shall illuminate on the driver's dash when the drive wheels slip during acceleration. A deep snow and mud option switch shall be provided in addition to the ATC option. This function increases available traction on extra soft surfaces like snow, mud or gravel by slightly increasing the permissible wheel spin.	Y	
INTER-AXLE DIFFERENTIAL LOCK The rear tandem axle set shall be equipped with an air actuated primary traction device that allows for speed differences between the forward and rear tandem axles while providing equal pulling power from each axle. When disengaged, one wheel set of the forward drive axle and the opposite side wheel set of the rear drive axle shall operate in drive action to minimize wear on drive components. When the IAD lock is engaged, both wheel sets of each tandem axle provides drive action and does so until one side encounters slip or the vehicle is turning, thereby maximizing traction without diminishing turn radius. A dash mounted locking rocker switch shall engage and disengage the IAD lock. While the IAD lock may be engaged or disengaged at rest or at road speed, it should not be engaged whenever any drive wheel is slipping. It is understood that the IAD should be unlocked for normal dry road condition operation to avoid premature ring gear, clutch and tire wear.	Y	

	Yes	No
AIR COMPRESSOR, BRAKE SYSTEM The air compressor shall be a Cummins/Wabco with 25.9 cubic feet per minute output. All airline connections shall be of the compression type. “Push on” fittings shall not be used for any air application, brakes or accessories (No Exceptions).	Y	
AIR SYSTEM One (1) air inlet with male Type “A” coupling shall be provided. It shall allow station air to be supplied to the apparatus brake system through a shoreline hose. The inlet shall be located in the driver side lower step well of the cab. A check valve shall be provided to prevent the reverse flow of air. The inlet shall discharge into the "wet" tank of the brake system. A mating female Type “A” coupling shall also be provided with the loose equipment Air Outlet One (1) female Type “A” coupling shall be provided adjacent to the Air Inlet. Air supply shall be dried and filtered. A 1/4 turn shutoff valve shall be located adjacent to the outlet. The outlet shall be located in the driver’s side lower step well of cab.	Y	
Air Tank (Additional) An additional air tank shall be provided to increase the capacity of the air system. This tank shall be dedicated to air horn use.	Y	
Air Tank Drains Heavy duty manual drain valves with pull cables shall be provided on each tank to drain condensation. Drain cables shall be routed to readily accessible location on outer cab/body. Drain cables shall also have sufficient slack built into the design to prevent unintended activation as a result of body flex/movement. The location shall have a permanently placed placard that reads “Drain Daily.”	Y	
Air Tank Mounting To reduce the effects of corrosion, all air tanks shall be mounted with stainless steel brackets.		N
AUXILIARY AIR COMPRESSOR A Kussmaul model #091-9B-1 "Auto Pump AC" redundant air compressor shall be installed. The Auto Pump shall be wired to 120 VAC shoreline. Operation shall be automatic with the pressure switch sensing the system pressure and controlling the power input. The compressor shall automatically replace air lost due to leakage in the brake system without any interference to engine mounted air compressor functions. Access for maintenance must be designed such	Y	

	Yes	No
that no other components must be dismantled to service the air compressor. Final location to be determined at preconstruction conference.		
AUXILIARY AIR APPLIED FRONT AXLE PARKING BRAKE An auxiliary air applied front axle parking brake shall be supplied with a separate control switch and properly labeled indicator light in the cab. This front parking brake will only be able to be activated when the parking brake for the rear axle is set.	Y	
OFFICER EMERGENCY BRAKE An additional emergency brake control shall be provided on the right hand side of the cab dash in easy reach of the officer. Control shall actuate the rear axle spring brakes only. In addition, the control shall disable the driver's accelerator pedal and shift the transmission into neutral. Brake control shall be a heavy duty toggle type electrical switch equipped with a spring loaded safety cover to prevent accidental brake engagement. Cover shall be red in color. Control switch shall have an identification label and a warning that it is "For Emergency Use Only". A red LED light shall illuminate when the brake is activated.	Y	
ENGINE INSTALLATION CERTIFICATION The fire apparatus manufacturer shall provide certification, along with a letter from the engine manufacturer stating they approve of the engine installation in the bidder's chassis. The certification shall be provided at the time of delivery.	Y	
ENGINE The chassis shall be powered by an electronically controlled engine as described below: • Make: Cummins • Model: X12 • Power: 525 @ 1900 RPM • Torque: 1695 ft.lb. @ 1000 RPM • Governed Engine Speed: 2000 RPM • Emissions Level: EPA 2010 • Fuel: Diesel • Cylinders: Six (6) • Displacement: 11.8 cu.in. • Starter: Delco 39 MT-HD	Y	

- Fuel Filters: Spin-on style primary filter with water separator & water-in-fuel sensor.
- Coolant Filter: Spin-on style with shut off valves on the supply and return line.

A dry-type air cleaner, suitable for the engine being proposed, shall be installed and mounted as to provide easy access for serviceability. An air restriction indicator shall be mounted in the dash panel to provide a warning indication of a clogged air filter. The air intake with ember separator shall be provided and be easily accessible. Y
A Racor Ecolite® dry type engine air cleaner shall be provided. It shall be installed in a location above the chassis frame rails and no less than 40" above the ground. A visual inspection shall be possible without tilting the cab. The air cleaner shall be serviceable through an access opening in the engine cowling.

EXHAUST SYSTEM

The exhaust system shall be stainless steel from the turbo to the inlet of the selective catalytic reduction (SCR) device, and shall be 4.00" in diameter. The exhaust system shall include a diesel particulate filter (DPF) and an SCR device to meet current EPA standards. An insulation wrap shall be provided on all exhaust pipe between the turbo and SCR to minimize the transfer of heat to the cab. The exhaust shall terminate horizontally ahead of the passenger side rear wheels. A tailpipe diffuser shall be provided to reduce the temperature of the exhaust at the exit. Heat deflector shields shall be provided to isolate chassis and body components from the heat of the tailpipe diffuser. Y

Exhaust Modification

The exhaust pipe shall be brought out from under the body at a 90-degree angle from the truck. The tailpipe shall extend a minimum of 2.00" past the body, terminating with a flange for a Plymovent magnetic attachment system. The diameter of the pipe shall be 6.00". There shall be a clearance of 4.00" completely around the pipe once past the side of the body. Y

DIESEL EXHAUST FLUID TANK

A minimum 10 gallon diesel exhaust fluid (DEF) tank, constructed of polyethylene, shall be provided and mounted in the driver's side rear cab step area. There shall be an access door that provides easy access for refilling the DEF tank. The tank shall be fillable without lifting cab (NO EXCEPTIONS). The tank shall be easy to remove for service. The tank shall be fully accessible when the cab is raised. There shall be a DEF fluid level sensor provided in the tank and connected to a gauge on the dash of the cab. All metal mounting components shall be stainless steel. A .50" drain plug shall be provided in a low point of the tank for drainage. The tank shall meet the engine manufacturer's requirement for 10% expansion space in the event Y

	Yes	No

of tank freezing. The tank shall include an integrated heater unit that utilizes engine coolant to thaw the DEF in the event of freezing.

ENGINE BRAKE

A Cummins engine brake shall be installed with controls within easy reach of the driver. Brake shall automatically be actuated when the accelerator pedal is released. The engine brake shall be wired in conjunction with the rear brake lights so that they are activated when the engine brake is engaged. It shall have a three position switch; "LOW", "MEDIUM" and "HIGH" along with an "OFF" and "ON" switch. — N

COOLANT OVERFLOW RESERVOIR

A six (6) quart coolant overflow reservoir shall be provided. It shall be accessed in the officer's step well. A hinged aluminum tread plate door with small D-ring handle shall be provided for access, separate from the officer's door. The aluminum tread plate door shall be properly labeled. — Y

A visual inspection of the fluid level shall be possible without tilting the cab (NO EXCEPTIONS).

RADIATOR

The radiator and the complete cooling system shall meet or exceed NFPA and engine manufacturer cooling system standards. For maximum cooling performance, the radiator core shall be made of aluminum fins having a serpentine design, soldered to brass tubes. The tubes shall be welded to brass headers using the patented "Beta-Weld" process for increased strength, longer road life, and solder-bloom corrosion protection. Steel supply and return tanks shall be bolted to the core headers and steel side channels to complete the radiator assembly. The radiator shall be compatible with commercial antifreeze solutions. The radiator shall be mounted in such a manner as to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven ground. The radiator assembly shall be isolated from the chassis frame rails with rubber isolators. — Y — N

The radiator shall include an integral de-aeration tank, with a remote-mounted overflow tank. For visual coolant level inspection, the radiator shall have a built-in sight glass that is located higher than the low coolant level sensor. The radiator shall be equipped with a 15 psi pressure relief cap. A drain port shall be located at the lowest point of the cooling system and the bottom of the radiator to permit complete flushing of the coolant from the system. A heavy-

duty fan shall draw in fresh, cool air through the radiator. Shields or baffles shall be provided to prevent recirculation of hot air to the inlet side of the radiator.

COOLANT LINES

Silicone hoses shall be used for all engine/heater coolant lines installed by the chassis manufacturer.
Hose clamps shall be stainless steel "constant torque type" to prevent coolant leakage. They shall react to temperature changes in the cooling system and expand or contract accordingly while maintaining a constant clamping pressure on the hose. Y
All fittings and adapters in the cooling system shall be manufactured from aluminum, brass or bronze. Plastic or composite materials shall not be acceptable.

SKID PLATE

A removable radiator skid plate shall be provided to protect the radiator from debris. The skid plate shall cover the lower radiator tank and shall be painted to match the frame rails. Y

FAN CLUTCH

A viscous style thermostatically controlled, clutch shall be provided for the engine cooling fan. The clutch shall be of a failsafe design, in that it shall fail in the "on" mode and thus prevent overheating. Manufacturer shall also wire the clutch so that it remains "on" constantly when aerial PTO is engaged. It shall not be load managed. Y

ACCESS TO ENGINE DIPSTICKS

For access to the engine oil and transmission fluid dipsticks, there shall be a door on the engine tunnel, inside the crew cab. The engine oil dipstick shall allow for checking only. The transmission dipstick shall allow for both checking and filling. An additional tube shall be provided for filling the engine oil. The door shall have a rubber seal for thermal and acoustic insulation. One (1) flush latch shall be provided on the access door. Y

FUEL TANK

The vehicle shall be furnished with a minimum 65 gallon fuel tank mounted behind the rear axle and just below the frame rails. The tank shall be constructed of stainless steel and equipped with a swash partition and vent. The fuel tank shall meet all FHWA requirements including a fill capacity of 95% of tank volume and all DOT and FMVSS regulations for Y

rollover protection. A 2" diameter fill inlet shall be provided. Fuel cap shall be of brass or bronze construction, non-vented and have lead safety fuses. It shall be chained to inlet tube or to the body sheet metal to prevent loss. Braided hoses shall be provided for the fuel lines. A 1/2" NPT drain plug shall be located at the bottom of the tank. The tank shall be installed using stainless steel straps and hardware, separated from the tank by a rubber insulating strip to prevent against chaffing. The stainless steel fuel fill inlet shall be located on the left (drivers) side of the apparatus. It shall be concealed behind a door. The inside of the door shall be marked "ULTRA LOW SULFUR DIESEL FUEL ONLY". The fuel inlet area, recessed behind the door, shall be completely enclosed to prevent dirt and debris from entering. Provision shall be provided inside the fill recess for drainage of any spilled fuel within the cavity. Y

The fuel door shall be constructed of stainless steel and shall have a brushed finish. It shall be hinged along the vertical side towards the front. A magnet shall hold the door in the closed position. The door shall be kinked along 3 edges with the fourth side being used as s finger grab for opening and closing it. A stainless steel trim ring shall encircle the opening to prevent the fuel nozzle from damaging the surrounding surface when it is opened. The fuel shelf shall be made from a high impact polyethylene material. Four (4) feet of extra fuel line shall be provided, coiled, and secured to the top of the tank.

Fuel Water Separator With Alarm & Heater

A Racor Greenmax™ model 4400R1210 fuel water separator with 10 micron Aquabloc filter, water sensor alarm and heater shall be provided Y

Fuel Line Shutoff Valve

A fuel line shutoff valve shall be provided to prevent fuel from draining back while changing fuel filters. The fuel line shutoff valve shall be located near the fuel water separator. Y

Fuel Cooler

An engine fuel cooler shall be provided on the apparatus. The engine fuel cooler shall cool the returning fuel from the engine using the water from the water pump. Y

Transmission

An Allison electronic automatic transmission shall be provided. The transmission shall be the most current generational design by Allison. Y

	Yes	No
The transmission shall be rated to handle the weight of the apparatus when fully loaded. The transmission shall be rated to handle the maximum rated torque output as produced by the chassis engine in all power ranges.		
A transmission temperature gauge shall be installed on the cab instrument panel. The transmission shall be programmed for Fire Service / aggressive downshifting application.	Y	
Transmission Shifter		
A six (6)-speed push-button shift module with the 4 + 2 "Mode" button shall be mounted to the right of the driver on the console. Shift position indicator shall be indirectly lit for after dark operation.	Y	
The Allison shifter shall be a "double-digit" display model.		
Transmission Cooler	Y	
A transmission oil cooler shall be mounted externally.		

DRIVELINE

Drivelines shall be a heavy-duty metal tube and be equipped with Spicer 1710 universal joints. The shafts shall be dynamically balanced before installation. A splined slip joint shall be provided in each driveshaft, slip joint shall be coated with Glide coat or equivalent. A grease zerk shall be provided for lubrication of the slip joint.	Y	N

POWER STEERING SYSTEM

A heavy duty power steering system shall be provided. The apparatus shall be equipped with an integral power steering unit which is rated to steer the front axle capacity.		
The hydraulic pump shall be engine gear driven. The steering gear "box", or fixture that the gear is mounted to, shall be fabricated in the factory of the bidder. It shall be a welded assembly constructed of 3/8" formed steel with a 3/4" face plate. Vertical gussets shall be provided between the face plate and the frame mounting plate to insure against frame flex while the vehicle is stationary.	Y	
The system will operate mechanically should the hydraulic system fail.		

AUXILIARY CYLINDER FOR POWER STEERING

An auxiliary power assist cylinder shall be provided in the power steering system.	Y	

POWER STEERING COOLER

	Yes	No
A power steering cooler shall be provided. Power steering oil temperature shall not exceed 225°F with an ambient air temperature of 115°F under any operating conditions. The cooler shall be of oil to air type.	Y	
FRONT TIRES The two (2) front tires shall be Continental 425/65R22.5, Conti HAC3, load range "L", with a nominal rating of 11,400 pounds at a top speed of 68 mph.	Y	
REAR TIRES The eight (8) rear tires shall be Continental 315/80R22.5, Conti HSC3, load range "L", with a nominal rating of 9,090 pounds at a top speed of 68 mph.	Y	
TIRE PRESSURE INDICATORS Tires shall have non-pressure indicators installed for shipment. Accu-Pressure Heavy Duty Safety Caps shall be provided and shipped loose. This valve stem inflation pressure sensitive monitor shall provide a visual color indication of when the tire pressure is below the manufacturers recommended level. The chrome safety cap shall show green when the tire is properly inflated and red once the tire becomes under inflated. All inner wheels shall be equipped with a valve stem extension that shall allow the inner wheel to be filled without removing the outer wheel.	Y	
WHEELS All tires shall be mounted on Alcoa Dura-Bright polished aluminum disc-type wheels with a ten (10) I-stud 11.25" bolt circle.	Y	
MUD FLAPS Front and rear heavy duty mud flaps shall be provided. Mud flaps shall be mounted such that they do not interfere with raising or lowering the cab or require physical manipulation to raise or lower the cab.	Y	
CAB INTEGRITY CERTIFICATION The cab shall be certified for the following tests: SAE J2420: Cab Over Engine (COE) Front Strength Evaluation - Dynamic	Y	

	Yes	No
Loading - Heavy Trucks SAE J2422: Cab Roof Strength Evaluation - Quasi Static Loading - Heavy Trucks ECE Regulation 29: Protection of Occupants of Cab in Commercial Vehicle Performance Measure: 1. After undergoing each test, the cab of the vehicle shall exhibit a survival space accommodating a 50th percentile male ATD in the median position without contact between the manikin and non-resilient parts for all seating positions. 2. None of the doors shall open during the tests. 3. The cab attachments may be distorted or fractured, however, the cab shall remain attached to the vehicle frame in at least one attachment location.	Y	
FRONTAL IMPACT The cab shall withstand a frontal force produced from 65,200 ft-lbs of energy using a swing-bob type platen. The same cab shall withstand all tests without any measurable intrusion into the survival space of the occupant area. There shall be no exception to any portion of the cab integrity certification. Nonconformance shall lead to immediate rejection of the bid.	Y	N
CAB The cab shall be designed specifically for the fire service and shall provide roll cage strength and safety. The cab shall be made in the factory of the bidder and must be the bidder's top-of-the-line stainless steel model. The cab shall be of the open interior design. The entire cab shall tilt forward 45 degrees for engine access. No plastic or fiberglass shall be used in the construction of the cab sub-frame, floor assembly, front assembly, side assemblies, back wall assemblies or roof assembly. Front Cab Dimensions The front face of the forward cab shall measure a minimum of 58" from the center of the front axle. The cab shall have an outside minimum width of 94". Entrance step wells to the driver's and officer's positions shall be a minimum of 24" wide. Entrance steps shall be made of stainless steel grating. Crew Cab Dimensions The back wall of the cab shall measure a minimum of 58" from the center of the front axle. The cab shall have an outside minimum width of 94". Entrance step wells to the crew cab positions shall be a minimum of 21" wide. Entrance steps shall be made of stainless steel grating.	Y	

	Yes	No
Cab Mounting A four point mounting system shall be provided for the front cab. The mounting system shall consist of two (2) front pivot mounts fabricated of steel and two (2) rearward lock plates attached to the rear cab sub-structure. Each front pivot mount shall consist of a greaseless pin and a multi-layered, self-lubricating, composite bearing. The outer layer of the bearing shall be high-durometer rubber to isolate road vibrations and shock. Each rear lock plate assembly shall consist of two hydraulic actuated locks isolated from the chassis by center bonded rubber mounts. Sub-Frame The sub-frame shall be stainless steel reinforced welded safety-cage construction utilizing a 3” x 4” rectangular structural steel tube sub-frame. All joints shall have continuous welds; stitch welding shall not be acceptable. The sub-frame shall be designed as a one-piece structure from the front to the back of the cab. It shall be used to support the cab while tilting, join front pivots to the cab locks, and to join the cab to the chassis. Front Assembly The safety-cage section at the front of the cab shall be constructed of 1.25” stainless steel tubing and shall join the front door posts together with the main sub-frame. There shall be a 2.50” x 1.50” x .25” heavy wall lower cross tube that joins the cab sills together to prevent cab twisting when tilting the cab. The front fire walls shall be set back from the front assembly structure to provide added protection in a frontal crash. The outer cab skin shall not be an integral structural member, although it shall help stiffen the cab front face. The front cab door hinge mount (aka “A” pillar) shall be a 2” x 2” tube with a .19” thick wall. Cab Floors All floor components shall be welded directly to the sub-frame. The floor shall be constructed of 50,000 psi stainless steel. Cab floors shall be covered with a sound barrier mat with a heavy-duty wear surface. Side Wall Assemblies The safety-cage on the sides shall be constructed of 1.25” stainless steel tubing. Both side wall assemblies shall be joined to the sub-frame via thick tubular structures, using heavy fillet welds. This shall strengthen the walls to withstand high roof loading. The side wall outer skins shall be integral with the cab structure as well as additional formed components to help stiffen side wall assemblies. There shall be 1.25” of insulating foam between the exterior and interior side walls. The structure shall be reinforced for cab entry grab handle mountings. The rear cab door hinge mount (aka “C” pillar) shall be equivalent to a 2.5mm formed channel with .19” thick tapping bar. Roof Assembly The 1.25” stainless steel tubing used in the construction of the roof section of the safety-cage shall support 2 psi of loading across the whole roof. The fabricated and welded roof sills and front header shall be made of 50,000 psi stainless steel material. The corner caps shall utilize	Y	

	Yes	No
spun metal technology thus retaining the metal's strength while producing a very rigid corner joint. The side roof covering (rolled edges) shall be constructed of stainless steel formed in a quarter round. It shall form a hollow double wall, angle reinforced roof edge with an integral drip rail. The roof top outer wall shall not be an integral structural member, although it shall stiffen the roof. There shall be 1.25" of insulating foam between the exterior roof and interior ceiling.	Y	
A flat roof shall be provided with an interior floor to ceiling height of no less than 54". The exterior surface of the cab roof shall be painted in compliance with the cab paint specifications detailed elsewhere in this specification document.		
BACK WALL ASSEMBLY		
The safety-cage on the back wall shall be constructed of 1.25" stainless steel tubing. It shall join the roof to the floor assembly. Construction of the back wall assembly shall utilize a minimum of 2.5mm 3CR12 material and the design shall provide crush protection in the event of a rollover. The back wall structure shall be uniform, regardless of the seating choices. All seat mounts and seatbelt mounts shall use weld nuts to eliminate pullouts and stripped threads. The outer skin shall not be an integral structural member, although it shall stiffen the back wall. 1.25" of insulating foam shall be located between the exterior and interior back walls.	Y	
Cab Grille		
The cab front opening shall be covered with a custom made polished stainless steel grille that shall be fabricated in the bidder's factory. The grille shall have formed vertical bars spaced apart on 2" centers. The upper polished stainless steel grille shall have a matching lower counterpart to further facilitate engine cooling. The two (2) stainless grilles shall be housed in a custom, raised and chrome plated bezel. Both the upper and lower front, center raised surround bezels and the two (2) grilles shall have a polished chrome finish.	Y	
UPPER RAISED BEZEL SURROUNDS, WITH PANELS		
A custom raised bezel shall be installed on the front face of the cab, on each side of the front grille. Housed within each bezel shall be a removable panel, painted job color. The removable panel shall provide service access to the forward side, firewall mounted electrical connections and wiring harness. The upper raised headlight bezel surrounds shall have a bright chrome finish.	Y	
Engine Air Inlet Grille & Ember Separator		
A highly polished stainless steel removable grille for engine air intake shall be provided. The air intake grille shall contain the replaceable water and ember separator filter in an integral housing. The air intake grille and water/ember separator cartridge shall be located on the side of the cab, above and to the rear of the driver's side steer axle. The engine air intake grill shall be no less than 60" above the ground. The cab engine air inlet shall be painted (JOB COLOR) RED	Y	

	Yes	No
## ENGINE TUNNEL The engine enclosure structure shall have a 1-1/4" thick inner lining, on the engine side, comprised of aluminized foil and foam/barrier composite for heat insulation. The tunnel cover shall have 1/2" decoupled foam lower and 1" decoupled foam upper covering, on the cab interior side, for noise insulation. The top forward portion of the hood shall have a full-width riser with a sloped face for the installation of the switch panel. The sloped panels shall be used for vehicle accessory controls. A minimum of 1" shall be provided between the right edge of the accelerator pedal and the side of the engine hood. A removable cover over the engine enclosure and insulation shall be coated with black LINE-X to act as an insulator for sound and engine temperature, as well as to provide an easy-to-clean work surface.	Y	
## ACCESSORY MOUNTING STRUCTURE The top portion of the engine enclosure shall have a channel frame located between the engine tunnel structure and the cover to support the cover and facilitate mounting of accessories and equipment.	Y	
## CREW CAB ENGINE COMPARTMENT ACCESS DOOR An access door shall be provided at the rear of the engine enclosure for routine engine fluid checks. The access door shall be insulated from engine heat with aluminized foil/foam/barrier composite and sealed to prevent exhaust fumes from entering the crew cab.	Y	
## FORWARD CAB CENTER TUNNEL REMOVABLE OVERLAY PLATE FOR POWERPOINT ACCESS A removable aluminum plate cover shall be provided for access to beneath the rearmost center tunnel cover immediately to the rear of the center tunnel cover. This accesses the power point/distribution area for center tunnel accessory potential. This plate shall be attached directly to the tunnel cover surface and the plate finish shall match the engine tunnel cover.	Y	
## FORWARD CAB CENTER TUNNEL COVER REMOVABLE PLATE-CENTER DASH A removable 27" long x 27" wide x .13" aluminum plate square cover shall be provided for access to two (2) equal spaces of approximately 10" long x 24" wide each beneath the center tunnel cover immediately to the rear of the center dash switch panel area and between the	Y	

	Yes	No
forward cab seating. This plate shall be attached directly to the tunnel cover surface. Its finish shall match that of the engine tunnel cover.		
STEERING WHEEL A padded steering wheel with center horn ring shall be provided. The upper steering column shall be of the tilt and telescopic type. A self-canceling directional switch with wiper control and headlight dimmer control shall be mounted on the steering column with an ICC four way flash switch. The self-canceling directional switch shall be easily removable and replaceable without removing the steering wheel or column assembly. The junction of the shaft and the cab floor shall be sealed to prevent air exchange between the cab interior and exterior.	Y	
CAB FLOOR The cab floors shall be covered with a black mat that functions as a sound dampening barrier. The mat shall have a pebble textured heavy-duty wear surface and be laminated to a foam underlay. The mat shall be composed of a vinyl-nitrile blend, which is the base material used in IV tubes and blood bags; it is not affected by blood or other body fluids.	Y	
REAR WALL COVERING A 3-piece aluminum tread plate overlay shall be provided over the entire exterior rear wall of the cab.	Y	
PAC TRAC ON INTERIOR REAR CAB WALL A Pac Trac 7000 assembly shall be installed on the interior rear cab wall, on both the driver's side and the officer's side outboard positions, starting at floor level. The Pac Trac on each side shall measure approximately 20" wide overall by 51.75" high.	Y	
CAB DOORS The four (4) forward and crew cab doors shall be barrier clearing. The forward and crew cab doors shall be a minimum 34.5” wide. The interior and exterior door handles to be flush mounted paddle style with a Trimark TM202 keyed lock incorporated in the exterior handle and lever control lock incorporated in the interior handle. One (1) key per door shall be provided. The door check straps shall be six (6) inch wide 9800 lb woven nylon strap with sewn integral steel reinforcement bars for attachment to cab and cab door. The door's latch locking	Y	

	Yes	No
mechanism shall make it impossible to lock oneself out of the cab unless locked with the supplied key. The door rotary latch mechanisms latch linkage shall be accessible through an access panel integral to the interior door panel. Doors shall be hung on stainless steel full length hinges attached to cab and door with .25" bolts. The hinges for each door shall be of one-piece 304-2B stainless steel construction with stainless steel pins and 0.090 gauge leaves with 2" joints and a 3" width opening. Doors shall meet Federal Motor Vehicle Safety Standard #206. All piano hinges on the exterior cab doors shall be mill finished. The doors shall be designed so as to allow the tempered laminate windows to roll completely down.	Y	
Cab Door Opening The front cab doors shall open approximately 90 degrees.		
Inner Cab Door Panels The upper inside bolt-on panel on each cab door shall be removable and shall be constructed of aluminum covered with black LINE-X.	Y	
Reflective Chevron All four (4) cab passenger compartment doors shall have at least 96 square inches of reflective material affixed to the inside of each door to alert traffic when the door is open. The reflective material shall be a chevron design that complies with NFPA requirements.	Y	
Doors - (2) Cab Two (2) cab side access doors shall be provided on the cab, one each side, to the rear of the front cab entrance doors. Door openings shall be approximately 13.00" wide x 27.00” high. The doors shall fit flush with the exterior skin of the cab and be hung on 304 stainless steel full length hinges attached to the cab and door by 0.25” bolts. The doors shall open a minimum of 90 degrees. The cab side access doors shall be vertically hinged at the front edge. The doors shall each have a chain style door stay.		
Cab Side Access Door Latch Position - Lower Part of Door Trimark paddle style latches shall be provided on the lower part of the door.	Y	
Keyed Locks for (2) Cab Side Access Doors (#1250 Keys) There shall be keyed locks for both the cab side access doors. The driver's side and officer's side access doors shall be keyed alike with #1250 keys.	Y	
Sill Protectors - (2) Cab Side Access Door, Brushed S/S Brushed stainless steel sill protectors, approximately .50" wide, shall be provided on the cab side access door sills to protect the painted finish.	Y	
Cab Side Access Inner Door Frame Scuff Plates A brushed stainless steel scuff plate shall be installed on the striker side of each cab side access inner door frame and shall run the full height of the door opening. The scuff plate shall be a single bend configuration that guards the outer door frame post from damage and chips to the paint.	Y	
CAB DOOR FRAME SCUFF PLATES		

	Yes	No
A highly polished stainless steel scuff plate shall be installed on the striker side of each cab door frame and shall run the full height of the door opening. The scuff plate shall be a single bend configuration that guards the outer door frame surface from damage and chips to the paint.		
Cab Side Access Door Lights - (2) ROM LED, (1) Strip Light Per Door Each cab side access door shall have a ROM LED lighting strip installed. The full height lighting strip shall be mounted vertically at the hinged side of the cab door. The LED lights shall be mounted in an anodized aluminum track. A switch, installed in the door jam, shall be used to activate light.	Y	

CAB INTERIOR

The cab shall be provided with an aluminum tread plate removable back liner. The back liner shall be the multi-piece type (minimum of three (3) sections) so that the entire liner does not have to be removed for localized maintenance.	Y	

INTERIOR CAB INSULATION

The cab shall include minimum 1.50" insulation in the ceiling and side walls, and 2.00" insulation in the rear wall to maximize acoustic absorption and thermal insulation.		
The cab shall be provided with a removable black headliner for ease of servicing the electrical wiring placed in the cab roof. The headliner shall consist of 3 layers of material. Next to the roof shall be a layer of acoustical insulation made of polyester and polypropylene fibers. The next layer is 1/4" thick Luann. Finally, there is a 1/4" thick layer of foam/perforated acoustical vinyl. The headliner shall be the multi-piece type (minimum of three (3) sections) so that the entire liner does not have to be removed for localized maintenance.	Y	

CAB DASH FINISH

The cab dash shall be sprayed with black LINE-X having a high resistance to abrasion and tearing. The LINE-X shall absorb impact without surface damage. The LINE-X shall be resistant to gasoline, diesel fuel, paints, bleaches, organic solvents and other cleaning agents and chemicals. It shall include sound dampening and vibration elimination properties. The LINE-X shall be solvent free and be environmentally safe to apply with no VOC or CFC hazards. Its surface shall have a non-glare, granular texture and be easily cleaned with common cleansing compounds.	Y	

OVERHEAD DASH

	Yes	No
The overhead dash shall be made of metal. It shall have a black LINE-X coating. Forward Cab Center Overhead Dash Open Retention Strap A removable, replaceable limit strap assembly shall be provided to prevent contact with the lower center dash panel and to retain the center overhead dash assembly in an open position when open for inspection or when access to the upper center power distribution is required. The strap assembly shall consist of a 2" wide, sewn, nylon strap with a steel footman loop inserted in each sewn looped end of the nylon strap. Each of the two (2) footman loops shall be anchored by two (2) 1/4 inch machine screws. The upper anchor assembly shall be attached to the cab roof structure and the lower anchor assembly shall be attached to the hinged power distribution access panel.	Y	

CAB INTERIOR PAINT

	Yes	No
The cab interior metal surfaces shall be painted black vinyl texture paint, unless finished in Line-X as otherwise specified. The following components shall always be black in color: • Floor matting and floor mat edging • Headliner trim • Back liner trim • Crew heater, complete assembly • Electrical panels • Plastic snap plugs for wire access holes • Door seals • Seat risers • Under seat compartments • Rubber covered grab handles • Map desk, if present • Tilt control storage door The following item shall always be gray in color: • Seat belt retractor cover.	Y	

WINDSHIELD

	Yes	No
The windshield shall be of tinted automotive laminated safety plate glass with a curved two-piece design. The windshield shall have approximately 2900 square inches of visual area. Right and left hand windshield glass shall be symmetrical and interchangeable from side to	Y	

	Yes	No
side to minimize spare parts stock and expense. Windshield shall be installed and held in place by an extruded rubber molding with a bright finish, decorative, locking bead. Cab shall be finish painted prior to windshield glass being installed. Glass shall be available from a local vendor.		
DOOR GLASS		
A retractable window with automotive type laminated safety glass shall be provided in all four (4) forward hinged cab doors. All glass shall be tinted. Glass shall slide in stainless steel side channels with cloth/fiber liners. Rubberized fiber seals shall be located at the bottom of the window opening to prevent water and debris from entering the interior of the door when the glass is up (or down). A seal shall be placed on both sides (interior and exterior) of the glass. The front door glass shall be approximately 23.75" high x 25.75" wide upper and 27.50" wide lower. The rear door glass shall be approximately 23.75" high x 30" wide. The door window openings shall be trimmed on the exterior side with a smooth, black, poly vinyl chloride (PVC) molding. Electric power window regulator shall be manufactured by the Muncy Corporation and shall be the enclosed, sliding flexible shaft, gear type for ease of operation and reliability. The shaft shall enter a vinyl plastic protective sheath whenever it is exposed. A 12 volt electric motor with gear reduction box to slow driven gear rpm and increase power transmission shall be provided.	Y	
DRIVER'S DOOR GLASS SWITCH An individual switch for the driver's electric door window shall be provided on the driver's dash, wired to the ignition. Aftermarket add-on type electric power window conversion devices like the type that replaces the crank arm will not be acceptable.	Y	
OFFICER'S DOOR GLASS SWITCH An individual switch for the officer's electric door window shall be provided on the officer's dash, wired to the ignition. Aftermarket add-on type electric power window conversion devices like the type that replaces the crank arm will not be acceptable.	Y	
CREW DOOR GLASS SWITCHES An individual switch for the crew electric door windows shall be provided on the crew doors, wired to the ignition. Aftermarket add-on type electric power window conversion devices like the type that replaces the crank arm will not be acceptable.	Y	
ADDITIONAL SWITCHES Three (3) additional switches, wired to the ignition, shall be provided to allow the driver to operate all power cab door windows.	Y	
CREW CAB SIDE GLASS There shall be a side window on each side of the cab between the doors. They shall be tinted and be manufactured of automotive laminated safety glass. Each window shall measure 23” high x 12” wide. They shall be installed and held in place by an extruded rubber molding with	Y	

	Yes	No
a chrome plated, decorative, locking bead. The cab shall be finish painted prior to window glass being installed.		
CREW CAB WINDOWS TINT The crew cab windows shall have a green tint laminate.	Y	
WINDSHIELD WIPERS One (1) wet arm operated windshield wiper shall be provided for each plate of windshield glass for accessibility and optimum windshield wiping surface areas. Wipers shall be two speed type with intermittent wiping feature. One (1) control switch shall be provided and located on the self-canceling directional switch for both wiper arms. The switch shall combine the on/off (automatic park position), two speed, intermittent and washer functions in one control. The turning switch shall activate the wipers and control speed, and pushing it shall operate the washers. The wiper arms shall park in a low, horizontal position to provide an unobstructed view when not in use. The wipers shall be wired through the parking brake, so they discontinue operation when the parking brake is set.	Y	
WINDSHIELD WASHER FLUID RESERVOIR A five (5) quart windshield washer fluid reservoir shall be provided. It shall be accessed in the officer's step well. A hinged aluminum tread plate door with small D-ring handle shall be provided for access. The aluminum tread plate door shall be properly labeled. A visual inspection shall be possible without tilting the cab.	Y	
SUN VISORS Two (2) approximately 8" x 28" padded, black sun visors shall be provided, one on the driver's side and one on the officer's side. Visor shall be supported at both ends to prevent drooping. The sun visors shall each have an adjustment knob that locks the visor position.	Y	
MDC NOTCH Provision for the installation of a mobile data computer (MDC) shall be provided in front of the officer seat. There shall also be provided the required wiring for the MDC on the right side of the cab dash. This shall consist of a 12-volt power and ground pigtail and GPS / data antenna wiring. The location of this power and antenna wiring shall be demonstrated at the final inspection. Access panel shall be installed in the top portion of the dash		N

	Yes	No
CAB STEPS The forward cab and crew cab access steps shall be a full-size two-step design to provide the largest possible stepping surfaces for safe ingress and egress. Four (4) fold up Eberhard intermediate cab steps shall be provided in the step well beneath each door. One (1) step shall be mounted on the forward vertical surface of the step well for each of the cab doors. The steps shall not interfere with the operation of any access doors built into the step wells when folded. The folding intermediate step shall be positioned to divide the height of the step well in half.	Y	
STIRRUP STEPS WITH GRIP STRUT Auxiliary cab entrance steps shall be provided at each cab door opening, below the cab, to reduce the cab entrance step height by approximately 9.50”.	Y	
CAB INTERIOR UPHOLSTERY Two (2) black "head bumper style" elbow pads shall be installed on the engine tunnel inboard of the officer and the driver. They shall be covered in Durawear™ and be fastened to a bracket outboard to the engine tunnel. The finish of the bracket shall match that of the engine tunnel. The assembly shall be positioned approximately 6 inches rearward of the center dash vertical surface. A customer patch shall be sewn to five (5) seat head rest(s) in place of the Manufacturer Logo. If a head rest is not present, then the customer's patch shall be sewn onto the front of the seat back cushion.	Y	
DRIVER SEAT One (1) H.O. Bostrom Sierra EX8/ABTS seat with high back styling shall be provided for the driver’s position. Seat Belt The driver's seat shall have a 3-point vertically adjustable D Loop style shoulder harness using integrated dual retractor, to meet FMVSS and NFPA 1901 current edition requirements. The seat belt shall be red in color.		N
OFFICER SEAT The officer’s seat shall be a Bostrom model Tanker 550 rigid mount seat. The seat back shall include a spring loaded flip up headrest and an SCBA bracket designed to accommodate a 1,800 liter cylinder @4,500 psi cylinder. Seat shall be mounted as far back as possible.		N

	Yes	No
SCBA Bracket One (1) NFPA compliant IMMI SmartDock universal SCBA bracket shall be installed in the seat(s).	Y	
Seat Belt The officer's seat shall have a 3-point vertically adjustable D Loop style shoulder harness using integrated dual retractor, to meet FMVSS and NFPA 1901 current edition requirements. The seat belt shall be red in color.		
SEAT CUSHION ADDITIONAL WIDTH Rear seat model Tanker 550 seats shall have the 22" wide cushion. Front seats shall be provided standard 20" cushion.		N
REAR CREW SEATS Three (3) Bostrom model Tanker 550 non-suspension seats shall be provided, two (2) forward-facing, centered on the rear wall of the apparatus, and one (1) rear-facing outboard on officer's side. One (1) NFPA compliant IMMI SmartDock universal SCBA bracket shall be provided in each seat.		N
Seat Belts - Inboard, Forward Facing, 3 Point, Vertically Adjustable (Ea.) The forward facing seat(s) shall have a 3-point vertically adjustable D Loop style shoulder harness using integrated dual retractor, to meet FMVSS and NFPA 1901 current edition requirements. The seat belts shall be red in color.	Y	
HEAD BUMPERS Two (2) padded black vinyl head bumpers shall be provided each side on the interior of the cab above the crew doors in the header area.	Y	
DOOR JAM SCUFF PLATES All cab door jambs shall be furnished with a stainless steel scuff plate, mounted on the striker side of the jam.	Y	
MIRRORS		

	Yes	No
Two (2) Rosco Accustyle heated mirrors with remote shall be installed on the cab doors, one on each side of the cab. The flat upper mirror shall measure 7" x 14" and the lower convex section shall measure 6.5" x 6". The mirrors shall have a black finish.	Y	
CROSSOVER MIRROR An eight (8) inch crossover convex mirror (K-10 P/N 512115-50S) will be installed on cab officer's side top corner that will allow the driver to have visual access of front bumper from the seated position. The mirror shall have a minimum of two attachment points to the body of the cab. The crossover mirror bracket shall have an outboard location.	Y	
FENDERETTES All wheel well openings shall be trimmed with replaceable, bolt-in, molded black rubber fenderettes. The fenderettes shall be secured to the cab with stainless steel threaded fasteners along the internal perimeter of the wheel well. Rubber welting shall be installed between the fenderettes and the cab side panel. They shall be installed with 1/4" hex head bolts (self-tapping sheet metal screws are not acceptable). There shall be a stainless steel backing strip between the rubber and the mounting flange to add support. Fenderette shall incorporate a vertical flange to cover the area where the cab side and wheel opening mounting surface meet. The fenderettes shall be a minimum of 1/4" thick, have a mold formed outer radius and a rounded bead at the wheel opening edge.	Y	
FENDER LINERS Semi-circular inner liners shall be provided in each wheel housing. They shall be constructed of aluminum and shall be bolted in place so they may be removed if damaged. Self-tapping sheet metal screws are not acceptable. The bottom edge of the liner shall be reinforced along its full length however, not have a formed reinforcement flange to avoid trapping dirt and debris.	Y	
CUP HOLDERS Four (4) cup holder(s) with a black Line-X finish shall be installed in the cab. The cup holder shall be designed for mounting on top of the engine tunnel. The cup holder shall be shipped loose.	Y	
MAP BOX		

	Yes	No
A map box shall be provided and installed between the driver and officer on top of the engine hood. The box shall have four (4) angled vertical slots space on 2.75 inch centers. The rear interior of the slots shall be 14.25 inches wide by 8.00 inches deep and shall run crossways of the cab. The front two (2) slots shall be 4.00 inches deep. The box shall be constructed of a 0.125 inch thick aluminum sheet metal welded assembly. It shall be covered with black LINE-X®. A velcro retaining strap shall be provided. The location of the map box shall be determined at the Final Inspection.	Y	
HELMET HOLDER The helmets shall be stored in the body in accordance with NFPA 1901 current regulations: NFPA 14.1.8.4.1 A location for helmet storage shall be provided. NFPA 14.1.8.4.2 If helmets are to be stored in the driving or crew compartment, the helmets shall be secured in compliance with 14.1.11.2. Caution labels shall be posted in the cab so that they shall be visible from each seat position. The labels shall read: "Do Not Wear Helmets While Seated".	Y	
MECHANICAL SIREN A Federal Signal Model Q2B® siren with chrome plated housing shall be recessed mounted in the front bumper extension with front and vane grille exposed. The siren activation switches shall only be active when the emergency master is activated. The Q2B® siren shall be mounted in the center of the bumper, forward section extended through the bumper. Two (2) Linemaster® Model 632-S momentary foot operated switch(es) to activate the mechanical Q2B® siren shall be installed on the toe board of the cab floor. A siren brake rocker switch shall be installed in the cab switch panel on each side for driver and officer, properly labeled. A master switch for the Federal Signal Q2B® siren shall be provided under the driver's side dash. Activation of the master switch shall remove all power including line supply to the solenoid. The foot switch shall be deactivated when the parking brake is set. The foot switch shall be located on the driver's side, outboard of the steering column. An aluminum tread plate angle panel shall be installed to hold a single foot switch shall be installed on the officer's side towards the door opening.	Y	
ELECTRONIC SIREN A Whelen electronic siren shall be provided in the cab dash. The siren has a selectable output of 100 or 200 Watts. The microphone shall be removable.	Y	

	Yes	No
The siren head shall be wired battery switched. Auxiliary activation switches shall only be active when the emergency master and ignition are activated. Model and location shall be determined at pre-construction conference. Two (2) Whelen Projector Series SA-315P, 100-watt speaker(s) with a polished grille shall be recess mounted in the front bumper extension.		
HANDHELD LIGHT There shall be four (4) hand lights provided, Stream light Vulcan lights with the orange thermoplastic body and a 20-watt spot bulb. Carrying straps with buckles shall be provided for each light. The four (4) hand lights shall be mounted rear crew cab area. The exact location of the hand lights shall be discussed at the pre-construction meeting.	Y	
CAB LIFT The cab shall tilt a minimum of 45 degrees for normal servicing of the engine and other equipment. The tilt cab locking system shall be a two-point type that locks automatically when the cab is lowered into its nested position. The cab tilt package is custom designed for safety and ease of vehicle maintenance. The hydraulic tilting system consists of two (2) heavy-duty single acting cylinders. The power supply is a high efficiency electric over hydraulic system with an integral mechanical override in case of battery failure. All components and parts are designed for installation with a minimum of 3 to 1 safety factor based on current S.A.E. standards. In addition to the velocity fuses, a secondary safety system shall be provided to hold cab in the fully raised position in the event of a failure in the primary lift mechanism. It shall consist of a metal channel device, which automatically drops over the extended rod of the right side hydraulic lift cylinder thereby preventing its retraction. The safety channel can only be released through an overt action made by the operator such as pulling a lever or cable from the right side of the apparatus, near the safety channel. Automatic release of the safety system shall not be acceptable. There shall be a small compartment under the officer's side, rear facing seat area. The compartment door opens rearward into the crew area. Stored in this compartment is the "manual tilt bar", in clips. The manual tilt bar actuates the manual hydraulic pump to tilt the cab. The cab tilt system shall be remotely controlled utilizing a cable with a hand held push button device. The cable shall be of sufficient length so as to be able to see both sides of the cab. The cab tilt control shall be located, stored, and tethered directly to a compartment beneath the officer side floor, forward step well area. The compartment shall have a hinged door with a latch. The door shall have the same finish as the surrounding step well area.	Y	
INTERLOCK CAB LIFT TO PARKING BRAKE		

	Yes	No
The cab lift system shall be interlocked to the parking brake. The cab tilt mechanism shall be active only when the parking brake is set, and the ignition switch is in the on position, if the parking brake is released the cab tilt mechanism shall be disabled. The cab lift control connection shall be moisture proof.		
BUMPER		
A heavy duty 0.25” thick painted steel bumper shall be mounted to the front of the chassis and be fabricated in the factory of the bidder. The bumper shall be channel-shaped with a minimum dimension of 10” high with 1.5" flanges and its ends shall be angled 45 degrees for a distance of 5". The bumper shall be painted to match the lower cab color.	Y	
A bumper extension shall be installed at the front of the cab. The front of the bumper shall be approximately 16" from the front face of the cab. A gravel pan made of 3/16" aluminum tread plate shall be installed between the front bumper and the cab. The bumper extension shall be designed and constructed so that the apparatus can be pulled by the extension.		
As part of the bumper extension, a second formed channel with 2" flanges shall be provided directly behind the full width of the flat portion of the bumper. The bumper extension support shall be of channel (minimum 9-7/16" x 3" x 3/8") construction, bolted to the chassis frame stub. A 3/16" aluminum tread plate gravel pan (deck) contoured to fit just below the front face above of the cab and just the upper bumper flange shall be provided. The gravel pan shall not be fastened to the top flange of the bumper.		
LIFT AND TOW MOUNTS		
The bumper extension shall be designed and constructed so that the apparatus can be lifted and towed by the extension. The bumper extensions shall be constructed with a heavy duty structure so as to allow the gravel pan to support weight and additional options. The only holes made in the bumper extension shall be those required for requested options.	Y	
Front Tow Eyes Two (2) painted "cut plate" type tow eyes shall be furnished. They shall be installed under the aluminum tread plate "gravel" pan, behind bumper, and securely attached to the bumper extension frame. The eyes shall be fabricated of 1" thick steel plate with a 3" diameter opening. They shall be painted to match the lower body color	Y	
Rear Tow Loops Two (2) painted rear tow loops shall be provided, welded to the underside of the rear step subframe. The loops shall be rated at 9000 pounds straight pull. They shall be painted to match the frame/undercarriage. They shall be painted to match the lower body color	Y	

	Yes	No

GRAB HANDLES AND HANDRAILS - CAB

Handrails shall be 1-1/4" diameter extruded aluminum, knurled, with a bright anodized finish. All handrail stanchions shall be chrome plated. They shall be bolted to the body with 1/4" stainless steel hex head bolts. Stanchions shall have a rubberized gasket placed between them and the body surface they are mounted on. A drain hole shall be provided in each bottom stanchion.

Handrails shall be installed as follows:

	Yes	No
• Four (4) 24" handrails shall be installed on the side of the cab, one just to the rear of each cab door.	Y	
• Handrails shall have stainless steel sill plates installed on the cab sides behind handles.	Y	
• Two (2) 6" chrome grab handles shall be provided, one on the inside of each front cab door.	Y	
• Two (2) 12" rubber covered grab handles shall be provided, one on the inside of each crew cab door.		
• Two (2) 12" rubber covered grab handles shall be provided, one on the driver's side and officer's side front A-pillar, above the door hinge, to assist in entry to the cab.	Y	
• Two (2) 12" rubber covered grab handles shall be provided, one on each rear crew door hinged-pillar, on the hinged side of the door, to assist in entry to the cab.	Y	
• One (1) 24” chrome grab handle shall be installed centered on the front face of the cab, between the grill and windshield.		N

VEHICLE DATA RECORDER

Fire Research series SBA200-A00 seat monitor display and vehicle data recorder kit shall be installed. The kit shall include a seat monitor display module, a vehicle data recorder, and cables. The seat monitor display shall be programmable for up to twelve (12) seats and have a seatbelt icon for each. A message display, push buttons for navigating through programs, and vehicle system warning indicators shall be located on the front of the seat monitor display. The data recorder case shall be waterproof. It shall have inputs for monitored information from the vehicle J1939 CAN bus, independent sensors, seatbelt and seat occupied switches, outputs for audible alarms, and two-way FRC datalink connectors. Y

The vehicle data recorder shall record the following data once per second and store it in a 48 hour loop:

- Vehicle Speed
- Acceleration
- Deceleration
- Engine Speed

	Yes	No
• Engine Throttle Position • ABS Event • Seat Occupied Status • Seat Belt Status • Master Optical Warning Device Switch • Time • Date • The vehicle data recorder shall record the following data once per minute and have memory to store it for 100 engine hours: • Maximum Vehicle Speed • Maximum Acceleration • Maximum Deceleration • Maximum Engine Speed • Maximum Engine Throttle Position • ABS Event • Seat Occupied with Seat Belt Unbuckled • Master Optical Warning Device Switch • Time • Date The oldest data shall be erased first when memory capacity is reached. All data shall be password protected and uploadable from the vehicle data recorder to a computer.		
UTILITY COMPARTMENT The officer's seat shall be held at NFPA regulated height by a frame which creates an enclosed compartment. The compartment measures approximately 18" wide x 11" high x 18" deep, front to back at the top and 10" deep front to back at the bottom. Access to this compartment shall be through a front drop-down door, measuring approximately 8.5" high and 14.5" wide.		N
INTERIOR STORAGE COMPARTMENT One (1) storage compartment shall be provided in the cab. The compartment shall be rear facing and in the outboard position on the driver's side. The compartment opening shall be covered with a webbing cargo net with metal buckles to secure the contents. The compartment shall be constructed of 1/8" smooth aluminum. The overall outside dimensions shall be 18"widex18" deep x 21" high. The compartment exterior shall have a LINE-X finish that shall match the lower cab dash/engine tunnel. The door interior finish shall match the compartment	Y	

	Yes	No
interior finish. Final dimensions shall be determined at the pre-construction conference. A black cargo net shall be provided over the cabinet front opening to secure stored equipment. The netting shall be made of two (2) inch wide black cargo netting with approximately two (2) inch square openings. The netting shall be fastened on the bottom with footman's loops. The top of the netting shall have two (2) seat belt buckles to secure/release the cover, one (1) in each corner. The male portion of each buckle shall be secured to the top of the netting, the female receiver portion shall be secured to the header of the compartment. A pull strap with loop handle shall be attached to each female receiver to release the cover. Velcro fold overs to the interior of the compartment shall be located on the bottom of the netting to facilitate removal.	Y	

CLIMATE CONTROL SYSTEM

A front cab heater / defroster / air conditioning unit shall be provided. The HVAC unit shall distribute filtered, heated or cooled, fresh and / or recirculated, air through ducting of the cab front dash panels. Heating capacity shall be rated at 46,000 BTU minimum. Cooling capacity shall be rated at 33,000 BTU minimum. The HVAC unit shall be located in the cab RH firewall and have a variable speed 625 CFM blower assembly. The HVAC unit shall be designed for serviceability and be located behind a removable panel. Access to air intake filter, heater core, evaporator core, and fan assembly shall be provided without removing the HVAC housing from the installed location. Intake air shall be filtered by a commercially available filter and can be mixed between fresh and recirculated for vent / defrost and heat / cool selections. Output air can be distributed between the four (4) defroster vent located at the base of the windshield, four (4) rear facing dash vents, and two (2) lower rear facing vents. Defrost function selection can provide heated or cooled output air, fresh or recirculated intake air, and utilizes the AC system for drying air to the windshield. Output air will be directed through six (6) vents. Four (4) fixed flow vents located at the base of the windshield positioned and designed to distribute the air up. Two (2) adjustable vents located, one (1) at the LH edge of the dash directed at the LH driver’s door glass and one (1) at the RH edge of the RH passenger’s door glass. Vent function selection can provide heated or cooled output air, fresh or recirculated intake air. Output air shall be directed rearward through four (4) adjustable vents. Two (2) adjustable vents shall be located in the center dash panel with positioning optimized for LH driver and RH passenger air flow direction to the upper torso. Two (2) adjustable vents shall be located, one (1) each forward seating position, in the upper outboard area of each forward seating kick panel, below the dash. The front HVAC unit shall utilize a dedicated condenser located beside the aerial. The condenser shall be a stacked type, low profile and feature two fans. All connections, hose and	Y	

	Yes	No
harness, shall be through weatherproof bulkheads. The condenser assembly shall include an aluminum tread plate (ATP) cover over the stacked condenser coils and an ATP cover over the Freon hoses, dryer, valves, switches and / or solenoids above the cab roof and connected to the condenser body. Condenser and cover mounting shall be made without perforating the cab roof skin for maximum resistance to water intrusion to the cab interior. A crew cab heater shall be provided. The heater unit shall provide filtered, engine coolant heated, air to the crew cab area through a ducted enclosure. Crew heating capacity shall be rated at 35,000 BTU minimum and the combined heating capacity of the cab HVAC units shall be 81,000 BTU minimum. The heater unit shall have a variable speed 430 CFM blower assembly. The heater unit shall be designed for serviceability and be located against the rear crew cab wall on the inboard officer side forward facing position in a vented and ducted enclosure approximately 16" deep x 14.5" high x 20" wide. Access to air intake filter, heater core, and fan assembly shall be provided. If the heater unit is centered on the back wall, an additional cover shall be provided to cover the hoses on the floor. This cover finish shall match the crew heater assembly. Crew heater function shall feature two (2) controls with backlighting. One (1) rotary fan control switch with four positions (OFF, LOW, MEDIUM, and HIGH) and one (1) rotary temperature control coupled to an electronic water valve. The heater control shall be located near the ceiling above the rear engine access door. The forward cab heater and crew cab heater inlet flow and return flow shall be interrupted by one (1) manual engine coolant shutoff valve mounted on a plate utilized specifically for auxiliary engine coolant flow control. The mounting plate and valve location shall be in the forward, RH side of the chassis engine area. Valve to be 1/4 turn style with label for ease of identification. The valve shall be a Hale 12BV nickel-plated brass ¼ turn valve with reinforced Teflon seals and operated by a chrome-plated rectangular handle (NO EXCEPTIONS). AIR CONDITIONING SYSTEM ADDITION - CREW CAB A crew cab air conditioning unit shall be provided on the cab ceiling, above the rear portion of the engine enclosure. The AC unit shall distribute cooled recirculated, air through six (6) outlets. The six air outlets include four (4) adjustable rear facing air diffusers and two (2) adjustable side outboard facing vents. Cooling capacity of the crew AC evaporator unit shall be rated at 39,500 BTU minimum and the combined cooling capacity of the cab HVAC evaporator units shall be 72,500 BTU minimum.	Y	

Yes | No

The crew AC unit shall have a variable speed 577 CFM blower assembly. Intake air shall be filtered by a commercially available and serviceable filter. The AC unit shall feature independent fan speed and temperature controls. Evaporator condensate shall be evacuated by two independent drain hoses, each routed inside a stainless pipe located beneath the AC unit, between the AC unit and the top of the engine enclosure. The two independent hoses route through the top of the engine enclosure cover, behind the engine block, and terminate outboard the chassis frame rail.

The crew AC unit shall utilize a dedicated condenser located on the, rear, crew cab roof beside the aerial. The condenser shall be a stacked type, low profile and feature two fans. All connections, hose and harness, shall be through weatherproof bulkheads. The condenser assembly shall include an aluminum tread plate cover over the stacked condenser coils and an aluminum tread plate protective cover over Freon hoses, dryer, valves, switches and / or solenoids above the cab roof and connected to the condenser body. Condenser and cover mounting shall be made without perforating the cab roof skin for maximum resistance to water intrusion to the cab interior.

The air conditioning system, front and rear combined, shall exceed the performance standard of cooling the cab from an ambient temperature of 100 degrees Fahrenheit at 50% relative humidity to an average cab temperature of 75 degrees Fahrenheit in less than 30 minutes.

All condensate drains shall be gravity type. No condensate pumps shall be accepted (NO EXCEPTIONS).

HVAC Control - Forward Cab

HVAC controls shall feature rotary switches, function labeling, backlighting, and have colored indicators. Y
A single, lighted, AC engagement push switch shall be provided for engaging the AC system components as needed.

The HVAC panel shall have four (4) rotary control switches inline, from left to right, in the following order:

· Fan Speed (OFF, LOW, MEDIUM, HIGH)
· Water Temperature Blend Control (HEAT-COOL)
· Outlet Air Blend Control (DEFROST-VENT)
· Intake Air Blend Control (FRESH-RECIRC)

	Yes	No
The HVAC panel shall have one (1) raised, “push to engage”, switch that illuminates when the air conditioning is engaged. This switch shall be centrally located on the control panel, between the second and third rotary control switches, along the top edge of the control panel.		
The HVAC control panel shall allow the operator to make selections or adjustments to any one of the four (4) selectors without resetting or disturbing the selections of other three (3) controls.		
The HVAC control shall feature an override to engage the air conditioning system when the operator has selected 100% Defrost on the Outlet Air Blend Control.		

General Wiring And Wire Harness Construction

	Yes	No
Unless otherwise specified by the component supplier, all insulated wire and cable shall conform to SAE J1127 Low Voltage Battery Cable type SGX or STX, or SAE J1128 Low Voltage Primary Cable type SXL, GXL, or TXL. Circuit feeder wires shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for which the circuit is protected. 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. 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 temperatures.	Y	
Electrical Wiring - 12V General The apparatus shall be equipped with a heavy-duty 12-volt electrical system. All 12-volt electrical equipment installed by the apparatus manufacturer shall conform to modern automotive practices. All electrical wiring and components installed in the apparatus shall be suitable for use in severe duty emergency vehicle applications.	Y	
Circuit Identification All wiring shall be uniquely identified by a circuit number and color coding. The identification shall be referenced on a wiring diagram. Wires less than 8 AWG shall be permanently identified at least every 2.0 inches (50.8 mm) by a circuit and function code. Cables equal to or larger than 8 AWG and wires included in jacketed cables shall be permanently identified by circuit number at all terminations.	Y	
Wiring Connections 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. Secondary locks shall be	Y	

	Yes	No
utilized on all connectors that are secondary lock capable. Exterior exposed wire connectors shall be environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids. Seal plugs shall be installed in all unused sealed connector cavities. All ungrounded electrical terminals shall have covers or be in enclosures to protect against corrosion, excessive heat, excessive vibration, physical damage, liquid contaminants, dust, and other environmental factors. Wiring splices shall be crimp-type, molded, or sonic weld type. Adhesive lined heat shrink tubing shall be used to seal and insulate splice joints. Wire and Cable Routing Wiring routed through holes in sheet metal or castings shall have edges protected by an appropriately sized grommet. Wiring shall be routed to avoid metal edges, screws, trim fasteners and abrasive surfaces. When such routings are not possible, protective devices (shields, caps, etc.) shall be used to protect the wires. When wires must cross a metal edge the edge shall be covered with a protective shield. Wiring shall be routed to provide at least 3 inches (76.2 mm) clearance to moving parts, unless positively fastened or protected by a conduit. Wire routings should avoid areas where temperatures exceed 180° F (82.2° C) and a minimum clearance of 6 inches (152.4 mm) shall be maintained from exhaust system components. Where compliance with this requirement is not possible, high temperature insulation and heat shields shall be utilized. When wiring is routed between two members where relative motion can occur the wiring shall be secured to each member, with enough wire slack to allow flexing without damage to the wires. Wiring to all circuit components (switches, relays, etc.) in exposed locations shall provide a drip loop to prevent moisture from being conducted into the device via the wire connection. Routing wires into areas exposed to wheel wash shall be avoided if possible. When such routings cannot be avoided, adequate clipping or protective shields shall protect the wires from stone and ice damage. Wiring shall be secured in its intended location with appropriately sized bolt-on clips and nylon wire ties. Electrical components designed to be removed for maintenance shall include a sufficient length of wire to allow the component to be pulled away from the mounting area for inspection and service work. Bulkhead type connectors or sealed fittings shall be used to prevent the entry of liquid contaminants into weather tight enclosures. **Wiring at all connectors will have sufficient length to allow wiring to enter connectors as straight as possible.**	Y	
Spare Wires Wiring harnesses from/to major power and signal distribution areas of the apparatus shall include spare wires for future expansion of the system.	Y	

	Yes	No
Electrical System Components Serviceable components shall be readily accessible. Switches, relays, terminals and connectors shall have a dc rating of 125% of the maximum current for which the circuit is protected. A distributed power and signal system shall be utilized on the apparatus to minimize power supply voltage drops. Power and signal distribution areas in the cab shall be concentrated in five (5) areas. A lower cab power and signal distribution center shall be located in the center forward portion of the cab "dash". It shall be hinged and opened by unlocking two (2) top mounted, double hinged, lift and pull latches. This area shall contain relays and circuit breakers installed in a logical and serviceable fashion. An upper power and signal distribution area shall be located in the forward portion of the cab ceiling, above the engine tunnel. Components in this area shall be permanently labeled and easily accessible by opening a hinged cover. An additional lower cab power and signal distribution center shall be located below the officer's dash behind the kick plate. An upper power and signal distribution area shall be located in the forward portion of the cab ceiling, above the engine tunnel. Components in this area shall be permanently labeled and easily accessible by opening a hinged cover. A power and signal distribution area shall be located on the front of the forward body compartments. Components in these areas shall be permanently labeled and easily accessible. All electrical components or devices installed in an exposed area on the outside of the cab or body shall be mounted in such a manner, or protected by a gasket, caulking or other means, so that moisture shall not accumulate in it.	Y	
Corrosion Protection Externally exposed, non-plug type, electrical connections shall be given a hand applied or sprayed application of an industrial standard insulation coating with a minimum rating of 2100 volts per mil thickness. Insulation shall protect the connection from water induced electrical corrosion and accidental short circuiting. Should the connection be loosened or removed during the manufacturing process another coating shall be applied after it has been refastened or replaced. General protection circuit breakers shall be Type-I automatic reset (continuously resetting). When required, automotive type fuses shall be utilized to protect electronic equipment. Control relays and solenoid shall have a direct current rating of 125 percent of the maximum current for which the circuit is protected per NFPA.	Y	
Electrical Wiring Requirements - 12V INTELEX™ PLUS The apparatus shall be equipped with an INTELEX™ PLUS management system for control of the electrical system devices, where applicable.		
Circuit Protection Circuit protection devices shall be utilized to protect each electrical circuit. All circuit protection devices shall be sized according to 125% of the anticipated load to prevent wire		

	Yes	No
and component damage when subjected to extreme current overload. Solid State Circuit Protection Intelex power distribution modules shall utilize solid state output channels and feature fully protected high-side drivers (+12V) to protect wiring. High-side drivers shall provide overload protection, current limitation, transient protection, and replicate the function of an automatic reset circuit breaker. If output current exceeds the rated amperage, the output shall automatically turn off. After 30 seconds, the module shall attempt to re-energize the load. If the output is still overloaded, it shall remain off until the power is cycled. In the event of a communications loss with the vehicle's control module, all outputs not controlling a moving device shall remain in their previous state until communication is restored or the power is cycled.	Y	
Non-Solid State Circuit Protection Circuit breakers shall be Type-I automatic reset (continuously resetting) and conform to SAE J553 or J258 unless operational requirements and/or safety concerns dictate Type-III manual reset type conforming to SAE J1625. Automotive-type fuses conforming to SAE J554, J1284, J1888 or J2077 shall be utilized when required to protect electronic equipment.	Y	
Power Control Relays and Solenoids Power control relays and solenoids shall have a direct current (dc) rating of 125 percent of the anticipated current load.		
Bussmann mVEC Relays and Circuit Protection Manufactured as a hardened and weather tight module, the Mvec is rated at 200 Amps. The mVEC is configured to provide various OEM circuit protection and switching functions, using industry standard fuses, relays and breakers, with the status and control of each circuit accessible through J1939 CAN open messages. Each mVEC is rated at 200 Amps, with individual outputs rated up to 30 Amps. Waterproof to high pressure spraying (IP66 equivalent). The mVEC is designed and manufactured with robust features such as heavy-duty housing, silicon and Gortex gaskets, and protective conformal coated electronics, to operate in demanding vehicle environments such as those found in fire apparatus.	Y	
LOAD MANAGEMENT SYSTEM The apparatus shall be equipped with an automated load management system. The load management system shall monitor battery voltage and activate the engine high idle system (provided NFPA interlocks have been established) before disabling any electrical loads. If engine high idle is not available or activation does not result in sufficient battery system voltage, individual electrical loads shall be automatically and sequentially deactivated until voltage returns to an acceptable level. Loads shall be sequentially reactivated to avoid a sudden large voltage demand on the system. Electrical loads defined in NFPA 1901 as "minimum continuous" shall not be subject to automatic load management. Load	Y	

	Yes	No

prioritization shall be independently field programmable by authorized users. If the load management system becomes active, the “LOAD MANAGE” indicator shall illuminate on the "Warnings" page of the INTELEX™ PLUS cab mounted display.

MULTIPLEX DISPLAY

A 5" color display capable of displaying graphical images as well as text messages shall be located on the cab dash. The main display page shall include the date, time and ambient air temperature in Fahrenheit. Additional information pages shall be provided for the warning indications, not stowed indications, and open doors. The display shall be dimmable with a Rheostat control on the dash and shall have an override button on the control to dim to ten (10) percent. The Display shall provide an auxiliary video input. Y

CAB INSTRUMENTATION

A non-glare instrument panel, custom designed to accommodate the appropriate functions, shall be provided. Illumination shall be provided for controls, switches, instruction plates, gauges, and instruments necessary for the operation of the apparatus. The cab dash shall be forward slanted, and constructed of aluminum. Rocker switches that have integral lights shall be as follows when applicable: red indicator lights shall be provided for warning light and engine/mechanical functions, green indicator lights shall be provided for scene and auxiliary lighting and general functions; selection shall be at the manufacturer's discretion. A system shall be provided that interacts with the engine electronics and eliminates redundant senders and switches. The electronic engine gauges shall receive information on the SAE J1939 data link to improve reliability and gauge accuracy. Connectors shall be utilized for ease of service. The dial face shall be black with white lettering. The primary letters shall be in Imperial with the secondary, smaller letters in metric. The dial shall have international non-language symbols for the gauge function (except speedometer). Gauges shall have illumination with a monochrome LCD display located on the speedometer gauge. They shall also have a 250 degree dial sweep for greater definition of scale. SAE J1939 Faults and Warnings shall be displayed on the LED display. Y

Driver’s Instrumentation

The following individually mounted gauges shall be provided: (all-inclusive gauge clusters not accepted, no exceptions)

Main Gauges

- 3” Speedometer: 0-85 mph with built-in LCD display
- 3” Tachometer: 0-4000 rpm Satellite Gauges

	Yes	No
• 2” Fuel Level: Empty – full with low level warning indicator • 2” Voltmeter: 10-18 VDC Satellite Gauges • 2” Fuel Level: Empty – full with low level warning indicator • 2” Voltmeter: 10-18 VDC • 2” Coolant Temperature: 100-280 Degrees Fahrenheit • 2" Engine Oil Pressure: 0-100 psi • 2” Transmission Oil Temp: 100-320 Degrees Fahrenheit • 2” Front Air Pressure: 0-150 psi • 2” Rear Air Pressure: 0-150 psi • 2” DEF Level: Empty – full with low level warning indicator	Y	
Driver's Indicator Light Module The following indicators shall be mounted in a removable modular panel in front of the steering column. The indicators shall be identified with universal ISO 2575 symbols where applicable and visible to the driver while seated. All applicable indicators in the modular panel shall automatically illuminate for 1 second upon activation of the ignition switch to verify operation: • Battery Switch “On” green indicator light • Ignition Switch "On" green indicator light • Check Transmission amber indicator light • High Transmission Temperature amber indicator light • Check Engine amber indicator light • High Coolant Temperature red indicator light • Low Coolant Level red indicator light • Stop Engine (Engine Warning) red indicator light • High Exhaust Temperature (HEST) amber indicator light • Diesel Particulate Filter Regeneration (DPF) amber indicator light • Diesel Exhaust Fluid (DEF) Level amber indicator light • Wait-to-Start amber indicator light • Malfunction Indicator Light (MIL) amber indicator light • ABS warning amber indicator light • Automatic Traction Control activated amber indicator light	Y	

	Yes	No

- Electronic Stability Control activated amber indicator light
- Spring (Parking) Brake "On" red indicator light
- High Beam “On” blue indicator light
- Low air pressure red indicator light
- Left Turn signal green indicator light
- Right Turn signal green indicator light
- Panel Fault amber indicator light
- Cab Not Locked red indicator light

CONTROL SWITCHES

The following rocker style control switches shall be identified and accessible to the driver while seated. Switches shall include integral indicator lights (where applicable) to advise that the switch has been energized and identification labels shall be illuminated for night driving.

- Ignition switch with green indicator light
- Engine Start switch
- Headlight / Tail-Marker-ID light switch
- Instrument Panel Dimmer control rheostat

Y

The following controls shall be stalk mounted on the steering column and identified and visible to the driver while seated:

- Turn Signal Control and 4-Way Hazard Warning switch
- High-beam headlight switch
- Windshield wiper control switch
- Windshield washer control switch

The following controls shall be identified and accessible to the driver while seated:

- Parking (Spring) Brake Control
- Front Axle Parking Brake
- High Idle control switch
- Other controls (as defined elsewhere in this specification)

An overhead switch panel shall be located in the "overhead" position above the windshield on the driver's side shall have the following switches

- Siren brake
- A.T.C.
- Rear locking differential
- Telma Brake Control
- White light disable

The following controls shall be identified and accessible to both the driver and officer while

	Yes	No

seated. Controls shall be identified and illuminated for night driving.

- HVAC control panel
- Siren brake
- Other controls (as defined elsewhere in this specification)

EMERGENCY & WORK LIGHT SWITCH PANEL - DRIVER

All emergency light and work area lighting control switches shall be mounted in a removable panel located in the overhead position on the driver's side of the cab. The light switches shall be maintained rocker type with an internal indicator light (where applicable) to show when the switch is energized. All switches shall be properly identified by an illuminated label for night driving. A master warning light switch shall be provided for emergency lighting. Work lights are defined as ground, step, rear pick up, and dunnage area. Y

ALARMS

The following conditions shall cause the audible alarm to sound “steady” (not an intermittent beep); signifying a “mission critical” condition exists that requires immediate attention.

- STOP ENGINE
- LOW AIR
- LOW COOLANT
- CAB NOT LATCHED
- LOW VOLT
- ABS FAULT
- LOW OIL PRESSURE

Y

Corresponding “Low Air”, “Stop Engine” visual indicators shall be located in the dash gauge panel in front of the driver.

The following conditions shall cause a chime alarm to sound “intermittently” (i.e., beep), once the parking brake is released, signifying a condition exists that may become “mission critical” if not quickly addressed. A “Do Not Move Apparatus” red flashing indicator shall be located in the driver’s compartment to indicate

- ANY LIGHT NOT STOWED
- ANY BODY DOOR OPEN
- ANY CAB OR CREW CAB DOOR OPEN

	Yes	No
The light shall be activated only when the parking brake is released. An override switch to silence an audible alarm in case of malfunction shall be provided.		
An audible alarm shall sound if any of the seat belts are not properly closed and the vehicle is going 5 mph or greater. The sound shall be different from all other audible alarms in the cab.		
INDICATOR LAMP AND ALARM PROVE-OUT A system shall be provided which automatically tests telltale indicator lights and alarms located on the cab instrument panel. Telltale indicators and alarms shall perform prove-out when the ignition switch is held in the up position for three (3) to five (5) seconds to ensure proper performance.	Y	
SECOND SWITCH PANEL There shall be a secondary (redundant) switch panel located in the officer console area of the cab. The light switches shall be rocker type with an internal indicator light (where applicable) to show when the switch is energized. Switches shall be maintained rocker type with an indicator light of which is an integral part of the switch. All switches shall be properly identified by an illuminated label for night driving.	Y	
The switches in this panel will control the front cab brow light and the side mounted cab floodlights.		
POWERPOINTS Six (6) 12 volt DC / USB utility plugs shall be installed in the cab interior. Two (2) 12 volt DC / USB utility plugs shall be installed in a designated body compartment. The location of the 12 volt DC / USB utility plugs shall be determined at the pre-construction conference.	Y	
12 VOLT PLUG(S) AND RECEPTACLE(S) Three (3) 12 volt power plug receptacle(s) and cover(s) shall be provided and shall be wired battery direct, with a fused circuit, through a Havis Charge Guard Select. The plug and receptacle are made from corrosion resistant marine grade materials. The plug locks into the receptacle providing a positive moisture proof connection.	Y	

	Yes	No
Location of the 12V plugs shall be on the officer's side console of the engine tunnel to allow powering of monitors and electronic devices.		
12 VOLT PLUG(S) AND RECEPTACLE(S)		
Two (2) 12 volt power plug receptacle(s) and cover(s) shall be provided and shall be wired battery direct, with a fused circuit, through a Havis Charge Guard Select. The plug and receptacle are made from corrosion resistant marine grade materials. The plug locks into the receptacle providing a positive moisture proof connection.	Y	
Location of the 12V plugs shall be in the rear of the cab, accessible to the crew. Final location determined at the pre-build conference.		
RADIO ANTENNA MOUNT		
The apparatus will require four (4) communications antennas mounted on the roof of the apparatus.		
The antenna mounting base shall be NMO type mounts designed for use with the thickness of the material used for the roof of the apparatus (Model MATM). The antenna mounts shall be provided with twenty-five (25) feet of coaxial cable installed to locations in the apparatus determined by the Radio Communications Section of the Lexington Division of Fire and Emergency Services. The coaxial cable shall be RG58/U with 95% braided shield minimum. The coaxial cable shall have a solid copper center conductor with a Polyethylene or Teflon dielectric.	Y	
The location of the antennas on the roof of the apparatus shall be determined in consultation with the Radio Communications Section of the Lexington Division of Fire and Emergency Services (Radio Communications Section). The manufacturer shall provide the Radio Communications Section a detailed diagram on the apparatus cab area including the layout of the roof area, the interior consoles, seats and interior compartments. The diagram of the roof shall include the location of the structural members, light fixtures, and interior headliners. A means of access shall be provided to the inside location of each antenna mounting location selected by the radio communications personnel. Headliner removal shall not be required to service the underside of antenna mounts. All factory installed antenna mounts shall have an antenna or an antenna mount rain cap installed to protect the antenna mount from damage.		
RADIO EQUIPMENT POWER		
A minimum of 6 (six) constantly hot and 6 (six) ignition switched fuse panel connections, and grounds for customer-installed radios and chargers shall be provided at the electrical distribution area. Electrical noise suppression shall be sufficient to allow radio equipment	Y	

	Yes	No
operation without interference. Electrical noise suppression shall be accomplished by using a filter on power supply.		
DASH CUTOUTS FOR RADIOS The cab dash shall be manufactured with cutouts and mounting ears for the following two (2) purchaser-supplied mobile radios. Top Slot: Harris XG25M Bottom Slot: ICOM ICF121	Y	
ELECTRICAL POWER CONTROL SYSTEM A compartment shall be provided in or under the cab to house the vehicle's electrical power and signal circuit protection and control components. The power and signal protection and control compartment shall contain circuit protection devices and power control devices. Power and signal protection and control components shall be protected against corrosion, excessive heat, excessive vibration, physical damage and water spray. Serviceable components shall be readily accessible. Circuit protection devices, which conform to SAE standard, shall be utilized to protect each circuit. All circuit protection devices shall be sized to prevent wire and component damage when subjected to extreme current overload. General protection circuit breakers shall be Type-I automatic reset (continuously resetting) and conform to SAE J553 or J258. PTO power circuits shall be protected by Type III manual reset non-cycling circuit breakers conforming to SAE J553 or J258 which remain open until manually reset. When required, automotive type fuses conforming to SAE J554, J1284, J1888 or J2077 shall be utilized to protect electronic equipment. Power control relays and solenoids shall have a direct current (dc) rating of 125 percent of the maximum current for which the circuit is protected. Visual status indicators shall be supplied to identify control safety interlocks and vehicle status. In addition to visual status indicators, audible alarms designed to provide early warning of problems before they become critical shall be used.	Y	
EMI/RFI EMISSIONS-SUSCEPTIBILITY-PROTECTION State-of-the-art electrical system design and components shall be utilized to ensure the suppression of radiated and conducted EMI (electromagnetic interference) and RFI (radio frequency interference) emissions that may cause communication and navigation	Y	

Yes	No

radio-reception interference. EMI/RFI susceptibility shall be controlled by applying immune circuit designs, shielding, twisted pair wiring and filtering. Harness and cable routing shall be given careful attention to minimizing the potential for conducting and radiated EMI-RFI susceptibility. The apparatus proposed shall have the ability to operate in the electromagnetic environment typically found in fire ground operations.

The electrical system and related components shall comply with the applicable sections of J551/1 *Performance Levels and Methods of Measurement of Electromagnetic Compatibility of Vehicles, Boats (up to 15 m), and Machines (16.6 Hz to 18 GHz).* The contractor shall be able to demonstrate the EMI and RFI testing has been done on similar apparatus and certifies that the vehicle proposed meets SAE J551 requirements.

Electrical / electronic equipment on the apparatus shall not be susceptible to radiated and conducted EMI/RFI emissions from on-board high powered two-way radio transmitter(s) and shall comply with the requirements of SAE J551-12 *Vehicle Electromagnetic Immunity--On-Board Transmitter Simulation*.

BATTERY SYSTEM

Six (6) 12V Group 31 950 CCA batteries shall be installed, three each side of the cab under the rear entrance way. Heavy-duty battery cables shall be provided to maximize power available to the electrical system. A pair of jumper cable studs with color coded covers shall be provided under the driver's side battery storage area. Battery and electrical component storage areas shall be constructed of stainless steel with structural steel tubes at the corner mounting points and shall be located one (1) each side mounted on the vehicle frame. They shall be well ventilated and enclosed to protect against road splash and debris. Suitable provisions shall be provided for drainage.

Y

The batteries shall be held firmly in place by providing a full frame type top clamp which encloses the battery set on all four (4) upper corner sides. The one piece clamp shall be fabricated of 3/4" angles and be held in place by four (4) "J" shaped clamping bolts placed in the corners, retained within the battery box to prevent retrieval from underside the apparatus. Battery inspection shall be provided through latched drop down doors in the lower step area of the crew cab. Battery replacement shall be possible without tilting the cab. The interior of the battery box where the batteries are installed shall be painted gloss black. The batteries shall be installed on a non-corrosive Turtle Tile mat. Batteries shall be contained in a box made of stainless steel.

	Yes	No
BATTERY DISCONNECT SWITCH A master load disconnect switch shall be provided between the battery positive buss bar and the remainder of the switched battery electrical loads on the apparatus. A green "battery on" pilot light that is visible from the driver's position shall be provided. One (1) single battery system switch mounted near the driver's side front entrance in a location so it may be turned off by a person standing on the ground outside the vehicle. It shall have the capacity to handle 350 amps of continuous power. An additional master disconnect switch shall be provided between the batteries and the battery positive buss bar to facilitate ease of maintenance. This disconnect shall be located on the officer's side near the batteries and shall be accessible when the cab is tilted.	Y	
BATTERY CABLE INSTALLATION Battery cables and battery cable harnessing shall be installed utilizing the following guidelines: • All battery cables and battery harnesses shall have a permanent label attached for easy identification of the harness part number and fabrication date. • Splices shall not be allowed on battery cables or battery cable harnesses. • For ease of identification and simplified use, battery cables shall be color coded. All positive battery cables shall be red in color or wrapped in red loom the entire length of the cable. All negative battery cables shall be black in color. For increased reliability and reduced maintenance, all electrical buss bars located on the exterior of the apparatus shall be coated to prevent corrosion.	Y	
ALTERNATOR A 430 amp Delco alternator, model 55SI, shall be provided.	Y	
STARTER SYSTEM All positive cables from the batteries shall be connected directly to a battery positive buss bar located as close to the batteries as practical. The alternator shall be wired directly to the battery positive buss bar through the ammeter shunt, if one is provided. The starter solenoid(s) shall be connected directly to the battery positive buss bar. An interlock shall be provided to prevent the operator from engaging the starter when the engine is running. All negative (ground) cables from the batteries shall be connected directly to a	Y	

	Yes	No
battery negative buss bar located as close to the batteries as practical. Appropriately sized ground feeder cables shall be utilized to provide a low impedance ground path to the negative buss bar for all electrical devices on the apparatus. The battery negative buss bar shall be connected to the chassis frame. The cab, transverse module, and body structure shall be electrically bonded to the vehicle frame with braided copper grounding straps.		
BATTERY CHARGER A Kussmaul Auto charge 1200, Model 091-53-12-Remote battery charger shall be provided. A bar graph display indicating the state of the charge shall be provided. The charger shall have a maximum output of 40 amps and a fully automatic regulation. The battery charger shall be wired to the AC shoreline inlet through an AC receptacle adjacent to this battery charger. Battery charger shall be located in the cab, in an area that will not: obstruct crew activities or space, create a hazard for crew while riding or operating, or obstruct space for crew PPE (turnout gear) or usable compartment space. The battery charger must be mounted in a location that accessible and serviceable without removing or dismantling of any other components. A protective cover is acceptable. Wires shall have sufficient slack to allow charger to be removed easily. The battery charger indicator shall be located beneath the driver's seat on the inside of the cab and visible from the ground with the door open.	Y	
HUBBELL STYLE RECEPTACLE A non-ejecting Hubbell style receptacle shoreline inlet. Cover to be painted job color red. There is to be a relay to inhibit the starter from engaging unless the shoreline is disconnected from the inlet. There shall also be a mechanics switch in dash with a missile switch cover to override this relay should a failure occur. Shoreline inlet to be located on driver's side of cab as directed on a stainless steel mounting plate.	Y	
GENERATOR/INVERTER TEST AND CERTIFICATION The generator/inverter shall be third party tested at the manufacturer's facility and shall conform to NFPA requirements and standards. Copies of all tests shall be provided with the delivery documentation.	Y	
HYDRAULIC GENERATOR A Harrison 8.0 kW hydraulic generator system shall be provided and installed on the apparatus. The system shall be capable of producing the nominal output power of 8.0 kW, 120V/240V, single phase, 60 Hz. The generator shall be installed per the manufacturer recommendations and shall be capable of supplying full power during all engine speeds or operation modes.	Y	

Yes	No

The generator shall be placed in a tray frame assembly which affords protection to the components and provides a unitized mounting module containing the motor/generator, reservoir, oil cooler, filtration system, and a manifold containing a cross-port check valve plus system relief valve. The generator shall be a commercial type with a heavy-duty bearing and of brushless design to ensure low maintenance. The reservoir shall include an oil level gauge, oil temperature gauge, fill cap, fill strainer, and a boost unit to provide a positive pressure to the pump suction port. The generator and hydraulic motor shall be close coupled and permanently aligned using a Morse taper with a through bolt to secure the motor to the generator.

The PTO driven hydraulic pump and motor shall be of axial piston design to provide low internal leakage and a high degree of frequency stability. The pump will match to the system with the proper orifice, pressure compensator and load sensing to provide a stable output over the rated speed range of the pump and with electrical loads from no load to full-load. The PTO ratio shall be selected to allow operation throughout the entire engine RPM range; idle to full throttle.

A display meter consisting of (4) numeric LED displays shall be used. The meter shall simultaneously display system voltage, frequency and amperage in each of the two 120V legs. The display meter shall be located in close proximity to the breaker box.

A high temperature visual indicator and audible alarm shall be provided and installed.

The hydraulic generator shall be located in the open bin over the torque box.

The generator enable switch shall be installed on the cab dash.

BREAKER BOX

A twenty (20) place Square D brand, QO series, or approved equal, gray colored circuit breaker box shall be provided and installed in the front upper left hand side compartment. Manual reset circuit breakers, matching the rated output of each specific outlet or device shall be provided. All power supply assembly conductors, including neutral and grounding conductors from the line voltage power source to the circuit breaker box shall have an equivalent amperage rating and shall be sized to carry not less than 115 percent of the amperage of the nameplate current rating of the power source. Power supply conductors shall be run in nonmetallic liquid tight flexible conduit or type SO/SEO cord with a WA suffix. Conduit shall have a temperature range of -67°F (-55°C) to 221°F (105°C). Wiring from the circuit breaker box to the individual outlets and devices shall be sized in accordance with NFPA 70, *National Electrical Code* requirements. Branch circuit wiring conductors shall be run in (1) metallic or nonmetallic liquid tight flexible conduit rated for use in a temperature range of -67°F (-55°C) to 221°F (105°C) with stranded copper wire rated for wet locations and temperatures not less than 194°F (90°C) or (2) Type SOW,

Yes	No
Y	

	Yes	No
SOOW, SEOW, or SEOOW flexible cord, rated at 600 volts and at temperatures not less than 194°F (90°C). A power source specification label shall be permanently attached to the apparatus near the operators control panel.		
The door of the breaker box shall have a side hinge.		
The load center shall be located in the forward left side compartment, up high.		
Ten (10) 20 amp breaker(s) with ground fault interrupter shall be installed		
KUSSMAUL AUTO TRANSFER SWITCH		
One (1) Kussmaul 091-134 Auto Interlock II switch(es) shall be provided to allow the receptacle to be fed from shore power through the Hubbell style shoreline inlet when the generator is not in use. The switch(es) shall be installed near the breaker box.	Y	
120 VOLT RECEPTACLE(S) IN CAB INTERIOR FOR AUTO TRANSFER RELAY		
One (1) 120-volt, 20 amp, 3-wire receptacle(s) shall be provided in the cab interior in accordance with NFPA guidelines. A brushed stainless steel cover plate shall be provided to protect the receptacle. When the generator is shut down, the load is automatically returned to the shoreline. The receptacle shall be labeled accordingly.	Y	
NEMA Rating: 5-20R (20 Amp) Non-Twist-Lock, Single.		
Two (2) plastic flip lid single receptacle cover(s) shall be installed.		
One (1) stainless steel wall plate(s) shall be installed.		
The receptacle(s) shall be located at preconstruction conference.		
IN-COMPARTMENT 120V AC RECEPTACLES FOR AUTO TRANSFER RELAY		
Two (2) AC 120V, NEMA 5-15R, 15 amp straight blade duplex receptacles, one (1) provided in each compartment in front of rear axle (R2, L2). Outlets mounted in the top 25% of the vertical compartment walls to minimize the likelihood of damage to receptacles by equipment	Y	

	Yes	No

storage. When the generator is shut down, the load is automatically returned to the shoreline. The receptacle shall be labeled accordingly.

Details to be discussed in the prebuild conference.

CORD REELS

Two (2) Hannay Model ECR1618-17-18 power rewind cord reels for live electric cable shall be provided. The reel(s) shall be 12 volt electric rewind and be equipped with an electrical collector ring with a minimum #10 gauge, 4-conductor wiring. Capacity of each reel shall be 200 feet 10/4 gauge electric cable. Y

Each cord reel will be wired to the breaker box with 2 individual 20-amp circuits.

Final location to be determined at prebuild conference.

CORD REEL CABLES

One (1) 200 foot length(s) of 10/4 type SO electric cable shall be provided and installed on each cord reel. The color of the cord cable shall be yellow.

The working end of each cord reel cable shall have a Hubbell heavy duty, twist-lock female watertight L14-20 connector installed. Y

ELECTRICAL JUNCTION BOXES

One (1) Akron Brass 4-receptacle junction box shall be provided per **each** mounted cord reel for distribution of electrical power on the fire ground. Each box shall be constructed of aluminum and shall be completely powder coated gray with gray hinged protective receptacle covers and the full length carry handle. Internally lighted faceplates shall provide sufficient light to make connections and alert the crew that the box is in “power-on" status. Each junction box shall have dimensions of 9.25" long x 5.5" wide x 8.5" high. Each box shall be equipped with a cable strain relief and a Hubbell model watertight twist lock male L14-20 connection. Y

For each junction box, a total of four (4) duplex receptacles shall be provided, NEMA Rating 5-20R non-twist-lock, straight blade. Each receptacle shall be rated for 20 amps at 125 Volts.

Each junction box shall be configured with a separate circuit on each side of the box.

	Yes	No
A mounting box, with brushed stainless finish, shall be provided for each junction box. The junction box mount shall be located at preconstruction conference. The junction box mount shall be placed vertically.		
AMP DRAW REPORT The bidder shall provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system. The manufacturer of the apparatus shall provide the following: • Documentation of the electrical system performance tests. • A written load analysis, which shall include the following: o The nameplate rating of the alternator. o The alternator rating under the conditions specified per: o Applicable NFPA 1901 or 1906 (Current Edition). o The minimum continuous load of each component that is specified per: o Applicable NFPA 1901 or 1906 (Current Edition). o Additional loads that, when added to the minimum continuous load, determine the total connected load. o Each individual intermittent load. o All of the above-listed items shall be provided by the bidder per the applicable NFPA 1901 or 1906 (Current Edition).	Y	
ELECTRICAL WIRING DIAGRAMS One (1) hard copies and one (1) electronic format **as-built** electrical wiring diagrams, prepared for the chassis, body, and aerial shall be provided.	Y	
BODY The body shall be designed and built to acceptable industry standards and shall be of sufficient construction and integrity to prevent cracking at welds, warping, metal fatigue and stress under rough road conditions and extreme temperatures encountered in our area. The body shall be designed and constructed of stainless steel to provide an expected service life of at least 25 years. Body structural analysis shall be fully tested. Proven engineering and test techniques such as finite element analysis, stress coating and strain gauging shall be performed with special attention given to fatigue, life and structural integrity of the cab, body, and substructure. The	Y	

body shall be tested while loaded to its greatest in-service weight. The criteria used during the testing procedure shall include:

- The raising of opposite corners of the vehicle tires 9.00" to simulate the twisting a truck may experience when driving over a curb.
- Making a 90-degree turn, while driving at 20 mph to simulate aggressive driving conditions
- Driving the vehicle at 35 mph on a "washboard" road
- Driving the vehicle at 55 mph on a smooth road
- Accelerating the vehicle fully, until reaching the approximate speed of 45 mph on rough pavement
- Evidence of actual testing techniques shall be made available upon request.

The body and compartments shall be constructed of heavy duty stainless steel. The body shall be welded on external or hidden surfaces wherever possible to insure a clean compartment interior look. The compartments shall be a "sweep out" design with the floor higher than the door sill. All compartment seams shall be caulked with gray adhesive/sealant. Each compartment shall be rated for 500 lbs. of storage. False bulkhead panels shall be provided on the inside of the forward and rearward wall of the side compartment panel to cover and protect all electrical wiring and components. This also provides a clean interior for equipment mounting. These panels shall be removable. Removable service panels shall be placed within each of the false bulkhead panels. Door frames on compartments with hinged doors shall be fabricated by flanging the door opening edges inward 1.88" and bending out again .75" to form an angle.

A bright aluminum tread plate cover shall be installed over the side compartments. The cover shall not form the compartment top but shall be an overlay. The forward and rearward edges of the cover shall be folded down 1.5" to cap the forward and rearward ends of the side compartment panel. The outside edge of the cover shall be folded down 1.5" to cap the outside of the side compartment panel and shall have a 45 degree outward bend to provide drip protection over any compartment doors which are immediately below the cover.

Extruded aluminum drip molding with a bright anodized finish shall provide drip protection for any compartment doors that are not directly below an aluminum tread plate cover. The forward face of the side compartments and the face of the front cross panel above the operator stand shall be covered with a bright aluminum tread plate overlay. All body components covered with aluminum tread plate overlays shall be coated with an anti-corrosion compound prior to installation. All tread plate shall be secured with threaded fasteners.

Fender compartments shall be integral with the body side compartmentation. There shall be no sharp objects protruding into the wheel well area that could cause injury while cleaning or doing other maintenance in this area.

	Yes	No
The front portion of the right and left hand side compartments shall mount to a front cross panel. The front cross panel assembly shall rest on two (2) heavy duty rubber isolators. These isolators shall be bolted to brackets mounted to the chassis frame, as close to the center line of the chassis frame as possible. These center mounted isolators shall provide a pivot point which shall allow chassis movement without introducing stresses into the body. The rear portion of each side compartment shall bolt directly to the rear step support assembly, which is bolted directly to the chassis frame. The rear steel step/body support assembly shall be constructed of formed .25" and .375" plate, 2" X 3" tubes, 2" X 2" angles, and 3" structural channels in a welded assembly. The rear wall shall be reinforced with formed heavy duty panels.		
TRANSVERSE COMPARTMENT		
One (1) transverse compartment shall be located directly behind the cab in place of a pump module. Minimum acceptable measurements of the transverse module shall be 48.00" wide x 64.00" high x 94.00" wide. The full height compartment shall have minimum doorframe to doorframe dimensions of 45.00" wide x 56" high. This compartment shall have vertically hinged double doors. (Note: The usable height of the right hand compartment may be adjusted to provide body clearance around engine exhaust system).	Y	
LEFT SIDE COMPARTMENTS		
All measurements shall be considered to be the minimum accepted. The left side panel consists of one (1) full height compartment ahead of the rear wheels, one (1) full height compartment behind the rear wheels, and two (2) upper compartments above the rear wheels. All compartments shall have vertically hinged doors with D- handle latches.		
The full height compartment ahead of the rear wheels shall have a doorframe to doorframe dimension of no less than 41.00" wide x 63.75" high. This compartment shall have double three prong outlet in the top right corner. This compartment shall have vertically hinged double doors with D- Handle latch. The full height compartment behind the rear wheels shall have a doorframe to doorframe dimension of no less than 42.00" wide x 47.75" high. This compartment shall have vertically hinged doors with D – handle latch. The compartments above the rear wheels shall be equal in width, but the upper front compartment shall be 6.00" greater in height. The upper front compartment shall have a doorframe to doorframe dimension of 53.50" wide x 30.50" high. The upper rear	Y	

	Yes	No
compartment shall have a doorframe to doorframe dimension of 53.50" wide x 24.50" high. These compartments shall have vertically hinged doors with D- handle latches.		
RIGHT SIDE COMPARTMENTS		
All measurements shall be considered to be the minimum accepted. The right side panel consists of one (1) full height compartment ahead of the rear wheels, one (1) full height compartment behind the rear wheels, and two (2) upper compartments above the rear wheels. All compartments shall have vertically hinged doors with D- handle latches.		
The full height compartment ahead of the rear wheels shall have a doorframe to doorframe dimension of no less than 41.00" wide x 63.75" high. This compartment shall have double three prong outlet in the top right corner. This compartment shall have vertically hinged double doors with D- Handle latch. The full height compartment behind the rear wheels shall have a doorframe to doorframe dimension of no less than 42.00" wide x 47.75" high. This compartment shall have vertically hinged doors with D – handle latch. The compartments above the rear wheels shall be equal in width, but the upper front compartment shall be 6.00" greater in height. The upper front compartment shall have a doorframe to doorframe dimension of 53.50" wide x 30.50" high. The upper rear compartment shall have a doorframe to doorframe dimension of 53.50" wide x 24.50" high. These compartments shall have vertically hinged doors with D- handle latches.		
REAR COMPARTMENTS		
One (1) compartment shall be provided at the rear of the apparatus, on the left side of the torque tube ladder storage compartment. This compartment, accessed from the rear, shall be 12.5" wide x 27.50" high x 34.25" deep to accommodate electrical cord reel. It shall have (1) smooth aluminum pan style vertically hinged door with a D-handle latch. The door pan shall have an Etch finish as standard.	Y	
One (1) compartment shall be provided at the rear of the apparatus, on the right side of the torque tube ladder storage compartment. This compartment, accessed from the rear, shall be 12.5" wide x 27.50" high x 34.25" deep to accommodate electrical cord reel. It shall have (1) smooth aluminum pan style vertically hinged door with a D-handle latch. The door pan shall have an etch finish as standard.		N

	Yes	No

HINGED COMPARTMENT DOORS

The side compartment doors shall be lap type, double panel construction. Outer pan edges that form the lap portion of the door shall be "hemmed" (bent over and back 180 degrees) over the inner pan edges. Inside corners, at the hem area, shall be welded and ground smooth.

The doors shall be weather stripped with an automotive bulb type extruded rubber inner seal. A second outer seal of closed cell rubber shall be placed on the lap edge of the door to prevent damage to the paint finish. Outer seal shall have corrugated surface to prevent sticking. — Y

The doors shall be mounted on stainless steel piano hinges with a pin diameter of .25". Mounting holes shall be slotted vertically on one side of the hinge and horizontally on the other side to provide for proper adjustment of the door. The hinge pins shall have spun ends (crowns) at both ends to hold them in place and provide a finished look. Eberhard 206 latches with stainless steel "D" ring handles shall be provided on the lift, single, drop down, and lock door (double door set-up). The free door (double door set-up) shall have an Eberhard latches top and bottom with a single “D” handle located on the outside of the door even with the lock door handle. Isolation tape shall be furnished between the door hinge and door jam. A rubber gasket shall be provided between the "D" ring handle and the door.

Vertically hinged doors shall be equipped with Hansen 5EZ or Thomas EZ spring type door checks that also hold the doors in the open and closed position. Checks shall be the two point mounting type for simplicity. Spring tension (15 lb.) shall be easily adjustable. Checks shall have black zinc mounting brackets with stainless steel springs, 11" long rods and clamps. Springs shall be polished. Horizontally hinged doors shall be held in the opened position with gas cylinder type stays. Switches for automatic compartment light operation shall be installed in the door hinge area.

Brushed stainless steel overlay shall be provided on the inside of all compartment door(s) to protect the painted finish and to cover inside door hardware.

ADJUSTABLE SHELVES

Ten (10) adjustable shelf or shelves made from 3/16" smooth aluminum sheet metal shall be provided in the body compartment(s). The shelf lip shall be 1.75" high. Each shelf shall be supported by four (4) stainless steel angles bolted to Aluma-Strut tracks. — Y

When in a split depth compartment, the Aluma-Strut tracks shall only be provided in the area where adjustable shelve(s) are located. The LOCATION OF ADJUSTABLE SHELVES WILL BE DETERMINED AT PRE-CONSTRUCTION CONFERENCE.

	Yes	No
FLOOR-MOUNT ROLL OUT TRAYS		
Four (4) Floor Mount Roll Out Tray - Base Depth, shall be installed in body compartments.		
Four (4) SlideMaster model AM2 aluminum base depth slide mechanisms shall be bolted to the compartment floor. It shall allow the tray to extend 70% of the slide length. The tray/compartment shall be able to support a 500 pound load.	Y	
The SlideMaster slide mechanism shall be secured with a SlideMaster 2-rail IMS spring lock.		
Location of the floor mount roll out trays will be determined at pre-construction conference.		
ROLL OUT – DROP DOWN TRAYS		
Two (2) roll out drop down tray assembly(s) shall be provided in the body compartment(s). Each tray shall be vertically adjustable on Aluma-Strut attached to the sides of the compartment.		
Two (2) SlideMaster model MT aluminum base depth slide mechanisms shall be installed allowing each tray to slide out and tip down. The tray shall be able to support a 200 pound load.	Y	
The SlideMaster slide mechanism shall be secured with a SlideMaster Rotating Lock.		
Location of the roll out-drop down tray assemblies will be determined at pre-construction conference.		
TRANSVERSE FULL WIDTH ROLL OUT TRAY(S)		
Two (2) transverse full width roll out tray assemblies shall be provided in the front transverse compartment module.		
Two (2) sets SlideMaster model M2D aluminum transverse slide mechanisms shall be installed allowing the trays to extend 70% of the slide length to either side of the vehicle. The tray/compartment shall be able to support a 1000 pound load, evenly distributed .	Y	
The SlideMaster slide mechanism shall be secured with a SlideMaster 2-rail IMS spring lock.		

	Yes	No
Location of the transverse full width roll out trays will be determined at pre-construction conference.		
SHELF AND TRAY CONSTRUCTION All base depth tray(s) shall be constructed of 0.188" aluminum and shall have edges on all four sides for added strength. The corners shall be welded. The tray lip shall be 1.75" high.	Y	
PAC TRAC IN BODY COMPARTMENTS Pac Trac assemblies consisting of extruded aluminum tool mounting tracks and "Z" shaped mounting brackets shall be located on the back wall of four (4) compartment(s). Pac Trac shall be 25.88" in height and as wide as the compartment door opening (maximum of minus 2.5"). Pac Trac in the full height compartments shall be located in the upper portion only. The compartments which will locate the Pac Trac will be determined at pre-construction conference.	Y	
REAR LADDER COMPARTMENT DOOR The rear ladder compartment door on the apparatus shall be an R.O.M./Robinson aluminum shutter roll-up type door, made in the U.S.A. with a painted finish. A magnetic door ajar and compartment light system designed within the door to conceal moving parts and prevent parts exposure in the compartment shall be provided. Slats shall be double-wall box frame extrusion and must be anodized to eliminate oxidation and rusting. Exterior surface shall be flat and interior surface to be concave to help loose equipment from jamming the door. The latch system shall be a full width, one piece, lift bar, enabling operation with one hand. The manufacturer's standard door frame design may be altered or modified to accommodate the roll-up doors. The roll-up door shall be equipped with a model 1250 cam style lock. The locking mechanism shall consist of 2 locking rods that shall slide into pre-drilled holes in each of the door tracks. All locks shall be keyed alike (to use the same #1250 key).	Y	
RUB RAIL There shall be a rub rail installed on both sides of the lower body compartments. The rub rail assembly shall be constructed of solid polypropylene, Black in color and approximately 2.5" x 1" solid. The rub rail shall be bolted in place with stainless steel bolts, and spaced from the	Y	

	Yes	No
fire body to provide body protection. The rub rail shall serve as protection to the side doors when encountering close objects. The assembly shall have 45 degree angles on the end of assemblies and should be installed in a way that allows easy removal from the apparatus.		
HANDRAILS - BODY The handrails shall be 1.25" diameter anodized aluminum extrusion, with a ribbed design, to provide a positive gripping surface. Chrome plated end stanchions shall support the handrail. Plastic gaskets shall be used between end stanchions and any painted surfaces. Drain holes shall be provided in the bottom of all vertically mounted handrails. Location of handrails shall be finalized at the pre-construction conference.	Y	
EXTINGUISHER STORAGE One (1) extinguisher compartment shall be provided located on the passenger's side between the rear wheels. One (1) extinguisher compartment shall be located on the driver's side between the rear wheels. The compartments shall be of an adequate depth to accommodate different size extinguishers. Flooring shall be rubber lined and have a drain hole. A painted door with a chrome-plated latch shall be provided. A dielectric barrier shall be provided between the door hinges, hinge fasteners, and the body sheet metal. Purchaser desires the largest compartment possible in this location.	Y	
AIR CYLINDER STORAGE Storage for a minimum of eight air cylinders shall be provided. The air cylinder compartments shall be located on each side, One (1) located in front of the rear wheels on each side. One (1) located behind the rear wheels on each side. Each air cylinder compartment shall be of adequate size to accommodate at least two (2) 45 minute air cylinders. Flooring shall be rubber lined and furnished with a drain hole. A brushed stainless steel door with a chrome-plated latch shall be provided. A dielectric barrier shall be provided between the door hinge, hinge fasteners, and the body sheet metal. Purchaser desires the largest compartment possible in this location.	Y	

	Yes	No
AIR CYLINDER STORAGE INSERT A minimum of two (2) inserts shall be provided for the air cylinder storage compartments. The inserts shall accommodate 45 minute @ 4,500 psi SCBA cylinders. Purchaser desires to carry a maximum number of cylinders in each compartment, the appropriate number of inserts to be proposed by the bidder. The exact configuration of Extinguisher and Air Cylinder storage shall be determined at the pre-construction conference.	Y	
AERIAL LADDER DESIGN AND PERFORMANCE A telescoping steel aerial ladder shall be mounted on the rear of the apparatus. An aluminum ladder will not be accepted. The ladder shall reach a minimum height of 100 feet, with a minimum 500 lb. tip load. The ladder structure shall be of an open truss design and shall meet or exceed the requirements of all applicable sections of the current edition of NFPA 1901. The aerial ladder and turntable design shall provide continuous egress for civilians and firefighters through any angle of elevation to the ground as defined by NFPA 1901. The ladder shall be designed with a structural safety factor of two to one (2:1) based on the dead and live loads and shall meet ANSI A92.2 Standard for Vehicle Mounted Aerial Devices and NFPA 1901 which requires a static stability safety factor of one and one half to one (1.5:1) based on the rated load. These capabilities shall be established in the unsupported configuration. The aerial device and all supporting structure shall be third party tested to confirm that the aerial meets the original design criteria and the intent of the latest recommended NFPA standard for aerial devices. Such testing shall include the use of brittle lacquer stress coating to identify all stress concentrations, followed by strain gauging to verify that all nominal stresses and stress concentrations have a safety factor that is equal to or greater than 2:1 based on the dead and live load. The aerial ladder shall be comprised of four (4) sections and extend to a minimum nominal working height of 100 feet above the ground as measured by NFPA 1901 recommendations. The aerial ladder shall have a rated minimum horizontal reach of 91 feet measured in the horizontal plane at zero (0) degrees from the centerline of the turntable rotation, as defined by NFPA 1901. The aerial ladder shall be capable of continuous operation through 360 degrees of rotation and from minus five (-5) degrees to plus eighty (+80) degrees elevation.	Y	
AERIAL LADDER CERTIFIED RATED CAPACITY		

	Yes	No
The rated capacity of the aerial ladder shall be a minimum of a 500 pound tip load while flowing a maximum of 1000 GPM of water at any extension, any angle in accordance with NFPA 1901, current edition. There shall be no nozzle orientation restrictions while flowing 1000 GPM of water. The aerial device will be capable of operating with the maximum rated tip load in either of the two (2) following conditions: • Conditions of high wind up to 50 mph • Conditions of icing, up to a coating of .25" over the entire aerial structure All aerial ladder certifications shall be based on the ladder being properly deployed in an unsupported configuration. The capacities shall be based upon 360 degree rotation, up to full extension, and from -5 degrees to + 80 degrees.	Y	
OPERATION ON GRADES The aerial is capable of being operated at full rated capacity in every position in which the aerial device can be placed when the apparatus is on a slope of 5 degrees (8.7%) in accordance with NFPA 1901 (19.21.3.1)	Y	
AERIAL TORQUE BOX An aerial torque box sub-frame, incorporating two sets of stabilizers and the aerial turntable pedestal structure, shall be provided. The sub-frame shall be constructed of a minimum 5/16", T-1, 100,000 PSI yield steel plate. Chassis mounting plates shall be welded to the sides of the torque box and then it shall be bolted to the frame rails using SAE grade 8 bolts and nuts. The torque box assembly shall be capable of withstanding all torsional and horizontal loading when the unit is supported by the outriggers and the aerial device is fully extended and loaded to capacity. The turntable riser or pedestal shall be incorporated into the rear of the torque box. The entire assembly shall be welded together in one unit.	Y	
OUTRIGGERS A minimum of one (1) set of double box beam type out-and-down outriggers shall be provided behind the rear axle. Each horizontal cylinder extends to provide a maximum of 16 foot stance across the outriggers. All cylinders shall be equipped with integral (on the cylinder) holding valves which shall hold it either in the stowed position or the working position should a pressurized hydraulic line be severed at any point within the system. The	Y	

Yes	No

extension of the horizontal beams shall be accomplished by a horizontal jack cylinder. All the horizontal jack cylinders shall be totally enclosed within the extension beam housings. The horizontal jack cylinder shall be equipped with a trombone type tube to supply hydraulic oil to the vertical jack cylinders to eliminate wear and potential failure of hydraulic hoses. The extension of the vertical housing shall be accomplished by a vertical jack cylinder. All the vertical jack cylinders shall be totally enclosed within the outer and telescoping inner jack tubes to protect them against damage that may occur while on the fire ground. Each vertical jack tube structure shall be equipped with a mechanical pin lock.

The bidder may use either of the following for stabilizers forward of the rear axle:

- One (1) set of modified "A" frames shall be provided and located just behind the cab. When extended the outrigger feet shall not extend beyond the outside of the truck. These cylinders shall also be equipped with integral holding valves that shall hold the jacks in the stowed or deployed position should a pressurized hydraulic line be severed. These jacks shall be equipped with a mechanical pin lock.
- One (1) set of double box beam type out-and-down outriggers shall be provided forward of the rear axle. Each horizontal cylinder extends to provide a maximum of 16 foot stance across the outriggers. All cylinders shall be equipped with integral (on the cylinder) holding valves which shall hold it either in the stowed position or the working position should a pressurized hydraulic line be severed at any point within the system. The extension of the horizontal beams shall be accomplished by a horizontal jack cylinder. All the horizontal jack cylinders shall be totally enclosed within the extension beam housings. The horizontal jack cylinder shall be equipped with a trombone type tube to supply hydraulic oil to the vertical jack cylinders to eliminate wear and potential failure of hydraulic hoses. The extension of the vertical housing shall be accomplished by a vertical jack cylinder. All the vertical jack cylinders shall be totally enclosed within the outer and telescoping inner jack tubes to protect them against damage that may occur while on the fire ground. Each vertical jack tube structure shall be equipped with a mechanical pin lock.

OUTRIGGER CONTROLS

The outrigger controls shall be provided at the rear of the apparatus in enclosed compartments with D-ring latches. There shall be a controls on each side of the rear so that the operator can see the outrigger being maneuvered. Out-and-down outrigger functions shall be operated by joysticks or toggle switches. A short jack switch shall be provided so that the vehicle may be set up in restricted areas or on uneven terrain. A bubble type level shall be furnished to aid in leveling the unit side to side. Each outrigger shall have an indicator light that illuminates

Y	

	Yes	No
when proper ground jack placement has been achieved. An automatic high idle switch and indicator shall be provided so that automatic engine RPM ramp up from hydraulic requests can be disabled. The compartment shall be illuminated by a TecNiq EON LED light engaged by the aerial PTO switch in the cab. An electric safety diverter valve shall also be provided in conjunction with the outrigger controls. The diverter valve shall allow the hydraulic fluid to flow either to the outrigger hydraulic circuit or the turntable and aerial circuit but not simultaneously.		
OUTRIGGER ALARM		
An automatic electronic warning device (horn) shall be provided to warn personnel when the outriggers leave their nested position. Alarm shall operate only when outriggers are moving.	Y	
OUTRIGGER PADS AND BRACKETS		
A set of four (4) auxiliary outrigger pads shall be installed on the apparatus. The pads shall be 24" x 24" and shall be made of 3/8" aluminum with a bent rod style carrying handle. There shall be two (2) pads stacked within a bracket. One bracket shall be mounted to the underside of the body just aft of each rear axle.	Y	
LADDER CRADLE		
A heavy-duty rest shall be provided to support the aerial in the travel position. Wear strips shall be attached to the aerial cradle to protect the aerial when the unit is in the travel position. The cradle pivots to conform to the nested ladder, providing support over the full width of the cradle.	Y	
LADDER CRADLE INTERLOCK SYSTEM		
A ladder cradle interlock system shall be provided which automatically prevents the operator from lifting the aerial device from the cradle unless all outriggers are fully extended and placed in a load supporting configuration. An additional interlock shall be provided that prevents outrigger operation when the aerial device is not fully stowed in the cradle.	Y	
SHORT-JACK OPERATIONS		

	Yes	No
The aerial device shall be capable of operating in a “short-jacked” stance. The aerial device shall require only one operator to lift the ladder from the cradle, as long as the outriggers are in a load supporting configuration. Once the ladder is lifted from the cradle, the aerial device shall be fully operational by a single operator to the side of the apparatus with fully deployed outriggers, and shall be denied operation to the short set side. In the event both sides are short set, the operator will automatically be denied operation to both sides. Two methods of overriding the interlock are available: an electric switch, or mechanically moving the solenoid. Both are available to the single operator located at the primary operator's station.	Y	

MANUAL OVERRIDES

The manual overrides for the aerial device (clockwise and counterclockwise rotation and ladder lowering interlocks) shall be in the turntable control pedestal. Operation of the ladder without the outriggers properly set requires the operation of a diverter valve and requires a second operator. The overrides for the outriggers shall be conveniently located at the rear of the apparatus. The outrigger overrides can be operated by one person, but requires the simultaneous activation of two separate controls to override any safety system.	Y	

AERIAL HYDRAULIC SYSTEM

HOSE

High pressure hydraulic hose used for the circuits of the hydraulic system shall have a minimum burst strength of four (4) times operating pressure.	Y	

FILTER

An easily accessible 6 micron replaceable filter, with remote filter condition indicator, shall be installed in the hydraulic pressure line. A 10 micron return filter shall be installed in the reservoir.	Y	

RESERVOIR

The hydraulic oil tank shall have a sufficient capacity to operate the aerial while allowing the oil to cool and shall be located behind the cab and mounted to the A-Frame structure and be	Y	

	Yes	No
under the Aerial cradle. There shall be a means provided to remove the tank, if needed. The connection points to the tank shall be easily accessible, with internal baffles separating the intake and return. There shall be shut-off valves to isolate the tank, if needed. A filtered breather cap and a basket strainer shall be located in the filler neck. A dip stick shall verify the oil level. There shall be a plaque mounted next to the fill cap labeled “Hydraulic Fluid Only”.		
PUMP		
The system shall be powered by a pressure compensated load sensing hydraulic pump. The pump shall be sized to operate all boom functions simultaneously. The load sense feature operates any function at the optimum pressure to maximize efficiency and minimize heat build-up.	Y	
HOUR METER		
An aerial hydraulics hour meter shall be provided to accumulate hours when the transmission provides pressure to engage the PTO and the aerial enable switch is engaged.	Y	
EMERGENCY PUMP		
The apparatus shall be equipped with an emergency hydraulic pump. The pump shall be driven by a 12 volt electric motor with power from the truck batteries. It shall be capable of providing hydraulic power for limited (slower) ladder functions and for stowage of the unit in case of prime power failure. A control switch for the emergency pump shall be located at the outrigger control station and at the aerial control. The control switch shall be a spring loaded momentary type to prevent prolonged operation of the emergency pump.	Y	

HOT SHIFT PTO FOR AERIAL

The apparatus shall be equipped with a power (hot) shift PTO driven by the chassis transmission. An indicator shall be located in the cab to indicate when the PTO is engaged.	Y	
The following conditions apply for use of the PTO:		
• If the PTO is used to power the generator only, then the PTO can be engaged by the generator switch when the truck is in motion.		

	Yes	No

- If the PTO is used to power the aerial only, then the PTO can be engaged by the aerial enable switch if the transmission is in neutral and the parking brake is set or in pump mode with the parking brake set.

- If the PTO is used to power the generator and the aerial, then the generator can be used while the truck is in motion by activating the generator switch. A hydraulic valve, controlled by the aerial enable switch, shall prevent aerial operation until the transmission is in neutral and the parking brake has been set or in pump mode with the parking brake set.

There shall be no exceptions to this interlock system since it is designed to protect and safeguard personnel and equipment.

The hydraulic pump shall be mounted on the transmission with an extension shaft between the PTO and the pump.

HOIST SYSTEM

Two (2) double acting (power up and power down) lift cylinders shall provide smooth and precise elevation from -5 to 80 degrees above horizontal. Units that do not operate below 0 degrees shall not be acceptable. The elevation cylinders shall be equipped with integral (on the cylinder) holding valves to prevent the unit from falling should a charged line be severed at any point within the hydraulic system. Y

EXTENSION AND RETRACTION SYSTEM

A full hydraulic powered ladder extension and retraction system shall be provided utilizing dual hydraulic cylinders and cables. Each cylinder shall be capable of operating the ladder in the event of a failure of the other. The extension/retraction cylinders shall be equipped with integral (on the cylinder) holding valves to prevent the unit from falling should a pressurized hydraulic line be severed at any point within the system. The extension/retraction cables shall be of the following diameters: 3/8" 2nd section; 5/16" 3rd section; 1/4" fly section. Y

Wear pads shall be provided between the telescoping sections for smooth operation. Wear pads shall be composed of high strength polymers with friction reducing additives.

	Yes	No

ROTATION SYSTEM

A heavy-duty 34" center to center, 39.88 O. D., swing bearing shall be provided. This bearing shall feature four-point contact ball bearing design combined with offset raceway construction and individual ball separators to give maximum combined thrust and radial moment capacities. Races shall be deep induction hardened and precision ground. The bearing shall have a minimum of 61 precision, 1.38" diameter chrome alloy steel balls kept at uniform spacing by resilient spacers. Two (2) grease fittings shall be provided for proper lubrication. Y

The bearing shall be attached to both turntable and turntable support structure with grade 8 bolts. Both surfaces to which the bearing shall be mounted shall be milled to provide a level mounting. Welding of bearing to either support shall not be allowed (NO EXCEPTIONS). A planetary gear drive unit mounted on the turntable opposite of the control pedestal and powered by a hydraulic motor shall be provided. A spring applied, hydraulically released, disc type brake shall be furnished to provide positive braking of the turntable assembly.

ROTATION INTERLOCK SYSTEM

The apparatus shall be supplied with a rotation interlock system. This interlock system shall not allow the aerial to be rotated over the side of the apparatus if the stabilizers on that side are not fully deployed. The interlock system shall include a light and audible alarm that will activate when rotation is no longer allowed. Once rotation is stopped the interlock system shall allow the operator to rotate away from the stopping point without the use of an override. A manual override feature shall be provided that will allow the operator at the turntable the ability to override the interlock system. There shall be NO EXCEPTIONS to this interlock system since it is designed to protect and safeguard personnel and equipment. Y

The rotation interlock system box/module shall be located behind a false panel in the rear wall of the driver's side rear outrigger compartment.

AERIAL SWIVEL WITH 4” WATERWAY

The aerial device shall be equipped with a swivel installed within the axial centerline of the turntable to allow 360 degree rotation of the aerial device. The swivel shall float on the turntable to prevent side loading. It shall have passages for the hydraulic lines from the hydraulic pump and oil reservoir to the aerial control valve bank, and for a 4" waterway down the center. The swivel shall also maintain electrical continuity of all necessary electrical Y

	Yes	No
circuits while ladder is rotating or when it is immobile. A minimum of thirty-six (36) collector rings shall be provided.		
TURNTABLE		
The turntable shall consist of aluminum tread plate to provide a slip resistant surface while operating the ladder. It shall have a minimum of 12 sq. ft. of useable walking surface.		
The turntable swing bearing bolts shall be accessible from the topside of the platform. This shall allow fire department service personnel to easily perform the required periodic bolt torque tightness check.	Y	
Three 1-1/4" 12 gauge stainless steel tubing guardrails, coated with black LINE-X®, shall be furnished. The guardrails shall have fall-protection between them consisting of man-saver bars. One guardrail shall be located near the control console, one opposite the control console, and one directly behind the aerial ladder. All shall be a minimum of 42" high.		
The guardrail behind the aerial ladder shall be removable.		
TURNTABLE ROTATION MOTOR COVER		
An aluminum tread plate cover shall be provided over the aerial ladder rotation motor on the turntable.	Y	
YELLOW PERIMETER MARKING		
In accordance with NFPA 1901 chapter 15.7.1.6, the perimeter of the turntable not covered with a railing shall be marked with a one-inch wide safety yellow line to delineate the designated standing or walking surface area.	Y	
AERIAL CONTROL CONSOLE (PEDESTAL)		
The aerial control console shall be located on the left side of the turntable facing the ladder tip.	Y	

Yes | No

The console shall be illuminated for night operation and shall have the following items clearly identified and conveniently located on or in close proximity to the console for ease of operation:

- Aerial overload chart
- Throttle switch
- Intercom system - allows communication between pedestal and end of aerial
- Three directional control handles for aerial functions The following shall be inside the pedestal access door:
- Emergency override rotation switch with protective cover
- Emergency pump switch with protective cover

The three directional control valves shall control the elevation/lowering, clockwise/counter clockwise, and extension/retraction functions for the positioning of the aerial. The controls for the three aerial functions may be operated independently or simultaneously and shall be of the "deadman" type. A foot pedal locking feature shall be incorporated to insure the controls are non-operable unless the foot pedal is engaged when the function is being performed.

The display located in the pedestal shall include the following information, if applicable:

- Low voltage (Red)
- Rung alignment (Green)
- Turntable aligned (Green)
- Aerial overload buzzer, bar graph, and light (Red)
- Rotation limit exceeded (Red)
- Cab avoidance (Red)
- Hydraulic system pressure
- Lower system pressure
- All warning information
- Aerial status
- Truck status
- Elevation indicator

PEDESTAL COVER

A hinged aluminum tread plate cover shall be provided for the control pedestal. Two (2) gas springs shall hold the cover in either an open or closed position. There shall be a rubber ball

Y

	Yes	No
type latch installed on the pedestal cover to assist in holding the cover closed. A sensor and corresponding warning indicator will be installed to warn the driver when the cover is open and the parking brake is released.		
PEDESTAL COVER LIGHT		
There shall be a TecNiq Eon LED lamp installed in the pedestal cover. The light shall be activated when the PTO is engaged.	Y	
CONTROL PEDESTAL INTERIOR WORKLIGHT		
The interior of the turntable control pedestal shall have a TecNiq EON LED work light for control valve service visibility. It shall have a stand-alone toggle switch with label.	Y	
CAB AVOIDANCE		
Cab avoidance shall be provided within the aerial electrical system that shall create an electronic envelope around the cab to prevent the aerial from contacting the cab. An override system shall be included with a switch on the pedestal control panel that will allow the operator to override the cab avoidance system in an emergency.		N
AERIAL OVERLOAD ALARM		
An alarm horn and warning light shall be provided on the control pedestal that shall sound to alert the operator should the load capacity of the aerial be exceeded. The alarm shall in no way restrict the further operation of the aerial. There will be no exception to this safety requirement.	Y	
LADDER ALIGNMENT ARROWS		
There shall be a 1" wide x 3.44" long arrow constructed of 12 gauge 304 stainless steel and painted fluorescent orange installed on the turntable. A corresponding arrow shall be placed on the decking next to the turntable. Each arrow shall be installed atop a 2.5" high box. Surface mounted on each arrow shall be a red TecNiq LED Dragon light. When the ladder is aligned with the cradle, the points of both arrows shall line up and both lights shall activate.	Y	

	Yes	No
The alignment arrows shall be located at final inspection.		
ANGLE INDICATOR		
A lighted angle indicator shall be installed on the base section of the aerial, next to the aerial operator's position.	Y	
AERIAL INTERCOM SYSTEM		
The intercom shall be a Fire Research Model ICA-900 2 station with ACT clear voice sound system. The master shall be a push-to-talk station with 5-LED volume indicator lights and push button, arrow-up and arrow down, controls. The master unit shall be mounted on the turntable control pedestal. The hands free voice transmission slave unit shall be installed at the aerial tip or platform control console and always in transmit mode until interrupted by transmission from the master unit. The intercom speaker at the aerial tip/platform control console shall have a cover over the rear of it. The system stations shall be interconnected with shielded cable for static free operation in normal conditions.	Y	
AERIAL LADDER CONSTRUCTION		
The aerial ladder shall be constructed of welded, high-strength steel throughout. Each section shall be trussed diagonally, vertically and horizontally and be reinforced at critical points for extra rigidity. The ladder rungs shall be round. They shall extend through the web of each ladder section rail and be fully welded at both the inside and outside of the beam faces to provide excellent torsional rigidity. The rungs shall also be "K" braced.	Y	
The ladder shall use greaseless bushings on all pivot points and sheaves. Greaseless wear strips shall be used between the ladder sections. The ladder shall include a safety guard panel located at the turntable end of the base section and mounted on both sides of the ladder to prevent personnel from placing hands, elbows, etc. in the path of the aerial ladder extension or retraction.		
Ladder construction shall complement the support of heavy or unbalanced loads at horizontal or low angle positions. To allow the passing of personnel on the ladder, the minimum inside width dimensions of the four ladder sections shall be as follows: Base - 31"; Lower Mid - 28"; Upper Mid - 24" and Fly - 21". To allow for safe climbing and good "handhold" positioning at any climbing angle, the minimum height of the handrails above the center line of the rungs of		

	Yes	No
the four ladder sections shall be as follows: Base - 25"; Lower Mid - 22"; Upper Mid - 18" and Fly - 15". The ladder will be designed to provide continuous egress for firefighters and civilians from an elevated position to the ground. The end of the fly section will be constructed in a manner that aids personnel who are climbing off the ladder. The egress section will be designed to maintain the rated load of the aerial device. It will be bolted on for easy replacement (No exceptions).		
AERIAL LADDER SLIDES The aerial ladder slide rocker pads shall consist of Teflon impregnated polyethylene wear pads between each section. They shall be provided to reduce the frictional forces between the individual sections of the ladder.	Y	
RUNG COVERS All rungs shall be covered with deeply serrated, replaceable, heavy-duty rubber sheaths, glued and clamped securely to the rungs.	Y	
AERIAL EXTENSION NUMERIC LABELS Numeric labels shall be applied to the inside rail of the base section opposite the pedestal to indicate ladder extension feet.	Y	
AERIAL TIP CONTROLS Aerial tip controls shall be provided to allow personnel to fine-tune placement of the aerial while positioned at the tip of the ladder. The control shall consist of a joystick with graduated speed control and shall be mounted in position to be operated by personnel using the folding steps at the tip of the fly section. They shall be mounted recessed such as not to impede egress on the fly section. A momentary switch on the pedestal shall activate tip controls.	Y	
FOLDING STEPS - LIGHTED	Y	

	Yes	No
One (1) pair of extreme duty cast aluminum folding steps with cam locking feature shall be installed to provide substantial footing for a firefighter stationed at the **TIP** of the fly section. Each step area shall be a minimum of 7" x 7" square. An aggressive serrated tread shall be provided to keep a foot from sliding off the top of the step. Each step shall come standard with a LED light built into the base of the step right above the stepping surface. The steps shall not protrude more than 1.50" into the climbing area of the ladder when in the stowed position. The step lights shall activate with the aerial master.		
One (1) pair of extreme duty cast aluminum folding steps with cam locking feature shall be installed to provide substantial footing for a firefighter stationed at the **BOTTOM** of the fly section. Each step area shall be a minimum of 7" x 7" square. An aggressive serrated tread shall be provided to keep a foot from sliding off the top of the step. Each step shall come standard with a LED light built into the base of the step right above the stepping surface. The steps shall not protrude more than 1.50" into the climbing area of the ladder when in the stowed position. The step lights shall activate with the aerial master.		
AERIAL WATER SYSTEM		
A single aluminum telescopic waterway, which has been duranodic hard coat anodized, shall be provided and mounted beneath the center of the aerial ladder. The aerial waterway shall be capable of being supplied by an external water source with intake at the rear of the apparatus. A relief valve and drain valve shall be installed at the rear inlet. The rear intake shall be piped to the waterway swivel with 4" piping running within the body and between the chassis frame.	Y	
The telescopic waterway shall consist of a 4-1/2" I.D. base section tube, 4-1/4" I.D. second section tube, a 3-3/4" I.D. third section tube and a 3-1/4" I.D. fly section tube with a 4" ASA 150 lb. flange.		
FLOW METER		
A flow meter utilizing a paddlewheel sensor shall be installed at the aerial operators pedestal position and read from the pedestal display. The sensor will be located in a straight section of the waterway to eliminate turbulence at the sensor.	Y	
WATERWAY CONTROL VALVE		

	Yes	No
A 4" Akron electric butterfly valve shall be installed under the turntable, to stop the flow of water up the waterway.	Y	
WATERWAY VALVE CONTROL ON PEDESTAL The controls for the waterway valve shall be located on the aerial pedestal.	Y	
WATERWAY ADAPTER A 4" FNPT X 4.5" MNST straight chrome plated brass adapter shall be provided for the waterway.	Y	
WATERWAY CAP A 4.5" FNST rocker lug chrome plated brass cap and 16" stainless steel chain shall be provided for the waterway.	Y	
MANUAL WATERWAY CONTROL VALVE A 4" manually operated butterfly valve shall be provided prior to the waterway swivel. The controls shall be located near the waterway inlet at the rear of the apparatus and shall feature Trident Tru Flow style handwheels.	Y	
PINNABLE WATERWAY The last section of the waterway pipe shall be pinnable to either of the top two sections of the aerial ladder (NO EXCEPTIONS). This shall allow the monitor to be held back from the tip of the ladder, thus preventing damage to the waterway and monitor when the aerial is being used for rescues or parapet wall applications, etc. The operator shall select the placement of the monitor (upper or lower position) when the ladder is fully retracted using a locking pin or lever. The two positions shall be labeled with a photometal label, stating “RESCUE” and “WATERWAY.” The locking pin or lever shall have a stainless steel shaft and a ball bearing type positive locking feature. Its handle shall incorporate a spring loaded push button that releases the detents to remove or install the pin. If a pin is used, the pin shall be tethered to the pinnable waterway lock with a stainless steel restraining cable to prevent its loss. Four (4)	Y	

	Yes	No
large adjustable 1-1/2" thick rubber bumpers shall be placed on the top two ladder sections to automatically align the locking pin holes when the ladder is fully retracted.		
Safe operation of the pinnable waterway shall require the proper placement of the positive locking pin. The waterway shall be fully functional no matter which section of the aerial ladder that the waterway is pinned to. There shall be redundant safety systems designed into the construction of the aerial ladder to serve as precautions against the telescopic portion of the waterway and the monitor assembly separating from the aerial ladder. There shall be no manual disconnecting or movement of electrical connections required for changing the pinned position of the waterway (NO EXCEPTIONS).		
A Cat Track shall be provided that contains electric cables for the intercom, 12 Volt DC power, and 12 Volt DC controls. Any hoses and cables shall be continuous from the turntable to the tip with no reels.		
LADDER MONITOR		
One (1) Akron Brass StreamMaster™ II model 3480, 12-volt all-electric monitor with a 2000 GPM flow shall be installed on the waterway. The lightweight Pyrolite® monitor shall have a 4”, 150 lb. flanged inlet and a 3-1/2” NH outlet. It shall have cast-in turning vanes in each elbow and fully enclosed motors and gears with manual overrides for both horizontal and vertical rotation which may be operated simultaneously. The monitor shall have absolute position feedback to provide programmable soft stops anywhere within the physical travel range. The control system shall also provide programmable oscillation and obstacle avoidance functions. It shall have one environmentally sealed USB port to facilitate control system updates. The control system shall have a built-in wireless transceiver to facilitate operation from wireless remote-control devices. The monitor shall not exceed 15” high and 11-5/8” wide and 12-1/2” depth and weigh 40.7 lbs.	Y	
The entire water system shall be capable of delivering up to 1,000 gallons per minute at any angle of elevation, up to full extension, at 45 degrees above horizontal and at 90 degrees to the centerline of the ladder. The monitor shall be Akron Red in color.		
NOZZLE		
One (1) Akron Brass Master Stream Akromatic® 2000 gpm model 5178 electric combination fog and straight stream nozzle shall be provided. The nozzle shall have an automatic flow	Y	

	Yes	No
mechanism that provides a flow range of up to 2000 GPM at 80 PSI. It shall be constructed of durable, lightweight Pyrolite® and shall have electric pattern selection from straight stream to wide fog controlled by a 12V motor and linear ball screw, a manual override pattern control knob, built-in stream shaper, and a 3-1/2" NH swivel base.		
STACKED TIP SET		
One (1) Akron Brass model 3499 set of triple stacked tips shall be provided. They shall be constructed of Pyrolite®, have a 3-1/2" NH female inlet, and 2", 2-1/4", and 2-1/2" orifices. It shall not exceed 19-1/2" in length or 7-1/2" lbs. in weight.	Y	
DISCHARGE PIPE		
One (1) Akron Brass model 3488, Pyrolite® discharge pipe- stream shaper shall be supplied. The shaper shall measure 3-1/2" x 2-1/2" x 10-1/2" long and shall be designed with built-in fins.	Y	
MONITOR PEDESTAL CONTROL		
Toggle switches shall be located at the pedestal to control the monitor.	Y	
MONITOR TIP CONTROL		
Toggle switches shall be located at the pinnable waterway bracket to control the monitor.	Y	
AERIAL LADDER BASE LIGHTS		
Two (2) FRC SoBrite model SRA-110-07C LED scene lights with CD-BS-2 mount shall be installed on the base section of the ladder. The light head and bracket shall be black. One mounted per side; Left/Right. The lights shall be switched at the base and at the pedestal.	Y	
AERIAL LADDER TIP LIGHTS		
Two (2) FRC SoBrite model SRA-110-07C LED scene lights with CD-BS-2 mount shall be installed on the tip section of the ladder. The light head and bracket shall be black. One mounted per side; Left/Right. The lights shall be switched at the base and at the pedestal.	Y	N

	Yes	No
RUNG LIGHTING Each side of each aerial ladder section shall have Wes Garde flexible, weatherproof LED strip lights installed. The rung lights shall be blue in color. The light strips shall be mounted on the inside of the hand rail with mechanical fasteners and adhesive. Lights shall have over 50,000 hours of life and a 10 year limited warranty. These lights shall be activated when the aerial ladder system is activated in the cab.	Y	
PIKE POLE MOUNT ON FLY One (1) pike pole mount hall be provided on the left hand side of the fly section of the ladder, painted to match the ladder.	Y	
LADDER-MOUNTED PIKE POLE One 10' ft Fire Hooks Unlimited NHF-10 pike pole with fiberglass handle shall be used in the fly section mounts.	Y	
LADDER-MOUNTED PICK HEAD AXE A 6 lb. pick head axe with fiberglass handle shall be mounted on right hand side of the fly section of the ladder.		
CHAIN SAW SCABBARD One (1) Chain Saw Scabbard shall be added to the right side of the fly section.	Y	
LADDER BRACKETS ON BASE SECTION Ladder brackets shall be provided and mounted on each side on the outside of the aerial base section to accommodate one (1) 14’ double-ended roof ladder and one (1) 10’ double-ended roof ladder. The ladder brackets shall be mounted behind the ladder sign on the outside of each side of the base section.	Y	

	Yes	No
## LADDER SIGN Two (2) 132" x 16.25" painted metal placards for department identification signs shall be provided. One shall be installed on each side of the bed section of the ladder. Placards shall be made of smooth aluminum sheet metal and be securely fastened to the ladder. The center of the metal placards shall be mounted approximately 160" from the pivot point of the aerial device. Ladder mounted options may affect the location of the ladder sign. The sign shall be painted to match the lower body.	Y	
## STOREFRONT OPERATION ON NOZZLE Storefront operations may require ladder overhang to be reduced by one (1) rung or 14" (Engineer approved) The nozzle shall be able to operate below grade, flowing water in a "Store Front" mode at a minimum of 30 degrees above the waterway centerline with no reduction in flow capacity.	Y	
# LIGHTING SECTION		
## EXTERIOR LIGHTING Exterior lighting shall meet or exceed Federal Department of Transportation, Federal Motor Vehicle Safety Standards, and National Fire Protection Association requirements in effect at time of proposal.	Y	
## STEP LIGHTS All mounted steps shall be lit by LED lighting integrated into the steps.	Y	
## FRONT FMVSS LIGHTING Front headlights shall be mounted on the front cab face to the left and right of the engine cooling intake grille. The headlights shall be quad type, rectangular Truck-Lite model	Y	

	Yes	No
27640C/27645C 12-volt LED with bright finished trim rings and chrome bezels. The low beam headlights shall be located at the outer position.		
The headlights shall be in the middle position.		
FRONT DIRECTIONAL DUAL LIGHT BEZEL		
The front directional lights shall be mounted in a chrome plated dual light bezel located on each side of the cab front face. The dual light bezel shall match the headlight housing. The front directional light bezels shall be in the uppermost position.	Y	
FRONT DIRECTIONAL LIGHTS		
There shall be one (1) Whelen M6T LED amber arrow directional signal light installed on each side of the cab front face. The light shall have an amber arrow shape with black background and shall be provided with a "flash" pattern; a "sweep" pattern shall not be allowed. Lens color shall be amber.	Y	
ADDITIONAL FRONT WARNING LIGHT DUAL LIGHT BEZELS		
An additional pair of chrome-plated dual light bezels shall be provided for the optional warning lights. The additional headlight bezel shall be located in the lowest position.		N
REAR FMVSS LIGHTING		
The rear stop/tail and directional lighting shall consist of the following: • Two (2) Whelen, Model M6BTT, red Super LED combination stop/tail lights. • Two (2) Whelen, Model M6T, amber Super LED arrow shape turn signal lights. • Two (2) Whelen, Model M6BUW, Super LED backup lights shall be provided. .	Y	
Four (4) red reflectors shall be provided.		
The brake, turn, backup and warning lights shall be located at the rear of the apparatus. Each light shall be mounted horizontally in a vertical configuration, one light atop the other.		

Yes | No

The order of lights shall be as follows:

Top: AMBER LED ARROW SIGNAL LIGHTS

Second from top: RED LED BRAKE/TAIL LIGHTS

Third from top: CLEAR LED BACK UP LIGHTS

Bottom: RED LED WARNING LIGHTS

Y

Six (6) Whelen #M6FC chrome plated bezels shall be provided for the M6 series rear stop, turn, and backup lights.

LICENSE PLATE BRACKET/LIGHTING

A stainless steel license plate bracket, painted black, shall be installed on the rear of the vehicle. Mounted on the license plate bracket shall be a chrome light bracket containing a 12 volt LED lamp that shall illuminate the license plate.
The license plate bracket shall be located on the rear of the vehicle, on the left side above the taillight cluster.

Y

ID/MARKER DOT LIGHTING

A TecNiq S34 amber LED marker light with amber lens shall be recess mounted in a rubber sealing grommet placed in the lower front cab side, forward of the driver and officer door, on each side of the cab. The light body shall be urethane filled to ensure against moisture intrusion. These cowl mounted lights shall have 100,000 hour life and shall carry a manufacturer's 10 year warranty.

Y

Two (2) Britax model #L428 short rubber side LED directional lights shall be provided in addition to the front turn signals. One (1) light shall be mounted just above the front fender on each side of the cab. Lamp shall have an amber plastic lens at front and a red lens facing the rear.

A Britax long stemmed "LED" dual faced #L427 long, marker light shall be placed at each rear corner of the body. The front lens shall be amber; the rear lens shall be red.

Seven (7) TecNiq S34, red LED marker and clearance lights with red lens shall be installed at the rear of the body. The three light identification cluster shall be surface mounted on the rear step vertical flange. Two lights shall be placed at each lower rear

body corner, facing the side. Two lights shall be placed in the upper rear body corners, facing the rear.

D.O.T. Reflectors

Reflectors shall be placed on the cab and body as required by Federal standards. An amber reflector, Signal Stat, model 32ADB, shall be placed on each side of the cab. Four (4) Signal Stat model 32DB red reflectors shall be located on the rear face and sides of the body. The reflectors shall be rectangular in shape.

Y

Backup Alarm

One (1) Preco Model LDA-50 backup alarm shall be provided and activated when the vehicle transmission is placed in reverse. Alarm output shall be a minimum of 97 DBA.

Y

Light, Intermediate

There shall be one (1) pair, of Truck-Lite, Model: 60115Y, amber, LED, turn signal, marker lights furnished, one (1) each side, horizontally in the rear fender panel.
A stainless steel trim shall be included with this installation.

Y

Open Door Indicator Light

A Whelen "T0" series 2" round red flashing LED light with chrome flange shall illuminate automatically whenever the apparatus parking brake is not fully engaged and any of the following conditions exist:

- Any passenger or equipment compartment door is open.
- Any ladder or equipment rack is not in the stowed position.
- Stabilizer system is not in its stowed position.
- Powered light tower is extended.
- Pedestal cover is open.
- 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.

The hazard warning light shall be identified with a label that reads: “Do Not Move Apparatus When Light Is On.” The light shall be located on the ceiling between the driver and the officer.

Y

Cab Step Lights

Y

Four (4) Whelen model TOCACCCR, LED step lights shall be provided, one (1) at each cab entrance door.
The cab step lights shall be activated with the cab door open switch.
The step lights on the body shall be activated with the parking brake in conjunction with the marker lights.

ACCESS LADDER STEP LIGHTS

The access ladder shall be illuminated by one (1) TecNiq Eon LED horizontal surface mounted step light located above the top step shining downward and one (1) TecNiq E10 LED surface mounted step light located below the top step, also shining downward. Y

WATERWAY INTAKE LIGHTING

Two (2) TecNiq EON series LED lights shall be located in the aerial waterway intake panel at the rear, one each side, to illuminate the intake area. The lights shall activate with the parking brake/marker light function. Y

TURN TABLE STEP LIGHTS

Y

There shall be three (3) TecNiq Eon LED step lights at the base of the aerial to illuminate the turntable stepping surfaces.

There shall be a TecNiq Eon LED step light on the pedestal to illuminate the area around the pedestal. This light shall be activated with the aerial PTO.

The flange for the step lights shall be polished stainless steel.
The step lights shall have a grommet.

LIGHT ACTIVATION

The cab ground lights shall be activated with the cab door open switch. Y

The ground lights on the body shall be activated with the parking brake in conjunction with the marker lights.

GROUND LIGHTS

Two (2) weatherproof TecNiq #E10 LED ground lights shall be provided in each front bumper corner, at 45 degrees.

Four (4) weatherproof TecNiq #E10 LED ground lights shall be provided underneath the cab, Y

	Yes	No

per NFPA requirements.

Two (2) weatherproof TecNiq #E10 LED ground lights shall be provided underneath the body rear step, per NFPA requirements.

Four (4) weatherproof TecNiq #E10 LED ground lights shall be provided underneath the body, under the compartment fore and aft of the axle each side, approximately centered with the compartment.

Two (2) weatherproof TecNiq E10 LED ground lights shall be provided underneath the transverse compartment, one each side, approximately centered with the compartment.

One (1) weatherproof TecNiq E10 LED ground light shall be provided underneath the rear body below the ladder storage compartment lights, approximately centered with the compartment.

LIGHTING

- There shall be one (1) 72" LED HIVIZ, FIRE TECH Model FT-B-72 floodlight provided centered on the front visor. Final placement to be determined at pre-construction conference. This light may be load managed when the parking brake is set. Light shall be equipped with integrated marker lights. — No
- There shall be two (2) Firetech Guardian Elite FT-GESM surface mount 12v scene lights. One shall be located on the driver's side of the crew cab. The second shall be located on the officer's side of the crew cab. The lights shall be controlled by a switch located between driver and officer and shall come on when the driver side crew doors are opened. These lights may be load managed when the parking brake is set. — Y
- There shall be two (2) Whelen Pioneer Plus LED PFP2APDB dual panel top-mount scene lights mounted on the upper body shelf and cab of driver's side. — Y
- There shall be two (2) Whelen Pioneer Plus LED PFP2APDB dual panel top-mount scene light mounted on the upper body shelf and cab of officer's side. — Y
- Final placement of all scene lighting shall be determined at the pre-construction conference.

SWITCH, BACK-UP LIGHTS

A reverse enable switch shall be provided in the cab to activate the backup lights, rear 12V scene, and deck lights whenever the transmission is shifted into reverse. The switch shall only be active when the parking brake is applied. This is in addition to the standard switch that allows the driver to engage the lights anytime the battery is on and is labeled "SCENE LIGHT REVERSE". — Y

SWITCH, STEP LIGHTS

	Yes	No
A switch shall be provided in the cab to prevent the ground perimeter, dome, and step lights to be disabled for "blacked out" situations.	Y	

INTERIOR CAB DOME LIGHTS

Four (4) Weldon 60CREGCS 6" series red/clear LED lights with push button shall be mounted in the cab ceiling. Two (2) in front (driver & officer) and two (2) in the crew cab. All lights shall be controlled by a switch on the light head.	Y	

AUTOMATIC DOOR SWITCHES

Automatic door switches shall be provided for the cab dome lights. All white dome lights shall activate with any cab door opening.	Y	

CAB DOOR INTERIOR LIGHTS

Four (4) Whelen model OSA00FCR flashing amber LED lights in chrome flanges shall be installed on the interior of the specified cab entrance doors, above the door seal in the lower outboard corner. The cab doors receiving lights shall be all the doors.	Y	

ENGINE COMPARTMENT WORK LIGHT

One (1) Whelen 3SC0CDCR engine compartment work light shall be provided. The light shall illuminate the fluid dip sticks. The light shall activate with the cab tilt or with the switch. The single light shall be installed on the right side of the opening.	Y	

EXTERIOR COMPARTMENT LIGHT – LED STRIPS

Four (4) exterior compartment(s) shall have a ROM LED lighting strip installed. The lighting strip shall be mounted horizontally on the ceiling next to the door framing in all specified body compartments. The LED lights shall be mounted in an anodized aluminum track. A switch, installed in the door frame, shall be used to activate light.	Y	

EXTERIOR COMPARTMENT LIGHT – (2) LED STRIPS

Six (6) exterior compartment(s) shall have a ROM LED lighting strip installed on both sides of the door. The lighting strips shall be mounted vertically along both sides of the door framing in all specified body compartments. The LED lights shall be mounted in an anodized aluminum track. A switch, installed in the door frame, shall be used to activate the lights.	Y	

	Yes	No
COMPARTMENT LIGHTS One (1) transverse compartment(s) shall be provided with two (2) TecNiq E10 LED lights installed in the transverse area of the compartment(s). Each light shall be mounted on a "hat" shaped metal bracket welded to the compartment ceiling to eliminate mounting holes through the top of the compartment. A switch, installed in each door frame, shall be used to activate the light nearest that door. Lights shall not have any other individual switch on the light base.	Y	
UPPER REAR WARNING LIGHTS Two (2) Whelen model R316RF Rota-Beam™ Super-LED® red beacons with red lens shall be provided on the upper rear of the apparatus. The flasher shall have the factory set Rotator 75 flash pattern. The rear beacons shall be installed directly atop the body.	Y	
WARNING LIGHTS Twelve (12) Whelen model M6R red Super-LED® light(s) with flange(s) and red lens(es) shall be provided on the apparatus. The flash pattern of the light(s) shall be the factory set SignalAlert™ 75 flash pattern .	Y	
CAB COWL LIGHTS Two (2) Whelen 50R03ZCR red LED lights with red lens and chrome flanges shall be provided on the cab cowl, one each side. The flash pattern of the lights shall be the factory set SignalAlert™ 75 flash pattern. The cowl lights shall be located on both of the cab cowls with the lights mounted approximately in-line with the middle light position on the front of the cab, at approximately 45 degrees.	Y	
WARNING LIGHTS (CAB ROOF) All the lenses shall be clear. There shall be one (1) switch located in the cab, on the switch panel, and shall control this light bar. There shall be two (2) forward facing Whelen model F4N MINI Mini Freedom™ IV LED 21.5" lightbars shall be provided and installed on the cab roof so that they are pointed	Y	

	Yes	No

straight ahead. Each lightbar shall consist of two (2) Linear-LED® heads with two (2) clear LED located in the center forward facing and one (1) red LED to the outside facing the side. The lightbar shall also be equipped with two (2) red corner Linear-LED® lights in the front corners.

The Whelen mini lightbar shall be mounted using a 1.5" high mount, model MKEZ7.

The white warning lights shall be disabled when the parking brake is set

DIRECTIONAL WARNING LIGHT

A Whelen model DTA8A Dominator™ series Traffic Advisor™ shall be provided. The light bar shall be 30.36" long and have eight (8) TIR3™ Super-LED® amber lamps. All outer lenses shall be clear. It shall be mounted in an extruded aluminum housing. The lights shall be controlled by a TADCTL1 controller mounted in the cab.

The control head for the traffic arrow shall be mounted on the top center of the dash. Y
The Traffic Advisor™ shall be wired through the Emergency Master.
The traffic advisor shall be mounted on top of the body, at the rear. An ATP guard shall be provided to protect the traffic advisor.
The lens color shall be clear.
The light flange shall be chrome plated.

DUAL ELECTRIC HORNS

Dual automotive electric horns controlled by the steering wheel horn button shall be provided. Y

DUAL AIR HORNS

Two (2) Hadley E Tones chrome air horns shall be furnished. A pressure protection valve shall be installed in-line to prevent loss of all air from the vehicle air brake system. The air horns shall range from 18" to 24" in length and shall be as long as possible, dependent upon other selected options and extension length. Y

There shall be an air horn mounted through the bumper on each side of frame.

AIR HORN DUAL LAYNARDS

	Yes	No
The air horn(s) shall be activated by two (2) lanyard pull cords. One for the driver and one for the officer, terminating into two (2) control valves, located between the driver and the officer in the cab ceiling. The lanyard pull cords shall be composed of a chain encased in a plastic tube.	Y	
AIR SHUT OFF VALVE		
An air shut off valve shall be provided in the feed line to the air horns, under the dash on the driver's side, accessible without removing any panels.	Y	
WHELEN SIREN		
A Whelen model 295SLSA1 electronic siren shall be provided. The siren has a selectable output of 100 or 200 Watts. The microphone shall be removable. The siren head shall be wired battery switched. Auxiliary activation switches shall only be active when the emergency master and ignition are activated. The electronic siren head shall be located in the upper dash. The siren mic clip shall be shipped loose.	Y	
SIREN SPEAKERS		
Two (2) Whelen Projector Series SA-315P, 100-watt speaker(s) shall be recess mounted in the front bumper extension, one on each side of the bumper.	Y	
MECHANICAL SIREN		
A Federal Signal Model Q2B® siren with chrome plated housing shall be recessed mounted in the front bumper extension with front and vane grille exposed. The siren activation switches shall only be active when the emergency master is activated. The Q2B® siren shall be mounted in the center of the bumper, forward section extended through the bumper.	Y	
MECHANICAL Q2B FOOT SWITCH		
Two (2) Linemaster® Model 632-S momentary foot operated switch(es) to activate the mechanical Q2B® siren shall be installed on the toe board of the cab floor.	Y	
Q2B BRAKE ROCKER SWITCH		

	Yes	No
A siren brake rocker switch shall be installed in the cab, at the officer's side switch panel, properly labeled. A master switch for the Federal Signal Q2B® siren shall be provided under the driver's side dash. Activation of the master switch shall remove all power including line supply to the solenoid. The foot switch shall not be deactivated when the parking brake is set. The foot switch shall be located on the driver's side, outboard of the steering column.	Y	

Foot Switch Bracket

	Yes	No
An aluminum tread plate angle panel shall be installed to hold a single foot switch shall be installed on the officer's side.	Y	

GROUND LADDERS

	Yes	No
Ladders shall be provided in full compliance with NFPA 1901 requirements for aerial trucks. Ladders shall be individually mounted vertically under the aerial turntable and open equipment area or hose bed inside of the torque box and properly labeled. One hundred sixty-nine (169) feet of Duo-Safety ladders shall be provided as follows:	Y	

Ladder Compliment:

- 35' extension (3 section)
- 28' extension (2 section)
- 24' extension (2 section)
- 16' roof ladder
- 20' roof ladder
- 10' double-ended roof ladder (mounted on base section of aerial)
- 12' Fresno with safety shoes
- 10' folding ladder
- 14’ double-ended roof ladder (mounted on base section of aerial)

LADDER SLIDES FOR TORQUE BOX LADDER COMPARTMENT

	Yes	No
The ladders shall be stored on individual slides in the torque box ladder compartment to permit easy removal and shall be arranged to allow access and removal of each ladder individually.	Y	

PIKE POLES

	Yes	No
The following pike poles shall be furnished:	Y	

Yes | No

Two (2) 8 ft. Fire Hooks Unlimited NHF-8 pike pole(s) with fiberglass handle(s).
Two (2) 10 ft. Fire Hooks Unlimited NHF-10 pike pole(s) with fiberglass handle(s).
Two (2) 12 ft. Fire Hooks Unlimited NHF-12 pike pole(s) with fiberglass handle(s).

PVC PIKE POLE MOUNTS

Six (6) PVC tube(s) shall be mounted to facilitate storage of pike poles.
The pike pole mount shall be located in the ladder compartment.

Y

PAINT

The following processes shall be employed in the finishing of the apparatus:

Y

- Manual Surface preparation – All metal surfaces on all custom body and cabs shall be thoroughly cleaned and prepared for paint. Surfaces that shall not be painted include all chrome plated, polished stainless steel and bright aluminum tread plate. As required, weld seams and other areas shall be caulked to prevent water leaks or for appearance reasons. Each imperfection on the exterior metal surface shall be removed or filled and then sanded for a smooth flat appearance.
- Chemical Cleaning and Treatment – All painted surfaces shall be washed with a chemical degreaser, cleaner and surface conditioner to allow for proper adherence of primer coat. Then they shall be washed with a neutralizer product. All products used are approved by paint supplier and applied under strict process control to meet performance requirements on corrosion prevention and chip resistance.
- Primer/ Surface Coating for Top Coat application – a minimum of 2 coats of Epoxy based primer shall be applied to surfaces inside and outside of cabs and bodies and all other parts of apparatus that shall receive a Top color coat to achieve required corrosion protection. After that a minimum of 2 coats of sealer shall be applied over the primer surface. The overall thickness of the primer/sealer coat shall be between 3 to 8 mils wet. Once dried and cured all surfaces that shall receive a top coat shall be hand sanded to achieve a flat and smooth surface to meet gloss and other paint quality standards. All products used are approved by paint supplier and applied under strict process control to meet performance and appearance requirements. The underside of the cab and body shall be finished with one coat of epoxy

Yes | No

primer specifically designed for this application to prevent corrosion and provide chip resistance to typical paved road conditions.

- Top Coat Application – Each Top Coat final color on the apparatus is applied using a two stage paint process. The unit shall be thoroughly hand cleaned to eliminate dust residues and to detect any imperfection in the surfaces to be painted. A fast drying 3.5 VOC polyurethane basecoat color shall be applied using a cross coat application technique. Additional coats may be applied as required until the coat thickness reaches 2.0 to 6.0 mils wet and a full hide appearance. If a second color is required, proper masking shall be applied to the unit and the basecoat application process shall be repeated for the second color. A slow drying low VOC High Build clear coat shall be applied using a cross coat application technique until a minimum of 5.0 mils wet is achieved. The unit is then properly heated to assure flash and cure of the paint before leaving the paint booth. All products used are approved by paint supplier and applied under strict process control to meet performance and appearance requirements. Each batch of color topcoat shall be tested for precise color match following paint supplier color matching process. A visual color match shall be checked prior to paint using customer approved paint chips.
- The cab and body shall be primed and finish painted prior to installation on the chassis to ensure paint coverage in all areas including the difficult to reach places. The exterior and interior of the cab shall be finish painted before the doors are installed or any assembly is started to ensure a finish painted surface beneath all trim items.
- Primer/ Surface Coating for Single Coat application – a minimum of 2 coats of Epoxy based primer shall be applied to all surfaces of the apparatus that shall receive a single color coat to achieve required corrosion protection. This is a wet coat process and it shall achieve a 3.0 to 8.0 mills wet thickness and complete coverage of all bare metal. All products used are approved by paint supplier and applied under strict process control to meet performance and appearance requirements.
- Single Coat Application – A minimum of 2 coats of direct gloss paint shall be applied over all primed surface to achieve corrosion protection and appearance. This application shall be used for Gloss Black, Job Color and Color finishes in parts of the apparatus such as frame rails,

	Yes	No

outriggers, ladders and other aerial devices, suspension and other chassis parts, etc. as defined in the sales order.

- Zolatone Coat Application – All areas to receive a Zolatone coat shall be primed following the primer/surface coating for top coat application. A high pressure coat of Zolatone paint shall be applied in a cross pattern technique to achieve smooth finished surface. A second low pressure coat of Zolatone paint shall be applied in a single pattern to achieve a textured appearance.
- Zolatone Clear Coat Application – Starting with a completed and dry Zolatone coat application 2 to 3 coats of Zolatone clear coat shall be applied until a thickness of 5.0 mills wet is achieved.

All painters shall be paint supplier certified. They shall be re-certified periodically in order to keep up to current standards and procedures required by the coatings manufacturer. This certification is performed independently by the paint supplier.

FACILITY

The finishing facility shall be certified independently by the paint supplier by meeting or exceeding its extensive and stringent requirements. The paint facility shall be audited quarterly by the paint supplier to ensure proper equipment, procedures and safety regulations are being used and adhered to in order to assure paint quality requirements are met in every job. Y

PAINT - CAB INTERIOR

The inside of the cab shall be painted with black Zolatone paint following the Zolatone Coat application process.

The following components shall be painted: Y

- Exposed interior surfaces of the cab structure
- Exposed interior surfaces of the driver/officer/crew doors
- All interior "Metal" access/wire covers of the cab
- Head bumper brackets
- Miscellaneous brackets, if present: camera mounts, non-recessed radios, charger covers

CAB PAINT

	Yes	No
The cab shall be painted one color. The paint shall follow the Top Coat application process for a single color. **Cab exterior paint number is #__910785_____Color:___Red_____.**		
## CAB DECORATIVE TRIM MOLDING A decorative molding shall be provided around the cab. The decorative molding shall be horizontal across the front of the cab above the wipers and taper down with a radius even with the outside corners of the grille.	Y	
## BODY PAINT The body of the apparatus shall be painted to match the primary cab color. The paint shall follow the Top Coat application process for a single color. **Body exterior paint number is #__910785_____Color:____Red_____.**	Y	
## OUTRIGGERS & JACKS PAINT The outriggers and jacks shall be painted to match the primary cab color. The paint shall follow the Top Coat Application process for a single color.	Y	
## LADDER AND COMPONENTS PAINT The ladder sections, turntable, lift cylinders and ladder rest will be painted PPG 35913 Silver Blue. Single Coat application process shall be used to apply the color selected in this order using direct gloss paint on identified parts.	Y	
## PAINT AERIAL TIP The top three feet, or removable tip, of the fly section of the aerial ladder shall be painted with One-Shot fluorescent red-orange paint number 203F. Clear coat shall be applied over the fluorescent red-orange paint. Top Coat application process shall be used to apply the color selected.	Y	
## PAINT CHASSIS FRAME ASSEMBLY		

	Yes	No
The chassis frame assembly shall be painted black before the installation of the cab and body, and before installation of the engine and transmission assembly, air brake lines, electrical wire harnesses, etc. Components that are included with the chassis frame assembly that shall be painted black are frame rails, cross members, axles, suspension, steering gear, fuel tank, body substructure supports, miscellaneous mounting brackets, etc.	Y	

RUST/CORROSION PROOFING

	Yes	No
Rust/Corrosion proofing compound shall be applied to all accessible rust or corrosion prone areas.	Y	

CAB AND CHASSIS:

- Light Wells
- Rocker Panels and Rear Vertical Door Jambs
- Front Hinge Door Pillars
- Fender Wells and Fenders
- Underside
- All Enclosed, Boxed-In, or Double-Paneled Sections in Chassis Body
- Entire Underbody
- Frame rails

IT IS UNDERSTOOD THAT RUST/ CORROSION PROOFING COMPOUND SHALL NOT BE APPLIED TO ANY AREA WHERE ITS APPLICATION WILL INTERFERE WITH MECHANICAL OR ELECTRICAL PARTS INCLUDING, BUT NOT LIMITED TO: EXHAUST SYSTEM,TRANSMISSION,SHOCK ABSORBERS,DIFFERENTIAL HOUSING,ENGINE ASSEMBLY AND ACCESSORIES,STEERING LINKAGE,DRIVESHAFTS,UNIVERSAL JOINTS,WHEELS AND TIRES,

RUST/CORROSION PROOFING COMPOUND SHALL BE A PETROLEUM-BASED RUST/CORROSION PREVENTATIVE.
SURFACE PREPARATION: WIRE BRUSHED OR WASHED WHERE DEEMED NECESSARY FOR PROPER APPLICATION OF RUST/CORROSION PROOFING MATERIAL BY CONTRACTOR

* THE ZIEBART SHALL BE APPLIED PRIOR TO THE BODY IS LOADED ON THE CHASSIS.

	Yes	No
The following items shall have an additional coat of gloss black paint applied over the primed surface as supplied by the component manufacturer. Single coat application process shall be used to apply Gloss Black paint on the parts identified below: • Front & rear axles and suspension • Fuel tank • Air reservoir tanks • Pump module mounting brackets • Body mounting brackets • Steering gear box and steering link arm • Drive shafts The frame rails shall receive an additional coat of gloss black paint after all primer, powder coating, and rust and corrosion preventative have been applied.		
GRAPHICS A detailed description of all graphics to be determined at the pre-construction conference.	Y	
REFLECTIVE STRIPES Three (3) reflective stripes shall be provided across the front of the vehicle and along the sides of the chassis cab and apparatus body. The reflective band shall consist of a 1.00" blue stripe at the top, then a 6.00" white stripe, and a 1.00" blue stripe on the bottom. There shall be no gap between striping. The reflective band provided on the cab face shall be at the headlight level.	Y	
CHEVRON STRIPING, REAR There shall be alternating chevron striping located on the rear-facing vertical surface of the apparatus. The entire rear surface, excluding the rear compartment door, shall be covered. The colors shall be red and fluorescent yellow, green diamond grade. Each stripe shall be 6.00" in width. This shall meet the requirements of NFPA 1901, 2009 edition, which states that 50% of the rear surface shall be covered with chevron striping.	Y	

	Yes	No
CHEVRON STRIPING, FRONT BUMPER There shall be alternating chevron striping located on the front-facing vertical surface of the front bumper. The colors shall be red and fluorescent yellow, green diamond grade. Each stripe shall be 6.00” in width.	Y	
STOP SIGN AND REFLECTIVE CHEVRONS, CAB DOORS A 12.00" x 12.00" reflective stop sign shall be provided on the interior of each cab door. The stop sign shall be located on the stainless steel door panel. There shall be alternating chevron striping located on the interior of each cab door. The colors shall be red and fluorescent yellow, green diamond grade. Each stripe shall be 6.00” in width. The stop sign and chevrons shall meet or exceed NFPA 1901 requirements.		N
LETTERING The lettering shall be totally encapsulated between two (2) layers of clear vinyl. Forty-one (41) to sixty (60) genuine gold leaf letters, 3.00" high, with outlining and shading shall be provided.	Y	
LETTERING ADDITIONAL 8.00” white reflective numbers with black outline shall be installed on the passenger cab front. 16.00” white reflective letters/numbers with black shading shall be installed on the rear side compartment doors, rear tailboard compartment and roof of the cab. Seventeen (17) genuine gold leaf letters, 8” high, with outlining and shading shall be provided for upper left (driver) side body.	Y	
WARRANTIES Each piece of new fire or rescue apparatus shall be warranted to be free from defects in materials or workmanship under normal use and service. Each manufacturer shall supply, as a part of their bid package, a copy of the warranty or warranties that they propose to provide. The bidder shall provide all optional warranty packages, such as extended warranties, etc., bid to include the cost of said packages. All other warranties, as outlined in these specifications shall be provided in writing as a part of the bid package. Failure to provide the warranties as outlined throughout these specifications shall be cause for rejection of the bid package. The following minimum warranties shall be furnished:	Y	

	Yes	No
Two (2) Year Material and Workmanship Each new piece of apparatus shall be provided with a minimum two (2) year basic apparatus material and workmanship limited warranty. The warranty shall cover such portions of the apparatus built by the manufacturer as being free from defects in material and workmanship that would arise under normal use and service. A copy of the warranty certificate shall be submitted with the bid package (No Exception).	Y	
Fifty (50) Year Frame Structural Integrity The chassis frame shall be provided with a fifty (50) year material and workmanship limited warranty. The warranty shall cover the chassis frame as being free from defects in material and workmanship that would arise under normal use and service. A copy of the warranty certificate shall be submitted with the bid package (No Exception).	Y	
Twenty (20) Year Aerial Device Structural Integrity The aerial device shall be provided with a twenty (20) year material and workmanship limited warranty. The warranty shall cover the aerial device as being free from defects in material and workmanship that would arise under normal use and service. A copy of the warranty certificate shall be submitted with the bid package (No Exception).	Y	
(10) Year Cab Structural Integrity The new cab shall be provided with a ten (10) year material and workmanship limited warranty. The warranty shall cover such portions of the cab built by the manufacturer as being free from structural failures caused by defects in material and workmanship that would arise under normal use and service. A copy of the warranty certificate shall be submitted with the bid package (No Exception).	Y	
Ten (10) Year Body Structural Integrity Each new piece of apparatus shall be provided with a ten (10) year material and workmanship limited warranty on the apparatus body. The warranty shall cover such portions of the apparatus built by the manufacturer as being free from defects in material and workmanship that would arise under normal use and service. A copy of the warranty certificate shall be submitted with the bid package (No Exception).	Y	
Engine The engine shall come with a five (5) year or 100,000-mile warranty provided by the Cummins Corporation.	Y	

	Yes	No
Transmission The transmission shall have a five (5) year/unlimited mileage warranty covering 100% parts and labor.	Y	
Electronic Stability Control System, Anti-Lock Brake System & Automatic Traction Control The Wabco ABS/ATC system shall come with a three (3) year or 300,000-mile parts and labor warranty provided by Meritor Wabco Vehicle Control Systems.	Y	
Ten (10) Year Non-Pro-Rated Paint and Corrosion Each new piece of apparatus shall be provided with a ten (10) year non-pro-rated paint and corrosion limited warranty on the apparatus cab. The warranty shall cover painted exterior surfaces of the body to be free from blistering, peeling, corrosion, or any other adhesion defect caused by defective manufacturing methods or paint material selection that would arise under normal use and service. A copy of the warranty certificate shall be submitted with the bid package (No Exception).	Y	
Three (3) Year Gold Leaf Material and Workmanship The gold leaf lamination shall be provided with a three (3) year material and workmanship limited warranty. The warranty shall cover the gold leaf lamination as being free from defects in material and workmanship that would arise under normal use and service. A copy of the warranty certificate shall be submitted with the bid package (No Exception).		
Five (5) Year Front and Rear Axles Dana Corporation provides a five (5) year parts and labor warranty on the front axle and rear axles. A copy of the warranty certificate shall be submitted with the bid package (No Exception).	Y	
Two (2) Year Telma Driveline Retarder Telma warrants to customers that the product shall be free from defects in materials and workmanship and will confirm to applicable specifications. TRI shall, at its option, repair correct or replace any product or part thereof which is defective in workmanship of material: provided, however, that TRI is given prompt written notice of any failure (setting forth the alleged defect and pertinent delivery dates showing that the product is covered under the warranty) occurring within the lesser of a) two (2) years after the date of delivery to the first user of OEM product into which the product is installed of b) thirty (30) months from original delivery of the product. A copy of the warranty certificate shall be submitted with the bid package (No Exception).	Y	

LOOSE EQUIPMENT

The following equipment shall be furnished with the completed unit:

Y

- One bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts, and washers, as used in the construction of the unit
- Four (4) Zico folding wheel chocks with under body mounting brackets
- Turtle-Tile shall be provided for all compartment floors, shelves, rollout trays, and transverse areas.

OPTION PRICING

Bidder shall provide pricing for optional changes to the base specifications as listed:

- Transverse area over full height compartments in front of rear axles (R2/L2).
- 120V 15 amp duplex outlets located in top forward corner in each side compartment.
- Full height R.O.M./Robinson aluminum shutter roll-up type doors, made in the U.S.A. with a painted finish for each side compartment in place of full height hinged lap-type doors

AERIAL QUESTIONNAIRE

Vendors must complete the questionnaire below regarding manufacturer, dealer and service center information:

MANUFACTURER	DEALER	SERVICE CENTER
Seagrave Fire Apparatus LLC	Fire & Specialty Equipment Company	Fire & Specialty Equipment Company
Mfg. Address	Dealer Address	Service Center Address
105 East 12th Street	235 Rogers Drive	235 Rogers Drive
City/State/Zip	City/State/Zip	City/State/Zip
Clintonville,WI 54929	Shepherdsville KY 40165	Shepherdsville KY 40165
Mfg. Phone	Dealer Phone	Service Center Phone
715-823-2141	502-957-2145	502-957-2145

2022 Aerial Specifications

Yes	No

Apparatus Model Name Force	Number of Days: Contract Award to Delivery 790	Driving miles from LFD to Service Center 81.2
Overall Length APPROX. 481.50	Transmission Make and Model Allison 4000-EVS	Service Center Sq. Ft. 10,000
Overall Height APPOX. 136.00	Aerial Length and Rating 100' - 500 lb. tip	Service Center Number of Factory Trained Techs 6
Overall Width APPROX. 99.00	Front Axle Capacity 22800	Service Center Number of Mobile Service Units 5
Wheelbase APPROX. 242.00	Front Axle Loaded Weight(Est.) TBD	Service Center Number of Indoor Service Bays 7
Curb-to-Curb Turning Radius	Rear Axle Capacity 47000	Frame Dimension see porposal
Engine Make & Model Cummins X12	Rear Axle Loaded Weight(Est.) TBD	Frame Resistance To Bending see porposal
Engine Torque Rating 1695 ft. lb. @ 1000 rpm	Generator Make and Output Harrison 8KW	
	Dealer Signature *scott adkins*	Date 12/08/2022

Fire & Specialty Equipment Co.

Lexington-Fayette Urban County Government

RE: Invitation to Bid # 152-2022 (Ladder truck)

Clarifications and Exceptions

On behalf of Seagrave Fire Apparatus, LLC ("Seagrave"), I wish to submit the following clarifications for your review and consideration:

Boilerplate Page 11 of 31 item 12 **Cancellation**- Seagrave is taking exception to this.

Boilerplate Page 15-31 **MWDBE Participation Goals-** Since Seagrave produces highly customized products and uses very specific suppliers, as defined in the bid documentation, this prevents Seagrave from having the opportunity to be afforded a number of choices for suppliers of their materials.

As a result of this, there are not enough subcontractors or suppliers from which to choose from in order for Seagrave to be able to meet the requirements of 10 % procurement costs as a goal for participation of Minority-Owned Business Enterprise ("MBE"), Woman-Owned Business Enterprise ("WBE") and Disadvantaged Business Enterprise ("DBE") on this contract. It also prevents Seagrave from being able to meet the requirements of 3% for Veteran-Owned Small Business ("VOSB") on this contract.

We respectfully request that an exception be made in light of these circumstances.

Boilerplate Page 27-31 **Amendment 1-** Certification of Compliance for American Rescue Plan Act Expenditures- Seagrave is taking exception to this.

Page 2 **Project Funding**- Seagrave is taking Exception to this. See proposal for Seagrave Funding.

Page 2 **Delivery Schedule**- Seagrave is taking Exception to this. Proposed delivery is 760 days from approved drawing and updated specifications following pre-construction conference. Penalty shall be based on mutually agreed upon documents and drawings post pre- construction.

Page 3 **Manufacturer Sponsored Training**- Fire & Specialty Equipment Company will have three (3) familiarization sessions to take place at Lexington Kentucky Fire Department upon truck delivery.

Page 3 **Safety Video** – is not included in Seagrave bid.

Page 5 **Specification Bid Requirements** – Seagrave proposal is laid out front to back of the apparatus and does not match order of Lexington Specifications. Please note that a list has been added to help reference the Seagrave specifications. In addition, the Seagrave specification will supersede the municipalities specifications once agreed upon. That is what the preconstruction conference is for.

Page 8 **Website** – is not included as part of our proposal, nor is a dealer portal providing pictures.

Page 10 **Performance Bond** – Based on premium associated with a Performance Bond, the bond will be issued upon an awarded contract.

Page 13 **Apparatus Body Width** – Seagrave is taking Exception to this. Force Body is 100” wide

Page 13 **Gross Vehicle Weight Ratings** – Seagrave is taking Exception to this. See Seagrave proposal for Rear weight Rating

Page 15 **Rear Axles** – Seagrave is taking Exception to this. See Seagrave proposal for new model number and capacity.

Page 15 **Suspension** – Seagrave is taking Exception to this. See Seagrave proposal for new capacity and model number.

Page 16 **Brake System Certified** – All certifications are by the axle manufacturer for specific application. Brake chamber and size shall be determined by the axle manufacturer as proposed by Seagrave in this proposal.

Page 18 **Air Tank Mounting** – Seagrave air tanks are secured with stainless steel cables coated in vinyl, but the mounts are steel.

Page 21 **Engine Brake** – Seagrave is taking Exception based on the Axle manufacturer not allowing both the Telma and Jacob system together.

Page 21 **Radiator** – Radiator proposed by Seagrave has copper fin design.

Page 24 **Driveline** – Seagrave is taking Exception on this model number. Seagrave proposal is an 1810 Spicer universal joints.

Page 26 **Frontal Impact**- Frontal Impact test was done utilizing a kinetic "ram cart" at IMMI and passed (video is on website)-plum bob not utilized.

Page 35 **MDC Notch** – Seagrave is taking Exception to this. Due to the configuration of the Capital cab a recess in the front of the officer is not an available option.

Page 36 and 37 **Seats** – Seagrave is taking Exception to all seats. See Seagrave proposal #550 is not a Seagrave offering. See new model number for seats.

Page 42 **Grab Handles and Handrails Cab** – Seagrave is taking Exception to this. Due to the design of the wipers 24" is NA

Page 43 **Utility Compartment**- Seagrave is taking Exception to this.

Page 52 **Cab Instrumentation** – Please note that Seagrave gauges for the air system are not labeled front and back, but Primary & secondary

Page 67 **Rear Compartments** – Seagrave is taking Exception to this. The rear compartment will not accommodate the cord real due to the size of the real.

Page 69 **Transverse Roll out Tray** – Seagrave is taking Exception to this. See Seagrave proposal IMS NA

Page 71 **Extinguisher and Air Cylinder Storage** – See Seagrave proposal for all doors to be painted.

Page 82 **Cab Avoidance** – Seagrave is taking Exception to this. Not required on Rear mount Aerial

Page 86 **Manual Waterway Control Valve** – Seagrave is taking Exception to this. See Seagrave proposal for control valve.

Page 88 **Aerial Tip Lights** – Seagrave is taking Exception on switched at the base. See Seagrave proposal on switch.

Page 91 **Additional Front Waring Lights Dual Light Bezels –** is not being quoted based on type of warning light. Can be adjusted at pre-construction meeting.

Page 95 **Lighting** – Seagrave is taking Exception to this. 72" brow light will not work with aerial and telescopic waterway. See Seagrave proposal for brow replacement.

Page 100 **Ground Ladder** – Seagrave is taking Exception to this. See Seagrave proposal.

Page 106 and 107 **Graphics, Lettering** – Seagrave proposal is to include a lettering and graphics allowance of $8500. Any cost above and beyond this are the responsibility of purchaser.

Page 107 **Stop Sign** – Seagrave is taking Exception to this. Stop signs will not fit with door size.

Page 108 **Warranty Proposals** -

Frame is lifetime vs 50 years

Cab Structural is (15) years vs (10) years

Body Structural is (15) years vs (10) years

Paint Warranty proposed will be (10) year pro-rated per Seagrave paint warranty.

Page 110 **Option Pricing – The following items are not in the Bid Proposal**

- Transversa area over the full height compartments in front of the rear axles.

Note: this can be done how ever engineer would need more information to provide a cost at this time.

- 120 V 15-amp duplex outlets in each forward corner compartments.

The cost to add Eight (8) NEMA rating plugs to each compartment w/ground fault brakers and stainless-steel wall plates is estimated to be $3008.00 dollars

- Full height R.O.M Aluminum shutter doors.

The cost saving using the R.O.M Aluminum less than $500.00 dollars on each side of the truck. Note: using R.O.M Doors may cause an increase in price with door protectors.

**** Please note that the above items are not all inclusive and there may be other items differing between the Seagrave proposal and the City Specifications. Seagrave specifications for what is exactly proposed.

Fire & Specialty Equipment Company

One (1) == Boiler Plate - SFA Force/Patriot Aerial NQ - 0.000 ==

One (1) BOILER PLATE
00-03-1100

One (1) REQUIRED CUSTOMER ORDER INFORMATION (in Tech Note)
00-03-1101

One (1) Contract "B" - Prepayment
00-03-110C

One (1) Payment Terms - "B" Prepayment
00-03-230F

PAYMENT TERMS

Payment shall be made in full at time of order, less the prepay discounted amount. If payment is not made at the time of the order, the discount shall be adjusted accordingly. Any balance due shall be paid, along with all approved modifications required by the Purchaser, at time of final delivery and acceptance on the completed unit.

Fifty percent (50%) of the bid will be issued upon completion of the chassis, final payment will be issued upon apparatus delivery and safisfactory inspection by Division of Fire.

Bidder shall provide an option to negotiate a 100% pre-payment of the apparatus.

One (1) Proposal Expiration - 60 Days
00-04-0010

PROPOSAL EXPIRATION

Unless this proposal is accepted within 60 days from the date of the quotation, Seagrave reserves the right to either change the price or any other terms or withdraw this proposal in its entirety.

One (1) Federal & State Regulations, NFPA Standards & Import Tariffs
00-04-0015

FEDERAL & STATE REGULATIONS, NFPA STANDARDS & IMPORT TARIFFS

In the event that any applicable Federal or State Regulations (DOT, FMVSS, EPA, etc.), National Fire Protection Association Standards or import tariffs which are enacted during the course of this contract,

and which requires a change in the contract specifications and purchase price in order for the Apparatus and Equipment to comply with such regulation, the parties will execute a change order describing the change in the specifications and increasing the purchase price by an amount equal to the increase in the costs of producing the Apparatus and Equipment.

One (1) Intent of Specifications
00-04-0120

INTENT OF SPECIFICATIONS

It is the intent of these specifications to cover the design, manufacture and delivery to the purchaser of a complete fire apparatus equipped as specified herein. These specifications include the general requirements of design, material content and construction as well as certain equipment that shall be provided by the contractor. Not all details of the design, material content and construction of the fire apparatus are herein specified. Any such design, material content and construction not specified herein are left to the sole discretion of the seller contractor.

One (1) Compliance with NFPA 1901
00-04-01A0

COMPLIANCE WITH NFPA 1901

The National Fire Protection Association Standard “NFPA 1901 - Standard for Automotive Fire Apparatus - Current Edition” (hereinafter referred to as NPFA 1901) in effect at the time of the purchase shall be used as a reference and its requirements shall be met by the apparatus manufacturer. The apparatus shall be constructed in accordance with federal and state laws at the time of bid. Any federal, state or NFPA amended changes that shall affect the cost of producing said apparatus shall be charged to the purchaser. Mandatory minor apparatus equipment as stated in the applicable paragraphs of the NFPA standard shall not be provided unless specifically stated and listed in purchaser's written specifications.

Any and all references to “NFPA 1901” within this document shall refer to the current edition of NFPA 1901 in effect at the time of the purchase.

One (1) Purchaser's NFPA 1901 Responsibilities
00-04-01B0

PURCHASER’S NFPA 1901 RESPONSIBILITIES

In accordance with NFPA 1901, current edition, it shall be the responsibility of the purchaser to specify the following details of the apparatus:

- Its required performance, including where operations at or above elevations of 2000 ft. or on grades greater than 6 percent are required.
- The maximum number of firefighters to ride within the apparatus.
- Specific electrical loads that are to be part of the minimum continuous electrical load as defined in current edition of NFPA 1901 at the time of bid.
- Any hose, ground ladders, or equipment to be carried by the apparatus that exceed the minimum

requirements of the NFPA 1901 standard in effect at the time of the bid. Equipment weight and location on the apparatus are the responsibility of the purchaser as a prerequisite of defining the loaded vehicle's vertical center of gravity for rollover stability calculations, when required.

One (1) Acquaintance with Specifications - meets Requirements
00-04-023E

ACQUAINTANCE WITH SPECIFICATIONS

Seagrave Fire Apparatus LLC and its Sales Representatives have reviewed your bid specifications. It is our opinion that the fire apparatus as depicted in this proposal meets or exceeds the requirements of the bid specifications. The purchaser is required to review our Contractor's Specifications contained herein. Because of the intricacies in fire apparatus design, engineering and manufacturing, the Contactor's Specifications, along with any mutually approved changes, shall prevail in the event of a discrepancy between the purchaser's original bid specifications and the contractor's specifications.

One (1) Single Source Manufacturer - SFA Custom Chassis
00-04-0430

SINGLE SOURCE MANUFACTURER

Seagrave is a single source fire apparatus manufacturer. A single source manufacturer is defined as a manufacturer who designs, engineers and manufactures the entire apparatus in the factory of the bidder. The use of commonly incorporated components such as the diesel engine, the transmission, the pump, lighting fixtures, etc. is acceptable. However, calling the cab/chassis/drivetrain or the outriggers/torque box/aerial device a "component" shall not be acceptable. Single source warranty and service provision from Seagrave Fire Apparatus, LLC and its distributors, sales representatives and service network shall be provided to insure parts availability and undivided warranty responsibility. There shall be no exceptions to these conditions.

One (1) Third Party Manufactured Products - Discontinuance Policy
00-04-1100

DISCONTINUANCE POLICY

The apparatus manufacturer furnishes and installs components which are manufactured by 3rd Party Vendors. From time to time, these products are either changed or discontinued by the manufacturer. The apparatus manufacturer reserves the right to replace a discontinued 3rd Party Vendor manufactured component with an equivalent model.

One (1) Standard Placement of Components
00-04-1110

STANDARD PLACEMENT OF COMPONENTS

Any deviation from the apparatus manufacturer's standard placement shall incur additional charges.

Fire & Specialty Equipment Company

Seven Hundred Ninety (790)
00-04-5710 Completion Date

COMPLETION DATE

Barring any significant change in our current backlog of orders, and delays due to strikes, war or international conflict, failures to obtain materials, or other causes beyond our control not preventing, the apparatus and equipment detailed in the attached specification shall be delivered to you within approximately **Seven Hundred Ninety (790)** calendar days after receiving the complete order and signed approval drawing. It shall be understood and agreed that changes requested after the order placement and the resulting signed change orders and approval drawings, if approved, after the order has been released to Engineering, shall constitute a valid cause for production delay and without penalty to the contractor.

One (1) Proposal Drawings
00-04-5910

PROPOSAL DRAWINGS

Included with our proposal are line drawings of the apparatus being proposed. These drawings shall be drawn to scale on a CAD system to assure an accurate and professional drawing. The drawings show five (5) views of the vehicle: front, rear, both sides and top. The drawings show the wheelbase and overall dimensions of the apparatus, proposed compartment sizes and features, booster tank position and the location of all emergency warning equipment, work lights, seating and other major items that are to be provided on the apparatus.

One (1) Turning Radius Drawing
00-04-5B10

TURNING RADIUS DRAWING

A turning radius drawing has been provided showing the turning radius of the vehicle as configured in the proposal. The diagram shall show the curb-to-curb and wall-to-wall clearance as well.

One (1) Bid Bond - 10%
00-04-6210

BID BONDS

Each bidder shall supply with their bid proposal a bid bond in the amount of 10% of the proposed contract amount. Bid Bonds by salesmen or agents of the manufacturer are not acceptable. Bids shall expire after 30 days immediately following the date of the bid proposal. All required insurance coverage shall be underwritten by insurers legally allowed to conduct business in all states of the U.S. and shall have a policy holders rating of “A” or better in the latest evaluation by A. M. Best Co.

Proposals received from bidders who do not build the chassis shall provide a warranty that is issued jointly and severally by, and signed by, both the bidder and manufacturer of the chassis. Bidders who build their own chassis shall provide a warranty issued in their name only.

If the successful bidder does not manufacturer the chassis, the bidder shall supply a separate warranty bond which guarantees all terms and conditions of the warranty and names, as co-principals, both the bidder and the chassis manufacturer. This warranty bond shall be issued for the contract amount and shall remain in force for a term which is consistent with the term of the warranty quoted in the bid.

No exception to these requirements shall be allowed if the bid is to be considered compliant.

One (1) Performance Bond - 100%
00-04-6410

PERFORMANCE BOND

The successful bidder shall furnish a 100% Performance Bond within 10 days after receipt of purchase order or signed contract. The bond is to be furnished by the company who will build the apparatus proposed. Bonds by salesmen or agents of the manufacturer are not acceptable. All required insurance coverage shall be underwritten by insurers legally allowed to conduct business in all states of the U.S. and shall have a policy holders rating of "A" or better in the latest evaluation by A. M. Best Co.

No exception to these requirements shall be allowed if the bid is to be considered compliant.

One (1) Delivery Penalty
00-04-6810

DELIVERY PENALTY

Seagrave Fire Apparatus shall furnish and deliver the apparatus within **Seven Hundred Ninety (790) Calendar Days** from receipt of order by Seagrave, Clintonville, WI; provided, however, the order shall be fully specified, accurate and completely defined. In the event that the order is not fully specified, accurate and completely defined, the delivery date shall be adjusted as determined by Seagrave. Any resulted delivery penalty will only be applicable after such amended delivery date. Liquidated damages in the amount of $ 500.00 **per day** shall go into effect on the **Seven Hundred Ninety-First (791) Calendar Day** or such amended delivery date unless due to force majeure events, change order or other actions of the purchaser that cause a delay and are beyond the control of Seagrave.

One (1) Approval Drawings
00-04-7000

APPROVAL DRAWINGS

Following the acceptance of a complete and approved order, three (3) sets of engineering, blueprint type drawings, specifically for this apparatus, shall be provided by the manufacturer and shall be approved by the Fire Department before construction begins. Both the Fire Department and the manufacturer's representative shall have a copy of this drawing. It shall become part of the total contract. These drawings shall be drawn to scale on a CAD system to assure an accurate and professional drawing. The drawing shall show five (5) views of the vehicle (front, rear, both sides and top). The drawings shall show the wheelbase and overall dimensions of the apparatus, final compartment sizes and features, booster tank position, the location of all emergency warning equipment, work and scene lights.

One (1) Change Orders
00-04-7100

CHANGE ORDERS

To ensure the proper engineering and construction of the purchaser's custom fire apparatus in a timely manner, the contractor shall consider the order final and complete at placement of the order into Engineering. Change orders requested after the order placement are discouraged. If approved, change orders are subject to fees and escalating multipliers. It shall be understood and agreed that any changes, if approved, after the order has been released to Engineering, shall constitute a valid cause for production delay and without penalty to the contractor.

One (1) Pre-Construction Conference, Travel Included
00-04-811C

PRE-CONSTRUCTION CONFERENCE

One (1) "Pre-Construction" conference trip for representatives of the purchaser shall be included in the bid. The conference shall be held at a company facility or an authorized representative's facility during normal business hours, Monday - Friday. All cost of transportation, meals and lodging shall be included. A distributor or sales representative shall accompany the purchaser on the trip. The conference shall be held prior to the commencement of any work being done on the apparatus. Factory sales and engineering personnel shall participate in the conference as needed to ensure that the apparatus fulfills all the requirements of the accepted bid. Authorized representatives from both the purchaser and manufacturer shall approve and sign any changes made during these meetings prior to the commencement of any work being done on the apparatus.

It is understood and agreed that delays beyond thirty (30) days of contract approval for Pre-Construction conference changes in specifications shall be cause for delay in delivery.

Four (4) Number of Fire Depart Representatives Attending Pre-Construction Conference (Ea)
00-04-813Z

Four (4) fire department representatives shall attend the Pre-Construction Conference.

One (1) In-Process Inspection - Clintonville, WI, Travel Included
00-04-823C

IN-PROCESS INSPECTION TRIP

One (1) "In-Process" inspection trip for representatives of the purchaser shall be included in the bid. The inspection shall take place at the Seagrave factory in Clintonville, WI, during normal business hours, Monday-Friday. The cost of transportation, meals and lodging shall be included. A distributor or sales representative shall accompany the purchaser on the inspection trip. The inspection shall not be longer than one (1) day unless multiple vehicles are being inspected.

Fire & Specialty Equipment Company

Four (4) Number of Fire Department Representatives Attending In-Process Inspection (Ea)
00-04-823Z

Four (4) fire department representatives shall attend the In-Process Inspection.

One (1) Final Inspection, Travel Included
00-04-831C

FINAL INSPECTION TRIP

One (1) "Final" inspection trip for representatives of the purchaser shall be included in the bid. The inspection shall take place at a Company facility or an authorized representative's facility of the Company's during normal business hours, Monday - Friday. The selection of the inspection location shall be done at the sole discretion of the Company. The reasonable and customary cost of transportation, meals and lodging shall be included. An authorized distributor or manufacturer's sales representative may accompany the Purchaser on the inspection trip.

Four (4) Number of Fire Department Representatives Attending Final Inspection (Ea)
00-04-834Z

Four (4) fire department representatives shall attend the Final Inspection.

One (1) Pre-Delivery Road Trip and Final Factory Checklist
00-04-8400

PRE-DELIVERY ROAD TRIP AND FINAL FACTORY CHECKLIST

Prior to delivery, the completed apparatus shall be thoroughly inspected by the factory. This inspection shall include a road test of the apparatus. During the factory inspections and road testing, a checklist shall be utilized by factory personnel to document the inspection and road test results. The checklist shall include:

- Documentation of the make, model and serial numbers of all major components such as the engine, transmission, pump, axles, etc.
- Complete, comprehensive operational check of all chassis/drive train components and fluid levels.
- A comprehensive review of the entire exterior and interior of the apparatus for fit and finish, checked against the customer's order specifications, and any ensuing change orders.
- A thorough test of all driving systems under actual highway and city driving conditions.

One (1) Final Delivery - Zone 3
00-04-8463

DELIVERY

The fire apparatus shall be delivered over the road and under its own power to insure proper break-in of all driving components while still under warranty. Rail or truck freight shipment of the apparatus is not acceptable.

Delivery shall be to an area located in Zone 3.

One (1) Familiarization - Aerials
00-04-8520

FAMILIARIZATION

An experienced and qualified distributor or sales representative shall familiarize Fire Department personnel (as designated by the authority in charge) in the proper operation, care and maintenance of the apparatus delivered.

The representative must be a qualified, trained agent of the local authorized distributor or sales representative, or a direct employee of the manufacturer of the apparatus.

A factory field service technician shall provide instruction to the Fire Department regarding the aerial device. The familiarization period shall consist of up to three (3) daytime sessions over a period of three (3) consecutive days during the normal work week (Monday - Friday). The number, length and time of the sessions may vary due to the nature of the apparatus and availability of attendees and must be approved by the factory in advance. Evening sessions may be arranged in advance with the Seagrave Fire Apparatus Service Department under special circumstances. Due to scheduling, advance notice must be received in writing at least three (3) weeks prior to shipment or date of instruction and will be considered on a first come, first serve basis. The balance of any time remaining in a session may be devoted to minor adjustments or corrections to the apparatus for items which may have developed while in transit from the factory.

One (1) Documentation - NFPA Requirements
00-04-8700

DOCUMENTATION - NFPA REQUIREMENTS

All NFPA required documentation and certifications shall be supplied with the apparatus at the time of delivery.

One (1) General Design Requirements - S/S Custom Cab, S/S Body
00-05-013A

GENERAL DESIGN REQUIREMENTS

The specified apparatus shall be a custom cab type; designed, engineered and manufactured specifically for the fire service in North America. The apparatus meets or exceeds the requirements of the NFPA 1901, current edition, in all respects.

Seagrave's deluxe custom cab chassis shall be provided. It incorporates an all steel cab for strength, durability and safety. The cab and body sheet metal shall be constructed of stainless steel, no exception. The Seagrave cab incorporates a protective safety-cage design that totally surrounds and protects the seat

belted driver, officer and crew. The safety-cage, composed of heavy gauge stainless steel, makes the Seagrave deluxe cab an extremely strong cab.

One (1) Gross Vehicle Weight - with Certificate at Delivery
00-05-0210

GROSS VEHICLE WEIGHT

The manufacturer shall be responsible for proper weight distribution upon the chassis and axles. The apparatus when loaded, shall have not less than 25% nor more than 45% of the weight on the front axle and not less than 55% nor more than 75% on the rear axle. A certified weight certificate showing weights on the front axle, rear axle and total weight for the completed apparatus with the water and fuel tanks full, but without personnel, equipment and hose shall be provided at the time of delivery.

In accordance with NFPA 1901, it shall be the responsibility of the purchaser to notify the manufacturer in the purchaser's specification of any hose, ground ladders, or equipment to be carried by the apparatus that exceeds the minimum requirements of the NFPA 1901 standard in effect at the time of the bid.

One (1) Customer Declared Equipment Weight - 2001 To 2500 LB Evenly Distributed
00-05-032X

CUSTOMER DECLARED EQUIPMENT WEIGHT

The customer declared equipment weight shall be from 2001 to 2500 pounds. This weight shall be evenly distributed.

One (1) Apparatus Overall Height hall not exceed 136 inches.
00-05-1010

APPARATUS OVERALL HEIGHT

The overall height of the completed apparatus shall not exceed **136 inches**. This measurement shall be taken with the water tank empty and no hose, equipment or personnel on the apparatus. All permanently mounted equipment shall be in the stowed/travel position.

One (1) General Construction, Quality and Workmanship
00-05-2000

GENERAL CONSTRUCTION, QUALITY AND WORKMANSHIP

The design and construction of the apparatus shall embody standard automotive heavy vehicle engineering practices. The apparatus shall be designed, engineered and constructed with due consideration for the severe service nature of the fire service. All parts of the apparatus shall be installed in accordance with the OEM specifications.

Distribution of load between the front and rear axles shall be engineered so that all specified equipment, including a filled water tank, full complement of personnel and fire hose shall be carried without damage

to the apparatus. Weight balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association and current standard automotive practices.

All welding personnel that shall be utilized in the fabrication and construction of structural components of the apparatus chassis, body and aerial device shall hold a valid certificate from the AWS - American Welding Society.

The apparatus shall be designed to conform to applicable ANSI and NFPA 1901 standards. The following design criteria shall be applicable to this specification to the extent specified herein:

- American Society for Testing Materials (ASTM) - A-36, Specification for Structural Steel
- Society of Automotive Engineers, Inc. (SAE) - SAE Handbook
- American Welding Society (AWS) - AWSO14.4-77 Classification and Application of Welded Joints for Machinery and Equipment
- American Society for Non-Destructive Testing (ASNT)

All sensitive components shall be protected against adverse weather conditions. Any exposed metal surface which is not painted or otherwise coated shall have a bright finish. Corrosion protection shall be provided between any dissimilar metals joined in the construction of this apparatus.

One (1) NFPA 1901 Stepping Surface Certification
00-05-2110

STEPPING SURFACE CERTIFICATION

A certification that all materials used for exterior surfaces designated as stepping, standing and walking areas, all interior steps and all interior floors meet the slip resistance requirements of the applicable edition and section of NFPA 1901 shall be provided with the delivery documentation.

One (1) Aerial Test and Certification - Third Party
00-05-310S

AERIAL TEST AND CERTIFICATION

The aerial device shall be third party tested at the manufacturer's facility and shall conform to NFPA requirements and standards. Copies of all tests shall be provided with the delivery documentation.

One (1) Performance Requirements and Test - NFPA
00-05-4000

PERFORMANCE REQUIREMENTS AND TEST - NFPA

A road test shall be conducted with the apparatus loaded per NFPA recommendations (unless otherwise specified) and a continuous run of ten (10) miles or more shall be made during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts and rear axles shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus.

The apparatus must be capable of accelerating to 35 mph from a standing start within 25 seconds on a level highway without exceeding the maximum governed rpm of the engine.

The fully loaded vehicle shall be capable of obtaining a minimum top speed of 50 mph on a level highway with the engine not exceeding its governed rpm (full load).

The apparatus shall be able to maintain a speed of 20 mph on any grade up to and including 6%.

The service brakes shall be capable of stopping the fully loaded vehicle in 35 feet at 20 mph on a level highway.

The apparatus shall be tested and approved in accordance with NFPA standard practices.

One (1) == Cab/Chas - CAP Force 100/500 NQt Lng - 0.000 ==

One (1) Vehicle Performance Analysis Report - Provided When Done
00-05-042F

VEHICLE PERFORMANCE ANALYSIS

A performance analysis report shall be run on the vehicle, as ordered, using computer software to determine top speed, gradeability, optimum shift points and acceleration on various grades. The report shall be delivered with the completed vehicle.

One (1) Capitol S/S Tilting Cab - 100/500 Long Non-Quint, Force, Tandem
10-00-3460

GENERAL

Chassis shall be a new, heavy-duty, custom fire apparatus design built expressly for the fire service. All standard components that have not been specified shall be provided.

Chassis shall be designed, engineered and built by the bidder and be the manufacturer's first line custom chassis.

The chassis shall be suitable for heavy duty service with all components having adequate strength and capacity for the intended load to be sustained and the type of service required.

One (1) Wheelbase 242"
10-00-9910

WHEELBASE

The wheelbase shall be: **242 inches.**

Five (5) Seating Capacity
10-00-9920

SEATING CAPACITY

The safe seating capacity of the cab for properly belted passengers shall be: Five (5)

One (1) Approach - Departure Angles
10-00-9935

APPROACH - DEPARTURE ANGLES

An angle of approach and an angle of departure of at least 8 degrees shall be maintained at the front and the rear of the vehicle when it is loaded to the estimated in-service weight, as defined by NFPA 1901 current edition.

One (1) Gross Vehicle Weight Ratings
10-00-9940

GROSS VEHICLE WEIGHT RATINGS

Front Vehicle Weight Rating shall be: **[22,800#]**
Rear Vehicle Weight Rating shall be: **[47,000#]**
Gross Vehicle Weight Rating shall be: **[69,800#]**

One (1) Frame - 10.25"/12.5" Vari. Sect. Rail w/Liner, 3.2544m RBM - Min. (220-245" WB)
10-10-1400

FRAME

The frame is to be specifically designed and produced for the vehicle as specified. Each hole made in the frame rails must be used for a specific chassis component and any holes for non-required options are not acceptable.

The chassis frame shall be built using two variable section steel channels and a minimum of six (6) formed steel cross members. A midship mounted fire pump or pump module shall not be considered as a frame cross member. The frame rails shall be 120,000 psi heat treated steel alloy with tapering measurements and continuous top and bottom flanges. The cross members shall be of heavy duty, fabricated, all-welded design, made out of a minimum of 50,000 psi material.

A “C” straight channel frame inner liner with top and bottom flanges shall be provided. It shall extend from behind the front suspension shackle to the end of the frame rail.

Each rail shall have a combined section modulus of 27.4 and a combined minimum resisting bending moment of 3,254,400 inch pounds.

The frame rails and cross members shall be assembled using 5/8" flange head, grade eight bolts and "Spiralock®" flange nuts. Spiralock® nuts shall be used exclusively in the frame assembly for mounting spring hangers, steering gear, engine, transmission, etc. to maintain constant torque tension and prevent loosening from vibration. Spiralock® nuts shall provide even thread load over the bolt, increased fatigue strength and clamping torque.

Frame rails less than or equal to 480" in length shall receive a duo-coat primer: an E-coat followed by a powder coating. This duo-coat process meets 1000 hours of salt spray testing per ASTM B117 test procedure. Frame rails greater than 480" in length shall be powder coated only. The inside of the rails shall be hand re-sprayed to insure coverage. This process meets 240 hours of salt spray testing per ASTM B117 test procedure.

One (1) Bumper - 10.25" High (NYC Style) Mitered Corners, Painted
10-10-5000

BUMPER

A heavy duty 10-1/4" high x 1/4" thick painted steel bumper shall be mounted to the front of the chassis and be fabricated in the factory of the bidder. The bumper shall be channel shaped with 2" flanges and its ends shall be angled 45 degrees for a distance of 5". The bumper shall be painted to match the lower cab color.

As part of the bumper extension, a second formed channel with 2" flanges shall be provided directly behind the full width of the flat portion of the bumper. The bumper extension support shall be of channel (minimum 9-7/16" x 3" x 3/8") construction, bolted to the chassis frame stub. A 3/16" aluminum tread plate gravel pan (deck) contoured to fit just below the front face of the cab and just below the upper bumper flange shall be provided. The gravel pan shall not be fastened to the top flange of the bumper.

One (1) Bumper Mounting Bolts - Stainless Steel
10-11-0060

The visible mounting bolts for the bumper shall be stainless steel.

Painted Job Color Red

One (1) Bumper Extension - 18"
10-12-0018

18" BUMPER EXTENSION

A bumper extension shall be installed at the front of the cab. The front of the bumper shall be approximately 18" from the front face of the cab. A gravel pan made of 3/16" aluminum tread plate shall be installed between the front bumper and the cab. The bumper extension shall be designed and constructed so that the apparatus can be pulled by the extension.

Fire & Specialty Equipment Company

One (1) Bumper Extension shall be Liftable & Towable
10-12-00A0

LIFTABLE AND TOWABLE BUMPER EXTENSION

The bumper extension shall be designed and constructed so that the apparatus can be lifted and towed by the extension.

One (1) Opening in Front Bumper for Surface-Mounted Q2B - Center
10-12-153P

BUMPER PREPPED FOR CENTER Q2B SIREN

The center of the bumper shall be prepared to accommodate a surface-mounted Federal Q2B siren. When installed, the Q2B vanes shall stick out in front of the bumper.

One (1) Bumper Extension Not a Step - Sign, FAMA26 No-Step
10-12-8010

FAMA26 NO-STEP SIGN

In accordance with NFPA 1901 chapter 15.7.1.6, a FAMA26 "No-Step" sign shall be attached to the top of the gravel pan. The sign reads: "Fall Hazard-Railings NOT provided. Surface may be slippery - Not intended for stepping, standing or walking. Fall will injure or kill".

One (1) Front Tow Eyes - (2) Cut Plate, Elongated Style, Painted, Under Pan
10-20-0680

FRONT TOW EYES

Two (2) painted "cut plate elongated-style" type tow eyes shall be furnished. They shall be installed under the aluminum tread plate "gravel" pan, behind bumper. The eyes shall be fabricated of 1" thick steel plate with a 3" diameter opening. **Shall be painted to match the lower body color.**

One (1) Rear Tow Eyes - (2) Cut Plate, Painted, Bolted to Torque Box
10-22-0450

REAR TOW EYES

Two (2) rear tow eyes, bolted to the torque box, one (1) each side shall be provided. The eyes shall be fabricated of 1" heavy duty steel plate, with a 3" diameter opening. They shall be painted to match the lower body color.

One (1) Power Steering Installation
10-25-0100

STEERING

A heavy duty power steering system shall be provided. The hydraulic pump shall be engine gear driven.

The steering gear "box", or fixture that the gear is mounted to, shall be fabricated in the factory of the bidder. It shall be a welded assembly constructed of 3/8" formed steel with a 3/4" face plate. Vertical gussets shall be provided between the face plate and the frame mounting plate to insure against frame flex while the vehicle is stationary.

One (1) Auxiliary Cylinder - Power Steering
10-25-1300

AUXILIARY CYLINDER FOR POWER STEERING

An auxiliary power assist cylinder shall be provided in the power steering system.

One (1) Power Steering Cooler
10-25-1350

POWER STEERING COOLER

A power steering cooler shall be provided in addition to the power steering reservoir.

One (1) Chassis Alignment
10-25-2000

CHASSIS ALIGNMENT

The chassis frame rails shall be cross checked for length and square. Front and rear axles shall be laser aligned. The front axle shall be aligned at the manufacturer's facility.

One (1) Air System - Chassis, Three Axle
10-28-0200

AIR PIPING

The service brake system shall be full air type. The system is to meet or exceed current FMVSS-121 requirements. Other components or accessories shall be as follows:

- Pressure protection valve
- Quick build up system
- Engine mounted, gear driven air compressor
- Bendix Model E-6 dual circuit brake treadle valve
- Two (2) air pressure gauges on cab dash with indicator light and buzzer
- Air reservoirs with capacity to meet FMVSS-121

The Bendix SR-7 valve, in conjunction with the double check valve, shall enable modulation of the spring brakes in the event of a service brake air system failure to allow the vehicle to be stopped. Brake piping shall consist of SAE approved, DOT rated "Synflex" reinforced colored nylon tubing. The lines shall be wrapped in a heat protective loom where necessary in the chassis. Braided hoses shall provide flexibility between axle and frame connections. Brake air lines shall be color-coded. Air inlet to

air brake compressor shall be from the engine intake manifold, i.e. after transition through the engine air cleaner. A stainless braided Teflon hose and/or copper tubing shall be provided from the compressor to the air dryer. Fittings shall be brass.

The parking brake system is to be the spring set type operated by control valve on driver's console. A brake indicator light shall also be provided.

One (1) Air System Fittings - Tandem Axle, Compression
10-28-0385

The fittings for the air system shall be compression.

Three (3) Main Air System Drain Valve(s) - Cable Controlled
10-28-0410

MAIN AIR SYSTEM DRAIN VALVE(S)

The drain valve(s) on the main air system reservoirs shall be cable controlled. The pull cable shall be extended to the side of the truck with a loop provided at its end. It shall be labeled: Drain Daily.

One (1) Wet Tank
10-28-0600

WET TANK

A 1250 cubic inch wet air tank shall be provided with the air system.

One (1) Wet Tank Drain Valve - Cable Controlled
10-28-0610

WET AIR RESERVOIR DRAIN CONTROL

A cable controlled drain valve shall be provided on the wet tank. The pull cable shall be extended to the side of the truck with a loop provided at its end. It shall be labeled: Drain Daily.

One (1) Isolated Air Reservoir - 1250 Cubic Inch, (Ea)
10-28-2800

ADDITIONAL AIR RESERVOIR

One (1) additional 1250 cubic inch air reservoir(s) shall be provided and installed. Each extra reservoir shall be isolated and be plumbed with an 85 PSI pressure protection valve on the reservoir supply side.

One (1) Isolated Air Tank Drain Valve(s) - Cable Controlled (Ea)
10-28-290Q

One (1) drain valve(s) on the isolated air reservoirs shall be cable controlled. The pull cable(s) shall be

extended to the side of the truck with a loop provided at its end. They shall be labeled: Drain Daily.

One (1) Air Reservoir Tank Shall be Used for Air Horn
10-28-2910

Air reservoir tank shall be used for air horn.

One (1) Emergency Brake - Officer
10-28-3120

OFFICER'S EMERGENCY BRAKE CONTROL

An additional emergency brake control shall be provided on the right hand side of the cab dash in easy reach of the officer. Control shall actuate the rear axle spring brakes only. In addition, the control shall disable the driver's accelerator pedal and shift the transmission into neutral. Brake control shall be a heavy duty toggle type electrical switch equipped with a spring loaded safety cover to prevent accidental brake engagement. The missile switch cover shall be red in color. Control switch shall have an identification label and a warning that it is "For Emergency Use Only". A red LED light shall illuminate when the brake is activated.

One (1) Air Dryer - Meritor WABCO System Saver 1200
10-28-3820

AIR DRYER

A Meritor WABCO 1200 System Saver air dryer shall be installed in the air brake system. It shall have a minimum capacity of 30 cfm air flow. Dryer shall be equipped with an integral, automatic, 12 volt heated moisture ejector which is thermostatically controlled. System shall include a pressure controlled check valve installed between the wet tank and the secondary air reservoir.

One (1) Aux Air Outlet - Shutoff Valve, DS Step Well
10-28-48SW

AUXILIARY AIR OUTLET

There shall be a 1/4" female air outlet with NPT plug mounted towards the front of the driver's side step well. A 1/4 turn shutoff valve shall be located adjacent to the outlet. The outlet shall be connected to the apparatus air reservoir tank.

One (1) Front Axle - Dana D2200, 22.8K with Bendix Disc Brakes/4" Spring Suspension
11-00-502A

FRONT AXLE

A Dana D2200 front axle with a 22,800 pound rating shall be provided. It shall include composite low-friction bushings with diagonal grooves to better distribute lube, camber settings of +1/4 degree for both left and right sides to help improve tire life and a large diameter, heat treated kingpin with a lube retaining seal.

DISC BRAKES

The front axle shall be provided with Bendix #ADB22X air disc brakes with internal automatic adjustment, sealed synchronized twin pistons and robust sealing of slide pins for environmental protection. The #ADB22X air disc brakes shall have 17" rotors and a fully sealed lever mechanism with variable mechanical ratio. A visual indicator of brake wear shall also be provided.

FRONT SEMI-ELLIPTICAL SPRING SUSPENSION, 4" X 52"

The front suspension shall be semi-elliptical 4" x 52" constant rate type springs with a military wrapped eye. The correct material, spring length, width, thickness and number shall be provided to match the leaf spring rating with that of the gross axle weight rating of the vehicle.

SHOCK ABSORBERS

Gabriel heavy-duty telescoping shock absorbers shall also be provided on the front axle.

One (1) Auxiliary Park Brake - Front Axle, Air Applied (Aerials)
11-00-9000

AUXILIARY AIR APPLIED FRONT AXLE PARKING BRAKE

An auxiliary air applied front axle parking brake shall be supplied with a separate control black rocker switch and properly labeled indicator light in the cab. This front parking brake will only be able to be activated when the parking brake for the rear axle is set.

One (1) Oil Seals - with Viewing Window, Front Axle
11-00-9500

FRONT AXLE OIL SEALS

The front axle shall be equipped with oil type seals with viewing windows.

One (1) Rear Axle - Dana D/R46-170H, w Bendix ADB22X Disc Brakes, 47,000#
11-10-5040

REAR AXLE

The rear tandem drive axle shall be a Dana model D/R46-170H with a capacity of 47,000 pounds at the hub. The rear axle shall be provided with Bendix #ADB22X air disc brakes with internal automatic adjustment, sealed synchronized twin pistons and robust sealing of slide pins for environmental protection. The #ADB22X air disc brakes shall have 17" rotors and a fully sealed lever mechanism with variable mechanical ratio. A visual indicator of brake wear shall also be provided.

An inter-axle differential control switch shall be provided on the cab dash, easily accessible from the

driver's seating position.

All axles shall be purchased complete from and certified by the axle manufacturer for the specific application. Brake chamber brand and size shall be determined by the axle manufacturer.

One (1) Axle Application Certification
11-10-9900

All axle applications must be certified by the axle manufacturer.

One (1) Rear Axle Ratio Shall be Determined by Manufacturer to Match NFPA Top Speed
11-10-991F

REAR AXLE RATIO

The rear axle ratio shall be determined by the manufacturer to match NFPA top speed.

One (1) Top Road Speed 60 MPH
11-10-9998

ROAD SPEED

Per NFPA, the maximum top road speed shall be 60 mph.

One (1) Anti-Lock Brakes (ABS) - 6 Channel
11-20-2500

ANTI-LOCK BRAKING SYSTEM (ABS)

The vehicle shall be equipped with a WABCO 6S6M anti-lock braking system (ABS). The ABS shall provide six (6) channel anti-lock-up braking control on the (2) front and (4) rear wheels. The system shall employ a digital electronics system with microprocessor controls divided into two (2) diagonal circuits. In the event of one circuit malfunction the second circuit shall operate unaffected. Each wheel shall be constantly monitored by the system when the vehicle is in motion. When any wheel begins to lock-up during braking, a signal shall be transmitted to the processor from the wheel sensor. The control unit shall instantly reduce the braking force applied to the wheel and immediately re-apply braking force so that the wheel rapidly slows without locking. The system shall control all wheels simultaneously to provide maximum vehicle braking in a relatively straight line.

An ABS warning light shall be installed in the warning light panel of the driver’s dash.

The ABS system shall automatically disengage the auxiliary braking system whenever the anti-lock braking mode is active.

One (1) Electronic Roll Stability (ESC) - for Tandem Axle
11-20-2760

VEHICLE STABILITY COMPLIANCE – ELECTRONIC CONTROL

In compliance with NFPA 1901, current edition standard 4.13.1, the vehicle, as specified, shall be equipped with a Meritor-WABCO electronic Roll Stability Control system that shall utilize a centrally mounted pitch and yaw sensor and steering shaft position sensor interacting with the chassis' ABS traction control, auxiliary braking system and the engine ECM to minimize the vehicle's potential for rollover in a turning at speed maneuver.

One (1) Automatic Traction Control w/ Deep Mud & Snow Switch
11-20-2795

AUTOMATIC TRACTION CONTROL WITH DEEP SNOW AND MUD SWITCH

Automatic Traction Control, working in concert with the ABS system, shall be provided which shall reduce wheel slip on acceleration on wet or slippery road conditions. A light shall illuminate on the driver's dash when the drive wheels slip during acceleration.

A deep snow and mud option switch shall be provided in addition to the ATC option. This function increases available traction on extra soft surfaces like snow, mud or gravel by slightly increasing the permissible wheel spin.

One (1) Inter-Axle Differential Lock (IAD)
11-20-4000

INTER-AXLE DIFFERENTIAL LOCK

The rear tandem axle set shall be equipped with an air actuated primary traction device that allows for speed differences between the forward and rear tandem axles while providing equal pulling power from each axle. When disengaged, one wheel set of the forward drive axle and the opposite side wheel set of the rear drive axle shall operate in drive action to minimize wear on drive components. When the IAD lock is engaged, both wheel sets of each tandem axle provides drive action and does so until one side encounters slip or the vehicle is turning, thereby maximizing traction without diminishing turn radius.

A dash mounted locking black rocker switch shall engage and disengage the IAD lock. While the IAD lock may be engaged or disengaged at rest or at road speed, it should not be engaged whenever any drive wheel is slipping.

It is understood that the IAD should be unlocked for normal dry road condition operation to avoid premature ring gear, clutch and tire wear.

One (1) Rear Suspension - Air Ride, Neway ADZ-248, Tandem,48,000#
11-30-1300

SUSPENSION

A Neway ADZ-248 heavy duty 48,000 lb capacity air ride suspension shall be used. The assembly utilizes air springs and a parallelogram framework design that reduces drive line wear and vibration

while maintaining a constant pinion angle. The air ride offers a smoother ride with less stress on truck components. It eliminates tire hopping and helps provide superior traction to the wheels.

Two (2) Front Tires - Continental/425/65R22.5/Conti HAC3, 11,400# (Ea)
12-18-0120

FRONT TIRES

The two (2) front tires shall be Continental 425/65R22.5, Conti HAC3, load range "L", with a nominal rating of 11,400 pounds at a top speed of 68 mph.

Eight (8) Rear Tires - Continental/12R22.5/HDR2+, 6,780# (Ea)
12-19-0022

REAR TIRES

The eight (8) rear tires shall be Continental 12R22.5, HDR2+, load range "H", with a nominal rating of 6,780 pounds at a top speed of 75 mph.

One (1) Wheels - Aluminum Disc, Durabrite, on Tandem Rear Axles
12-50-1700

WHEELS

Wheels shall be Alcoa aluminum disc type and hub piloted. The wheels shall be coated with Durabrite. Chrome plated nut covers shall be furnished.

One (1) Tire Pressure Indicators - Accu-Pressure H.D. Safety Caps, Tandem Axle
12-90-1020

TIRE PRESSURE INDICATORS

Tires shall have non-pressure indicators installed for shipment.

Accu-Pressure Heavy Duty Safety Caps shall be provided and shipped loose. This valve stem inflation pressure sensitive monitor shall provide a visual color indication of when the tire pressure is below the manufacturers recommended level. The chrome safety cap shall show green when the tire is properly inflated and red once the tire becomes under inflated.

All inner wheels shall be equipped with a valve stem extension that shall allow the inner wheel to be filled without removing the outer wheel.

One (1) No Tire Balance Compound Inserted into Front Tires
12-90-1205

One (1) Engine - Cummins X12, 525 HP, for Tandem Axle wo Water Pump, EPA21/OBD21 Cert.
13-00-5350

ENGINE

The chassis shall be powered by an EPA21/OBD21 certified and compliant Cummins X12 diesel engine, as described below:

• Model	X12
• Number of Cylinders	Six
• Bore and Stroke	5.2 x 5.67 in
• Displacement Liter (Cu. In.)	11.8 (720)
• Rated BHP	525 @ 1900 RPM
• Torque	1695 ft.lb. @ 1000 RPM
• Governed RPM	2000
• Oil Capacity / Type	10.5 gallons / SAE CK-4
• Fuel Requirement	Ultra low sulfur diesel (15 ppm max.)

Standard equipment on the engine shall include the following:

- Selective Catalytic Reduction (SCR) after treatment
- Cooled Exhaust Gas Recirculation system
- Fan – 32”, 11 blade
- Charge air cooling
- High pressure, common rail fuel system
- Fuel filter
- Fuel strainer
- Governor – electronic, interact system
- Injectors – electronically controlled full authority injection
- Lube oil cooler – integral
- Lube oil filter – full flow
- Turbocharger – variable geometry type
- Cummins Acumen Module

The engine exhaust system shall be a horizontal design constructed from heavy-duty truck components. Flexible couplings shall be utilized to absorb the torque and vibration of the engine. The outlet shall be directed to the forward side of the rear wheels, exiting the right side, with a straight tip. A heat-absorbing sleeve shall be used on the exhaust pipe in the engine compartment area to reduce stored heat, providing protection for the alternator, and also to protect hands when checking or adding oil in the engine compartment.

ENGINE AND CHARGED AIR COOLING SYSTEMS

A serpentine core type radiator with continuous louvered copper fin design shall be provided. Radiator shall be fitted with formed steel side frames. The top tank shall have a built-in de-aeration system. A drain shall be located at the lowest point.

The engine charged air heat exchanger shall be located directly in front of the radiator and be bolted to its side rails. It shall be all aluminum-brazed construction. Air cooler shall be cross flow design with cast aluminum side tanks, horizontal inlet and outlet at top and aluminum louvered serpentine external air fins. Plastic tanks shall not be acceptable, no exceptions. Cooler tubers shall also be constructed of aluminum and have internal fins that eliminate laminar airflow.

The charge air cooler and the radiator shall be produced by the same manufacturer as a single assembly to provide continuity throughout the cooling system. This shall ensure a certified “balanced” package for the chassis engine air and fluid cooling systems.

The radiator and charger cooler shall be mounted to the chassis stub. Fabricated mounting bracket for the fans ring shall be attached to the front of the engine in a manner so that it “floats” with the engine and increases the fan’s efficiency by tightening the tip clearance. This mounting design eliminates engine fan and radiator shroud contact due to engine torque movement and promotes more efficient airflow. The radiator and charger cooler shall be held in place at the bottom by two (2) large bolts equipped with anti-stress rubber biscuits. The top of the radiator shall be supported by two (2). ¾” tubular braces, bolted to the chassis stub. Anti-vibration rubber biscuits shall be installed at the top threaded end of the braces where they attach to the radiator.

One (1) Engine Cooling Certification
13-00-7000

ENGINE COOLING CERTIFICATION

"EPQ" (End Product Questionnaire) certification shall be provided by the chassis manufacturer. Certification shall be documented with reference to each specific chassis model by the chassis manufacturer.

One (1) Fan Clutch for X12 Engine
13-00-7520

FAN CLUTCH

A fan clutch shall be provided for the engine cooling fan. The viscous clutch shall be of a failsafe design, in that it shall fail in the "on" mode and thus prevent overheating in the event of component failure. Manufacturer shall also wire the clutch so that it remains "on" in the pumping mode to prevent water pressure fluctuations.

One (1) Coolant Overflow Reservoir - 6 QT, Attacker/Capitol
13-00-760S

COOLANT OVERFLOW RESERVOIR

A six (6) quart coolant overflow reservoir shall be provided. It shall be accessed in the officer's step well. A hinged aluminum tread plate door with small D-ring handle shall be provided for access. A visual inspection shall be possible without tilting the cab (NO EXCEPTIONS). The aluminum tread plate door shall be properly labeled.

One (1) Silicone Hoses - Coolant/Heater
13-01-2100

SILICONE HOSES

All hoses in the cooling system shall be silicone type with stainless steel constant torque Oetiker clamps.

One (1) Skid Plate - Painted To Match Frame Rails
13-01-2400

SKID PLATE

A radiator skid plate shall be provided to protect the radiator from debris. The skid plate shall cover the lower radiator tank and shall be painted to match the frame rails.

One (1) Transmission - Allison, 4000-EVS
13-03-1200

TRANSMISSION

An Allison, Model 4000 - EVS, electronically controlled automatic transmission with integral fluid filter shall be provided. A transmission cooler shall be installed in the radiator bottom tank. A warning light and buzzer shall be provided on the cab dash to alert the driver should the transmission overheat.

The transmission shall include the following: an oil life monitor, a filter life monitor, and a transmission health monitor. The oil life monitor determines fluid life remaining by monitoring various operating parameters. The filter life monitor determines when fluid filter(s) need to be replaced. The transmission health monitor determines when clutch system inspection is required. The monitors send a message via a blink code to a special prognostic light on the shift pad. Also on the shift pad shall be installed a digital, double-digit display that identifies the level of transmission oil. The display shall identify the oil level as “Ok”, “Lo” or “Hi”, also indicating the number of quarts lo or hi.

The transmission shall include the following emergency vehicle specifications:

- Maximum gross input power: 600 hp
- Maximum gross input torque: 1850 ft.lb.
- Input speed range: 1700 to 2300 rpm
- Direct gear lock-up: 4^{th} @ 1.00 to 1.00
- Overdrive gear and ratio: 5^{th} @ 0.74 to 1.00

Gear ratios shall be as follows:

- 1^{st} 3.51 to 1
- 2^{nd} 1.91 to 1

- 3rd 1.43 to 1
- 4th 1.00 to 1
- 5th 0.74 to 1
- 6th 0.64 to 1
- Rev -4.80 to 1

The transmission shall automatically shift into neutral whenever the chassis parking brake is applied.

One (1) Transmission Fluid - Synthetic SAE Standard Transynd for 4000-EVS
13-03-2015

TRANSMISSION FLUID

The Allison 4000-EVS transmission shall be delivered from the factory with a synthetic SAE standard ATF, Transynd.

One (1) Transmission Programming - Full 6 Speed Automatic
13-03-3300

TRANSMISSION PROGRAMMING

The transmission shall be programmed as a full 6-speed automatic.

One (1) Transmission Shift Control - Allison Touch Pad
13-03-4000

TOUCH PAD TRANSMISSION SHIFT CONTROL

Touch pad control shift module shall be mounted to the right of the driver on the console and be indirect lighted for after dark operation.

One (1) Driveline - Spicer 1810, for Tandem Axle, No Water Pump Selected
13-05-0240

DRIVELINE

Drivelines shall be built with heavy-duty metal tubes and utilize Spicer 1810 series or "Equal" mechanics type universal joints with "half round" end yokes. This quick disconnect strap and bolt design type end joint shall allow the driveline to be easily disassembled and dropped straight down for ease of service and maintenance. They also shall be dynamically balanced by the truck manufacturer before installation in the chassis. A splined slip joint is to be provided in each shaft assembly. A grease zerk shall be provided for lubrication of the slip joint.

One (1) Fuel Tank - 65 Gallon, S/S, Rear Mount, with S/S Straps
13-08-2700

FUEL SYSTEM

The vehicle shall be furnished with a 65 gallon fuel tank mounted behind the rear axle and just below the frame rails using a stainless steel strap. The tank shall be constructed of stainless steel and equipped with a swash partition and vent. The fuel tank shall meet all FHWA requirements including a fill capacity of 95% of tank volume and all DOT and FMVSS regulations for rollover protection. A 2" diameter fill inlet shall be provided. Fuel cap shall be of brass or bronze construction, non-vented and have lead safety fuses. It shall be chained to inlet tube or to the body sheet metal to prevent loss. Braided hoses shall be provided for the fuel lines. A 1/2" NPT drain plug shall be located at the bottom of the tank. The tank shall be installed using stainless steel straps and hardware, separated from the tank by a rubber insulating strip to prevent against chaffing. On trucks without torque boxes, the fuel tank pickup tube and sending unit shall be accessible without having to remove the tank.

The stainless steel fuel fill inlet shall be located on the left (drivers) side of the apparatus. It shall be concealed behind a door. The inside of the door shall be marked "ULTRA LOW SULFUR DIESEL FUEL ONLY". The fuel inlet area, recessed behind the door, shall be completely enclosed to prevent dirt and debris from entering. Provision shall be provided inside the fill recess for drainage of any spilled fuel within the cavity.

Four (4) feet of extra fuel line shall be provided, coiled and secured to the top of the tank.

One (1) Fuel Fill Door - S/S, Brushed, Side Hinged (NA TDA)
13-08-3060

The fuel door shall be constructed of stainless steel and shall have a brushed finish. It shall be hinged along the vertical side towards the front. A magnet shall hold the door in the closed position. The door shall be kinked along 3 edges with the fourth side being used as s finger grab for opening and closing it. A stainless steel trim ring shall encircle the opening to prevent the fuel nozzle from damaging the surrounding surface when it is opened. The fuel shelf shall be made from a high impact polyethylene material.

One (1) Shutoff Valve - Fuel Line
13-08-5100

FUEL LINE SHUTOFF VALVE

A fuel line shutoff valve shall be provided to prevent fuel from draining back while changing fuel filters.

One (1) Fuel Line Shutoff Valve Location - Near Fuel Water Separator, Input Side
13-08-5108

The fuel line shutoff valve shall be located near the fuel water separator on the input side.

One (1) Fuel Cooler - Engine, No Water Pump Present
13-08-5410

ENGINE FUEL COOLER

An engine fuel cooler shall be provided on the apparatus. The engine fuel cooler shall cool the returning fuel from the engine.

One (1) Fuel Water Separator/Alarm/Heater - Racor Greenmax™ 4400R1210, X12 Engine Only
13-08-5630

FUEL WATER SEPARATOR WITH ALARM & HEATER

A Racor Greenmax™ model 4400R1210 fuel water separator with 10 micron Aquabloc filter, water sensor alarm and heater shall be provided.

One (1) Engine Starter - Delco 39 MT-HD, 12 Volt
13-09-0020

ENGINE STARTER

A Delco, 12 volt, 39 MT-HD starter shall be installed.

One (1) Alternator - Delco, 430 Amp, Model 55SI
13-10-2500

ALTERNATOR

A 430 amp Delco alternator, model 55SI, shall be provided.

One (1) Air Compressor - Wabco 26.0 cfm
13-11-0410

AIR COMPRESSOR

A Wabco 26.0 cfm air compressor shall be furnished. The air compressor shall be gear driven off the engine.

One (1) Air Cleaner - Racor Ecolite®, Attacker/Capitol
13-12-0510

AIR CLEANER

A Racor Ecolite® dry type engine air cleaner shall be provided. It shall be installed in a location above the chassis frame rails and no less than 40" above the ground. A visual inspection shall be possible without tilting the cab (No Exceptions). The air cleaner shall be serviceable through an access opening of no less than 30" wide by 13" high.

One (1) Air Restrict Indicator - Information Display Center
13-12-5500

AIR RESTRICTION INDICATOR IN INFORMATION DISPLAY CENTER

An electrical engine air restriction indicator shall be provided and installed in the cab information display center.

One (1) Exhaust - Single Module, DPF/SCR, Outboard of Frame Rail, X12 Engine Only
13-13-0008

EXHAUST

A single exhaust module containing an SCR chamber and a DPF chamber shall be installed on the right side of the vehicle, immediately behind the cab. The exhaust module shall ingest urea from a remote storage tank to remove NOx from the exhaust. The exhaust assembly shall be mounted outboard of the frame rail.

One (1) DPF Regeneration Process
13-13-0030

DPF REGENERATION PROCESS

NFPA 12.2.6.7.1 The regeneration process shall be activated by two methods:

- Automatically by the engine system but only when the transmission is in gear and the speedometer indicates a speed above 5 mph (8km/hr) whether the apparatus is in motion or is operating in stationary pump mode with an engine rpm sufficient to register 5 mph (8 km/hr) on the speedometer.

- Manually when initiated by activation of a switch located in the driver's area of the driving compartment.

There shall also be an inhibit black rocker switch placed near the driver to inhibit an automatic reburn.

One (1) Diesel Exhaust Fluid (DEF) & DEF Access, Attacker/Capitol
13-13-0055

DEF & DEF ACCESS

The urea mixture, a solution of 2/3 water and 1/3 urea which reacts with NOx to create nitrogen and water, shall be stored in a 10 gallon tank equipped with a level sensor and alarm to prevent run-out.

The filling or adding of DEF to the DEF tank shall be available without tilting the cab (No Exceptions). Access to the urea tank fill connections and level sensor shall be available without tilting the cab.

One (1) DEF Fill Access Door - ATP, Capitol
13-13-0059

DEF FILL ACCESS DOOR

An aluminum tread plate hinged door shall be provided for access to the DEF fill cap and neck. The DEF fill access shall be located on the left hand side of the cab, under the crew cab floor behind the crew cab step well battery access hinged door. The DEF fill access area shall contain a fill neck.

One (1) Tailpipe - Plymovent, Extended for Exhaust Evacuation System
13-13-0900

TAILPIPE EXTENSION

The tailpipe shall be provided to accommodate a Plymovent exhaust evacuation system. The tailpipe shall be mounted perpendicular to the side of the truck and be flush with the body. 12" of clearance between the pipe and the tire will be provided. The tailpipe mounting shall be straight out from the body.

It is understood that the engine exhausts can not be connected to exhaust evacuation systems when the Diesel Oxidation Catalyst and Diesel Particulate Filter on the engine are regenerating.

The exhaust pipe shall be brought out from under the truck body at a 90-degree angle from the truck.The tailpipe shall extend a minimum of 2" past the body, terminating with a flange for Plymovent magnetic attachment system. The diameter of the pipe shall be 6" and shall have a 4" clearance completely around the pipe once past the body.

One (1) Exhaust Heat Shielding
13-13-1130

EXHAUST HEAT SHIELDS

Heat shields shall be provided as needed to prevent damage to body and wiring from excessive exhaust temperatures. The exhaust pipe shall be wrapped in multi-layered insulation blankets, from just aft of the turbo down to inlet side of the DPF. Each blanket shall have a fiberglass inner layer and a silicone impregnated fiberglass cloth outer layer

The cab shall receive 1.25" thick foil back insulation blanket under the crew floor to reduce floor temperatures.

All harnesses and cables, in proximity to exhaust system components, shall be protected with insulation.

One (1) Focal Retarder - Telma
13-15-1400

TELMA FOCAL RETARDER

A Telma Focal retarder shall be installed in the drive line to provide an auxiliary braking device for the vehicle. Telma application shall be achieved by releasing throttle and/or depressing the brake pedal. There shall also be a four lamp indicator system to indicate the progressive stages of vehicle retardation. A momentary on/off black rocker switch with indicator light defaults on, resetting with the battery switch. The retarder shall be reset with the ignition or by pressing the switch a second time. The Telma relay box shall be mounted at the manufacturer's discretion in an easily accessible location for service.

One (1) Telma Operation - All Stages off Brake
13-15-159A

The Telma operation shall be all stages off brake.

One (1) Fast Idle - Switched on Dash
13-15-4100

FAST IDLE SWITCH

A fast idle switch shall activate an engine high idle. The circuit shall be wired through the neutral safety/parking brake interlock to prevent activation when the transmission is in the road mode. Fast idle shall be set at 1000 RPM's. A black rocker switch located inside the cab convenient to the driver shall be provided for this system.

One (1) Nameplate- Lubrication Capacity, On Driver's Door, Interior Face
13-15-5010

LUBRICATION NAMEPLATE

A nameplate shall be installed that specifies the quantity and type of the following fluids used in the vehicle and tire information:

- Engine oil
- Engine coolant
- Chassis transmission fluid
- Pump transmission lubrication fluid
- Pump priming system fluid, if applicable
- Drive axle(s) lubrication fluid
- Air condition refrigerant
- Air conditioning lubrication fluid
- Power steering fluid
- Cab tilt mechanism fluid
- Transfer case fluid
- Fuel
- Diesel Exhaust Fluid
- Windshield Washer Fluid
- Auto Lubrication System lubricant, if applicable
- Equipment rack fluid, if applicable
- Foam system lubricant, if applicable
- Generator system lubricant, if applicable
- Aerial Hydraulic Fluid, if applicable
- Front tire size and cold pressure
- Inner tire size and cold pressure, if applicable
- Rear tire size and cold pressure
- Trailer tire size and cold pressure, if applicable

- Maximum tire speed ratings
- Ambient operating temperature
- Paint colors and codes

A layer of Velvet Polycarbonate shall overlay the lettering to protect it. The lubrication nameplate shall be installed on the interior face of the driver's door, near the hinge and below the window controls.

One (1) 20-00-550D Cab - S/S, Full Tilting, 142" Capitol

STAINLESS STEEL FULL TILTING CAPITOL CAB

The cab shall be designed specifically for the fire service and shall provide roll cage strength and safety. The cab shall be made in the factory of the bidder and must be the bidder's top-of-the-line stainless steel model. The cab shall be of the open interior design. The entire cab shall tilt forward 45 degrees for engine access. In order to provide the strongest, safest cab design possible, no extrusions shall be used in the construction of the cab structure. No plastic or fiberglass shall be used in the construction of the cab sub-frame, floor assembly, front assembly, side assemblies, back wall assemblies or roof assembly.

FRONT CAB DIMENSIONS

The front face of the forward cab shall measure 68" from the center of the front axle. The cab shall have an inside width of 91" and outside width of 96".

CREW CAB DIMENSIONS

The back wall of the cab shall measure 74" from the center of the front axle. The cab shall have an inside width of 91" and outside width of 96".

CAB MOUNTING

A four point mounting system shall be provided for the front cab. The mounting system shall consist of two (2) front pivot mounts fabricated of steel and two (2) rearward lock plates attached to the rear cab sub-structure. Each front pivot mount shall consist of a greaseless pin and a multi-layered, self-lubricating, composite bearing. The outer layer of the bearing shall be high-durometer rubber to isolate road vibrations and shock. Each rear lock plate assembly shall consist of two hydraulic actuated locks isolated from the chassis by center bonded rubber mounts.

SUB-FRAME

The sub-frame shall be stainless steel reinforced welded safety-cage construction utilizing a 3” x 4” rectangular structural steel tube sub-frame. All joints shall have continuous welds; stitch welding shall not acceptable. The sub-frame shall be designed as a one-piece structure from the front to the back of the cab. It shall be used to support the cab while tilting, join front pivots to the cab locks, and to join the cab to the chassis. Pocketing of the sub-frame shall not be acceptable.

FRONT ASSEMBLY

The safety-cage section at the front of the cab shall be constructed of 1.25" stainless steel tubing and shall join the front door posts together with the main sub-frame. There shall be a 2.50" x 1.50" x .25" heavy wall lower cross tube that joins the cab sills together to prevent cab twisting when tilting the cab. The front fire walls shall be set back from the front assembly structure to provide added protection in a frontal crash. The outer cab skin shall not be an integral structural member, although it shall help stiffen the cab front face.

The front cab door hinge mount (aka "A" pillar) shall be a 2" x 2" tube with a .19" thick wall.

CAB FLOORS

All floor components shall be welded directly to the sub-frame. The floor shall be constructed of 50,000 psi stainless steel. Cab floors shall be covered with a sound barrier mat with a heavy-duty wear surface.

SIDE WALL ASSEMBLIES

The safety-cage on the sides shall be constructed of 1.25" stainless steel tubing. Both side wall assemblies shall be joined to the sub-frame via thick tubular structures, using heavy fillet welds. This shall strengthen the walls to withstand high roof loading. The side wall outer skins shall be integral with the cab structure as well as additional formed components to help stiffen side wall assemblies. There shall be 1.25" of insulating foam between the exterior and interior side walls. The structure shall be reinforced for cab entry grab handle mountings.

The rear cab door hinge mount (aka "C" pillar) shall be equivalent to a 2.5mm formed channel with .19" thick tapping bar.

ROOF ASSEMBLY

The 1.25" stainless steel tubing used in the construction of the roof section of the safety-cage shall support 2 psi of loading across the whole roof. The fabricated and welded roof sills and front header shall be made of 50,000 psi stainless steel material. The corner caps shall utilize spun metal technology thus retaining the metal's strength while producing a very rigid corner joint. The side roof covering (rolled edges) shall be constructed of stainless steel formed in a quarter round. It shall form a hollow double wall, angle reinforced roof edge with an integral drip rail. The roof top outer wall shall not be an integral structural member, although it shall stiffen the roof. There shall be 1.25" of insulating foam between the exterior roof and interior ceiling.

BACK WALL ASSEMBLY

The safety-cage on the back wall shall be constructed of 1.25" stainless steel tubing. It shall join the roof to the floor assembly. Construction of the back wall assembly shall utilize a minimum of 2.5mm 3CR12 material and the design shall provide crush protection in the event of a rollover. The back wall structure shall be uniform, regardless of the seating choices. All seat mounts and seatbelt mounts shall use weld nuts to eliminate pullouts and stripped threads. The outer skin shall not be an integral structural member,

although it shall stiffen the back wall. 1.25" of insulating foam shall be located between the exterior and interior back walls.

One (1) Rear Cab Wall Exterior Finish - Full ATP
20-00-68B1

ATP OVERLAY ON BACK OF CAB

An aluminum tread plate overlay shall be provided over the entire exterior rear wall of the cab.

One (1) Cab Grille - Front, Raised Bezel Surround, Vertical Bars
20-00-6910

CAB GRILLE - VERTICAL BARS AND RAISED BEZEL SURROUND

The cab front opening shall be covered with a custom made stainless steel grille that shall be fabricated in the bidder's factory. The grille shall have formed vertical bars spaced apart on 2" centers. The upper stainless steel grille shall have a matching lower counterpart to further facilitate engine cooling. The two (2) stainless grilles shall be housed in a custom, raised bezel.

One (1) Front Grille & Raised Surrounds - Polished, Chrome Finish
20-00-6920

Both the upper and lower front, center raised surround bezels and the two (2) grilles shall have a polished chrome finish.

One (1) Upper Raised Bezel Surrounds, with Panels, (2)
20-00-698A

UPPER RAISED BEZEL SURROUNDS, WITH PANELS

A custom raised bezel shall be installed on the front face of the cab, on each side of the front grille. Housed within each bezel shall be a removable panel, painted job color. The removable panel shall provide service access to the forward side, firewall mounted electrical connections and wiring harness.

One (1) Upper Raised Headlight Bezel Surrounds - Chrome Finish
20-00-698K

The upper raised headlight bezel surrounds shall have a bright chrome finish.

One (1) Engine Air Inlet Grille & Ember Separator, Attacker/Capitol
20-00-69MX

ENGINE AIR INTAKE GRILLE WITH WATER/EMBER SEPARATOR

A stainless steel removable grille for engine air intake shall be provided. The air intake grille shall contain the replaceable water and ember separator filter in an integral housing.

The air intake grille and water/ember separator cartridge shall be located on the side of the cab, above and to the rear of the driver's side steer axle. The engine air intake grill shall be no less than 60" above the ground.

One (1) Engine Air Inlet Grille- Painted Job Color
20-00-69NB

The cab side engine air inlet grille shall be painted job color to match the cab upper color.

One (1) Cab Roof - S/S, Flat, Attacker/Capitol
20-00-741S

FLAT ROOF

A flat roof shall be provided with an interior floor to ceiling height of 59".

One (1) Exterior Cab Roof Finish - Paint
20-00-78A1

PAINTED CAB ROOF

The exterior surface of the cab roof shall be painted in compliance with the cab paint specifications detailed elsewhere in this specification document.

One (1) Cab Entrance Doors - (4) Barrier Style, Capitol
20-00-821C

CAB DOOR CONSTRUCTION - BARRIER CLEARING

The four (4) forward and crew cab doors shall be barrier clearing and fabricated from stainless steel (No exceptions). The forward and crew cab doors shall be 34.5” wide. The interior and exterior door handles to be flush mounted paddle style with a Trimark TM202 keyed lock incorporated in the exterior handle and lever control lock incorporated in the interior handle. One (1) key per door shall be provided. The crew cab doors shall not include a taper and maintain full width from top to bottom for maximum crew entry and exit access.

The door check straps shall be six (6) inch wide 9800 lb woven nylon strap with sewn integral steel reinforcement bars for attachment to cab and cab door. The door's latch locking mechanism shall make it impossible to lock oneself out of the cab unless locked with the supplied key. The door rotary latch mechanisms latch linkage shall be accessible through an access panel integral to the interior door panel. Doors shall be hung on stainless steel full length hinges attached to cab and door with .25" bolts. The hinges for each door shall be of one-piece 304-2B stainless steel construction with stainless steel pins and 0.090 gauge leaves with 2" joints and a 3" width opening. Doors shall meet Federal Motor Vehicle Safety Standard #206. The doors shall be designed so as to allow the tempered laminate windows to roll completely down.

Entrance step wells to the driver's and officer's positions shall be a minimum of 26" wide. Entrance step wells to the crew cab positions shall be a minimum of 34" wide. Entrance steps shall be made of stainless steel grating.

One (1) Front Door Opening - Approximately 90 Degrees (NA with Aerialscope)
20-00-8425

The front cab doors shall open approximately 90 degrees.

One (1) Rear Crew Door Opening - Approximately 90 Degrees
20-00-8450

The rear crew cab doors shall open approximately 90 degrees.

One (1) Cab Tilt Mechanism - S/S, Full Tilt, Capitol
20-00-850C

CAB TILT

The cab shall tilt a minimum of 45 degrees for normal servicing of the engine and other equipment. The tilt cab locking system shall be a two-point type that locks automatically when the cab is lowered into its nested position. The cab tilt package is custom designed for safety and ease of vehicle maintenance. The hydraulic tilting system consists of two (2) heavy-duty single acting cylinders. The power supply is a high efficiency electric over hydraulic system with an integral mechanical override in case of battery failure. All components and parts are designed for installation with a minimum of 3 to 1 safety factor based on current S.A.E. standards.

In addition to the velocity fuses, a secondary safety system shall be provided to hold cab in the fully raised position in the event of a failure in the primary lift mechanism. It shall consist of a metal channel device, which automatically drops over the extended rod of the right side hydraulic lift cylinder thereby preventing its retraction. The safety channel can only be released through an overt action made by the operator such as pulling a lever or cable from the right side of the apparatus, near the safety channel. Automatic release of the safety system shall not be acceptable.

There shall be a small compartment under the officer's side, rear facing seat area. The compartment door opens rearward into the crew area. Stored in this compartment is the "manual tilt bar", in clips. The manual tilt bar actuates the manual hydraulic pump to tilt the cab.

The cab tilt system shall be remotely controlled utilizing a cable with a hand held push button device. The cable shall be of sufficient length so as to be able to see both sides of the cab.

Tilt whip receptacle shall be located on officer's side just forward of the cab door--ref SO 56258
Tilt whip will be plug in style and stored in rear crew cab storage area on officer's side beneath rear facing seat--ref SO 56258

Fire & Specialty Equipment Company

One (1)
20-00-9100

Step - Auxiliary Cab, Entrance, Under Each Door, Below Cab

AUXILIARY ENTRANCE STEPS

Auxiliary cab entrance steps shall be provided at each cab door opening, below the cab, to reduce the cab entrance step height by approximately 9.5 inches.

One (1)
20-00-910X

Folding Steps In Cab Stepwells

FOLDING STEPS IN CAB STEPWELLS

Folding Steps in Cab Stepwells matching SO 56258 shall be provided

Fire & Specialty Equipment Company

One (1)
20-00-951C

Doors - (2) Cab, B to C Pillar Side Access, 27" High, Capitol

CAB SIDE ACCESS DOOR

Two (2) stainless steel cab side access doors shall be provided on the cab, one each side, to the rear of the front cab entrance doors. Door openings shall be approximately 13.00" wide x 27.00” high. The doors shall fit flush with the exterior skin of the cab and be hung on 304 stainless steel full length hinges attached to the cab and door by 0.25” bolts. The doors shall open a minimum of 90 degrees.

One (1)
20-00-960A

Cab Side Access Doors Hinged at Front Edge

The cab side access doors shall be vertically hinged at the front edge.

One (1)
20-00-960F

Cab Side Access Door Stays- (2) Chain Style

The doors shall each have a chain style door stay.

One (1)
20-00-960P

Cab Side Access Door Latch Position - Lower Part of Door

The "D" handle type latches shall be provided on the lower part of the door.

One (1)
20-00-961L

Keyed Locks for (2) Cab Side Access Doors (#1250 Keys)

KEYED LOCKS

There shall be keyed locks for both the cab side access doors. The driver's side and officer's side access doors shall be keyed alike with #1250 keys.

One (1) Lower Inner Flange Protectors - (2) Cab Side Access Door, Brushed S/S
20-00-966B

CAB SIDE ACCESS DOOR LOWER INNER FLANGE PROTECTORS

Brushed stainless steel lower inner flange protectors, approximately .50" wide, shall be provided on the cab side access door to protect the painted finish.

One (1) Scuff Plates - (2) Cab Side Access Inner Door Frame, S/S, Brushed
20-00-966L

CAB SIDE ACCESS INNER DOOR FRAME SCUFF PLATES

A brushed stainless steel scuff plate shall be installed on the striker side of each cab side access inner door frame and shall run the full height of the door opening. The scuff plate shall be a single bend configuration that guards the outer door frame post from damage and chips to the paint.

One (1) Scuff Plates - (2) Cab Side Access Outer Door Frame, S/S, Hi-Polish
20-00-966S

CAB SIDE ACCESS OUTER DOOR FRAME SCUFF PLATES

A highly polished stainless steel scuff plate shall be installed on the top, bottom and striker side of each cab side access outer door frame, running the full height of the door opening. The scuff plate shall be a single bend configuration that guards the outer door frame post from damage and chips to the paint.

One (1) Front Grille Script Nameplate - Mirror Finish,for Grille w/Raised Bezel Surround
20-00-SR10

FRONT GRILLE SCRIPT NAMEPLATE

A "Seagrave" nameplate, fabricated from AISI 304 stainless steel, with mirror finish, shall be located on the lower front engine cooling intake grille of the cab.

One (1) Inner Liners - Front, Aluminum
20-05-2020

FRONT ALUMINUM INNER LINERS

Semi-circular inner liners shall be provided in each front wheel housing. They shall be constructed of aluminum and shall be bolted in place so they may be removed if damaged. Self-tapping sheet metal screws are not acceptable. The outside edge of the inner liner shall be bolted along its entire length. The bottom edge of liner shall not have a formed reinforcement flange to avoid trapping dirt and debris.

One (1) Fenderettes - Front, Rubber
20-05-2120

FRONT FENDERETTE

Black rubber fenderettes shall be installed in the front wheel openings. They shall be sufficiently wide to completely cover the outside rear tire and reduce wheel splash along the sides of the cab. They shall be installed with 1/4" hex head bolts (self-tapping sheet metal screws are not acceptable). There shall be a stainless steel backing strip between the rubber and the mounting flange to add support. Fenderette shall incorporate a vertical flange to cover the area where the cab side and wheel opening mounting surface meet. The fenderettes shall be a minimum of 1/4" thick, have a mold formed outer radius and a rounded bead at the wheel opening edge.

One (1) Mud Flaps - Front, Rubber
20-07-010R

FRONT MUD FLAPS

Heavy duty mud flaps with the manufacturer's "script and flame logos" placed on the rear face shall be provided and installed to the rear of the front wheels. Flaps shall be 14" wide and be made of 0.38" heavy duty rubber material to prevent "sailing".

One (1) Mud Flaps - Rear, Rubber
20-07-020R

REAR MUD FLAPS

Heavy duty rear mud flaps with the manufacturer's "script and flame logo" placed on the rear face shall be provided and installed to the rear of the rear dual wheels. Flaps shall be 24" wide and be made of 0.38" heavy duty rubber material to prevent "sailing".

One (1) Mirrors - (2) Rosco Accustyle, Heated/Remote w/Convex, Black Finish
20-10-1500

MIRRORS

Two (2) Rosco Accustyle heated mirrors with remote shall be installed on the cab doors, one on each side of the cab. The flat upper mirror shall measure 7" x 14" and the lower convex section shall measure 6.5" x 6". The mirrors shall have a black finish.

One (1) Mirror - Crossover, Stainless Steel, Approx 8" Dia
20-10-1800

CROSSOVER MIRRORS

An approximately 8" diameter mirror with polished stainless steel housing shall be provided on the right front of the cab above the windshield. The main adjustment bar shall be mounted to the cab roof.

One (1) Crossover Mirror Style - Convex
20-10-2050

The crossover mirror shall be convex.

One (1) Crossover Mirror Bracket Location - Outboard
20-10-2075

The crossover mirror bracket shall have an outboard location.

One (1) Mirror Wiring - through Ignition
20-10-4900

The mirrors shall be wired through the ignition.

One (1) Windshield - Tinted
20-12-0300

WINDSHIELD

The windshield shall be of tinted automotive laminated safety plate glass with a curved two-piece design. The windshield shall have approximately 2900 square inches of visual area. Right and left hand windshield glass shall be symmetrical and interchangeable from side to side to minimize spare parts stock and expense. Windshield shall be installed and held in place by an extruded rubber molding with a bright finish, decorative, locking bead. Cab shall be finish painted prior to windshield glass being installed.

One (1) Windshield Wipers & Washers, Attacker/Capitol
20-12-0308

WINDSHIELD WIPERS AND WASHERS

One (1) wet arm operated windshield wiper shall be provided for each plate of windshield glass for accessibility and optimum windshield wiping surface areas. Wipers shall be two speed type with intermittent wiping feature. One (1) control switch shall be provided and located on the self-canceling directional switch for both wiper arms. The switch shall combine the on/off (automatic park position), two speed, intermittent and washer functions in one control. The turning switch shall activate the wipers and control speed, and pushing it shall operate the washers. The wiper arms shall park in a low, horizontal position to provide an unobstructed view when not in use.

One (1) Windshield Wiper Interlock
20-12-0312

WINDSHIELD WIPER INTERLOCK

The vehicle windshield wipers shall cease to operate once the vehicles parking brake has been applied.

One (1) Windshield Washer Fluid Reservoir - 5 QT, Attacker/Capitol

20-12-031S

WINDSHIELD WASHER RESERVOIR

A five (5) quart windshield washer fluid reservoir shall be provided. It shall be accessed in the officer's step well. A hinged aluminum tread plate door with small D-ring handle shall be provided for access. A visual inspection shall be possible without tilting the cab (NO EXCEPTIONS). The aluminum tread plate door shall be properly labeled.

One (1) Door Glass - Electric Power Windows, Tinted, Attacker/Capitol
20-12-271S

DOOR WINDOWS

A retractable window with automotive type laminated safety glass shall be provided in all four (4) forward hinged cab doors. All glass shall be tinted. Glass shall slide in stainless steel side channels with cloth/fiber liners. Rubberized fiber seals shall be located at the bottom of the window opening to prevent water and debris from entering the interior of the door when the glass is up (or down). A seal shall be placed on both sides (interior and exterior) of the glass. The front door glass shall be 23.75" high x 25.75" wide upper and 27.50" wide lower. The rear door glass shall be 23.75" high x 30" wide. The door window openings shall be trimmed on the exterior side with a smooth, black, poly vinyl chloride (PVC) molding

Electric power window regulator shall be manufactured by the Muncy Corporation and shall be the enclosed, sliding flexible shaft, gear type for ease of operation and reliability. The shaft shall enter a vinyl plastic protective sheath whenever it is exposed. A 12 volt electric motor with gear reduction box to slow driven gear rpm and increase power transmission shall be provided.

The power windows shall be wired through the ignition.

One (1) Driver's Door Glass Switch - on Driver's Dash
20-12-2792

DRIVER'S DOOR GLASS SWITCH

An individual black window switch for the driver's electric door window shall be provided on the driver's dash, wired to the ignition.

Aftermarket add-on type electric power window conversion devices like the type that replaces the crank arm will not be acceptable.

One (1) Officer's Door Glass Switch - on Officer's Dash
20-12-2796

OFFICER'S DOOR GLASS SWITCH

An individual black window switch for the officer's electric door window shall be provided on the officer's dash, wired to the ignition.

Aftermarket add-on type electric power window conversion devices like the type that replaces the crank arm will not be acceptable.

One (1) Crew Door Glass Switches - on Crew's Doors
20-12-2798

CREW DOOR GLASS SWITCHES

An individual black window switch for the crew electric door windows shall be provided on the crew doors, wired to the ignition.

Aftermarket add-on type electric power window conversion devices like the type that replaces the crank arm will not be acceptable.

One (1) Additional Switches - (3) to Allow Driver to Operate all Power Windows
20-12-3000

ADDITIONAL SWITCHES

Three (3) additional black window switches, wired to the ignition, shall be provided to allow the driver to operate all power cab door windows.

One (1) Glass - Side Crew Cab, Fixed, Tinted, Attacker/Capitol
20-14-111S

CREW CAB SIDE GLASS

There shall be a side window on each side of the cab between the doors. They shall be tinted and be manufactured of automotive laminated safety glass. Each window shall measure 23” high x 12” wide. They shall be installed and held in place by an extruded rubber molding with a chrome plated, decorative, locking bead. The cab shall be finish painted prior to window glass being installed.

One (1) Crew Cab Windows Tint - Green Laminate (ATT/CAP)
20-14-2905

CREW CAB WINDOWS TINT

The crew cab windows shall have a green tint laminate.

One (1) Scuff Plates - (4) Cab Door Frame, S/S, Brushed
20-16-5001

CAB DOOR FRAME SCUFF PLATES

A brushed stainless steel scuff plate shall be installed on the striker side of each cab door frame and shall run the full height of the door opening. The scuff plate shall be a single bend configuration that guards the outer door frame surface from damage and chips to the paint.

One (1) Cab Door Hinges - Mill Finish
20-16-9010

CAB DOOR HINGES

All piano hinges on the exterior cab doors shall be mill finished.

One (1) Cab Exterior Handrails - (4) AL Knurled, Surface Mt, Attacker/Capitol
20-18-0220

CAB EXTERIOR HANDRAILS

Four (4) 24" handrails shall be installed on the side of the cab, one just to the rear of each cab door. The handrails shall be 1-1/4" diameter extruded aluminum, knurled, with a bright anodized finish.

All handrail stanchions shall be chrome plated. They shall be bolted to the body with 1/4" stainless steel hex head bolts. Stanchions shall have a rubberized gasket placed between them and the body surface they are mounted on. A drain hole shall be provided in each bottom stanchion.

One (1) Cab Interior Grab Handles - Attacker/Capitol
20-18-0520

CAB INTERIOR GRAB HANDLES

The following grab handles shall be provided on the interior of the cab and cab doors:

- Two (2) 6" chrome grab handles shall be provided, one on the inside of each front cab door.

- Two (2) 12" rubber covered grab handles shall be provided, one on the inside of each crew cab door.

- Two (2) 12" rubber covered grab handles shall be provided, one on the driver's side and officer's side front A-pillar, above the door hinge, to assist in entry to the cab.

One (1) Crew Cab Interior Grab Handles - 12" Rubber Covered, Attacker/Capitol
20-18-0620

CREW CAB INTERIOR GRAB HANDLES

Two (2) 12" rubber covered grab handles shall be provided, one on each rear crew door hinged-pillar, on the hinged side of the door, to assist in entry to the cab.

One (1) Handrail - 18", AL, Knurled, Horiz, Front of Cab, Centered below Windshield
20-18-1015

FRONT OF CAB HANDRAIL

One (1) 18" knurled aluminum handrail shall be provided and installed horizontally on the front of the cab, centered below the windshields.

One (1) 20-20-010C Capitol Crash Test Report - Chassis and Cab

CAPITOL CRASH TEST

The cab shall be certified for the following tests:

- SAE J2420: Cab Over Engine (COE) Front Strength Evaluation - Dynamic Loading - Heavy Trucks
- SAE J2422: Cab Roof Strength Evaluation - Quasi Static Loading - Heavy Trucks
- ECE Regulation 29: Protection of Occupants of Cab in Commercial Vehicle

Performance Measure:

- After undergoing each test, the cab of the vehicle shall exhibit a survival space accommodating a 50th percentile male ATD in the median position without contact between the manikin and non-resilient parts for all seating positions.
- None of the doors shall open during the tests.
- The cab attachments may be distorted or fractured, however, the cab shall remain attached to the vehicle frame in at least one attachment location.

One (1) 20-20-4015 Helmet Holder - Body

HELMET HOLDER - BODY

The helmets shall be stored in the body in accordance with NFPA 1901 current regulations:

NFPA 14.1.8.4.1 A location for helmet storage shall be provided.

NFPA 14.1.8.4.2 If helmets are to be stored in the driving or crew compartment, the helmets shall be secured in compliance with 14.1.11.2.

One (1) 20-20-4024 Helmet Caution Labels (for 4 door cabs)

CAUTION LABELS

Caution labels shall be posted in the cab so that they shall be visible from each seat position. The labels shall read: “Do Not Wear Helmets While Seated”.

One (1) 20-20-6010 Collision Avoidance System - HAAS Alert R2V™, 2-Year Safety Cloud®

COLLISION AVOIDANCE SYSTEM

A HAAS Alert Responder-to-Vehicle (R2V) collision prevention solution shall be installed to provide real-time digital alerts to increase safety by notifying drivers in advance when crews are on-scene and responding. The digital alerts shall be delivered to navigation apps on smart phones and in-vehicle navigation systems. The system shall be active only when the Emergency Master is active.

The system shall include the HA-5 Transponder, R2V Safety Cloud® subscription, and Situational Awareness Dashboard. The transponder shall include cellular data service. The customizable Dashboard enables real-time operational status of the entire fleet on any device. The HA-5 Transponder shall be installed on the lower center dash to the driver's side, with a clear view of the sky for optimal GPS signal strength.

HAAS Alert shall provide a two-year warranty on the HA-5 Transponder.

A two-year subscription to the HAAS Alert R2V Safety Cloud® shall be provided. The subscription service shall be administered and serviced by HAAS Alert.

One (1) Headliner - Padded, Acoustical, Black
20-25-080B

HEADLINER

The cab shall be provided with a removable black headliner for ease of servicing the electrical wiring placed in the cab roof. The headliner shall consist of 3 layers of material. Next to the roof shall be a layer of acoustical insulation made of polyester and polypropylene fibers. The next layer is 1/4" thick Luann. Finally, there is a 1/4" thick layer of foam/perforated acoustical vinyl.

The headliner shall be the multi-piece type (minimum of three (3) sections) so that the entire liner does not have to be removed for localized maintenance.

One (1) Back Liner - ATP
20-25-0910

BACK LINER

The cab shall be provided with an aluminum tread plate removable back liner. The back liner shall be the multi-piece type (minimum of three (3) sections) so that the entire liner does not have to be removed for localized maintenance.

One (1) Crew Door Head Bumpers - (2) Vinyl, Padded, Black
20-25-094B

HEAD BUMPERS

Two (2) padded black vinyl head bumpers shall be provided each side on the interior of the cab above the crew doors in the header area.

One (1) Pac Trac - (2) #7000, Driver's & Officer's Side Outboard, Cab Back Wall
20-25-095C

PAC TRAC ON CAB BACK WALL

A Pac Trac 7000 assembly shall be installed on the interior rear cab wall, on both the driver's side and the officer's side outboard positions, starting at floor level. The Pac Trac on each side shall measure approximately 20" wide overall by 51.75" high.

Note: Other options selected for the cab interior, such as seats, speakers, back wall windows, compartments and other mounting brackets may affect the dimensions of the Pac Trac.

One (1) Engine Enclosure - Black LINE-X,® Attacker/Capitol
20-25-102B

FRONT CAB ENGINE ENCLOSURE

The engine enclosure structure shall have a 1-1/4" thick inner lining, on the engine side, comprised of aluminized foil and foam/barrier composite for heat insulation. The tunnel cover shall have 1/2" decoupled foam lower and 1" decoupled foam upper covering, on the cab interior side, for noise insulation. The top forward portion of the hood shall have a full-width riser with a sloped face for the installation of the switch panel. The sloped panels shall be used for vehicle accessory controls. A minimum of 1" shall be provided between the right edge of the accelerator pedal and the side of the engine hood. A removable cover over the engine enclosure and insulation shall be coated with black LINE-X® to act as an insulator for sound and engine temperature, as well as to provide an easy-to-clean work surface.

ACCESSORY MOUNTING STRUCTURE

The top portion of the engine enclosure shall have a stainless steel channel frame located between the engine tunnel structure and the cover to support the cover and facilitate mounting of accessories and equipment.

CREW CAB ENGINE COMPARTMENT ACCESS DOOR

An access door shall be provided at the rear of the engine enclosure for routine engine fluid checks. The access door shall be insulated from engine heat with aluminized foil/foam/barrier composite and sealed to prevent exhaust fumes from entering the crew cab. The engine access door shall measure approximately 30.5" wide x 13.7" high.

One (1) Forward Cab Center Tunnel Removable Overlay Plate for PowerPoint Access
20-25-109A

REMOVABLE TUNNEL COVER OVERLAY PLATE

A removable 9" long x 27" wide x .13" aluminum plate cover shall be provided for access to one (1) space of approximately 7" long x 24" wide beneath the rearmost center tunnel cover immediately to the rear of the center tunnel cover.

The space beneath this access area transitions from 1" to 2" deep in the power point/distribution area for center tunnel accessory potential.

This plate shall be attached directly to the tunnel cover surface and the plate finish shall match the engine tunnel cover.

One (1) Forward Cab Center Tunnel Cover Removable Plate-Center Dash
20-25-109E

REMOVABLE TUNNEL COVER OVERLAY PLATE

A removable 27" long x 27" wide x .13" aluminum plate square cover shall be provided for access to two (2) equal spaces of approximately 10" long x 24" wide each beneath the center tunnel cover immediately to the rear of the center dash switch panel area and between the forward cab seating.

This plate shall be attached directly to the tunnel cover surface. It's finish shall match that of the engine tunnel cover.

One (1) Steering Wheel - Tilt/Telescoping
20-25-3000

18" STEERING WHEEL WITH TILT/TELESCOPE

A padded 18" steering wheel with center horn ring shall be provided. The upper steering column shall be of the tilt and telescopic type. A self-canceling directional switch with wiper control and headlight dimmer control shall be mounted on the steering column with an ICC four way flash switch. The self-canceling directional switch shall be easily removable and replaceable without removing the steering wheel or column assembly. The junction of the shaft and the cab floor shall be sealed to prevent air exchange between the cab interior and exterior.

One (1) Cab Dash Finish - Black LINE-X®
20-25-400B

BLACK LINE-X® FOR CAB DASH

The cab dash shall be sprayed with black LINE-X® having a high resistance to abrasion and tearing. A vinyl cloth glued or laminated in some manner to a metal backing surface shall not be acceptable.

The LINE-X® shall absorb impact without surface damage. The LINE-X® shall be resistant to gasoline, diesel fuel, paints, bleaches, organic solvents and other cleaning agents and chemicals. It shall include sound dampening and vibration elimination properties.

The LINE-X® shall be solvent free and be environmentally safe to apply with no VOC or CFC hazards.

Its surface shall have a non-glare, granular texture and be easily cleaned with common cleansing compounds.

One (1) 20-25-407B — Overhead Dash - Black LINE-X® Coating, Attacker/Capitol Only

OVERHEAD DASH

The overhead dash shall have a black LINE-X® coating.

One (1) 20-25-4092 — Forward Cab Center Overhead Dash Open Retention Strap (Attacker/Capitol)

DASH RETENTION STRAP

A removable, replaceable limit strap assembly shall be provided to prevent contact with the lower center dash panel and to retain the center overhead dash assembly in an open position when open for inspection or when access to the upper center power distribution is required.

The strap assembly shall consist of a 2" wide, sewn, nylon strap with a steel footman loop inserted in each sewn looped end of the nylon strap. Each of the two (2) footman loops shall be anchored by two (2) 1/4 inch machine screws. The upper anchor assembly shall be attached to the cab roof structure and the lower anchor assembly shall be attached to the hinged power distribution access panel.

One (1) 20-25-4700 — Cab Floor - Forward Cab, Pebble Finish Matting, Attacker/Capitol

FORWARD CAB FLOOR

The forward cab floors shall be covered with a black mat that functions as a sound dampening barrier. The mat shall have a pebble textured heavy-duty wear surface and be laminated to a foam underlay. The mat shall be composed of a vinyl-nitrile blend, which is the base material used in IV tubes and blood bags; it is not affected by blood or other body fluids.

One (1) 20-25-482A — Cab Floor - 68"/74" Crew Cab, Pebble Finish Matting, Attacker/Capitol

CREW CAB FLOOR

The crew cab floors shall be covered with a black mat that functions as a sound dampening barrier. The mat shall have a pebble textured heavy-duty wear surface and be laminated to a foam underlay. The mat shall be composed of a vinyl-nitrile blend, which is the base material used in IV tubes and blood bags; it is not affected by blood or other body fluids.

One (1) 20-25-520B — Sun Visors - (2) Vinyl, Padded with Locking Adjustment, Black (Attacker/Capitol)

SUN VISORS

Two (2) approximately 8" x 28" padded, black sun visors shall be provided, one on the driver's side and one on the officer's side. Visor shall be supported at both ends to prevent drooping. The sun visors shall each have an adjustment knob that locks the visor position.

Four (4) Cup Holder - Black LINE-X® Finish (Ea)
20-25-6010

CUP HOLDER

Four (4) cup holder(s) with a black LINE-X® coating shall be installed in the cab. The cup holder shall be designed for mounting on top of the engine tunnel.

Four (4) Cup Holder Location - Ship Loose
20-25-6053

The cup holder shall be shipped loose.

One (1) Sign - Vehicle Dimension & Weight
20-25-8000

VEHICLE DIMENSION SIGN

A sign shall be provided in the front cab area indicating the height of the completed apparatus in feet and inches, length of the completed apparatus in feet and inches, and the gross vehicle weight rating (GVWR) in tons.

One (1) Inner Cab Door Panels - Black LINE-X® (4)
20-50-501B

INNER DOOR PANELS – BLACK LINE-X® (4)

The upper inside bolt-on panel on each cab door shall be removable and shall be constructed of aluminum covered with black LINE-X®.

One (1) Reflective Stop Signs - (4) Inner Cab Door Panels
20-50-6010

STOP SIGNS

A reflective stop sign shall be provided on the interior lower portion of the four (4) cab doors in place of the required NFPA reflective chevron.

One (1) Seat - Driver's, Bostrom, Sierra, Air-100, Reclining (NA w RollTek)
21-00-B0AR

DRIVER'S SEAT

The driver's seat shall be an H.O. Bostrom Sierra Air-100 reclining high back seat with air suspension. This seat shall have 5” horizontal adjustment.

One (1) Seat - Officer's, Bostrom, Tanker 450, Air-100, SCBA (NA w RollTek)
21-01-BSAF

OFFICER'S SEAT

An H.O. Bostrom Tanker 450 Air-100 SCBA seat shall be provided for the officer. This seat shall have no forward/aft adjustment.

One (1) Seat Riser - Driver 5" High, Not Available with RollTek, ATT/CAP
21-05-030D

The driver's seat shall be held at NFPA regulated height by a 3CR12 stainless steel frame that measures approximately 18.13" wide x 5" high x 17" deep, front to back at the top and 13.72" deep, front to back at the bottom.

One (1) Seat Riser/Compt - Officer, 5" High, Not Available with RollTek, ATT/CAP
21-07-030O

The officer's seat shall be held at NFPA regulated height by a 3CR12 stainless steel frame which creates an enclosed compartment. The compartment measures approximately 18.13" wide x 5" high x 17" deep, front to back at the top and 13.72" deep at the bottom.

One (1) Seat Riser/Compartment Door - Front Opening, 13.88"w x 3.3" h,Vertically-Hinged
21-07-092F

The seat riser/compartment shall have a front opening vertically-hinged door that measures 13.88" wide by 3.3" high.

One (1) SCBA Bracket - IMMI SmartDock Gen 2 (Ea)
21-08-0150

One (1) NFPA compliant IMMI SmartDock Gen 2 SCBA bracket shall be installed in the seat(s). The bracket shall utilize a locking mechanism that engages during deceleration. The bracket shall hold the cylinder in place while in transit and release using no straps, levers, buttons or switches.

One (1) SCBA Bracket - IMMI SmartDock Gen 2 (Ea)
21-08-0150

One (1) NFPA compliant IMMI SmartDock Gen 2 SCBA bracket shall be installed in the seat(s). The bracket shall utilize a locking mechanism that engages during deceleration. The bracket shall hold the cylinder in place while in transit and release using no straps, levers, buttons or switches.

Two (2) SCBA Bracket - IMMI SmartDock Gen 2 (Ea)
21-08-0150

Two (2) NFPA compliant IMMI SmartDock Gen 2 SCBA bracket shall be installed in the seat(s). The

bracket shall utilize a locking mechanism that engages during deceleration. The bracket shall hold the cylinder in place while in transit and release using no straps, levers, buttons or switches.

One (1) Cable Raceway - ATP, Attacker/Capitol
21-09-120R

RACEWAY

A cable raceway shall be provided between the seat riser compartment under the officer's seat and the officer's side toe kick area below the dash. The raceway will run on top of the floor next to the engine tunnel. The raceway shall be constructed of aluminum tread plate.

One (1) Seat - (1) Outboard, Rear Facing, RS, Bostrom, Tanker 450 SCBA
21-11-592A

REAR SEATING

The rear crew cab section shall contain one (1) outboard rear facing H. O. Bostrom Tanker 450 SCBA passenger seat. The seat shall be installed on the right side at the rear of the engine enclosure. The seating area shall allow maximum room for fire fighters in full turn out gear.

One (1) Seat - (2) Inboard, Forward Facing, Bostrom, 400 SCBA Flip-up
21-11-6C00

REAR SEATING

The rear crew cab section shall contain two (2) center forward facing H.O. Bostrom 400CT SCBA flip-up passenger seats. The seats shall be installed on the rear wall of the cab directly behind the engine enclosure. The seating area shall allow maximum room for fire fighters in full turn out gear.

Center forward facing seats on the rear cab wall shall have a minimum 4" spacing between the seat brackets unless there are outboard foward facing seats.

One (1) Seat Belt - Driver's, 3 Point, Vertically Adjustable
21-12-700D

SEAT BELT

The driver's seat shall have a 3-point vertically adjustable D Loop style shoulder harness, to meet FMVSS and NFPA 1901 current edition requirements. The seat belt shall be red in color.

One (1) Seat Belt - Officer's, 3 Point, Vertically Adjustable
21-12-701D

SEAT BELT

The officer's seat shall have a 3-point vertically adjustable D Loop style shoulder harness, to meet FMVSS and NFPA 1901 current edition requirements. The seat belt shall be red in color.

One (1) 21-12-702D — Seat Belts - Outboard, Rear Facing, 3 Point, Vertically Adj, ATT/CAP Only, (Ea)

SEAT BELTS

The one (1) outboard, rear facing seat(s) shall have a 3-point vertically adjustable D Loop style shoulder harness, to meet FMVSS and NFPA 1901 current edition requirements. The seat belts shall be red in color.

Two (2) 21-12-704E — Seat Belts - Inboard, Fwd Facing, 3 Pt, Vertically Adjustable w ReadyReach (Ea)

SEAT BELTS

The two (2) inboard, forward facing seat(s) shall have a 3-point vertically adjustable D Loop style shoulder harness, to meet FMVSS and NFPA 1901 current edition requirements. The seat belts shall be red in color.

An IMMI ReadyReach shall be attached to each of the inboard forward facing seat belts. The ReadyReach positions the seat belt forward making the seat belt easier to reach.

One (1) 21-12-7165 — Elbow Pads - Durawear™, Driver & Officer, Inboard

ELBOW PADS

Two (2) "head bumper style" elbow pads shall be installed on the engine tunnel inboard of the officer and the driver. They shall be covered in Durawear™ and be fastened to a bracket outboard to the engine tunnel. The finish of the bracket shall match that of the engine tunnel. The assembly shall be positioned approximately 6 inches rearward of the center dash vertical surface.

Note: elbow pads may need to be removed in order to access other components.

One (1) 21-12-719B — Elbow Pad Color - Black

The color of the elbow pads shall be black.

Five (5) 21-12-7600 — Upholstery - Seat, Bostrom, Durawear™, Black (Ea)

SEAT UPHOLSTERY

Five (5) cab seats shall be upholstered in black H.O. Bostrom Durawear™ waterproof cloth fabric.

One (1) 21-13-1510 — Capitol & Attacker Interior Decor, Miscellaneous Items

INTERIOR DÉCOR

The following components shall always be black in color:

- Floor matting and floor mat edging
- Headliner trim
- Back liner trim
- Crew heater, complete assembly
- Electrical panels
- Plastic snap plugs for wire access holes
- Door seals
- Seat risers
- Under seat compartments
- Rubber covered grab handles
- Map desk, if present
- Tilt control storage door

The following item shall always be gray in color:

- Seat belt retractor cover.

One (1) Sign - Seating Capacity
21-13-2500

CAPACITY SIGN

A sign visible to the driver, that states the number of personnel the vehicle is designed to carry, shall be provided.

Five (5) Sew Customer Patch to Bostrom Head Rest or Seat Back (Ea)
21-13-8000

SEW PATCH TO SEAT HEAD REST(S)/SEAT BACK(S)

A customer patch shall be sewn to five (5) seat head rest(s) in place of the Seagrave Logo. If a head rest is not present, then the customer's patch shall be sewn onto the front of the seat back cushion.

Gold Patch shall be sewn to officer seat.

One (1) Cab Compt- (1) DS Rear Facing, Outbd, 18wx18dx21h O.D. Front Opening (Ea) Cap/At
21-15-100A

STORAGE COMPARTMENT

One (1) storage compartment with front opening shall be provided on the driver's side in the cab. The compartments shall be rear facing and in the outboard position. The overall outside dimensions of the compartment shall be 18" wide x 18" deep x 21" high. The compartment shall be constructed of 1/8"

smooth aluminum. The compartment exteriors shall have a LINE-X® coating that shall match the lower cab dash/engine tunnel.

One (1) Cab Compartment Door - Cargo Netting, f/ Front Opening
21-15-195N

CAB COMPARTMENT DOOR

A black cargo net shall be provided over the cabinet front opening to secure stored equipment. The netting shall be made of two (2) inch wide black cargo netting with approximately two (2) inch square openings. The netting shall be fastened on the bottom with footman's loops. The top of the netting shall have two (2) seat belt buckles to secure/release the cover, one (1) in each corner. The male portion of each buckle shall be secured to the top of the netting, the female receiver portion shall be secured to the header of the compartment. A pull strap with loop handle shall be attached to each female receiver to release the cover. Velcro fold overs to the interior of the compartment shall be located on the bottom of the netting to facilitate removal.

One (1) Pull Strap(s) Color - Orange
21-15-2150

The pull straps shall be orange in color.

One (1) HVAC, Vent, Defrost - Forward Cab, 46,000 /33,000 BTU, ATT/CAP
21-23-071S

HEATER/DEFROSTER/AIR CONDITIONING-FORWARD CAB

A front cab heater / defroster / air conditioning unit shall be provided. The HVAC unit shall distribute filtered, heated or cooled, fresh and / or recirculated, air through ducting of the cab front dash panels.

Heating capacity shall be rated at 46,000 BTU minimum.

Cooling capacity shall be rated at 33,000 BTU minimum.

The HVAC unit shall be located in the cab RH firewall and have a variable speed 625 CFM blower assembly. The HVAC unit shall be designed for serviceability and be located behind a removable panel. Access to air intake filter, heater core, evaporator core, and fan assembly shall be provided without removing the HVAC housing from the installed location.

Intake air shall be filtered by a commercially available filter and can be mixed between fresh and recirculated for vent / defrost and heat / cool selections.

Output air can be distributed between the four (4) defroster vent located at the base of the windshield, four (4) rear facing dash vents, and two (2) lower rear facing vents.

Defrost function selection can provide heated or cooled output air, fresh or recirculated intake air, and utilizes the AC system for drying air to the windshield. Output air will be directed through six (6) vents.

Four (4) fixed flow vents located at the base of the windshield positioned and designed to distribute the air up. Two (2) adjustable vents located, one (1) at the LH edge of the dash directed at the LH driver's door glass and one (1) at the RH edge of the RH passenger's door glass.

Vent function selection can provide heated or cooled output air, fresh or recirculated intake air. Output air shall be directed rearward through four (4) adjustable vents. Two (2) adjustable vents shall be located in the center dash panel with positioning optimized for LH driver and RH passenger air flow direction to the upper torso. Two (2) adjustable vents shall be located, one (1) each forward seating position, in the upper outboard area of each forward seating kick panel, below the dash.

The front HVAC unit shall utilize a dedicated condenser located on the forward cab roof. The condenser shall be a stacked type, low profile and feature two fans. All connections, hose and harness, shall be through weatherproof bulkheads. The condenser assembly shall include a white powder coated cover over the stacked condenser coils and a white painted protective cover over the Freon hoses, dryer, valves, switches and / or solenoids above the cab roof and connected to the condenser body. Condenser and cover mounting shall be made without perforating the cab roof skin for maximum resistance to water intrusion to the cab interior.

One (1) Air Conditioning Front Condenser Cover - Aluminum, Additional, ATT/CAP
21-23-079L

FRONT CONDENSER COVER

The condenser body shall have one fabricated cover assembly providing complete protection for, and above the condenser fans. The design shall be modular to allow access to condenser components without removing the entire cover assembly.

The main condenser body and fan cover shall be approximately 10.5" high x 46" long x 19.75" wide with a base and sides fabricated from 3/16" wall 5052-H32 aluminum plate. Two removable covers, each over the top of each condenser fan, shall be constructed with 3/16" wall x 1" high aluminum expanded grating.

Condenser cover mounting shall be made without perforating the cab roof skin for maximum resistance to water intrusion to the cab interior. The cover shall have a DA finish.

Note: Condenser location and orientation is dependent on other influential options.

One (1) Manual Coolant Shutoff Valve - Forward Cab HVAC Inflow (Inlet), ATT/CAP
21-23-0820

MANUAL COOLANT SHUTOFF VALVE - INLET

The forward cab heater inlet flow shall be interrupted by one (1) manual engine coolant shutoff valve mounted on a plate utilized specifically for auxiliary engine coolant flow control. The mounting plate and valve location shall be in the forward, RH side of the chassis engine area. Valve to be 1/4 turn style with label for ease of identification.

One (1) Manual Coolant Shutoff Valve - Forward Cab HVAC Outflow (Return), ATT/CAP
21-23-0900

MANUAL COOLANT SHUTOFF VALVE - RETURN

The forward cab heater return flow shall be interrupted by one (1) manual engine coolant shutoff valve mounted on a plate utilized specifically for auxiliary engine coolant flow control. The mounting plate and valve location shall be in the forward, RH side of the chassis engine area. Valve to be 1/4 turn style with label for ease of identification.

One (1) Rear Heat Addition - Crew Cab, 81,000 BTU Heat Combined, 20" Wide, A&C
21-23-271T

REAR HEAT ADDITION REAR CREW CAB, 3 SPEED / ELECTRONIC CONTROL

A crew cab heater shall be provided. The heater unit shall provide filtered, engine coolant heated, air to the crew cab area through a ducted enclosure.

Crew heating capacity shall be rated at 35,000 BTU minimum and the combined heating capacity of the cab HVAC units shall be 81,000 BTU minimum.

The heater unit shall have a variable speed 430 CFM blower assembly. The heater unit shall be designed for serviceability.

Crew heater function shall feature two (2) controls with backlighting. One (1) rotary fan control switch with four positions (OFF, LOW, MEDIUM, HIGH) and one (1) rotary temperature control coupled to an electronic water valve. The heater control shall be located near the ceiling above the rear engine access door.

One (1) Heater Unit Location - Under Officer Side Inboard Seat Position
21-23-2800

The heater unit shall be located against the rear crew cab wall on the inboard officer side forward facing position in a vented and ducted enclosure approximately 16" deep x 14.5" high x 20" wide. Access to air intake filter, heater core, and fan assembly shall be provided.

One (1) Manual Coolant Shutoff Valve - Crew Cab Heater Inflow (Inlet), Attacker/Capitol
21-23-3020

MANUAL COOLANT SHUTOFF VALVE - INLET

The crew cab heater inlet flow shall be interrupted by one (1) manual engine coolant shutoff valve mounted on a plate utilized specifically for auxiliary engine coolant flow control. The mounting plate and valve location shall be in the forward, RH side of the chassis engine area. Valve to be 1/4 turn style with label for ease of identification.

One (1) Manual Coolant Shutoff Valve - Crew Cab Heater Outflow (Return), ATT/CAP
21-23-3100

MANUAL SHUTOFF VALVE - RETURN

The crew cab heater return flow shall be interrupted by one (1) manual engine coolant shutoff valve mounted on a plate utilized specifically for auxiliary engine coolant flow control. The mounting plate and valve location shall be in the forward, RH side of the chassis engine area. Valve to be 1/4 turn style with label for ease of identification.

One (1) Air Conditioner Addition - Crew Cab, 72,500 BTU Total, Attacker/Capitol
21-23-381S

AIR CONDITIONING SYSTEM ADDITION - CREW CAB

A crew cab air conditioning unit shall be provided on the cab ceiling, above the rear portion of the engine enclosure. The AC unit shall distribute cooled recirculated, air through six (6) outlets. The six air outlets include four (4) adjustable rear facing air diffusers and two (2) adjustable side outboard facing vents.

Cooling capacity of the crew AC evaporator unit shall be rated at 39,500 BTU minimum and the combined cooling capacity of the cab HVAC evaporator units shall be 72,500 BTU minimum.

The crew AC unit shall have a variable speed 577 CFM blower assembly. Intake air shall be filtered by a commercially available and serviceable filter. The AC unit shall feature independent fan speed and temperature controls. Evaporator condensate shall be evacuated by two independent drain hoses, each routed inside a single stainless pipe located beneath the AC unit, between the AC unit and the top of the engine enclosure. The two independent hoses route through the top of the engine enclosure cover, behind the engine block, and terminate outboard the LH chassis frame rail.

The crew AC unit shall utilize a dedicated condenser located on the, rear, crew cab roof. The condenser shall be a stacked type, low profile and feature two fans. All connections, hose and harness, shall be through weatherproof bulkheads. The condenser assembly shall include a white powder coated cover over the stacked condenser coils and a white painted protective cover over Freon hoses, dryer, valves, switches and / or solenoids above the cab roof and connected to the condenser body. Condenser and cover mounting shall be made without perforating the cab roof skin for maximum resistance to water intrusion to the cab interior.

The air conditioning system, front and rear combined, shall exceed the performance standard of cooling the cab from an ambient temperature of 100 degrees Fahrenheit at 50% relative humidity to an average cab temperature of 75 degrees Fahrenheit in less than 30 minutes.

One (1) Air Conditioning Rear Condenser Cover - Aluminum, Additional, Attacker/Capitol
21-23-390L

REAR CONDENSER COVER

The condenser body shall have one fabricated cover assembly providing complete protection for, and above the condenser fans. The design shall be modular to allow access to condenser components without removing the entire cover assembly.

The main condenser body and fan cover shall be approximately 10.5" high x 46" long x 19.75" wide with a base and sides fabricated from 3/16" wall 5052-H32 aluminum plate. Two removable covers, each over the top of each condenser fan, shall be constructed with 3/16" wall x 1" high aluminum expanded grating.

Condenser cover mounting shall be made without perforating the cab roof skin for maximum resistance to water intrusion to the cab interior. The cover shall have a DA finish.

Note: Condenser location and orientation is dependent on other influential options.

One (1) HVAC Controls - Forward Cab, 4 Selectors, Dedicated AC, Attacker/Capitol
21-23-8020

HVAC CONTROL - FORWARD CAB

HVAC controls shall feature rotary switches, function labeling, backlighting, and have colored indicators. A single, lighted, AC engagement push switch shall be provided for engaging the AC system components as needed.

The HVAC panel shall have four (4) rotary control switches inline, from left to right, in the following order:

· Fan Speed (OFF, LOW, MEDIUM, HIGH)
· Water Temperature Blend Control (HEAT-COOL)
· Outlet Air Blend Control (DEFROST-VENT)
· Intake Air Blend Control (FRESH-RECIRC)

The HVAC panel shall have one (1) raised, “push to engage”, switch that illuminates when the air conditioning is engaged. This switch shall be centrally located on the control panel, between the second and third rotary control switches, along the top edge of the control panel.

The HVAC control panel shall allow the operator to make selections or adjustments to any one of the four (4) selectors without resetting or disturbing the selections of other three (3) controls.

The HVAC control shall feature an override to engage the air conditioning system when the operator has selected 100% Defrost on the Outlet Air Blend Control.

One (1) Map Box - (4) Slot High/Low w/ Black LINE-X® Coating
21-50-1005

MAP BOX

A map box shall be provided. The box shall have four (4) angled vertical slots space on 2.75 inch centers. The rear interior of the slots shall be 14.25 inches wide by 8.00 inches deep and shall run crossways of the cab. The front two (2) slots shall be 4.00 inches deep.

The box shall be constructed of a 0.125 inch thick aluminum sheet metal welded assembly. It shall be covered with black LINE-X®. A velcro retaining strap shall be provided.

One (1) Map Box Location - Determined at Final Inspection
21-50-1201

The location of the map box shall be determined at the Final Inspection.

One (1) Cab Side Access Door Lights - (2) ROM LED, (1) Strip Light Per Door
23-25-0010

COMPARTMENT LIGHTS - LED

Each cab side access door shall have a ROM LED lighting strip installed. The full height lighting strip shall be mounted vertically at the hinged side of the cab door. The LED lights shall be mounted in an anodized aluminum track. A switch, installed in the door jam, shall be used to activate light.

One (1) No Cab Compartment Light Required
23-25-0019

One (1) Finish - Cab Roof Condenser Cover, Vendor White
91-00-6105

The cab roof condenser cover shall have the white finish as it comes from the manufacturer.

One (1) Finish - Cab Roof Condenser Cover, Vendor White
91-00-6105

The cab roof condenser cover shall have the white finish as it comes from the manufacturer.

One (1) Finish - Cab Roof Condenser Cover, DA Finish
91-00-6115

The cab roof condenser cover shall have a DA finish.

One (1) Finish - Cab Roof Condenser Cover, DA Finish
91-00-6115

The cab roof condenser cover shall have a DA finish.

One (1) Finish - Cab Compartment Interior, Mill Finish (Ea Compt)

Fire & Specialty Equipment Company

91-01-0210

FINISH – CAB COMPARTMENT INTERIOR(S)

One (1) cab compartment interior(s) shall have no finish applied.

If a hinged door is provided, the door interior shall match the compartment interior.

One (1) Warranty - Dana Front Axle, 5 Yr, P&L
91-75-0012

WARRANTY

Dana Corporation provides a five (5) year parts and labor warranty on the front axle. See warranty certificate for complete details.

One (1) Warranty - Dana/ Bendix Spicer Disc Brakes
91-75-002C

WARRANTY

Bendix Spicer Foundation Brake LLC warrants to the original retail purchaser that all air disc brake products shall be free from defects in materials or workmanship for five (5) years, 500,000 miles for on-highway applications, and one (1) year unlimited miles for off-highway applications provided Bendix brake pads, rotors, and brake chambers are used. See warranty certificate for complete details.

One (1) Warranty - Dana Rear Axle, 5 Yr, P&L
91-75-0030

WARRANTY

Dana Corporation provides a five (5) year parts and labor warranty on the rear axle. See warranty certificate for complete details.

One (1) Warranty - Meritor Anti-Lock Braking System, (ABS), 3 Years/300,000 Miles
91-75-003A

WARRANTY

A three (3) year or 300,000 miles parts and labor warranty shall be provided by Meritor WABCO Vehicle Control Systems for the Anti-Lock Braking System (ABS).

One (1) Warranty - Cummins X12 Engine, 5 Year/100,000 Mile
91-75-004E

WARRANTY

Cummins provides a 5 year or 100,000 mile warranty on the X12 engine. See Cummins Warranty Certificate for complete details of terms, conditions and deductibles.

Fire & Specialty Equipment Company

One (1) Warranty - Allison Transmission, 5 Yr, P & L
91-75-0065

WARRANTY

Allison provides a 5 year warranty on the EVS transmissions. See warranty certificate for complete details.

One (1) Warranty - Telma Standard
91-75-0085

WARRANTY

Telma warrants to customers that the product shall be free from defects in materials and workmanship and will confirm to applicable specifications. TRI shall, at its option, repair correct or replace any product or part thereof which is defective in workmanship of material: provided, however, that TRI is given prompt written notice of any failure (setting forth the alleged defect and pertinent delivery dates showing that the product is covered under the warranty) occurring within the lesser of a) two (2) years after the date of delivery to the first user of OEM product into which the product is installed of b) thirty (30) months from original delivery of the product.

Please see the attached Telma Warranty document for complete details.

One (1) == 12V Elec - CAP Force/Patriot Non-Quint - 0.000 ==

One (1) Electrical Wiring - 12V General, Attacker/Capitol
22-00-0107

GENERAL 12-VOLT ELECTRICAL WIRING REQUIREMENTS
12-VOLT ELECTRICAL SYSTEM

The apparatus shall be equipped with a heavy-duty 12-volt electrical system. All 12-volt electrical equipment installed by the apparatus manufacturer shall conform to modern automotive practices. All electrical wiring and components installed in the apparatus shall be suitable for use in severe duty emergency vehicle applications.

Wiring at all connectors will have sufficient length to allow wiring to enter connectors as straight as possible. No connector shall have a 90 degree bend

GENERAL WIRING AND WIRE HARNESS CONSTRUCTION

Unless otherwise specified by the component supplier, all insulated wire and cable shall conform to SAE J1127 *Low Voltage Battery Cable* type SGX or STX, or SAE J1128 *Low Voltage Primary Cable* type

SXL, GXL, or TXL.

Circuit feeder wires shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for which the circuit is protected.

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.

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 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.

CIRCUIT IDENTIFICATION

All wiring shall be uniquely identified by a circuit number and color coding. The identification shall be referenced on a wiring diagram. Wires less than 8 AWG shall be permanently identified at least every 2.0 inches (50.8 mm) by a circuit and function code.

WIRING CONNECTIONS

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. Secondary locks shall be utilized on all connectors that are secondary lock capable.

Exterior exposed wire connectors shall be environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids. Seal plugs shall be installed in all unused sealed connector cavities.

All ungrounded electrical terminals shall have covers or be in enclosures to protect against corrosion, excessive heat, excessive vibration, physical damage, liquid contaminants, dust, and other environmental factors.

Wiring splices shall be crimp-type, molded, or sonic weld type. Adhesive lined heat shrink tubing shall be used to seal and insulate splice joints.

WIRE AND CABLE ROUTING

Wiring routed through holes in sheet metal or castings shall have edges protected by an appropriately sized grommet.

Wiring shall be routed to avoid metal edges, screws, trim fasteners and abrasive surfaces. When such routings are not possible, protective devices (shields, caps, etc.) shall be used to protect the wires. When wires must cross a metal edge the edge shall be covered with a protective shield.

Wiring shall be routed to provide at least 3 inches (76.2 mm) clearance to moving parts, unless positively fastened or protected by a conduit.

Wire routings should avoid areas where temperatures exceed 180° F (82.2° C) and a minimum clearance of 6 inches (152.4 mm) shall be maintained from exhaust system components. Where compliance with this requirement is not possible, high temperature insulation and heat shields shall be utilized.

When wiring is routed between two members where relative motion can occur the wiring shall be secured to each member, with enough wire slack to allow flexing without damage to the wires.

Wiring to all circuit components (switches, relays, etc.) in exposed locations shall provide a drip loop to prevent moisture from being conducted into the device via the wire connection.

Routing wires into areas exposed to wheel wash shall be avoided if possible. When such routings cannot be avoided, adequate clipping or protective shields shall protect the wires from stone and ice damage.

Wiring shall be secured in its intended location with appropriately sized bolt-on clips and nylon wire ties.

Electrical components designed to be removed for maintenance shall include a sufficient length of wire to allow the component to be pulled away from the mounting area for inspection and service work.

Bulkhead type connectors or sealed fittings shall be used to prevent the entry of liquid contaminants into weather tight enclosures.

SPARE WIRES

Wiring harnesses from/to major power and signal distribution areas of the apparatus shall include spare wires for future expansion of the system.

ELECTRICAL SYSTEM COMPONENTS

Serviceable components shall be readily accessible. Switches, relays, terminals and connectors shall have a dc rating of 125% of the maximum current for which the circuit is protected.

A distributed power and signal system shall be utilized on the apparatus to minimize power supply voltage drops. Power and signal distribution areas in the cab shall be concentrated in five (5) areas.

A lower cab power and signal distribution center shall be located in the center forward portion of the cab "dash". It shall be hinged and opened by unlocking two (2) top mounted, double hinged, lift and pull latches. This area shall contain relays and circuit breakers installed in a logical and serviceable fashion.

An additional lower cab power and signal distribution center shall be located below the officer's dash behind the kick plate.

An upper power and signal distribution area shall be located in the forward portion of the cab ceiling, above the engine tunnel. Components in this area shall be permanently labeled and easily accessible by opening a hinged cover.

A power and signal distribution area shall be located in the pump module, if applicable. Components in this area shall be permanently labeled and easily accessible.

A power and signal distribution area shall be located on the front of the forward body compartments. Components in these areas shall be permanently labeled and easily accessible.

All electrical components or devices installed in an exposed area on the outside of the cab or body shall be mounted in such a manner, or protected by a gasket, caulking or other means, so that moisture shall not accumulate in it.

CORROSION PROTECTION

Externally exposed, non-plug type, electrical connections shall be given a hand applied or sprayed application of an industrial standard insulation coating with a minimum rating of 2100 volts per mil thickness. Insulation shall protect the connection from water induced electrical corrosion and accidental short circuiting. Should the connection be loosened or removed during the manufacturing process another coating shall be applied after it has been refastened or replaced.

One (1) 22-00-0110 Main Battery and Starter Circuits

MAIN BATTERY AND STARTER CIRCUITS

BATTERY POWER BUSS

All positive cables from the batteries shall be connected directly to a battery positive buss bar located as close to the batteries as practical. The alternator shall be wired directly to the battery positive buss bar through the ammeter shunt, if one is provided.

ENGINE STARTER AND INTERLOCK CIRCUITS

The starter solenoid(s) shall be connected directly to the battery positive buss bar. An interlock shall be provided to prevent the operator from engaging the starter when the engine is running.

BATTERY GROUND BUSS AND SINGLE POINT GROUND SYSTEM

All negative (ground) cables from the batteries shall be connected directly to a battery negative buss bar located as close to the batteries as practical. Appropriately sized ground feeder cables shall be utilized to

provide a low impedance ground path to the negative buss bar for all electrical devices on the apparatus.

APPARATUS GROUND BONDING

The battery negative buss bar shall be connected to the chassis frame. The cab, pump enclosure (if furnished), and body structure shall be electrically bonded to the vehicle frame with braided copper grounding straps.

One (1) 22-00-0120 EMI/RFI Protection

EMI/RFI PROTECTION

The apparatus electrical system and related devices shall have the ability to function in the severe electromagnetic environment typical of fire ground operations.

EMI/RFI EMISSIONS

State-of-the-art electrical system design and components shall be utilized to ensure the suppression of radiated and conducted EMI (electromagnetic interference) and RFI (radio frequency interference) emissions that may cause communication and navigation radio-reception interference. The electrical system and related components shall comply with the applicable sections of J551/1 *Performance Levels and Methods of Measurement of Electromagnetic Compatibility of Vehicles, Boats (up to 15 m), and Machines (16.6 Hz to 18 GHz)*

EMI/RFI SUSCEPTIBILITY

The apparatus electrical system shall incorporate immune circuit designs, filtering, shielding and twisted-pair wiring to control EMI/RFI susceptibility. Particular attention shall be given to harness and cable routing to minimize the potential for conducted and radiated signal susceptibility.

Electrical / electronic equipment on the apparatus shall not be susceptible to radiated and conducted EMI/RFI emissions from on-board radio transmitter(s) and shall comply with the requirements of SAE J551-12 *Vehicle Electromagnetic Immunity--On-Board Transmitter Simulation*.

One (1) 22-00-0130 Low Voltage Electrical System Performance Testing

ELECTRICAL SYSTEM PERFORMANCE TESTING

An operational test shall be conducted to ensure that all installed electrical equipment is properly connected and is in working order. The apparatus alternator shall be tested with the total continuous electrical load applied and engine running up to the engine manufacturer's governed speed for a minimum of 2 hours. Additionally, all warning lights shall be run continuously during the three (3) hour NFPA pump certification test (or at another time for not less than three (3) hours). Activation of the load management system (if furnished) shall be permitted during this test. An alarm sounded by excessive

battery discharge, as detected by the low voltage warning system, or a system voltage of less than 11.8 V dc at the battery for more than 120 seconds, shall be considered a test failure.

One (1) Cab Dash & Instruments
22-00-014A

CAB DASH AND INSTRUMENTS FOR 2021 EMISSIONS ENGINE

A non-glare instrument panel, custom designed to accommodate the appropriate functions, shall be provided. Illumination shall be provided for controls, switches, instruction plates, gauges, and instruments necessary for the operation of the apparatus. The cab dash shall be forward slanted, and constructed of aluminum. Rocker switches that have integral lights shall be as follows when applicable: red indicator lights shall be provided for warning light and engine/mechanical functions, green indicator lights shall be provided for scene and auxiliary lighting and general functions; selection shall be at the manufacturer's discretion.

A system shall be provided that interacts with the engine electronics and eliminates redundant senders and switches. The electronic engine gauges shall receive information on the SAE J1939 data link to improve reliability and gauge accuracy. Connectors shall be utilized for ease of service. The dial face shall be black with white lettering. The primary letters shall be in Imperial with the secondary, smaller letters in metric. The dial shall have international non-language symbols for the gauge function (except speedometer). Gauges shall have illumination with a monochrome LCD display located on the speedometer gauge. They shall also have a 250 degree dial sweep for greater definition of scale. SAE J1939 Faults and Warnings shall be displayed on the LED display.

DRIVER'S INSTRUMENTATION

The following individually mounted gauges shall be provided: (all inclusive gauge clusters not allowed, no exceptions)

Main Gauges

- 3" Speedometer: 0-85 mph with built-in LCD display
- 3" Tachometer: 0-4000 rpm

Satellite Gauges

- 2" Fuel Level: Empty – full with low level warning indicator
- 2" Voltmeter: 10-18 VDC
- 2" Coolant Temperature: 100-280 Degrees Fahrenheit
- 2" Engine Oil Pressure: 0-100 psi
- 2" Transmission Oil Temp: 100-320 Degrees Fahrenheit
- 2" Front Air Pressure: 0-150 psi
- 2" Rear Air Pressure: 0-150 psi
- 2" DEF Level: Empty – full with low level warning indicator

AUDIBLE CAB ALARMS

Audible alarms shall be provided in the cab to alert the operator of conditions that require attention. The alarm device(s) shall be audible in the driving compartment.

An intermittent audible tone shall sound when the following conditions are present and the parking brake is disengaged:

- Active Hazard Warning – (Do Not Move Apparatus; Door Open, Tower Raised, Ladder Rack Down, etc.)
- Seat Belt Warning (A separate and different tone than that for the Active Hazard Warning)

A steady audible tone shall sound when the following conditions are present:

- Stop Engine (includes High Engine Temperature and Low Engine Oil Pressure)
- Low Voltage
- Engine Air Filter Restriction
- Jackknife Warning (if applicable)
- Tiller Cab Operator Not in Position (if applicable)

DRIVER'S AND OFFICER'S CONTROLS

The following rocker style control switches shall be identified and accessible to the driver while seated. Switches shall include integral indicator lights (where applicable) to advise that the switch has been energized and identification labels shall be illuminated for night driving.

- Ignition switch with green indicator light
- Engine Start switch
- Headlight / Tail-Marker-ID light switch
- Instrument Panel Dimmer control rheostat

The following controls shall be stalk mounted on the steering column and identified and visible to the driver while seated:

- Turn Signal Control and 4-Way Hazard Warning switch
- High-beam headlight switch
- Windshield wiper control switch
- Windshield washer control switch

The following controls shall be identified and accessible to the driver while seated:

- Parking (Spring) Brake Control
- High Idle control switch

- Other controls (as defined elsewhere in this specification)

The following controls shall be identified and accessible to both the driver and officer while seated. Controls shall be identified and illuminated for night driving.

- HVAC control panel

- Other controls (as defined elsewhere in this specification)

One (1) Driver's Indicator Light Module, Attacker/Capitol Only
22-00-014K

DRIVER'S INDICATOR LIGHT MODULE

The following indicators shall be mounted in a removable modular panel in front of the steering column. The indicators shall be identified with universal ISO 2575 symbols where applicable and visible to the driver while seated. All applicable indicators in the modular panel shall automatically illuminate for 1 second upon activation of the ignition switch to verify operation:

- Battery Switch “On” green indicator light
- Ignition Switch "On" green indicator light
- Check Transmission amber indicator light
- High Transmission Temperature amber indicator light
- Check Engine amber indicator light
- High Coolant Temperature red indicator light
- Low Coolant Level red indicator light
- Stop Engine (Engine Warning) red indicator light
- High Exhaust Temperature (HEST) amber indicator light
- Diesel Particulate Filter Regeneration (DPF) amber indicator light
- Diesel Exhaust Fluid (DEF) Level amber indicator light
- Wait-to-Start amber indicator light
- Malfunction Indicator Light (MIL) amber indicator light
- ABS warning amber indicator light
- Automatic Traction Control activated amber indicator light
- Electronic Stability Control activated amber indicator light
- Spring (Parking) Brake "On" red indicator light
- High Beam “On” blue indicator light
- Low air pressure red indicator light
- Left Turn signal green indicator light
- Right Turn signal green indicator light
- Panel Fault amber indicator light
- Cab Not Locked red indicator light

One (1) Emergency & Work Light Switch Panels - Driver & Officer (Requires INTELEX™ PLUS)

22-00-015T

EMERGENCY & WORK LIGHT SWITCH PANELS - DRIVER'S & OFFICER'S SIDES

All emergency light and work area lighting control switches shall be mounted in removable panels located in the overhead position on both the driver's and officer's side of the cab. The light switches shall be "rocker" type with an internal indicator light (where applicable) to show when the switch is energized. All switches shall be properly identified by an illuminated label for night driving.

A master warning light rocker switch, red in color, shall be provided for emergency lighting.

A momentary clear warning light black rocker switch shall be provided for clear emergency lighting control that shall default on.

Work lights are defined as ground, step, rear pick up, hose bed or dunnage area, if on the apparatus and specified.

One (1) Door Ajar/Hazard Warning Indicator - LED
22-00-0160

DOOR AJAR/HAZARD INDICATOR LIGHT (DO NOT MOVE APPARATUS)

A Whelen "T0" series 2" round red flashing LED light with chrome flange shall illuminate automatically whenever the apparatus parking brake is not fully engaged and any of the following conditions exist:

- Any passenger or equipment compartment door is open.
- Any ladder or equipment rack is not in the stowed position.
- Stabilizer system is not in its stowed position.
- Powered light tower is extended.
- 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.

The hazard warning light shall be identified with a label that reads: “Do Not Move Apparatus When Light Is On.” The light shall be located on the ceiling between the driver and the officer.

One (1) Digital Clock - 24 Hour
22-00-017B

DIGITAL CLOCK

A 24 hour real-time digital clock shall be identified and visible to the driver while seated.

One (1) Electrical Wiring - 12V INTELEX™ PLUS, Attacker/Capitol
22-00-030A

ELECTRICAL WIRING REQUIREMENTS - INTELEX™ PLUS

The apparatus shall be equipped with an INTELEX™ PLUS management system for control of the electrical system devices, where applicable.

CIRCUIT PROTECTION

Circuit protection devices shall be utilized to protect each electrical circuit. All circuit protection devices shall be sized according to 125% of the anticipated load to prevent wire and component damage when subjected to extreme current overload.

SOLID STATE CIRCUIT PROTECTION

Intelex power distribution modules shall utilize solid state output channels and feature fully protected high-side drivers (+12V) to protect wiring. High-side drivers shall provide overload protection, current limitation, transient protection, and replicate the function of an automatic reset circuit breaker. If output current exceeds the rated amperage, the output shall automatically turn off. After 30 seconds, the module shall attempt to re-energize the load. If the output is still overloaded, it shall remain off until the power is cycled. In the event of a communications loss with the vehicle's control module, all outputs not controlling a moving device, such as a ladder rack, shall remain in their previous state until communication is restored or the power is cycled.

NON-SOLID STATE CIRCUIT PROTECTION

Circuit breakers shall be Type-I automatic reset (continuously resetting) and conform to SAE J553 or J258 unless operational requirements and/or safety concerns dictate Type-III manual reset type conforming to SAE J1625. Automotive-type fuses conforming to SAE J554, J1284, J1888 or J2077 shall be utilized when required to protect electronic equipment.

POWER CONTROL RELAYS AND SOLENOIDS

Power control relays and solenoids shall have a direct current (dc) rating of 125 percent of the anticipated current load.

BUSSMANN MVEC RELAYS AND CIRCUIT PROTECTION

Manufactured as a hardened and weather tight module, the mVEC is rated at 200 Amps. The mVEC is configured to provide various OEM circuit protection and switching functions, using industry standard fuses, relays and breakers, with the status and control of each circuit accessible through J1939 CAN open messages. Each mVEC is rated at 200 Amps, with individual outputs rated up to 30 Amps. Waterproof to high pressure spraying (IP66 equivalent). The mVEC is designed and manufactured with robust features such as heavy-duty housing, silicon and Gortex gaskets, and protective conformal coated electronics, to operate in demanding vehicle environments such as those found in fire apparatus.

One (1) Information Center II - INTELEX™ PLUS
22-00-0310

INFORMATION CENTER II

A 5" color display capable of displaying graphical images as well as text messages shall be located on the cab dash. The main display page shall include the date, time and ambient air temperature in Fahrenheit. Additional information pages shall be provided for the warning indications, not stowed indications, and open doors. The display shall be dimmable with a Rheostat control on the dash and shall have an override button on the control to dim to ten (10) percent.

APPARATUS STATUS INDICATORS AND AUDIBLE ALARMS

If a monitored "Not Stowed" or "Warning" condition is active, the corresponding status indicator shall flash. In addition to visual indicators, audible alarms shall sound when designated conditions activate the "Not Stowed" and "Warning" status indicators.

WARNING INDICATOR

A flashing red triangle symbol shall alert the vehicle occupants of an active "WARNING" condition. This is defined as a situation or status on the vehicle that is of high priority or "mission critical" nature. The flashing red triangle shall be displayed on the Information Center and dash gauge panel in front of the driver. The following are typical "Warning" (high priority) conditions:

- HYDRAULIC FILTER
- AIR RESTRICTION
- LOAD MANAGE
- LOW AIR PSI
- CAB NOT LOCKED
- ABS FAULT
- LOW VOLTAGE
- JACK KNIFE (If applicable)
- TRAILER ABS

(If applicable)

NOT STOWED INDICATOR

A flashing Not Stowed indicator shall alert the vehicle occupants of an active "Not Stowed" condition. This is defined as a situation or status on the vehicle that is not of high priority or "mission critical" nature, but requires attention before the vehicle is put in motion. The following are typical "Not Stowed" (not high priority) conditions:

- AERIAL RAISED (If applicable)
- DECK GUN RAISED (If applicable)
- JACKS EXTENDED (If applicable)
- DUMP CHUTES (If applicable)

The following items are considered Not Stowed only when the parking brake is released.

- LADDER UP (If applicable)

- LIGHT TOWER UP (If applicable)
- OUTRIGGERS (If applicable)
- DS HATCH OPEN (If applicable)
- PS HATCH OPEN (If applicable)
- JACKS EXTENDED (If applicable)
- Q2B TILTED (If applicable)
- DECK GUN RAISED (If applicable)
- DS TELE LIGHT UP (If applicable)
- PS TELE LIGHT UP (If applicable)
- STEP DOWN (If applicable)
- PEDESTAL COVER UP (If applicable)

AUDIBLE ALARMS

The following conditions shall cause the audible alarm to sound “steady” (not an intermittent beep); signifying a “mission critical” condition exists that requires immediate attention.

- STOP ENGINE
- LOW AIR
- LOW COOLANT
- CAB NOT LATCHED
- LOW VOLT
- ABS FAULT
- LOW OIL PRESSURE

Corresponding “Low Air”, “Stop Engine” visual indicators shall be located in the dash gauge panel in front of the driver.

The following conditions shall cause a chime alarm to sound “intermittently” (i.e., beep), once the parking brake is released, signifying a condition exists that may become “mission critical” if not quickly addressed.

- ANY LIGHT NOT STOWED
- ANY BODY DOOR OPEN
- ANY CAB OR CREW CAB DOOR OPEN

An audible alarm shall sound if any of the seat belts are not properly closed and the vehicle is going 5 mph or greater. The sound shall be different from all other audible alarms in the cab.

OPEN DOORS / DEPLOYED EQUIPMENT RACKS / EXTENDED STEPS

When a cab or compartment door is open, a step is extended, or equipment (i.e., ladder) rack is deployed, the “DOORS” indicator shall flash. Pressing the corresponding button shall display an overhead graphical representation of the apparatus. This image depicts the open cab door(s), open compartment door(s), deployed equipment rack(s), and/or extended step(s). The chime alarm shall also sound when

the parking brake is released.

One (1) Customer Information on Display - Customer Name & City
22-00-031A

The customer's name and city shall display on the information display screen.

One (1) Customer Information on Display Shall Not Be PIN Protected
22-00-031F

Customer information on the display shall not be PIN protected.

One (1) Load Management System - INTELEX™ PLUS
22-00-0320

AUTOMATED ELECTRICAL LOAD MANAGEMENT SYSTEM

The apparatus shall be equipped with an automated load management system. The load management system shall monitor battery voltage and activate the engine high idle system (provided NFPA interlocks have been established) before disabling any electrical loads. If engine high idle is not available or activation does not result in sufficient battery system voltage, individual electrical loads shall be automatically and sequentially deactivated until voltage returns to an acceptable level. Loads shall be sequentially reactivated to avoid a sudden large voltage demand on the system. Electrical loads defined in NFPA 1901 as “minimum continuous” shall not be subject to automatic load management.

If the load management system becomes active, the “LOAD MANAGE” indicator shall illuminate on the "Warnings" page of the INTELEX™ PLUS cab mounted display.

One (1) Load Sequencer - INTELEX™ PLUS
22-00-0330

LOAD SEQUENCER

A sequential switching device shall automatically energize the specified optical warning devices to minimize potentially damaging voltage fluctuations due to the sudden addition or removal of large current demands on the electrical system. Upon activation of the “EMERGENCY MASTER” warning switch and provided the individual optical warning device switches are also activated, the following loads shall be activated (or deactivated) in 0.5 second intervals:

- Front Light Bar
- Side Light Bar (if applicable)
- Front and Rear Flashing Lights
- Side Warning
- Rear Beacons
- High Beam Headlight Flash

Fire & Specialty Equipment Company

One (1) Vehicle Data Recorder & Seat Monitor - FRC #SBA243, INTELEX™ PLUS
22-00-0344

VEHICLE DATA RECORDER AND SEAT MONITOR DISPLAY

Fire Research series SBA243-A00 seat monitor display and vehicle data recorder kit shall be installed. The kit shall include a seat monitor display module, a vehicle data recorder, and cables.

The seat monitor display shall be programmable for up to twelve (12) seats and have a seatbelt icon for each. A message display, push buttons for navigating through programs, and vehicle system warning indicators shall be located on the front of the seat monitor display.

The data recorder case shall be waterproof. It shall have inputs for monitored information from the vehicle J1939 CAN bus, independent sensors, seatbelt and seat occupied switches, outputs for audible alarms, and two-way FRC datalink connectors.

The vehicle data recorder shall record the following data once per second and store it in a 48 hour loop:

- Vehicle Speed
- Acceleration
- Deceleration
- Engine Speed
- Engine Throttle Position
- ABS Event
- Seat Occupied Status
- Seat Belt Status
- Master Optical Warning Device Switch
- Time
- Date

The vehicle data recorder shall record the following data once per minute and have memory to store it for 100 engine hours:

- Maximum Vehicle Speed
- Maximum Acceleration
- Maximum Deceleration
- Maximum Engine Speed
- Maximum Engine Throttle Position
- ABS Event
- Seat Occupied with Seat Belt Unbuckled
- Master Optical Warning Device Switch
- Time
- Date

The oldest data shall be erased first when memory capacity is reached. All data shall be password protected and uploadable from the vehicle data recorder to a computer running FRC HAWK data management software. The HAWK software shall store, manage, provide graphic displays and produce

formatted reports of the vehicle data recorder data. The HAWK Data Management Software package shall be provided with the apparatus.

One (1) Electrical System Diagnostics - INTELEX™ PLUS
22-00-0350

ELECTRICAL SYSTEM DIAGNOSTICS

The apparatus shall feature on-board electrical system diagnostics and provision for off-board diagnostic service equipment.

ON-BOARD DIAGNOSTICS

On-board diagnostic indicators shall be provided to support rapid troubleshooting of the INTELEX™ PLUS based electrical power and signal system. The input and output status of each INTELEX™ PLUS system module shall be easily determined through easy to use display pages.

Switches shall be provided in the cab to allow the operator or service personnel to obtain On-Board diagnostic information from the ABS system and Engine Controller.

A troubleshooting guide shall be provided with the vehicle to assist with interpretation of the diagnostic signals.

OFF-BOARD DIAGNOSTIC PROVISION

An interface port shall be provided for service access to the INTELEX™ PLUS data bus. The diagnostic port shall be mounted inside the cab on the driver side in a location that is accessible from the ground.

One (1) Power Studs - Overhead Switch Panel, (4) Stud Switched
22-00-0510

POWER STUDS (OVERHEAD SWITCH PANEL)

Four (4) studs shall be provided in the overhead switch panel to provide a 12 volt feed. The studs shall consist of a 12 volt direct stud, switched battery stud, switched ignition stud and grounding stud.

One (1) Power Studs - Cab Dash Area, (4) Stud Switched
22-00-0520

POWER STUDS (CAB DASH)

Four (4) studs shall be provided in the cab dash area to provide a 12 volt feed. The studs shall consist of a 12 volt direct stud, switched battery stud, switched ignition stud and grounding stud.

One (1) Buss Bar - Under Officer's Seat, (4) Stud Switched
22-00-0530

BUSS BAR (UNDER OFFICER'S SEAT)

A four (4) stud 30 Amp buss bar with protective cover shall be provided under the officer's seat to provide a 12 volt feed. The studs shall consist of a 12 volt direct stud, switched battery stud, switched ignition stud and grounding stud.

One (1) 22-00-0540 Fuse Block - Under Engine Tunnel Panel, 30 AMP

FUSE BLOCK (UNDER ENGINE TUNNEL)

A Blue Sea #5046 eight (8) place fuse block shall be provided under the rear engine tunnel panel to provide a 12 volt direct supply with ground. A total of 30 Amps of power shall be provided.

One (1) 22-00-06CP Dash Layout Drawing - Attacker, Split Tilt Cabs & Capital Full Tilt Cabs

DASH LAYOUT

The Manufacturer shall furnish a dash layout drawing to the Fire Department for their review and approval. The drawing shall detail the locations for installation of radios, sirens, light switches, gauges, etc. Due to the cab dash configuration and electrical wiring design, the components shall have designated locations that each will fit. The Fire Department shall review and approve the layout during the Engineering Conference.

One (1) 22-01-1502 Speedometer - Additional, Officer, Digital

OFFICER SPEEDOMETER

An additional speedometer shall be provided on the right hand side of the dash so that the officer can monitor apparatus speed. The speedometer shall be digital.

Three (3) 22-03-1400 12V Power Point - User Defined Location (Ea)

12 VOLT PLUG(S) AND RECEPTACLE(S)

Three (3) 12 volt power plug receptacle(s) and cover(s) shall be provided and shall be wired battery direct, with a fused circuit. The plug and receptacle are made from corrosion resistant marine grade materials. The plug locks into the receptacle providing a positive moisture proof connection.

Location of the 12V Power Point(s) shall be: Determined at the pre-build conference

One (1) 22-03-14SA No 12V Power Box on Rearward Engine Tunnel Required

Fire & Specialty Equipment Company

Six (6) 22-03-14UP — USB Charger Port - Kussmaul Dual Port #091-264 (Ea)

USB CHARGER PORT

Six (6) Kussmaul Electronics model 091-264, USB-C / USB-A Dual Charger Ports shall be wired battery direct with a fused circuit and shall be located on the dash as follows:

Location of USB charger port shall be: TBD

Two (2) 22-0A-5061 — Radio Cutout in Dash (Ea)

RADIO CUTOUT(S) IN DASH

Two (2) radio cutout(s) shall be provided in the dash, per the approved dash layout drawing.

Dash Zone #18
Top slot: Harris HG25M
Bottom Slot : ICOM ICF 121

Three (3) 22-0A-5120 — Two-Way Radio Antenna Mount - Universal w/ Cable (Ea)

TWO-WAY RADIO ANTENNA MOUNT(S)

Three (3) universal antenna mount(s), model MATM, with 17 feet of coax cable and black weatherproof cap shall be provided for the two-way radio equipment.

One (1) 22-0A-5130 — Install Dealer/Customer Furnished Antenna Mount (Ea)

RADIO ANTENNA

One (1) radio antenna(s) supplied by the fire department shall be mounted on the cab roof.

Three (3) 22-0A-515A — Antenna Lead - Terminates in the Overhead Dash

The antenna lead shall terminate in the overhead dash. Any excess cable shall be secured in an accessible location.

One (1) 22-0A-515C — Antenna Lead - Terminates in the Officer's Seat Riser

The antenna lead shall terminate in the officer's seat riser. Any excess cable shall be secured in an accessible location.

Three (3) Antenna Location - Behind Light Bar
22-0A-516A

The antenna location shall be installed in the cab roof, behind the light bar.

One (1) Antenna Location - Behind Light Bar
22-0A-516A

The antenna location shall be installed in the cab roof, behind the light bar.

One (1) Batteries - (6) 12V, 950 CCA
22-10-0700

BATTERIES

Six (6) 12V Group 31 950 CCA batteries shall be installed three each side of the cab under the rear entrance way.

Heavy-duty battery cables shall be provided to maximize power available to the electrical system.

One (1) Jumper Cable Studs - Under Driver's Side Battery Box
22-10-5200

JUMPER CABLE STUDS

A pair of jumper cable studs with color coded covers shall be provided under the driver's side battery storage area.

One (1) Battery/Electrical Component Storage Areas - S/S, Cab (Attacker/Capitol)
22-11-060S

BATTERY AND ELECTRICAL COMPONENT STORAGE AREAS

Battery and electrical component storage areas shall be constructed of stainless steel with structural steel tubes at the corner mounting points and shall be located one (1) each side mounted on the vehicle frame. They shall be well ventilated and enclosed to protect against road splash and debris. Suitable provisions shall be provided for drainage.

The batteries shall be held firmly in place by providing a full frame type top clamp which encloses the battery set on all four (4) upper corner sides. The one piece clamp shall be fabricated of 3/4" angles and be held in place by four (4) "J" shaped clamping bolts placed in the corners, retained within the battery box to prevent retrieval from underside the apparatus. Battery inspection shall be provided through doors in the step area of the crew cab. Battery replacement shall be possible without tilting the cab (No Exceptions).

One (1) Battery Box Finish - Gloss Black Paint

Fire & Specialty Equipment Company

22-11-0610

The whole battery box (interior and exterior) where the batteries are installed shall be painted gloss black.

One (1) Battery Mats - Turtle Tile, Non-Corrosive
22-11-5100

BATTERY MATS

The batteries shall be installed on a non-corrosive Turtle Tile mat.

One (1) Battery Disconnect Switch - Blue Sea 350 Amp
22-15-1400

DISCONNECT SWITCH - BLUE SEA 9003

A master load disconnect switch shall be provided between the battery positive buss bar and the remainder of the switched battery electrical loads on the apparatus. A green "battery on" pilot light that is visible from the driver's position shall be provided.

One (1) single battery system switch mounted near the driver's side front entrance in a location so it may be turned off by a person standing on the ground outside the vehicle. It shall have the capacity to handle 350 amps of continuous power.

One (1) Battery Disconnect Switch
22-15-140X

BATTERY DISCONNECT SWITCH ADDITIONAL

BATTERY DISCONNECT SWITCH ADDITIONAL

An additional master disconnect switch shall be provided between the batteries and the battery positive buss bar to facilitate ease of maintenance. This disconnect shall be located near the batteries and shall be accessible when the cab is tilted.

Additional battery disconnect to be located per SO 56233 on driver's side battery box rear face

Fire & Specialty Equipment Company

One (1)
22-15-3750

Battery Charger - Kussmaul #091-187-12-REMOTE, AutoCharge 1200 w/Bar Graph Displ

BATTERY CHARGER

There shall be one (1) Kussmaul model #091-187-12-REMOTE "Auto Charge 1200" single battery charger system installed in the vehicle's electrical system. The charger shall be fully automatic and shall maintain the truck batteries at a full charge level when connected to a 120 VAC source. Remote voltage sensing shall be provided to compensate the charger output for the voltage drop in the charging wires.

DISPLAY

A remote mounted indicator MODEL 091-199-001 shall be included which shall contain one bar graph to display the condition of the batteries. **It shall be mounted on the outside of the cab driver's side in close proximity to the shoreline inlet**

Fire & Specialty Equipment Company

One (1)
22-15-4100

Air Compressor - Kussmaul 091-9B-1, 120V

REDUNDANT AIR COMPRESSOR

A Kussmaul model #091-9B-1 "Auto Pump AC" redundant air compressor shall be installed. The Auto Pump shall be wired to 120 VAC shoreline. Operation shall be automatic with the pressure switch sensing the system pressure and controlling the power input. The compressor shall automatically replace air lost due to leakage in the brake system without any interference to engine mounted air compressor functions.

One (1)
22-15-4LDW

Charger/Compressor Location - Wall Adjacent to Side Window on Driver's Side

The battery charger/compressor shall be located on the driver's side wall adjacent to the side window.

One (1)
22-15-4LOW

Charger/Compressor Location - Wall Adjacent to Side Window on Officer's Side

The battery charger/compressor shall be located on the officer's side wall adjacent to the side window.

One (1)
22-15-5000

Battery Charger/Air Compressor Cover

BATTERY CHARGER/AIR COMPRESSOR COVER

A smooth aluminum cover shall be provided over the battery charger/air compressor. The outside finish shall match the cab interior finish.

One (1) 22-15-5000 Battery Charger/Air Compressor Cover

BATTERY CHARGER/AIR COMPRESSOR COVER

A smooth aluminum cover shall be provided over the battery charger/air compressor. The outside finish shall match the cab interior finish.

One (1) 22-15-5350 Non-Ejecting Shoreline Inlet - Hubbell 20 Amp, 120 VAC

NON-EJECTING SHORELINE INLET

A Hubbell 20 Amp, 120 VAC non-ejecting shoreline power inlet shall be provided for the battery charger. A label shall be permanently affixed at the inlet that indicates the line voltage in volts and the current rating in amps.

Cover to be painted Job color Red

One (1) 22-20-5810 Shoreline Inlet Location - Behind Driver's Door on Cab's Side

The shoreline inlet shall be located behind the driver's door on the cab's side.

One (1) 22-90-004J Headlights - Quad, Truck-Lite LED, with Dual Light, Chrome Bezels

HEADLIGHTS

Front headlights shall be mounted on the front cab face to the left and right of the engine cooling intake grille. The headlights shall be quad type, rectangular Truck-Lite model 27640C/27645C 12-volt LED with bright finished trim rings and chrome bezels. The low beam headlights shall be located at the outer position.

One (1) 22-90-004X Headlight Position - Middle

The headlights shall be in the middle position.

One (1) 22-90-007A Front Directional Dual Light Bezels, (2) Chrome-Plated

FRONT DIRECTIONAL DUAL LIGHT BEZEL

The front directional lights shall be mounted in a chrome plated dual light bezel located on each side of the cab front face. The dual light bezel shall match the headlight housing.

One (1) Front Directional Light Bezels Position - Uppermost
22-90-007X

The front directional light bezels shall be in the uppermost position.

One (1) Front Directional Lights - (2) Whelen M62T, LED, Amber Arrow, with Amber Lens
22-90-008G

FRONT DIRECTIONAL LIGHTS

There shall be one (1) Whelen M62T LED amber arrow directional signal light installed on each side of the cab front face. The light shall have an amber arrow shape with black background and shall be provided with a "flash" pattern; a "sweep" pattern shall not be allowed. Lens color shall be amber.

One (1) Clearance Lights - (5) Weldon Amber LED/Amber Lens, Surface Mount
22-90-0100

CLEARANCE LIGHTS

Exterior cab lighting shall meet or exceed Federal Department of Transportation, Federal Motor Vehicle Safety Standards and any National Fire Protection Association requirements in effect at the time of proposal.

Five (5) Weldon 9186-1500-20, amber LED type clearance and identification lights shall be surface mounted across the top leading edge of the cab roof.

One (1) Marker Lights - TecNiq #S34, (2) Amber LED/Amber Lens & (7) Red LED/Red Lens
22-90-0140

MARKER LIGHTS

A TecNiq S34 amber LED marker light with amber lens shall be recess mounted in a rubber sealing grommet placed in the lower front cab side, forward of the driver and officer door, on each side of the cab. The light body shall be urethane filled to ensure against moisture intrusion. These cowl mounted lights shall have 100,000 hour life and shall carry a manufacturers 10 year warranty.

Seven (7) TecNiq S34, red LED marker and clearance lights with red lens shall be installed at the rear of the body. The three light identification cluster shall be surface mounted on the rear step vertical flange. Two lights shall be placed at each lower rear body corner, facing the side. Two lights shall be placed in the upper rear body corners, facing the rear.

One (1) Body Side Directional Lights - (2) Britax L428 Rear & (2) TecNiq S34-A, LED,Mids
22-90-031Q

TURN/MARKER LIGHTS

One (1) Britax model L428, short rubber double faced directional light shall be provided and installed on the rear body fender panel on each side of the vehicle. The amber lens shall face forward and the red lens shall face to the rear.

One (1) TecNiq model S34-A amber marker light shall be located on each side of the body just forward of the front compartments, near the bottom. The lens shall match the other marker light lenses on the apparatus.

One (1) Side Marker Lights - Britax #L427, LED, Long, Rear Corners
22-90-0320

REAR MARKER LIGHTS

A Britax long stemmed "LED" dual faced #L427 long, marker light shall be placed at each rear corner of the body. The front lens shall be amber; the rear lens shall be red.

One (1) License Plate Bracket (S/S) & LED Light - Rear of Vehicle
22-90-0405

LICENSE PLATE LED LIGHT & BRACKET

A stainless steel license plate bracket, painted black, shall be installed on the rear of the vehicle. Mounted on the license plate bracket shall be a chrome light bracket containing a 12 volt LED lamp that shall illuminate the license plate.

One (1) Rear License Plate Bracket Location - LS of Body, Above Taillights
22-90-0455

The license plate bracket shall be located on the rear of the vehicle, on the left side above the taillight cluster.

One (1) D.O.T. Reflectors
22-90-0500

D.O.T. REFLECTORS

Reflectors shall be placed on the cab and body as required by Federal standards. An amber reflector, Signal Stat, model 32ADB, shall be placed on each side of the cab. Four (4) Signal Stat model 32DB red reflectors shall be located on the rear face and sides of the body. The reflectors shall be rectangular in shape.

One (1) Cab Side Direct Lights - (2) Double Faced, Britax #L428, LED, Short
23-02-9300

SIDE DIRECTIONAL LIGHTS

Britax model #L428, short rubber side LED directional lights shall be provided in addition to the front

turn signals. One (1) light shall be mounted just above the front fender on each side of the cab. Lamp shall have an amber plastic lens at front and a red lens facing rear.

One (1) Configuration of Turn/Brake/Backup/Warning Lights at Rear of Apparatus
23-03-0015

BRAKE/TURN/BACKUP/WARNING LIGHTS CONFIGURATION

The brake, turn, backup and warning lights shall be located at the rear of the apparatus. Each light shall be mounted horizontally in a vertical configuration, one light atop the other.

The order of lights shall be as follows:

Top:	Turn
Second from top:	Brake
Third from top:	Back-up
Bottom:	Warning

One (1) STBU Lights - Whelen M62 Series, Colored Lens
23-03-0140

STOP-TURN-BACK UP LIGHTS

Two (2) Whelen M6 series LED red brake/tail lights, model M62BTT, with red outer lens, shall be mounted at the rear of the apparatus, one on each side. All brakes lights shall be programmed for "steady burn" operation in compliance with FMVSS No. 108.

Two (2) Whelen M6 series Super-LED amber turn lights, model M62T, with amber outer lens, shall be mounted at the rear of the apparatus, one on each side. They shall be provided with a "flash" pattern; a "sweep" pattern shall not be allowed.

Two (2) Whelen M6 series clear Super-LED back up lights, model M62BU, shall be mounted at the rear of the apparatus, one on each side.

One (1) Bezels - (6) Whelen #M6FC, Chrome-Single, f/ M6 Series Stop/Turn/Backup
23-03-0720

BEZELS

Six (6) Whelen #M6FC chrome plated bezels shall be provided for the M6 series rear stop, turn, and backup lights.

One (1) 23-04-020A — Rear Floodlights - (2) Whelen PAR36, Chrome Super-LED, Cab Switch

REAR PICKUP LIGHTS

Two (2) Whelen PAR36 chrome plated Super-LED floodlights, model PFBS12C, with 12 diodes, shall be installed at the rear of the apparatus. A black rocker switch shall be provided in the cab.

One (1) 23-05-0010 — Light Activation - Step Lights

LIGHT ACTIVATION

The cab step lights shall be activated with the cab door open switch.

The step lights on the body shall be activated with the parking brake in conjunction with the marker lights.

One (1) 23-05-0034 — Black out Switch

BLACK OUT SWITCH

A Momentary default on tep light over-ride switch shall be provided. Step lights will engage with the park brake marker light function. There shall be a switch that resets with the ignition that will alow specified lights to be turned off in the cab for "black out situations"

Parking lights over-ride switch to be Labeled. "BLACKOUT SWITCH"

Blackout switch, will operate as noted.
Switch indicator will illuminate when switch is activated
Disable Cab Dome Lights from activating with door switch
Disable Ground Lights from activation with cab door switch
Disable Body Step Lights from activation.

One (1) 23-05-0035 — Step Lights - (4) Cab, Whelen TOCACCCR, LED (Attacker/Capitol)

CAB STEP LIGHTS

Four (4) Whelen model TOCACCCR, LED step lights shall be provided, one (1) at each cab entrance door.

One (1) — Step Lights - Access Ladder, TecNiq Eon & TecNiq E10 LED, Surface Mounted

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23-05-11A0

ACCESS LADDER STEP LIGHTS

The access ladder shall be illuminated by one (1) TecNiq Eon LED horizontal surface mounted step light located above the top step shining downward and one (1) TecNiq E10 LED surface mounted step light located below the top step, also shining downward.

One (1) Waterway Intake Lighting - (2) TecNiq EON, LED
23-05-11A5

WATERWAY INTAKE LIGHTING

Two (2) TecNiq EON series LED lights shall be located in the aerial waterway intake panel at the rear, one each side, to illuminate the intake area. The lights shall activate with the parking brake/marker light function.

One (1) Step Lights - Turntable, TecNiq Eon LED
23-05-1220

TURNTABLE STEP LIGHTS

There shall be three (3) TecNiq Eon LED step lights at the base of the aerial to illuminate the turntable stepping surfaces.

There shall be a TecNiq Eon LED step light on the pedestal to illuminate the area around the pedestal. This light shall be activated with the aerial PTO.

One (1) Step Light Flange - TecNiq, Polished Stainless Steel
23-05-1412

The flange for the step lights shall be polished stainless steel.

Two (2) Step Light Flange - TecNiq, Polished Stainless Steel
23-05-1412

The flange for the step lights shall be polished stainless steel.

Four (4) Step Light Flange - TecNiq, Polished Stainless Steel

23-05-1412

The flange for the step lights shall be polished stainless steel.

Four (4) Step Light Flange - Whelen, Grommet
23-05-1420

The step lights shall have a grommet.

One (1) Light Activation - Ground Lights
23-05-2010

LIGHT ACTIVATION

The cab ground lights shall be activated with the cab door open switch.

The ground lights on the body shall be activated with the parking brake in conjunction with the marker lights.

One (1) Ground Lights - (4) Cab, TecNiq #E10 LED
23-05-2111

GROUND LIGHTS

Four (4) weatherproof TecNiq #E10 LED ground lights shall be provided underneath the cab, per NFPA requirements.

One (1) Ground Lights - (2) Body Rear Step, TecNiq #E10 LED
23-05-2121

GROUND LIGHTS

Two (2) weatherproof TecNiq #E10 LED ground lights shall be provided underneath the body rear step, per NFPA requirements.

One (1) Ground Lights - (2) Under Transverse Compartment, TecNiq E10, LED
23-05-216B

GROUND LIGHTS

Two (2) weatherproof TecNiq E10 LED ground lights shall be provided underneath the transverse compartment, one each side, approximately centered with the compartment.

One (1) Ground Lights - Additional, TecNiq #E10 LED (Ea)
23-05-2181

GROUND LIGHTS

In addition to the standard, NFPA required ground lights, one (1) weatherproof TecNiq #E10 LED

ground lights shall be provided underneath the vehicle.

One (1) Ground light shall be installed underneath the rear body below the ladder storage compartment lights,approximately centered with the compartment.

One (1) 23-05-301C — Work Light - (1) Engine Compartment, Whelen 3SC0CDCR, ATT/CAP Only

ENGINE COMPARTMENT WORK LIGHT

One (1) Whelen 3SC0CDCR engine compartment work light shall be provided. The light shall illuminate the fluid dip sticks. The light shall activate with the cab tilt or with the switch. The single light shall be installed on the right side of the opening.

One (1) 23-11-1000 — Cab Dome Lights - (4) Weldon #8086-6978-68, Red/Clear

INTERIOR CAB DOME LIGHTS

Four (4) Weldon 8086-6978-68 red/clear incandescent lights with push button shall be mounted in the cab ceiling. Two (2) in front (driver & officer) and two (2) in the crew cab. The red light shall be in the forward position. All lights shall be controlled by a switch by the lens.

One (1) 23-11-1410 — Door Switches - Dome Lights, Automatic

AUTOMATIC DOOR SWITCHES

Automatic door switches shall be provided for the cab dome lights. All white dome lights shall activate with any cab door opening.

Four (4) 23-11-292M — Cab Door Lights - Whelen OSA00FCR Flashing Amber LED, Chrome Flange (Ea)

CAB DOOR INTERIOR LIGHTS

Four (4) Whelen model OSA00FCR flashing amber LED lights in chrome flanges shall be installed on the interior of the specified cab entrance doors, above the door seal in the lower outboard corner.

Four (4) 23-11-292Z — Cab Door Light Location - All Doors (Match Door Quantity)

The cab doors receiving lights shall be all the doors.

Four (4) 23-12-3010 — Hand Light - Streamlight, Fire Vulcan® #44451, LED/LED (Ea)

HAND LIGHTS

Four (4) Streamlight Fire Vulcan® LED model 44451 rechargeable hand light(s) with quick release shoulder strap(s) and a 12 volt DC direct wire charging rack shall be provided. The hand light shall be orange in color and feature a C4 LED primary bulb and two(2) blue LED taillights. The momentary toggle switch has 8 different modes of operation.

Four (4)
23-12-3S80

Hand Light Location - Identified at Time of Order for Installation

The hand lights and charging rack, if applicable, shall be located at time of order for installation.

Ten (10)
23-25-0150

Exterior Compartment Lights - (2) ROM LED Strips, Vertical Mount (Ea Pair)

EXTERIOR COMPARTMENT LIGHTS - (2) LED STRIP(S)

Ten (10) exterior compartment(s) shall have a ROM LED lighting strip installed on both sides of the door. The lighting strips shall be mounted vertically along both sides of the door framing in all specified body compartments. The LED lights shall be mounted in an anodized aluminum track. A switch, installed in the door frame, shall be used to activate the lights.

Specify which compartment(s) shall receive lighting:

Transverse Compartment
LT1 & RT1

Rear Main Body
LS1, LS2, LS3, LS4
RS1, RS2, RS3, RS4

One (1)
23-25-0178

Transverse Compartment Center Lights - (2) TecNiq E10, LED (Ea)

COMPARTMENT LIGHTS

One (1) transverse compartment(s) shall be provided with two (2) TecNiq E10 LED lights installed in the transverse area of the compartment(s). Each light shall be mounted on a "hat" shaped metal bracket welded to the compartment ceiling to eliminate mounting holes through the top of the compartment. A switch, installed in each door frame, shall be used to activate the light nearest that door. Lights shall not have any other individual switch on the light base.

One (1)
24-10-WFE9

Lightbars - (2) Whelen #F4N MINI, 21.5", LED, Forward Facing

MINI LIGHTBAR

Two (2) forward facing Whelen model F4N MINI Mini Freedom™ IV LED 21.5" lightbars shall be

provided and installed on the cab roof so that they are pointed straight ahead. Each lightbar shall consist of two (2) Linear-LED® heads with two (2) clear LED located in the center forward facing and one (1) red LED to the outside facing the side. The lightbar shall also be equipped with two (2) red corner Linear-LED® lights in the front corners.

Two (2) Lightbar Mount - Whelen MKEZ7, 1.5" high, on Mini Lightbars
24-15-3020

The Whelen mini lightbar shall be mounted using a 1.5" high mount, model MKEZ7.

One (1) Beacons - (2) Whelen #R316RF. Rota-Beam™, Red with Red Lens
24-20-WLLA

UPPER REAR WARNING LIGHTS

Two (2) Whelen model R316RF Rota-Beam™ Super-LED® red beacons with red lens shall be provided on the upper rear of the apparatus. The flasher shall have the factory set Rotator 75 flash pattern.

One (1) Beacon Locations - (2) Directly Atop Body Rear
24-20-Y010

The rear beacons shall be installed directly atop the body.

Twelve (12) Perimeter - Whelen #M6R Super-LED®, Red, with Red Lens (Ea)
24-30-WLM5

WARNING LIGHTS

Twelve (12) Whelen model M6R red Super-LED® light(s) with flange(s) and red lens(es) shall be provided on the apparatus. The flash pattern of the light(s) shall be the factory set SignalAlert™ 75 flash pattern.

One (1) Cab Cowl Lights - (2) Whelen 50R03ZRR, Red LED with Red Lens
24-35-0010

CAB COWL LIGHTS

Two (2) Whelen 50R03ZRR red LED lights with red lens and flanges shall be provided on the cab cowl, one each side. The flash pattern of the lights shall be the factory set SignalAlert™ 75 flash pattern.

One (1) Cowl Light Location - (B) Middle, In-Line with Middle Light Cab Front
24-35-021B

The cowl lights shall be located on both of the cab cowls with the lights mounted approximately in-line with the middle light position on the front of the cab, at approximately 45 degrees.

One (1) Standard Perimeter Warning Light Locations - Custom Apparatus
24-3L-0100

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Location of each perimeter warning light shall be:

Zone A Upper:
(2) Front light bars

Zone A lower:
(2) M6 Red lights inboard of turn signals
(2) M6 Red beneath headlights (2) centered
(2) 500 Red lights on cab cowls

Zone B/D lower:
(2) M6 Red lights on side of bumper
(2) M6 Red lights on side of cab, to rear of axle center, near crew door hinge
(2) M6 Red lights on body fender

Zone C upper:
(2) Rear beacons

Zone C lower:
(2) M6 Red lights below the backup lights

One (1) 24-80-WLE5 — Traffic Adv - Whelen #DTA8A, TIR3™ Super-LED®, Amber, 30.36"

TRAFFIC ADVISOR™

A Whelen model DTA8A Dominator™ series Traffic Advisor™ shall be provided. The light bar shall be 30.36" long and have eight (8) TIR3™ Super-LED® amber lamps. All outer lenses shall be clear. It shall be mounted in an extruded aluminum housing. The lights shall be controlled by a TADCTL1 controller mounted in the cab.

One (1) 24-81-CTCD — Traffic Arrow Control Head - Top Center Dash Mounted

The control head for the traffic arrow shall be mounted on the top center of the dash.

One (1) 24-81-CTX5 — Traffic Advisor™ Wiring - Through Emergency Master

The Traffic Advisor™ shall be wired through the Emergency Master.

One (1) 24-82-IN0T — Installation - Traffic Advisor, Top of Body

The traffic advisor shall be mounted on top of the body, at the rear. An ATP guard shall be provided to protect the traffic advisor.

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One (1) 24-UN-LNCC — Lens Color - Clear

The lens color shall be clear.

Two (2) 24-UZ-FL10 — Light Flange - Chrome Plated

The light flange shall be chrome plated.

Twelve (12) 24-UZ-FL10 — Light Flange - Chrome Plated

The light flange shall be chrome plated.

One (1) 25-00-0200 — Electric horns - Dual

AUDIBLE WARNING DEVICES

Dual automotive electric horns controlled by the steering wheel horn button shall be provided.

One (1) 25-01-0100 — Backup Alarm - Preco #LDA-50, 97DBA

BACKUP ALARM

One (1) Preco Model LDA-50 backup alarm shall be provided and activated when the vehicle transmission is placed in reverse. Alarm output shall be a minimum of 97 DBA.

One (1) 26-00-0035 — Air Horns - Dual

DUAL AIR HORNS

Two (2) chrome air horns shall be furnished. A pressure protection valve shall be installed in-line to prevent loss of all air from the vehicle air brake system. The air horns shall range from 18" to 24" in length and shall be as long as possible, dependent upon other selected options and extension length.

Shall be Hadley E Tones chrome air horns shall be furnished.

One (1) 26-00-006C — Air Horn Locations - Both in Center of Bumper

Both of the air horns shall be located in the center of bumper.

One (1) 26-00-0350 — Air Horn Dual Lanyard - 2 Switches in Rear, Driver & Officer Sides, Att/Cap Only

AIR HORN DUAL LANYARDS

The air horn(s) shall be activated by one (1) lanyard pull cord for the driver and by one (1) lanyard pull cord for the officer which shall both be anchored on the vertical face of the overhead dash outboard each side and shall end at a switch located at the rear of the center overhead, one on the driver's side, one on the officer's side. The lanyard pull cords shall be composed of a chain encased in a plastic tube.

One (1) Air Shut-off Valve
26-00-0820

AIR SHUT OFF VALVE

An air shut off valve shall be provided in the feed line to the air horns, under the dash on the driver's side.

One (1) Electronic Siren - Whelen 295SLSC1, 100/200 Watts, Removable Microphone
26-10-7420

WHELEN SIREN

A Whelen model 295SLSC1 electronic siren shall be provided. The siren has a selectable output of 100 or 200 Watts. The microphone shall be removable.

The siren head shall be wired battery switched. Auxiliary activation switches shall only be active when the emergency master and ignition are activated.

One (1) Electronic Siren Head Location - Upper Dash
26-10-860A

The electronic siren head shall be located in the upper dash.

One (1) Mic Clip - Ship Loose
26-10-8Z85

The siren mic clip shall be shipped loose.

Two (2) Siren Speaker - Whelen Projector #SA-315P w/ Flame Grille, In Bumper (Ea)
26-11-WS30

SIREN SPEAKER(S)

Two (2) Whelen Projector Series SA-315P, 100-watt speaker(s) with Seagrave "Flame" polished grille shall be recess mounted in the front bumper extension.

Two (2) Two Speakers Locations - One on each Side of Bumper
26-11-Y02B

There shall be a speaker located one (1) each side of the bumper.

One (1) Mechanical Siren - Federal Signal Q2B®, Recessed in Bumper

26-15-4500

MECHANICAL SIREN

A Federal Signal Model Q2B® siren with chrome plated housing shall be recessed mounted in the front bumper extension with front and vane grille exposed.

The siren activation switches shall only be active when the emergency master is activated.

One (1) Q2B® Siren Location - Center of Bumper, Forward Section Ext Through Bumper
26-15-462P

The Q2B® siren shall be mounted in the center of the bumper, forward section extended through the bumper.

Two (2) Mechanical Q2B® Foot Switch - Linemaster® #632-S (Ea)
26-15-5985

MECHANICAL Q2B® FOOT SWITCH

Two (2) Linemaster® Model 632-S momentary foot operated switch(es) to activate the mechanical Q2B® siren shall be installed on the toe board of the cab floor.

One (1) Q2B Siren Brake Rocker Switch Location - Driver's Side & Officer's Side
26-15-598M

Q2B BRAKE ROCKER SWITCHES

A siren brake red rocker switch shall be installed in the cab, at the driver's side and officer's side switch panels, properly labeled.

One (1) Q2B® Siren Master Switch, Driver's Side
26-15-6025

A master switch for the Federal Signal Q2B® siren shall be provided under the driver's side dash. Activation of the master switch shall remove all power to the solenoid.

Two (2) Foot Switch Shall be Deactivated When the Parking Brake is Set
26-15-7015

The foot switch shall be deactivated when the parking brake is set.

Two (2) Foot Switch Locations - Driver's Side OB & Officer's Side, OB Position on Floor
26-15-7036

A foot switch shall be located on the driver's side, outboard of the steering column and on the officer's side floor, outboard position.

One (1) Driver's Foot Switch Bracket - ATP Raised, Single

26-15-7085

FOOT SWITCH BRACKET

An aluminum tread plate angle panel shall be installed to hold a single foot switch shall be installed on the driver's side.

One (1) Officer's Foot Switch Bracket - ATP Raised, Single

26-15-7130

FOOT SWITCH BRACKET

An aluminum tread plate angle panel shall be installed to hold a single foot switch shall be installed on the officer's side.

One (1) Receptacle w/Plug & Cord - 120V, 20 Amp for Cab Interior, Shoreline Powered (Ea)
70-05-1928

120 VOLT SHORELINE POWERED RECEPTACLE(S) IN CAB INTERIOR

One (1) 120-volt, 20 amp, 3-wire receptacle(s) shall be provided in the cab interior in accordance with NFPA guidelines. A brushed stainless steel cover plate shall be provided to protect the receptacle. The receptacle shall be powered by the shorepower inlet and labeled accordingly.

A plug and cable assembly shall be installed, connecting the battery charger/compressor to the receptacle.

The receptacle(s) shall be located near the battery charger or compressor.

One (1) NEMA Rating - 5-20R (20 Amp) Non-Twist-Lock, Duplex
70-05-2535

NEMA Rating: 5-20R (20 Amp) Non-Twist-Lock, Duplex.

One (1) Receptacle Cover - Stainless Steel Wall Plate (Interior Use Only) (Ea)
70-05-2720

One (1) stainless steel wall plate(s) shall be installed.

One (1) == Body - Force/Patriot OAL 248.5" Long NQ - 0.000 ==

One (1) Rear Compartment Light - Triton #TLPC, LED
23-25-1700

REAR COMPARTMENT LIGHT

The rear compartment shall be illuminated by one (1) LED light from Triton, model TLPC. The weatherproof light shall have 15 LED bulbs and a lens that measures 1.125" in diameter. The light shall be activated by opening the compartment door. The door switch shall be integrated into the door ajar hazard warning system.

One (1) Transverse Compt - 48", S/S, Full Transverse, Hinged Doors (Force)
39-80-0235

TRANSVERSE COMPARTMENT

One (1) 48.00" wide x 70.00" high x 99.00" wide stainless steel transverse be located directly behind the cab. The full height compartment shall have doorframe to doorframe dimensions of 42.00" wide x 63.75" high. The clear door openings shall be 38.00" wide x 61.00" high. The left hand usable

compartment space (below frame level) shall be 44.75" wide x 19.00" high x 25.75" deep. The right hand usable compartment space (below frame level) shall be 44.75" wide x 7.00" high x 25.75" deep. The area above frame level shall be fully transverse. This transverse area shall be 44.00" wide x 46.50" high x 94.50" deep. This compartment shall have vertically hinged double doors. (Note: The usable height of the right hand compartment has been adjusted to provide body clearance around engine exhaust system).

One (1) Force/Patriot Body Over All Length - 248.5" Long (C=107")
40-00-0610

248.5” OVERALL BODY LENGTH

The overall length of the body shall be 248.5”. The distance from the front exterior edge of the body to the centerline of the rear tires shall be 107”. Body overall width shall be 99”.

One (1) Body Material & Construction - S/S, Force/Apollo/Patriot, Long Body Non-Quint
40-05-3080

STAINLESS STEEL BODY CONSTRUCTION

The body and compartments shall be constructed of 3CR12 stainless steel. The thickness of the walls, ceiling and dividers shall be 2.5mm. (Note: Any material that is exposed inside the open bin area shall be 304L stainless steel, so that it could be D/A finished). The body shall be welded on external or hidden surfaces wherever possible to insure a clean compartment interior look. The front portion of the right and left hand side compartments shall be bolted to a 0.1875" front cross panel sheet. The rear portion of the body (behind the rear outriggers) shall be constructed of a lattice framework of 1.75" x 3.50" aluminum. This framework shall be covered with tread plate and smooth aluminum overlays.

The compartments shall be a "sweep out" design with the floor higher than the door sill. The compartment floors shall be a minimum of 2.5mm 3CR12 Stainless steel. All compartment seams shall be caulked with gray adhesive/sealant. Each compartment shall be rated for 500 lbs. of storage. False bulkhead panels shall be provided on the inside of the forward and rearward wall of the side compartment panel to cover and protect all electrical wiring and components. This also provides a clean interior for equipment mounting. These panels shall be removable. Removable service panels shall be placed within each of the false bulkhead panels. Door frames on compartments with hinged doors shall be fabricated by flanging the door opening edges inward 1.88" and bending out again .75" to form an angle. Note:

A bright aluminum tread plate cover shall be installed over the side compartments. The cover shall not form the compartment top but shall be an overlay. The forward and rearward edges of the cover shall be folded down 1.5" to cap the forward and rearward ends of the side compartment panel. The outside edge of the cover shall be folded down 1.5" to cap the outside of the side compartment panel and shall have a 45 degree outward bend to provide drip protection over any compartment doors which are immediately below the cover. Extruded aluminum drip molding with a bright anodized finish shall provide drip protection for any compartment doors that are not directly below an aluminum tread plate cover. The forward face of the side compartments and the face of the front cross panel above the operator stand shall be covered with a bright aluminum tread plate overlay. All body components covered with aluminum

tread plate overlays shall be coated with an anti-corrosion compound prior to installation. All tread plate shall be secured with threaded fasteners.

Fender compartments shall be fabricated from a minimum 2.5mm 3CR12 Stainless steel, integral with the body side compartmentation. There shall be no sharp objects protruding into the wheel well area that could cause injury while cleaning or doing other maintenance in this area.

Flex joints to permit individual movement between cab, operators stand and the body shall be provided to allow for chassis frame twist and to eliminate undue body stress. There shall be no exception to these flex joints.

Note: A body is considered as Non-Quint status if it has an open bin storage area on top of the body that is lined with tread plate (No hose load or hose chutes)

The compartment sizes shall be as follows:

One (1) Body Roof - Yellow Perimeter Marking
40-05-998A

YELLOW PERIMETER MARKING

In accordance with NFPA 1901 chapter 15.7.1.6, the perimeter of all horizontal walking surfaces on the top of the body shall be marked near the outside edge with a one-inch wide safety yellow line to delineate the designated standing or walking surface area.

One (1) Body Mounting Substructure for Force/Apollo/Patriot, Non-Quints
40-10-0075

BODY MOUNTING SUBSTRUCTURE

The rear portion of the body (behind the rear outriggers) shall be constructed of a lattice framework of 1.75" x 3.50" aluminum tubes. This aluminum tubular framework shall be adequately reinforced and bolted directly to the aerial torque box. The body compartments shall be bolted directly to spacer brackets welded to the aerial torque box. They shall be bolted through the back wall of the compartments in 8 places (4 each side of body) along the length of the body. In addition the compartments in front of the rear wheels and behind the rear wheels shall be supported by a heavy 3" x 6# gusseted channel L-bracket (2 each compartment) that are bolted directly to the chassis frame.

The compartment in place of pump module shall rest on two (4) heavy duty rubber isolators. These isolators shall be bolted to brackets mounted to the chassis frame, as close to the center line of the chassis frame as possible. These center mounted isolators shall provide a pivot point which shall allow chassis movement without introducing stresses into the body compartment.

One (1) LS Compts - S/S, Long, 50/116/46, Full Depth, Hinged Doors
43-05-SL35

LEFT SIDE COMPARTMENTS

The full height left hand side panel shall be 212.00" long by 70.00" high for the front half of the body. The rear half of the body shall drop to 64.00" high for the area under the aerial turntable. The body shall be made of stainless steel. This panel consists of one (1) full height compartment ahead of the rear wheels, one (1) full height compartment behind the rear wheels, and two (2) upper compartments above the rear wheels. All compartments shall have hinged doors.

The full height compartment ahead of the rear wheels shall have a doorframe to doorframe dimension of 47.00" wide x 63.75" high. The clear door opening shall be 43.00" wide x 61.00" high. The usable compartment space shall be 47.00" wide x 66.25" high x 25.75" deep. This compartment shall have vertically hinged double doors.

The full height compartment behind the rear wheels shall have a doorframe to doorframe dimension of 42.00" wide x 57.75" high. The clear door opening shall be 38.00" wide x 55.00" high. The usable compartment space shall be 42.00" wide x 60.25" high x 25.75" deep. This compartment shall have vertically hinged double doors.

The compartments above the rear wheels shall be equal in width, but the upper front compartment shall be 6.00" greater in height. The upper front compartment shall have a doorframe to doorframe dimension of 53.50" wide x 30.50" high. The clear door opening shall be 50.00" wide x 27.00" high. The usable compartment space shall be 56.25" wide x 33.00" high x 25.75" deep. The upper rear compartment shall have a doorframe to doorframe dimension of 53.50" wide x 24.50" high. The clear door opening shall be 50.00" wide x 21.00" high. The usable compartment space shall be 56.25" wide x 27.00" high x 25.75" deep. These compartments shall have horizontally hinged lift doors.

One (1) RS Compts - S/S, Long, 50/116/46, with Ladder Thru, Hinged Doors
43-06-SL75

RIGHT SIDE COMPARTMENTS

The full height right hand side panel shall be 212.00" long by 70.00" high for the front half of the body. The rear half of the body shall drop to 64.00" high for the area under the aerial turntable. The body shall be made of stainless steel. This panel consists of one (1) full height compartment ahead of the rear wheels, one (1) full height compartment behind the rear wheels, and two (2) upper compartments above the rear wheels. All compartments shall have hinged doors.

The full height compartment ahead of the rear wheels shall have a doorframe to doorframe dimension of 47.00" wide x 63.75" high. The clear door opening shall be 43.00" wide x 61.00" high. The usable compartment space for the full depth lower area shall be 47.00" wide x 29.75" high x 25.75" deep and the upper shallow area shall be 47.00" wide x 36.50" high x 14.25" deep. This compartment shall have vertically hinged double doors.

The full height compartment behind the rear wheels shall have a doorframe to doorframe dimension of 42.00" wide x 57.75" high. The clear door opening shall be 38.00" wide x 55.00" high. The usable compartment space for the full depth lower area shall be 42.00" wide x 29.75" high x 25.75" deep and the

upper shallow area shall be 42.00" wide x 30.50" high x 14.25" deep. This compartment shall have vertically hinged double doors.

The compartments above the rear wheels shall be equal in width, but the upper front compartment shall be 6.00" greater in height. The upper front compartment shall have a doorframe to doorframe dimension of 53.50" wide x 30.50" high. The clear door opening shall be 50.00" wide x 27.00" high. The usable compartment space shall be 56.25" wide x 33.00" high x 14.25" deep. The upper rear compartment shall have a doorframe to doorframe dimension of 53.50" wide x 24.50" high. The clear door opening shall be 50.00" wide x 21.00" high. The usable compartment space shall be 56.25" wide x 27.00" high x 14.25" deep. These compartments shall have horizontally hinged lift doors.

One (1) Rear Compartment - (1) LS with Smooth Door, Used with Full Depth Body
43-07-0515

REAR COMPARTMENT

One (1) aluminum compartment shall be provided at the rear of the apparatus, on the left side of the torque tube ladder storage compartment. This compartment, accessed from the rear, shall be 12.5" wide x 27.50" high x 34.25" deep. It shall have (1) smooth aluminum pan style vertically hinged door with a D-handle latch. The door pan shall have an Etchfinish as standard.

One (1) Rear Recessed Area below Ladder Torque Box Area
43-07-0710

REAR RECESSED AREA

The area below the ladder torque box shall be recessed, constructed of aluminum tread plate and without a door. Drain holes shall be provided in each lower corner to drain the water.

One (1) Rear Surface - Smooth Aluminum
43-07-07A0

REAR SURFACE OF BODY

The rear facing body surface around the rear compartment shall be covered with smooth aluminum in preparation for the installation of reflective chevron striping.

One (1) Outrigger Housing Covers - Force, ATP
43-07-0810

OUTRIGGER HOUSING COVERS

An aluminum tread plate cover for each of the outrigger jack housings shall be provided. The side cover behind the outrigger housing cover shall also be aluminum tread plate.

One (1) Vents - Body Compartments (Matrix)
45-38-0100

VENTS

Compartment vents shall be provided to meet the requirements of NFPA 1901, current edition.

One (1) Inner Liners - Rear Tandem Axle, Aluminum
45-39-0025

REAR ALUMINUM INNER LINERS

Full semi-circular inner liners shall be provided in each wheel housing. They shall be constructed of aluminum and shall be bolted in place so they may be removed if damaged. Self-tapping sheet metal screws are not acceptable. The bottom edge of liner shall be reinforced along its full length, however, it shall not have a formed reinforcement flange to avoid trapping dirt and debris.

One (1) Fenderette - Rear Tandem Axle, Rubber
45-39-0045

REAR FENDERETTE

Black rubber fenderettes shall be installed on the rear wheel openings. The fenders shall be wide enough to completely cover the outside rear tire and reduce wheel splash up the sides of the body. They shall be installed with 1/4" hex head bolts, self-tapping sheet metal screws are not acceptable. There shall be a stainless steel backing strip between the rubber and the mounting flange to add support. The fenderettes shall incorporate a vertical flange to cover the area where the body side and wheel opening mounting surface meet. The fenderettes shall be a minimum of 1/4" thick, have a mold-formed outer radius and a rounded bead at the wheel opening edge.

One (1) Fender Panel - Rear, S/S, Tandem Axle, Painted without Overlay
45-39-0065

REAR FENDER PANELS

Painted 3CR12 stainless steel fender panels shall be provided on the outer face of each fender area. The panels shall be painted to match the job color.

One (1) Compartment Doors - Side, Hinged, S/S
57-00-0005

HINGED COMPARTMENT DOORS

The side compartment doors shall be lap type, double panel construction with .079” outer/.079” 3CR12 stainless steel inner panels. (NO EXCEPTIONS TO THIS STATEMENT.) Outer pan edges that form the lap portion of the door shall be "hemmed" (bent over and back 180 degrees) over the inner pan edges. Inside corners, at the hem area, shall be welded and ground smooth.

The doors shall be weather stripped with an automotive bulb type extruded rubber inner seal. A second outer seal of closed cell rubber shall be placed on the lap edge of the door to prevent damage to the paint

finish. Outer seal shall have corrugated surface to prevent sticking.

The doors shall be mounted on stainless steel piano hinges with a pin diameter of .25". Mounting holes shall be slotted vertically on one side of the hinge and horizontally on the other side to provide for proper adjustment of the door. The hinge pins shall have spun ends (crowns) at both ends to hold them in place and provide a finished look. Eberhard 206 latches with stainless steel "D" ring handles shall be provided on the lift, single, drop down, and lock door (double door set-up). The free door (double door set-up) shall have an (2) Eberhard latches top and bottom with a single handle located inside the door (standard location at bottom). Isolation tape shall be furnished between the door hinge and door jam. A rubber gasket shall be provided between the "D" ring handle and the door.

Vertically hinged doors shall be equipped with Hansen 5EZ or Thomas EZ spring type door checks that also hold the doors in the open and closed position. Checks shall be the two point mounting type for simplicity. Spring tension (15 lb.) shall be easily adjustable. Checks shall have black zinc mounting brackets with stainless steel springs, 11" long rods and clamps. Springs shall be polished. Horizontally hinged doors shall be held in the opened position with gas cylinder type stays. Switches for automatic compartment light operation shall be installed in the door hinge area.

Ten (10)
57-00-0006

Dual "D" Ring Handles

DUAL "D" RING HANDLES

Dual D-ring handles shall be provided (ipo of the standard interior lift handle) on the following Body compartments:

LT1 & RT1

LS1, LS3, LS4, LS5
RS1, RS3, RS4, RS5

Four (4)
57-00-0100

Compartment Door - Vertically Hinged Double Door IPO Lift Up Door

UPPER COMPARTMENT DOORS

In place of the standard horizontally hinged lift door in the over the wheels compartment, there shall be vertically hinged double doors.

The vertical hinged double doors shall be located at:

LS2, LS3
RS2, RS3

Two (2)
57-00-200N

Keyed Locks - NONE

One (1)
57-00-200N

Keyed Locks - NONE

One (1)
57-00-200N

Keyed Locks - NONE

One (1)
57-00-200N

Keyed Locks - NONE

Four (4)
57-00-5200

Liner - Interior Hinged Compartment Door, Brushed S/S (Ea)

BRUSHED STAINLESS COMPARTMENT DOOR LINER(S)

Brushed stainless steel overlay shall be provided on the inside of four (4) compartment door(s) to protect the painted finish and to cover inside door hardware.

Sixteen (16)

Liner - Interior Hinged Compartment Door, Brushed S/S (Ea)

57-00-5200

BRUSHED STAINLESS COMPARTMENT DOOR LINER(S)

Brushed stainless steel overlay shall be provided on the inside of sixteen (16) compartment door(s) to protect the painted finish and to cover inside door hardware.

One (1) Body Door Hinges - Mill Finish
57-00-6010

BODY DOOR HINGES

All piano hinges on the main body exterior doors shall be mill finished.

One (1) Ladder Slides - for Force/Apollo II thru Body Ladder Compartment
90-00-9775

LADDER SLIDES FOR THRU BODY LADDER COMPARTMENT

The ladders shall be stored on individual slides in the thru body ladder compartment to permit easy removal and shall be arranged to allow access and removal of each ladder individually.

One (1) Ladders Storage Tunnel - (1) RS w/Smooth Door, wo Slides,Used w/Ladder Thru Body
90-01-3280

LADDER STORAGE TUNNEL

The ladder storage tunnel shall be accessed from the rear on the right side of the torque tube ladder storage compartment. The tunnel shall be made of aluminum and it shall have a smooth mill finish as standard. It shall have (1) smooth aluminum pan style vertically hinged door with a D-handle latch. The door hinge shall be located on the right side. The door pan shall have an Etchfinish as standard. The approximate area available for additional ladder/equipment storage shall be 11.25" wide x 28.25" high x O.A.L (from the front of the body to the rear wall).

One (1) Ladder Bay Light - (1) Triton #TLPC, LED
90-01-9935

LADDER BAY LIGHT

The ladder bay opening shall be illuminated by one (1) LED light from Triton, model TLPC. The weatherproof light shall have a 15 LED bulb and a lens that measures 1.125” in diameter. The light shall be activated by opening the ladder bay door. The door switch shall be integrated into the door ajar hazard warning system.

Two (2) Finish - Transverse Compartment Interior, Gray Zolatone Paint
91-01-028A

FINISH – TRANSVERSE COMPARTMENT INTERIOR

The transverse compartment interior shall be finished with gray Zolatone type paint following the Zolatone Coat application process.

Eight (8) Finish - Body Side Compartment Interior, Gray Zolatone Paint (Ea Compt)
91-01-0330

FINISH – BODY SIDE COMPARTMENT INTERIOR(S)

Eight (8) body side compartment interior(s) shall be finished with gray Zolatone type paint following the Zolatone Coat application process.

One (1) Finish - Body Rear Compartment Interior, Gray Zolatone Paint (Ea Compt)
91-01-0430

FINISH – BODY REAR COMPARTMENT INTERIOR(S)

One (1) body rear compartment interior(s) shall be finished with gray Zolatone type paint following the Zolatone Coat application process.

One (1) Finish - Tunnel Interior, Mill Finish
91-01-0460

FINISH –TUNNEL INTERIOR

The interior of the tunnel shall have no finish applied.

One (1) == Body Options - Matrix Force/Patriot NQ - 0.000 ==

One (1) Open Equipment Compartment - Force/Apollo Non-Quint
45-65-0490

OPEN EQUIPMENT COMPARTMENT

Open equipment compartment shall be provided above the body under the aerial. Aluminum tread plate flooring shall be furnished in the open compartment. The side panels shall also be covered with aluminum tread plate.

Thirteen (13)
57-00-3510 Sill Protector - Body Compartment Door, Hi-Polish S/S (Ea Compartment)
COMPARTMENT DOOR SILL PROTECTOR(S)

A hi-polished stainless steel sill protector, approximately .50" wide, shall be provided on thirteen (13) body compartment door sill(s) to protect the painted finish.

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The following compartments shall have a hi-polished sill protector:

LT1 & RT1

LS1, LS2, LS3, LS4
RS1, RS2, RS3, RS4

Driver's Rear
Main Ladder Bay
Officer's Ladder Bay

Thirty Six (36)
57-05-0200 Turtle Tile - per Compartment / Shelf / Tray (Ea)

TURTLE TILE

Thirty Six (36) black Turtle Tile mat(s) shall be provided and installed on body compartment floors and/or in shelves/trays as specified.

Ten (10) Adjustable Shelf - 3/16" Aluminum w/Smooth Finish (Ea)
57-05-3010

ADJUSTABLE SHELF OR SHELVES

Ten (10) adjustable shelf or shelves (with open corners) made from 3/16" smooth aluminum sheet metal shall be provided in the body compartment(s). The shelf lip shall be 1.75" high. Each shelf shall be supported by four (4) stainless steel angles bolted to Aluma-Strut tracks.

When in a split depth compartment, the Aluma-Strut tracks shall only be provided in the upper or lower area where the shelve(s) are located.

Four (4) Floor Mount Roll Out Tray - Base Depth, in Compartment Ea)
57-05-4055

ROLL OUT TRAY(S)

Four (4) roll out tray assembly(s) shall be provided in the body compartment(s). The tray assembly shall be bolted to the compartment floor.

Two (2) Adjustable Roll Out Drop Down Tray - Base Depth (Ea)
57-05-4105

ROLL OUT DROP DOWN TRAY(S)

Two (2) roll out drop down tray assembly(s) shall be provided in the body compartment(s). Each tray shall be vertically adjustable on Aluma-Strut attached to the sides of the compartment.

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Two (2) Transverse Roll Out Tray - in Compartment (Ea)
57-05-4125

ROLL OUT TRAY(S)

Two (2) transverse rollout tray assembly(s) shall be provided in the body compartment(s).

Four (4) Tray Construction - Aluminum, Base Depth (Ea)
57-05-4210

Four (4) base depth tray(s) shall be constructed of 0.188" aluminum and shall have edges on all four sides for added strength. The corners shall be open. The tray lip shall be 1.75" high.

Two (2) Tray Construction - Aluminum, Base Depth (Ea)
57-05-4210

Two (2) base depth tray(s) shall be constructed of 0.188" aluminum and shall have edges on all four sides for added strength. The corners shall be open. The tray lip shall be 1.75" high.

Two (2) Tray Construction - Aluminum, Transverse (Ea)
57-05-421T

Two (2) transverse tray(s) shall be constructed of 0.188" aluminum and shall have edges on all four sides for added strength. The corners shall be open. The tray lip shall be 1.75" high.

Four (4) SlideMaster #AM2, 70% Aluminum, 500#, Floor Mount, Base Depth (Ea)
57-05-491F

Four (4) SlideMaster model AM2 aluminum base depth slide mechanisms shall be bolted to the compartment floor. It shall allow the tray to extend 70% of the slide length. The tray/compartment shall be able to support a 500 pound load.

Two (2) SlideMaster #MT, Aluminum, 200# (Ea)
57-05-4930

Two (2) SlideMaster model MT aluminum base depth slide mechanisms shall be installed allowing the tray to slide out and tip down. The tray shall be able to support a 200 pound load.

Two (2) SlideMaster #M2D, 70% Aluminum, 1000#, Transverse (Ea)
57-05-4970

Two (2) SlideMaster model M2D aluminum transverse slide mechanisms shall be installed allowing the tray to extend 70% of the slide length to either side of the vehicle. The tray/compartment shall be able to support a 1000 pound load, evenly distributed.

Two (2) SlideMaster Rotating Lock
57-05-4990

The SlideMaster slide mechanism shall be secured with a SlideMaster Rotating Lock.

Two (2) SlideMaster Rotating Lock
57-05-4990

The SlideMaster slide mechanism shall be secured with a SlideMaster Rotating Lock.

Four (4) SlideMaster IMS Lock, 2-Rail
57-05-4992

The SlideMaster slide mechanism shall be secured with a SlideMaster 2-rail IMS spring lock.

Four (4) Pac Trac - for Body Compartments (Ea)
57-05-5015

PAC TRAC

Pac Trac assemblies consisting of extruded aluminum tool mounting tracks and "Z" shaped mounting brackets shall be located on the back wall of four (4) compartment(s). Pac Trac shall be 25.88" in height and as wide as the compartment door opening (maximum of minus 2.5"). Pac Trac in the full height compartments shall be located in the upper portion only.

Two (2) Transverse Tray Location in Compartment - Floor Mount
57-05-5180

The transverse tray/SlideMaster assembly shall be mounted to the floor.

Ten (10) Compartment Option Location - Determined at Time of Order
57-05-5190

The location of the compartment option(s) shall be determined at the time of order.

Four (4) Compartment Option Location - Determined at Time of Order
57-05-5190

The location of the compartment option(s) shall be determined at the time of order.

Two (2) Compartment Option Location - Determined at Time of Order
57-05-5190

The location of the compartment option(s) shall be determined at the time of order.

Two (2) Compartment Option Location - Determined at Time of Order
57-05-5190

The location of the compartment option(s) shall be determined at the time of order.

Four (4) Compartment Option Location - Determined at Time of Order
57-05-5190

The location of the compartment option(s) shall be determined at the time of order.

Thirty Six (36)
57-05-5190 Compartment Option Location - Determined at Time of Order
The location of the compartment option(s) shall be determined at the time of order.

One (1) Fender Storage - Tandem Axle (NA Aerialscope)
57-12-0200

FENDER STORAGE

Storage compartments in the fender area of the apparatus shall be comprised of the following:

One (1) Fender Storage - Tandem, Driver's Side Front
57-12-0210
On the driver's side of the apparatus, forward of the rear axle there shall be:

One (1) Fender Storage - Tandem, Driver's Side Between Rear Axles, Forward
57-12-0220
On the driver's side of the apparatus, between the tandem axles in the forward position, there shall be:

One (1) Fender Storage - Tandem, Driver's Side Between Rear Axles, Rearward
57-12-0230
On the driver's side of the apparatus, between the tandem axles in the rearward position, there shall be:

One (1) Fender Storage - Tandem, Driver's Side Rear
57-12-0240
On the driver's side of the apparatus, aft of the rear axle there shall be:

One (1) Fender Storage - Tandem, Officer's Side Front
57-12-0250
On the officer's side of the apparatus, forward of the rear axle there shall be:

One (1) Fender Storage - Tandem, Officer's Side Between Rear Axles, Forward
57-12-0260
On the officer's side of the apparatus, between the tandem axles in the forward position, there shall be:

One (1) Fender Storage - Tandem, Officer's Side Between Rear Axles, Rearward
57-12-0270
On the officer's side of the apparatus, between the tandem axles in the rearward position, there shall be:

One (1) Fender Storage - Tandem, Officer's Side Rear
57-12-0280
On the officer's side of the apparatus, aft of the rear axle there shall be:

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One (1) 57-12-0720 — Air Bottle Compartment - Dual

One (1) enclosure to accommodate two (2) air bottles, fabricated of high impact polyethylene material, with a minimum of 26.0" usable depth, and an 8.0" inside diameter. The double oval compartments shall have a single wide opening and a raised nylon center divider to prevent the bottles from rolling together. A detainment strap shall be installed.

One (1) 57-12-0720 — Air Bottle Compartment - Dual

One (1) enclosure to accommodate two (2) air bottles, fabricated of high impact polyethylene material, with a minimum of 26.0" usable depth, and an 8.0" inside diameter. The double oval compartments shall have a single wide opening and a raised nylon center divider to prevent the bottles from rolling together. A detainment strap shall be installed.

One (1) 57-12-0720 — Air Bottle Compartment - Dual

One (1) enclosure to accommodate two (2) air bottles, fabricated of high impact polyethylene material, with a minimum of 26.0" usable depth, and an 8.0" inside diameter. The double oval compartments shall have a single wide opening and a raised nylon center divider to prevent the bottles from rolling together. A detainment strap shall be installed.

One (1) 57-12-0720 — Air Bottle Compartment - Dual

One (1) enclosure to accommodate two (2) air bottles, fabricated of high impact polyethylene material, with a minimum of 26.0" usable depth, and an 8.0" inside diameter. The double oval compartments shall have a single wide opening and a raised nylon center divider to prevent the bottles from rolling together. A detainment strap shall be installed.

One (1) 57-12-0730 — Extinguisher Compartment - Single

One (1) enclosure to accommodate one (1) fire extinguisher (not included), fabricated of high impact polyethylene material, with approximately 26.0" usable depth, and an 8.0" inside diameter. A detainment strap shall be installed.

One (1) 57-12-0730 — Extinguisher Compartment - Single

One (1) enclosure to accommodate one (1) fire extinguisher (not included), fabricated of high impact polyethylene material, with approximately 26.0" usable depth, and an 8.0" inside diameter. A detainment strap shall be installed.

One (1) — No Compartment(s) Required

Fire & Specialty Equipment Company

57-12-0790

One (1) No Compartment(s) Required
57-12-0790

Six (6) Fender Storage Doors - Painted Job Color w Push Button Lever Latch (Ea)
57-12-0820

Six (6) fender storage doors shall be constructed of 12 gauge stainless steel painted job color, secured by a full length stainless steel hinge and a push button lever latch.

One (1) Ladder - (2) Turntable Access, Aluminum, Straight Configuration
57-20-7010

ACCESS LADDER

Two (2) turntable access ladders shall be provided at the rear, one (1) on each side of the vehicle. The ladder steps shall be constructed of a grating for slip resistance. The ladders shall be a bolted assembly with the rear body face. They shall slope inward for a more comfortable and balanced climbing position. The walls behind and around the steps shall be of aluminum tread plate.

An auxiliary hinged fold-down step shall also be provided at the bottom of each ladder. A warning light shall be provided in the cab to indicate when the step(s) are down. The light shall be actuated by a magnetic-type proximity switch. The step shall be held in the "up position" by a mechanical, spring loaded, slam lock. The bottom step of the ladder shall be aluminum tread plate. The outer edge of this step shall have formed serrations to provide a non-slip surface.

One (1) Handrail - (1) each Straight & Swimming Pool, Aluminum, Knurled per Ladder Acces
57-25-0020

HANDRAILS

One (1) swimming pool style handrail shall be provided at both aerial ladder access steps. It shall be positioned on the rear rail of the access ladder and form a large radius turning approximately 180 degrees at the top and terminating on the upper body horizontal surface.

One (1) approximately 30" straight handrail shall also be provided at both aerial ladder access steps. It shall be positioned on the forward rail of the access ladder.

Both handrails shall be 1-1/4" diameter extruded aluminum with chrome plated stanchions.

Four (4) Rub Rail, Body Sides - Black Poly (Ea)
57-30-0110

RUB RAIL - BODY SIDES

Four (4) Black poly rub rails shall be provided along the lower portion of the body, beneath the compartment doors, on each side to prevent damage to the body and finish. The rub rails shall be a minimum of 2-3/8" wide x 1" deep, and shall be mounted on rubber supports. The rub rails shall have a 1" x 1" chamfer at the front and rear of the rails. The rails shall protrude a minimum of 1.75" from the face of the body.

One (1) Rub Rail, Body Rear - Black Poly, Full Width
57-30-1110

RUB RAIL - BODY REAR

A full width black poly rub rail shall be provided along the lower portion of the rear of the body, to prevent damage to the body and finish. The rub rail shall be a minimum of 2-3/8" wide x 1" deep, and shall be mounted on rubber supports. The rub rail shall have a 1" x 1" chamfer at the front and rear of the rail. The rail shall protrude a minimum of 1.75" from the face of the body.

Ten (10) Finish - Adjustable Shelf, DA outside Edge (Ea)
91-01-5300

FINISH - ADJUSTABLE SHELF (OR SHELVES)

Ten (10) adjustable shelf (or shelves) shall have a DA finish on the outside edge of the shelf.

Four (4) Finish - Roll Out Tray, DA Outside Edge (Ea)
91-01-6300

FINISH - ROLL OUT TRAY(S)

Four (4) roll out tray(s) shall have a DA finish applied to the outside edge of the tray.

Two (2) Finish - Roll Out Tray, DA Outside Edge (Ea)
91-01-6300

FINISH - ROLL OUT TRAY(S)

Two (2) roll out tray(s) shall have a DA finish applied to the outside edge of the tray.

Two (2) Finish - Roll Out Tray, DA Outside Edge (Ea)
91-01-6300

FINISH - ROLL OUT TRAY(S)

Two (2) roll out tray(s) shall have a DA finish applied to the outside edge of the tray.

One (1) == Aerial - 100' 500# Force Tndm, Long, NQ - 0.000 ==

One (1) Aerial Ladder Design and Performance (100/500 RM)
60-00-1200

AERIAL LADDER DESIGN AND PERFORMANCE

A 100 foot, 500 lb. tip load telescoping steel aerial ladder shall be mounted on the rear of the apparatus. The ladder structure shall be of an open truss design and shall meet or exceed the requirements of all applicable sections of the current edition of NFPA 1901. The aerial ladder and turntable design shall provide continuous egress for civilians and firefighters through any angle of elevation to the ground as defined by NFPA 1901.

The ladder shall be designed with a structural safety factor of two to one (2:1) based on the dead and live loads and shall meet ANSI A92.2 Standard for Vehicle Mounted Aerial Devices and NFPA 1901 which requires a static stability safety factor of one and one half to one (1.5:1) based on the rated load. These capabilities shall be established in the unsupported configuration.

The aerial device and all supporting structure shall be third party tested to confirm that the aerial meets the original design criteria and the intent of the latest recommended NFPA standard for aerial devices. Such testing shall include the use of brittle lacquer stress coating to identify all stress concentrations, followed by strain gauging to verify that all nominal stresses and stress concentrations have a safety factor that is equal to or greater than 2:1 based on the dead and live load.

The aerial ladder shall be comprised of four (4) sections and extend to a nominal working height of 100 feet above the ground as measured by NFPA 1901 recommendations. The aerial ladder shall have a rated horizontal reach of 91 feet measured in the horizontal plane at zero (0) degrees from the centerline of the turntable rotation, as defined by NFPA 1901. The aerial ladder shall be capable of continuous operation through 360 degrees of rotation and from minus five (-5) degrees to plus eighty (+80) degrees elevation.

One (1) Aerial Ladder Certified Rated Capacity (500#)
60-00-2200

AERIAL LADDER CERTIFIED RATED CAPACITY

The rated capacity of the aerial ladder, with the ladder below 45 degrees elevation, shall be based on a 500 pound tip load or a 250 pound tip load while flowing a maximum of 1000 GPM of water. With the ladder above 45 degrees, the capacity shall be a 500 pound tip load while flowing a maximum of 1000 GPM of water in accordance with NFPA 1901, current edition. There shall be no nozzle orientation restrictions while flowing 1000 GPM of water.

All aerial ladder certifications shall be based on the ladder being properly deployed in an unsupported configuration. The capacities shall be based upon 360 degree rotation, up to full extension, and from -5 degrees to + 80 degrees.

One (1) Operation on Grades (Rated Capacity @ 5 Degrees Off Level)

60-00-4000

OPERATION ON GRADES

The aerial is capable of being operated at full rated capacity in every position in which the aerial device can be placed when the apparatus is on a slope of 5 degrees (8.7%) in accordance with NFPA 1901 (19.21.3.1)

One (1) Aerial Torque Box - 4-Jack Force Body
60-05-5030

AERIAL TORQUE BOX

An aerial "torque box" sub-frame, incorporating two sets of stabilizers and the aerial turntable pedestal structure, shall be provided. The sub-frame shall be constructed of 5/16", T-1, 100,000 PSI yield steel plate. It shall be 240" (including turntable riser) by 33.13 high by 34.00 wide. Chassis mounting plates shall be welded to the sides of the torque box and then it shall be bolted to the frame rails using SAE grade 8 bolts and nuts. The torque box assembly shall be capable of withstanding all torsional and horizontal loading when the unit is supported by the outriggers and the aerial device is fully extended and loaded to capacity.

The turntable riser or pedestal shall be incorporated into the rear of the torque box. The entire assembly shall be welded together in one unit. The top of turntable support pedestal shall have provision for mounting the rotation bearing. The bearing shall be bolted to the "turntable box" which has been welded to the top of the pedestal. It shall consist of the box "top" which shall be a 38.50" x 36.00" x 1.25" thick piece of T1 steel. Top shall have the rotation gear mounting plate welded to it. Sides and bottom of box shall be fabricated of .50" T1 steel. Entire box shall be 5.38" high. The top and bottom of the box shall be supported and reinforced internally by four (4) diagonal "veins" of .50" thick T1 steel. The box shall have a 16.00" x 14.00" rectangular opening at its top to allow for clearance and passage of the electric commutator ring unit, hydraulic swivel and other turntable rotation equipment.

The turntable riser shall be constructed of 5.00" x 2.00" x 5/16" formed T1 steel channels and 2.00" x 3.00" x 5/16" formed T1 steel angles. The riser assembly shall be welded to the rear of the torque box and bolted to the sides of the chassis frame with a minimum of thirty (30) 5/8" grade 8 bolts and nuts.

One (1) Outriggers - Out & Down & A-Frame, 100' 500# Force
60-10-0100

OUTRIGGERS

One (1) set of double box beam type out-and-down outriggers shall be provided behind the rear axle. Each horizontal cylinder extends to provide a maximum of 16 foot stance across the outriggers. All cylinders shall be equipped with integral (on the cylinder) holding valves which shall hold it either in the stowed position or the working position should a pressurized hydraulic line be severed at any point within the system.

The extension of the horizontal beams shall be accomplished by a horizontal jack cylinder. All the horizontal jack cylinders shall be totally enclosed within the extension beam housings. The horizontal jack cylinder shall be equipped with a trombone type tube to supply hydraulic oil to the vertical jack cylinders to eliminate wear and potential failure of hydraulic hoses.

The extension of the vertical housing shall be accomplished by a vertical jack cylinder. All the vertical jack cylinders shall be totally enclosed within the outer and telescoping inner jack tubes to protect them against damage that may occur while on the fire ground. Outriggers that are not fully enclosed for protection shall not be acceptable. Each vertical jack tube structure shall be equipped with a mechanical pin lock.

One (1) set of modified "A" frames shall be provided and located just behind the cab. When extended the outrigger feet shall not extend beyond the outside of the truck. These cylinders shall also be equipped with integral holding valves that shall hold the jacks in the stowed or deployed position should a pressurized hydraulic line be severed. These jacks shall be equipped with a mechanical pin lock.

One (1) Outrigger Controls - Out & Down & A-Frame, Force
60-10-1100

OUTRIGGER CONTROLS

The outrigger controls shall be provided at the rear of the apparatus in enclosed compartments with D-ring latches. There shall be a control on each side of the rear so that the operator can see the outrigger being maneuvered. Out-and-down outrigger functions shall be operated by a single control (joystick). A short jack switch shall be provided so that the vehicle may be set up in restricted areas or on uneven terrain. A bubble type level shall be furnished to aid in leveling the unit side to side. Each outrigger shall have an indicator light that illuminates when proper ground jack placement has been achieved.

An automatic high idle switch and indicator shall be provided so that automatic engine RPM ramp up from hydraulic requests can be disabled.

The compartment shall be illuminated by a TecNiq EON LED light engaged by the aerial PTO switch in the cab.

An electric safety diverter valve shall also be provided in conjunction with the outrigger controls. The diverter valve shall allow the hydraulic fluid to flow either to the outrigger hydraulic circuit or the turntable and aerial circuit but not simultaneously.

One (1) Outrigger Alarm
60-10-2010

OUTRIGGER ALARM

An automatic electronic warning device (horn) shall be provided to warn personnel when the outriggers leave their nested position. Alarm shall operate only when outriggers are moving.

Fire & Specialty Equipment Company

One (1) Outrigger Lighting - Whelen M6R, LED for (2) A-Frame & (2) Out/Down Outrggr
60-10-3L3A

OUTRIGGER LIGHTING - LED

Four (4) Whelen M6R Super-LED® red flashing lights with red lens with flanges shall be mounted, one (1) on each outer vertical surface of the aluminum tread plate outrigger jack housing cover, lower half.

All flashing and illumination lights shall be automatically activated if any outrigger leaves its nested position and shall not be switched off until all ground jacks are once again in their stowed position.

Four (4) TecNiq T410 LED ground jack area illumination lights shall be furnished to light up the area around the stabilizers. One of these lights shall be mounted in each of the outrigger stowage housings.

Four (4) Outrigger Whelen Light Flanges - Chrome Plated
60-10-3L80

The flanges on the Whelen lights shall be chrome plated.

One (1) Outrigger Warning Lights Programmed As Side Warning Also, Requires INTELEX™ PLUS
60-10-3L95

OUTRIGGER WARNING LIGHTS PROGRAMMED AS SIDE WARNING ALSO

The outrigger warning lights shall be programmed to turn on whenever the side warning switch is on and the emergency master switch is on. They shall also turn on any time the outriggers are not nested or if the Aerial Master is on.

One (1) Outrigger Pads and Brackets - (4) Aluminum, Force/Apollo/Patriot
60-10-413A

OUTRIGGER PADS AND BRACKETS

A set of four (4) auxiliary outrigger pads shall be installed on the apparatus. The pads shall be 24" x 24" and shall be made of 3/8" aluminum with a bent rod style carrying handle. There shall be two (2) pads stacked within a bracket. One bracket shall be mounted to the underside of the body just aft of each rear axle.

One (1) Ladder Cradle - Wear Strips Attached To Cradle
60-10-6010

LADDER CRADLE

A heavy-duty rest shall be provided to support the aerial in the travel position. Wear strips shall be attached to the aerial cradle to protect the aerial when the unit is in the travel position. The cradle pivots to conform to the nested ladder, providing support over the full width of the cradle.

One (1) Ladder Cradle Interlocks

60-10-7010

LADDER CRADLE INTERLOCK SYSTEM

A ladder cradle interlock system shall be provided which automatically prevents the operator from lifting the aerial device from the cradle unless all outriggers are fully extended and placed in a load supporting configuration. An additional interlock shall be provided that prevents outrigger operation when the aerial device is not fully stowed in the cradle.

One (1) Short-Jack Operations - Out/Down Outriggers
60-10-7110

SHORT-JACK OPERATIONS

The aerial device shall be capable of operating in a “short-jacked” stance. The aerial device shall require only one operator to lift the ladder from the cradle, as long as the outriggers are in a load supporting configuration. Once the ladder is lifted from the cradle, the aerial device shall be fully operational by a single operator to the side of the apparatus with fully deployed outriggers, and shall be denied operation to the short set side. In the event both sides are short set, the operator will automatically be denied operation to both sides. Two methods of overriding the interlock are available: an electric switch, or mechanically moving the solenoid. Both are available to the single operator located at the primary operator's station.

One (1) Manual Overrides - Rear Mount Aerials
60-10-7210

MANUAL OVERRIDES

The manual overrides for the aerial device (clockwise and counterclockwise rotation and ladder lowering interlocks) shall be in the turntable control pedestal. Operation of the ladder without the outriggers properly set requires the operation of a diverter valve and requires a second operator. The overrides for the outriggers shall be conveniently located at the rear of the apparatus. The outrigger overrides can be operated by one person, but requires the simultaneous activation of two separate controls to override any safety system.

One (1) Aerial Hydraulics System - 4 Jack, Force/Patriot
60-20-0014

AERIAL HYDRAULIC SYSTEM

HOSE

High pressure hydraulic hose used for the circuits of the hydraulic system shall have a minimum burst strength of four (4) times operating pressure.

FILTER

An easily accessible 6 micron replaceable filter, with remote filter condition indicator, shall be installed

in the hydraulic pressure line. A 10 micron return filter shall be installed in the reservoir.

RESERVOIR

The hydraulic oil tank shall have a sufficient capacity to operate the aerial while allowing the oil to cool and shall be located behind the cab and mounted to the A-Frame structure and be under the Aerial cradle. There shall be a means provided to remove the tank, if needed. The connection points to the tank shall be easily accessible, with internal baffles separating the intake and return. There shall be shut-off valves to isolate the tank, if needed. A filtered breather cap and a basket strainer shall be located in the filler neck. A dip stick shall verify the oil level. There shall be a plaque mounted next to the fill cap labeled "Hydraulic Fluid Only".

PUMP

The system shall be powered by a pressure compensated load sensing hydraulic pump. The pump shall be sized to operate all boom functions simultaneously. The load sense feature operates any function at the optimum pressure to maximize efficiency and minimize heat build-up.

HOUR METER

An aerial hydraulics hour meter shall be provided to accumulate hours when the transmission provides pressure to engage the PTO and the aerial enable switch is engaged.

One (1) Emergency Pump
60-20-0200

EMERGENCY PUMP

The apparatus shall be equipped with an emergency hydraulic pump. The pump shall be driven by a 12 volt electric motor with power from the truck batteries. It shall be capable of providing hydraulic power for limited (slower) ladder functions and for stowage of the unit in case of prime power failure. A control black rocker switch for the emergency pump shall be located at the outrigger control station and at the aerial control. The control switch shall be a spring loaded momentary type to prevent prolonged operation of the emergency pump.

One (1) "Hot Shift" PTO & Extension Shaft - Aerials
60-20-0320

HOT SHIFT POWER TAKE/OFF FOR AERIALS

The apparatus shall be equipped with a power (hot) shift PTO driven by the chassis transmission. An indicator shall be located in the cab to indicate when the PTO is engaged.

The following conditions apply for use of the PTO:

- If the PTO is used to power the generator only, then the PTO can be engaged by the generator switch

when the truck is in motion.

• If the PTO is used to power the aerial only, then the PTO can be engaged by the aerial enable switch if the transmission is in neutral and the parking brake is set or in pump mode with the parking brake set.

• If the PTO is used to power the generator and the aerial, then the generator can be used while the truck is in motion by activating the generator switch. A hydraulic valve, controlled by the aerial enable switch, shall prevent aerial operation until the transmission is in neutral and the parking brake has been set or in pump mode with the parking brake set.

There shall be no exceptions to this interlock system since it is designed to protect and safeguard personnel and equipment.

The hydraulic pump shall be mounted on the transmission with an extension shaft between the PTO and the pump.

One (1) Hoist System (Stick Aerials)
60-20-0500

HOIST SYSTEM

Two (2) double acting (power up and power down) lift cylinders shall provide smooth and precise elevation from -5 to 80 degrees above horizontal. Units that do not operate below 0 degrees shall not be acceptable. The elevation cylinders shall be equipped with integral (on the cylinder) holding valves to prevent the unit from falling should a charged line be severed at any point within the hydraulic system.

One (1) Extension-Retraction System (100')
60-20-1100

EXTENSION-RETRACTION SYSTEM

A full hydraulic powered ladder extension and retraction system shall be provided utilizing dual hydraulic cylinders and cables. Each cylinder shall be capable of operating the ladder in the event of a failure of the other. The extension/retraction cylinders shall be equipped with integral (on the cylinder) holding valves to prevent the unit from falling should a pressurized hydraulic line be severed at any point within the system. The extension/retraction cables shall be of the following diameters: 3/8" 2nd section; 5/16" 3rd section; 1/4" fly section.

Wear pads shall be provided between the telescoping sections for smooth operation. Wear pads shall be composed of high strength polymers with friction reducing additives.

One (1) Rotation Interlock System - Force/Patriot
60-30-5020

ROTATION INTERLOCK SYSTEM

The apparatus shall be supplied with a rotation interlock system. This interlock system shall not allow the aerial to be rotated over the side of the apparatus if the stabilizers on that side are not fully deployed. The interlock system shall include a light and audible alarm that will activate when rotation is no longer allowed. Once rotation is stopped the interlock system shall allow the operator to rotate away from the stopping point without the use of an override. A manual override feature shall be provided that will allow the operator at the turntable the ability to override the interlock system. There shall be NO EXCEPTIONS to this interlock system since it is designed to protect and safeguard personnel and equipment.

The rotation interlock system box/module shall be located behind a false panel in the rear wall of the driver's side rear outrigger compartment.

One (1) Aerial Swivel - 36 Circuit, Hydraulic with 4" Waterway
60-35-36W4

AERIAL SWIVEL WITH 4" WATERWAY

The aerial device shall be equipped with a swivel installed within the axial centerline of the turntable to allow 360 degree rotation of the aerial device. The swivel shall float on the turntable to prevent side loading. It shall have passages for the hydraulic lines from the hydraulic pump and oil reservoir to the aerial control valve bank, and for a 4" waterway down the center. The swivel shall also maintain electrical continuity of all necessary electrical circuits while ladder is rotating or when it is immobile. A minimum of thirty-six (36) collector rings shall be provided.

One (1) Rotation System - Drive Gear opposite Pedestal
60-40-0100

ROTATION SYSTEM

A heavy-duty 34" center to center, 39.88 O. D., swing bearing shall be provided. This bearing shall feature four-point contact ball bearing design combined with offset raceway construction and individual ball separators to give maximum combined thrust and radial moment capacities. Races shall be deep induction hardened and precision ground. The bearing shall have a minimum of 61 precision, 1.38" diameter chrome alloy steel balls kept at uniform spacing by resilient spacers. Two (2) grease fittings shall be provided for proper lubrication.

The bearing shall be attached to both turntable and turntable support structure with grade 8 bolts. Both surfaces to which the bearing shall be mounted shall be milled to provide a level mounting. Welding of bearing to either support shall not be allowed, no exception. A planetary gear drive unit mounted on the turntable opposite of the control pedestal and powered by a hydraulic motor shall be provided. A spring applied, hydraulically released, disc type brake shall be furnished to provide positive braking of the turntable assembly.

One (1) Turntable - 3 Rails, Center Removeable, for Drive Gear opposite Pedestal
60-40-100R

TURNTABLE

The turntable shall consist of aluminum tread plate to provide a slip resistant surface while operating the ladder. It shall have a minimum of 12 sq. ft. of useable walking surface.

The turntable swing bearing bolts shall be accessible from the topside of the platform. This shall allow fire department service personnel to easily perform the required periodic bolt torque tightness check. There shall be no exceptions to this maintenance requirement as it shall eliminate extended labor cost and excessive down time.

Three 1-1/4" 12 gauge stainless steel tubing guardrails, coated with black LINE-X®, shall be furnished. The guardrails shall have safety connecting chains with clasps between them. One guardrail shall be located near the control console, one opposite the control console, and one directly behind the aerial ladder. All shall be a minimum of 42" high.

The guardrail behind the aerial ladder shall be removable.

One (1) Turntable Rotation Motor Cover
60-40-2020

TURNTABLE ROTATION MOTOR COVER

An aluminum tread plate cover shall be provided over the aerial ladder rotation motor on the turntable.

One (1) Turntable - Yellow Perimeter Marking
60-40-901A

YELLOW PERIMETER MARKING

In accordance with NFPA 1901 chapter 15.7.1.6, the perimeter of the turntable not covered with a railing shall be marked with a one-inch wide safety yellow line to delineate the designated standing or walking surface area.

One (1) Aerial Control Pedestal - Left Side of Turntable
60-41-000L

AERIAL CONTROL CONSOLE

The aerial control console shall be located on the left side of the turntable facing the ladder tip.

One (1) Hinged Aluminum Cover - Control Pedestal
60-41-0010

PEDESTAL COVER

A hinged aluminum tread plate cover shall be provided for the control pedestal. Two (2) gas springs shall hold the cover in either an open or closed position. The cover shall be wired to the Not Stowed page on the information display center on the cab dash, and activate the hazard warning light in the cab overhead

and audible alarm.

One (1) Pedestal Cover Latch - Additional
60-41-001L

PEDESTAL COVER LATCH

There shall be a rubber ball type latch installed on the pedestal cover to assist in holding the cover closed.

One (1) Pedestal (Interior Service) Work Light - (1) TecNiq Eon, LED
60-41-0110

CONTROL PEDESTAL INTERIOR WORKLIGHT

The interior of the turntable control pedestal shall have a TecNiq EON LED work light for control valve service visibility. It shall have a stand-alone toggle switch with label.

One (1) Pedestal Cover Light - (1) TecNiq Eon LED
60-41-0220

PEDESTAL COVER LIGHT

There shall be a TecNiq Eon LED lamp installed in the pedestal cover. The light shall be activated when the PTO is engaged.

One (1) Aerial Controls - Pedestal & Tip
60-41-1PT0

AERIAL CONTROL CONSOLE

The console shall be illuminated for night operation and shall have the following items clearly identified and conveniently located on or in close proximity to the console for ease of operation:

- Aerial overload chart
- Throttle switch
- Intercom system - allows communication between pedestal and end of aerial
- Three directional control handles for aerial functions

The following shall be inside the pedestal access door:

- Emergency override rotation switch with protective cover
- Emergency pump black rocker switch with protective cover

The three directional control valves shall control the elevation/lowering, clockwise/counter clockwise, and extension/retraction functions for the positioning of the aerial. The controls for the three aerial functions may be operated independently or simultaneously and shall be of the "deadman" type. A foot

pedal locking feature shall be incorporated to insure the controls are non-operable unless the foot pedal is engaged when the function is being performed.

The display located in the pedestal shall include the following information, if applicable:

- Low voltage (Red)
- Rung alignment (Green)
- Turntable aligned (Green)
- Aerial overload buzzer, bar graph, and light (Red)
- Rotation limit exceeded (Red)
- Cab avoidance (Red)
- Hydraulic system pressure
- Lower system pressure
- All warning information
- Aerial status
- Truck status
- Elevation indicator

AERIAL LADDER TIP CONTROLS

The aerial ladder device operation shall include controls at the tip of the "fly section". The controls shall consist of three (3) momentary toggle switches, which shall be clearly labeled for the function performed when activated, including extend/retract, clockwise/counterclockwise and down/up. Power to the switches shall be created by the main pedestal operator activating the "Tip Control Enable" switch on the pedestal, and the "Aerial Enable" foot switch located at the bottom of the pedestal. The tip controls shall be "creeper" controls which operate the ladder functions at a considerably reduced speed relative to the main control pedestal controls, in accordance with NFPA requirements.

One (1) Aerial Overload Alarm
60-41-2000

AERIAL OVERLOAD ALARM

An alarm horn and warning light shall be provided on the control pedestal that shall sound to alert the operator should the load capacity of the aerial be exceeded. The alarm shall in no way restrict the further operation of the aerial. There will be no exception to this safety requirement.

One (1) Ladder Alignment Arrows with Lights
60-41-204L

LADDER ALIGNMENT ARROWS

There shall be a 1” wide x 3.44” long arrow constructed of 12 gauge 304 stainless steel and painted fluorescent orange installed on the turntable. A corresponding arrow shall be placed on the decking next to the turntable. Each arrow shall be installed atop a 2.5” high box. Surface mounted on each arrow

shall be a red TecNiq LED Dragon light. When the ladder is aligned with the cradle, the points of both arrows shall line up and both lights shall activate.

The alignment arrows shall be located at final inspection.

One (1) Angle Indicator - (1) Lighted on Base Section
60-41-2080

ANGLE INDICATOR

A lighted angle indicator shall be installed on the base section of the aerial, next to the aerial operator's position.

One (1) Aerial Intercom - FRC ICA900, 2-Station, Non-Headset
60-45-1205

AERIAL INTERCOM SYSTEM

The intercom shall be a Fire Research Model ICA-900 2 station with ACT clear voice sound system. The master shall be a push-to-talk station with 5-LED volume indicator lights and push button, arrow-up and arrow down, controls. The master unit shall be mounted on the turntable control pedestal. The hands free voice transmission slave unit shall be installed at the aerial tip or platform control console and always in transmit mode until interrupted by transmission from the master unit. The intercom speaker at the aerial tip/platform control console shall have a cover over the rear of it. The system stations shall be interconnected with shielded cable for static free operation in normal conditions.

One (1) Aerial Ladder Construction (100/500)
60-50-0150

AERIAL LADDER CONSTRUCTION

The aerial ladder shall be constructed of welded, high-strength steel throughout. Each section shall be trussed diagonally, vertically and horizontally and be reinforced at critical points for extra rigidity. The ladder rungs shall be round. They shall extend through the web of each ladder section rail and be fully welded at both the inside and outside of the beam faces to provide excellent torsional rigidity. The rungs shall also be "K" braced.

The main ladder section beams or rails shall be a hollow I-beam design for superior lateral rigidity (as compared to a hollow rectangle) and a high strength-to-weight ratio. They shall be roll formed in the factory of the bidder and be welded together by a continuous-feed automatic welding machine. Holes in the rails for the rungs shall be punched through the entire web of the I-beam. The holes shall be formed outward in a "dish" shape to obtain the widest separation between the two weld points on the rung. Prior to final assembly, the interior of the I-beam shall have an under coating primer to prevent corrosion.

The ladder shall use greaseless bushings on all pivot points and sheaves. Greaseless wear strips shall be used between the ladder sections. The ladder shall include a safety guard panel located at the turntable end of the base section and mounted on both sides of the ladder to prevent personnel from placing hands, elbows, etc. in the path of the aerial ladder extension or retraction.

Ladder construction shall complement the support of heavy or unbalanced loads at horizontal or low angle positions. To allow the passing of personnel on the ladder, the minimum inside width dimensions of the four ladder sections shall be as follows: Base - 31"; Lower Mid - 28"; Upper Mid - 24" and Fly - 21". To allow for safe climbing and good "handhold" positioning at any climbing angle, the minimum height of the handrails above the center line of the rungs of the four ladder sections shall be as follows: Base - 25"; Lower Mid - 22"; Upper Mid - 18" and Fly - 15".

One (1) Aerial Ladder Slides
60-50-1000

AERIAL LADDER SLIDES

The aerial ladder slide rocker pads shall consist of Teflon impregnated polyethylene wear pads between each section. They shall be provided to reduce the frictional forces between the individual sections of the ladder. No exceptions to this requirement.

One (1) Rung Covers - Heavy Duty Rubber, 100'
60-50-1120

RUNG COVERS

All rungs shall be covered with deeply serrated, replaceable, heavy-duty rubber sheaths, glued and clamped securely to the rungs.

One (1) Aerial Extension Numeric Labels
60-50-1200

AERIAL EXTENSION NUMERIC LABELS

Numeric labels shall be applied to the inside rail of the base section opposite the pedestal to indicate ladder extension feet.

One (1) 60-50-9820 Folding Steps - 2 Sets at Ladder Tip, Lighted, for Waterway Monitor

LIGHTED FOLDING STEPS ON LADDER FLY SECTION

One (1) pair of extreme duty cast aluminum folding steps with cam locking feature shall be installed to provide substantial footing for a firefighter stationed at the tip of the fly section. Each step area shall be a minimum of 7" x 7" square. An aggressive serrated tread shall be provided to keep a foot from sliding off the top of the step. Each step shall come standard with a LED light built into the base of the step right above the stepping surface. Steps shall not protrude more than 1.50" into the climbing area of the ladder when in the stowed position.

One (1) additional set of extreme duty cast aluminum folding steps with cam locking feature and LED light shall be installed below those at the tip of the fly section. They shall be mounted in a position to provide substantial footing and easy access to the waterway monitor nozzle controls for those ladders equipped for monitor operation at the ladder tip. The second set of steps shall be identical in construction and use as the first set.

The step lights shall activate with the aerial master.

One (1) 60-50-982X Folding Steps (2) Bottom of Fly Section

LIGHTED FOLDING STEPS ON LADDER FLY SECTION**--BASE OF FLY**

One (1) pair of extreme duty cast aluminum folding steps with cam locking feature shall be installed to provide substantial footing for a firefighter stationed at the **BASE of the fly section**. Each step area shall be a minimum of 7" x 7" square. An aggressive serrated tread shall be provided to keep a foot from sliding off the top of the step. Each step shall come standard with a LED light built into the base of the step right above the stepping surface. Steps shall not protrude more than 1.50" into the climbing area of the ladder when in the stowed position.

One (1) additional set of extreme duty cast aluminum folding steps with cam locking feature and LED light shall be installed below those at the tip of the fly section. They shall be mounted in a position to provide substantial footing and easy access to the waterway monitor nozzle controls for those ladders equipped for monitor operation at the ladder tip. The second set of steps shall be identical in construction and use as the first set.

The step lights shall activate with the aerial master.

One (1) 60-50-9999 Storefront Operation on Nozzle

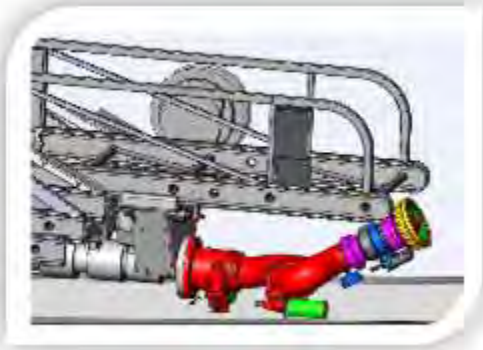
LADDER MODIFICATIONS

Fire & Specialty Equipment Company

Storefront operations-require ladder overhang to be reduced by one (1) rung or 14" (Engineering approved)

The nozzle shall be able to operate below grade, flowing water in a "Store Front " mode. Monitor would be able to traverse to 30 degrees above waterway centerline under the condition that load capacity of the ladder is reduced to 0 pounds.

A Warning label will be provided at the pedestal denoting that their is no load allowed on ladder when nozzle is above centerline for operations



One (1) 60-70-0500 Waterway - Telescoping, 100' Non-Quint

AERIAL WATER SYSTEM

A single aluminum telescopic waterway, which has been duranodic hard coat anodized, shall be provided and mounted beneath the center of the aerial ladder. The aerial waterway shall be capable of being supplied by an external water source with intake at the rear of the apparatus. A relief valve and drain valve shall be installed at the rear inlet. The rear intake shall be piped to the waterway swivel with 4" piping running within the body and between the chassis frame.

The telescopic waterway shall consist of a 4-1/2" I.D. base section tube, 4-1/4" I.D. second section tube, a 3-3/4" I.D. third section tube and a 3-1/4" I.D. fly section tube with a 4" ASA 150 lb. flange.

One (1) 60-70-144E Flow Meter at Pedestal - Seagrave Fire Apparatus, LLC

FLOW METER

A Seagrave Fire Apparatus, LLC flow meter utilizing a paddlewheel sensor shall be installed at the aerial operators pedestal position and read from the pedestal display.

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One (1) Waterway Valve (Non-Quints) - 4", Akron Electric, Under Turntable
60-70-1550

WATERWAY CONTROL VALVE

A 4" Akron electric butterfly valve shall be installed under the turntable, to stop the flow of water up the waterway.

One (1) Waterway Valve Control - Pedestal (Non-Quints)
60-70-1620

WATERWAY VALVE CONTROL ON PEDESTAL

The controls for the waterway valve shall be located on the aerial pedestal.

One (1) Adapter - Waterway, 4" FNPT X 4" MNST
60-70-25AK

WATERWAY ADAPTER

A 4" FNPT X 4" MNST straight chrome plated brass adapter shall be provided for the waterway.

One (1) No Additional Adapters Required
60-70-25BZ

One (1) Cap - Waterway, 4" FNST Rocker Lug
60-70-26R4

WATERWAY CAP

A 4" FNST rocker lug chrome plated brass cap and 16" stainless steel chain shall be provided for the waterway.

One (1) Pinnable Waterway Feature - 100' Aerials
60-70-3100

PINNABLE WATERWAY

The last section of the waterway pipe shall be pinnable to either of the top two sections of the aerial ladder, NO EXCEPTIONS. This shall allow the monitor to be held back from the tip of the ladder, thus preventing damage to the waterway and monitor when the aerial is being used for rescues or parapet wall applications, etc. The operator shall select the placement of the monitor (upper or lower position) when the ladder is fully retracted using a locking pin. The two positions shall be labeled with a photometal label, stating “RESCUE” and “WATERWAY.” The locking pin shall have a stainless steel shaft and a ball bearing type positive locking feature. Its handle shall incorporate a spring loaded push button that

releases the detents to remove or install the pin. The pin shall be tethered to the pinnable waterway lock with a stainless steel restraining cable to prevent its loss. Four (4) large adjustable 1-1/2" thick rubber bumpers shall be placed on the top two ladder sections to automatically align the locking pin holes when the ladder is fully retracted.

Safe operation of the pinnable waterway shall require the proper placement of the positive locking pin. The waterway shall be fully functional no matter which section of the aerial ladder that the waterway is pinned to. There shall be redundant safety systems designed into the construction of the aerial ladder to serve as precautions against the telescopic portion of the waterway and the monitor assembly separating from the aerial ladder.

One (1) Monitor Cord Reel
60-70-4710

MONITOR CORD REEL

A spring return electric cord reel shall be installed on the end of the pinnable aerial. It shall be located on the aerial on the side opposite to the location of the pedestal. The reel shall supply power and communication to the monitor and associated electronics.

One (1) Monitor Cord Reel Color - Manufacturer's White
60-70-471A

The monitor cord reel color shall be the manufacturer's white.

One (1) Ladder Monitor - (1) Akron StreamMaster™II #3480, Elec,1000GPM, 4"Inl/3-1/2"Outl
60-70-4A06

LADDER MONITOR

One (1) Akron Brass StreamMaster™ II model 3480, 12-volt all-electric monitor with a 1000 GPM flow shall be installed on the waterway. The lightweight Pyrolite® monitor shall have a 4”, 150 lb. flanged inlet and a 3-1/2” NH outlet. It shall have cast-in turning vanes in each elbow and fully enclosed motors and gears with manual overrides for both horizontal and vertical rotation which may be operated simultaneously. The monitor shall have absolute position feedback to provide programmable soft stops anywhere within the physical travel range. The control system shall also provide programmable oscillation and obstacle avoidance functions. It shall have one environmentally sealed USB port to facilitate control system updates. The control system shall have a built-in wireless transceiver to facilitate operation from wireless remote-control devices. The monitor shall not exceed 15” high and 11-5/8” wide and 12-1/2” depth and weigh 40.7 lbs.

The entire water system shall be capable of delivering up to 1,000 gallons per minute at any angle of elevation, up to full extension, at 45 degrees above horizontal and at 90 degrees to the centerline of the ladder.

One (1) Monitor Color - Akron Red
60-70-6A21

The monitor shall be Akron Red in color.

One (1) 60-70-6A35 — Nozzle - Akron MstrStrm Akromatic® 2000 #5178,3-1/2"NH, 500-1000GPM, Elect Ctl

NOZZLE

One (1) Akron Brass Master Stream Akromatic® 2000 model 5178 combination fog and straight stream nozzle shall be provided. The nozzle shall provide a flow range of up to 1000 GPM at 80 PSI. It shall be constructed of durable, lightweight Pyrolite® and shall have electric pattern selection, a manual override and built-in stream shaper and a 3-1/2” NH inlet.

One (1) 60-70-6A53 — Stacked Nozzle Tip Set - Akron #3499, Triple, 3-1/2", Pyrolite®

STACKED TIP SET

One (1) Akron Brass model 3499 set of triple stacked tips shall be provided. They shall be constructed of Pyrolite®, have a 3-1/2” NH female inlet, and 2”, 2-1/4”, and 2-1/2” orifices. It shall not exceed 19-1/2” in length or 7-1/2” lbs. in weight.

One (1) 60-70-6A66 — Discharge Pipe - Akron, #3488, 3-1/2" x 2-1/2" x 10-1/2"L, Pyrolite®

DISCHARGE PIPE

One (1) Akron Brass model 3488, Pyrolite® discharge pipe- stream shaper shall be supplied. The shaper shall measure 3-1/2” x 2-1/2” x 10-1/2” long and shall be designed with built-in fins.

One (1) 60-70-6A71 — Monitor Pedestal Control - Akron CAN4 Toggle Switch

MONITOR PEDESTAL CONTROL

A toggle switch shall be located at the pedestal to control the monitor.

One (1) 60-70-6A72 — Monitor Tip Control - Akron CAN3 Toggle Switch

MONITOR TIP CONTROL

A toggle switch shall be located at the pinnable waterway bracket to control the monitor.

Two (2) 60-80-111H — Ladder Base Light - FRC Sobrite 12V Trapezoid with Black Housing (Ea)

AERIAL LADDER BASE LIGHT(S)

Two (2) FRC SoBrite model SRA-110-07C LED scene light(s) with CD-BS-2 Base Mount shall be installed on the base section of the ladder. The lamp head shall have 22 ultra-bright white LEDs in a black housing to provide a trapezoid light beam pattern. It shall operate at 12/24 volts DC, draw 5/2.5 amps, and generate 7,000 lumens of light. The lamp head shall have a unique lens that focuses the trapezoid light beam to simultaneously provide a focused, concentrated beam and also a longer, wider beam to illuminate more of the work area. The lamp head shall be supplied with a Collins Dynamics CD-BS-2 light mounting base. The stainless 2" rounded-square base has four (4) pre-drilled holes for permanent attachment of an SRA-series light. Wiring shall extend from the rear of the lamp head.

Two (2) 60-80-1910 Ladder Base Light Shall be Mounted on the Left Side of the Ladder

Ladder base light shall be mounted on the left side of the ladder.

Two (2) 60-80-211H Ladder Fly-Stream Light - FRC Sobrite 12V Trapezoid with Black Housing (Ea)

AERIAL LADDER FLY LIGHT(S)

Two (2) FRC SoBrite model SRA-110-07C LED scene light(s) with CD-BS-2 Base Mount shall be installed on the fly section of the ladder near the tip. The lamp head shall have 22 ultra-bright white LEDs in a black housing to provide a trapezoid light beam pattern. It shall operate at 12/24 volts DC, draw 5/2.5 amps, and generate 7,000 lumens of light. The lamp head shall have a unique lens that focuses the trapezoid light beam to simultaneously provide a focused, concentrated beam and also a longer, wider beam to illuminate more of the work area. The lamp head shall be supplied with a Collins Dynamics CD-BS-2 light mounting base. The stainless 2" rounded-square base has four (4) pre-drilled holes for permanent attachment of an SRA-series light. Wiring shall extend from the rear of the lamp head.

Two (2) 60-80-2920 Ladder Fly Lights Shall be Mounted on the Both Sides of the Ladder

Ladder fly lights shall be mounted on the both sides of the ladder.

Two (2) 60-80-9030 Rung Lighting - Wes Garde LED Strips, for 100'/105' Ladder w/ Pinn Waterway (Ea)

RUNG LIGHTING

Two (2) side(s) of each aerial ladder section shall have Wes Garde flexible, weatherproof LED strip lights installed. The light strips shall be mounted on the inside of the hand rail with mechanical fasteners and adhesive. Lights shall have over 50,000 hours of life and a 10 year limited warranty.

Two (2) 60-80-907B Rung Light Color - Blue

The rung lights shall be blue in color.

Two (2) Rung Light Installation Location - Left Side
60-80-908A

The rung lights shall be installed on the left side.

Two (2) Aerial Light to Activate with Aerial Enable Switch in Cab
60-80-9100

This light shall be activated when the aerial ladder system is activated in the cab.

One (1) Aerial Light - Switched at Pedestal, 12V/120V (Ea)
60-80-9110

One (1) aerial light(s) shall be switched at the turntable pedestal.

One (1) Aerial Light - Switched at Pedestal, 12V/120V (Ea)
60-80-9110

One (1) aerial light(s) shall be switched at the turntable pedestal.

One (1) Cat Track - 100' Aerials
60-89-0025

CAT TRACK

A Cat Track shall be provided that contains Synflex hydraulic hose for the hydraulic leveling system. There shall also be electric cables for the intercom, 12 volt DC power and 12 volt DC controls. The hoses and cables shall be continuous from the turntable to the tip with no reels. There shall be electrical connectors and hydraulic connections at the turntable and tip that allow for easy maintenance.

One (1) Pike Pole Mount - (1) LS Fly, Painted
60-95-1005

PIKE POLE MOUNT ON FLY

One (1) pike pole mount hall be provided on the left hand side of the fly section of the ladder, painted to match the ladder.

One (1) 6 Lb Pick Head Axe - Fiberglass, Mounted on RS Fly
60-95-2020

LADDER MOUNTED PICK HEAD AXE

A 6 lb. pick head axe with fiberglass handle shall be mounted on right hand side of the fly section of the ladder.

One (1) Chain Saw Scabbard - (1) Mounted to Right Side of Fly, Painted
60-95-2050

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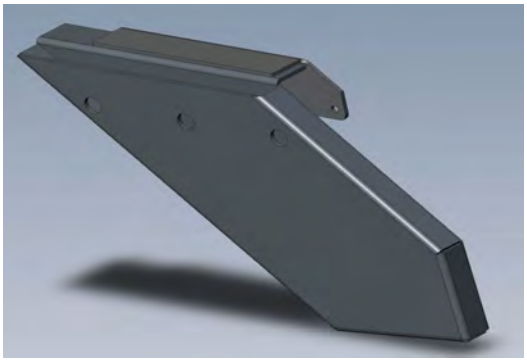
CHAIN SAW SCABBARD ON FLY

One (1) chainsaw scabbard shall be provided and mounted on the right side of the ladder at the fly. The scabbard shall be placed so when the saw is in the scabbard, the motor hangs to the outside of the fly section and not in the working area. The scabbard shall be painted to match the ladder tip.



Scabbard will be placed aft of the pickhead axle further down the fly section

_____

_____

_____

One (1)
60-95-2620

Ladder Bracket - Base Section, for (2) Roof Ladders (18' Maximum)

LADDER BRACKET ON BASE SECTION

A ladder bracket shall be provided and mounted to the outside of the aerial base section, opposite the pedestal, to accommodate two (2) roof ladders. Both ladders shall be mounted on one side of the aerial.

One (1)
60-95-4110

Ladder Signs - 16.25", (1) Each Side, Does Not Include Lettering

LADDER SIGN

Two (2) 132" x 16.25" painted metal placards for department identification signs shall be provided. One shall be installed on each side of the bed section of the ladder. Placards shall be made of smooth aluminum sheet metal and be securely fastened to the ladder. The center of the metal placards shall be mounted approximately 160" from the pivot point of the aerial device. Ladder mounted options may affect the location of the ladder sign.

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One (1) 60-95-815B — Sign Color - Painted to Match Body

The sign shall be painted to match the body.

One (1) 90-05-4100 — Pike Pole - 6', Fire Hooks NHF-10 with Fiberglass Handle (Ea)

PIKE POLE(S)

One (1) **10 ft. Fire Hooks Unlimited NHF-10 pike pole(s) with fiberglass handle(s).**

One (1) — == Misc Equip - Force/Patriot Long Non-Qt - 0.000 ==

One (1) 00-05-330S — Generator/Inverter Test and Certification - Third Party

GENERATOR/INVERTER TEST AND CERTIFICATION

The generator/inverter shall be third party tested at the manufacturer's facility and shall conform to NFPA requirements and standards. Copies of all tests shall be provided with the delivery documentation.

One (1) 57-00-2010 — Keyed Locks - ROM Roll-up Compartment Doors (#1250 Keys) (Ea)

LOCKING COMPARTMENT DOOR(S)

One (1) roll-up door(s) shall be equipped with a model 1250 cam style lock. The locking mechanism shall consist of 2 locking rods that shall slide into pre-drilled holes in each of the door tracks. All locks shall be keyed alike (to use the same #1250 key).

The following compartments shall be equipped with keyed locks: _____

One (1) 57-00-300N — Roll-up Doors - Satin Finish

ROLL-UP DOOR FINISH

The roll-up door(s) shall have a satin finish.

One (1) 70-00-0030 — Hydraulic Generators - Seagrave Stick Aerials (NA TDAs

One (1) Hydraulic Generator - Harrison 8 KW
70-00-8100

HYDRAULIC GENERATOR

A Harrison 8.0 kW hydraulic generator system shall be provided and installed on the apparatus. The system shall be capable of producing the nominal output power of 8.0 kW, 120V/240V, single phase, 60 Hz. The generator shall be installed per the manufacturer recommendations and shall be capable of supplying full power during all engine speeds or operation modes.

The generator shall be placed in a tray frame assembly which affords protection to the components and provides a unitized mounting module containing the motor/generator, reservoir, oil cooler, filtration system, and a manifold containing a cross-port check valve plus system relief valve. The generator shall be a commercial type with a heavy-duty bearing and of brushless design to ensure low maintenance. The reservoir shall include an oil level gauge, oil temperature gauge, fill cap, fill strainer, and a boost unit to provide a positive pressure to the pump suction port. The generator and hydraulic motor shall be close coupled and permanently aligned using a Morse taper with a through bolt to secure the motor to the generator.

The PTO driven hydraulic pump and motor shall be of axial piston design to provide low internal leakage and a high degree of frequency stability. The pump will match to the system with the proper orifice, pressure compensator and load sensing to provide a stable output over the rated speed range of the pump and with electrical loads from no load to full-load. The PTO ratio shall be selected to allow operation throughout the entire engine RPM range; idle to full throttle.

A display meter consisting of (4) numeric LED displays shall be used. The meter shall simultaneously display system voltage, frequency and amperage in each of the two 120V legs. The display meter shall be located in close proximity to the breaker box.

A high temperature visual indicator and audible alarm shall be provided and installed.

One (1) Generator Shall be Located in Open Bin over the Torque Box
70-02-0020

The hydraulic generator shall be located in the open bin over the torque box.

One (1) Generator Control Location - Cab Dash
70-02-0080

The generator enable momentary black rocker switch shall be installed on the cab dash.

One (1) Load Center - Up To Twenty Circuits
70-05-0400

BREAKER BOX

A twenty (20) place Square D brand, or approved equal, gray colored circuit breaker box shall be

provided and installed in the front upper left hand side compartment. Manual reset circuit breakers, matching the rated output of each specific outlet or device shall be provided. All power supply assembly conductors, including neutral and grounding conductors from the line voltage power source to the circuit breaker box shall have an equivalent amperage rating and shall be sized to carry not less than 115 percent of the amperage of the nameplate current rating of the power source. Power supply conductors shall be run in nonmetallic liquid tight flexible conduit or type SO/SEO cord with a WA suffix. Conduit shall have a temperature range of -67°F (-55°C) to 221°F (105°C). Wiring from the circuit breaker box to the individual outlets and devices shall be sized in accordance with NFPA 70, *National Electrical Code* requirements. Branch circuit wiring conductors shall be run in (1) metallic or nonmetallic liquid tight flexible conduit rated for use in a temperature range of -67°F (-55°C) to 221°F (105°C) with stranded copper wire rated for wet locations and temperatures not less than 194°F (90°C) or (2) Type SOW, SOOW, SEOW, or SEOOW flexible cord, rated at 600 volts and at temperatures not less than 194°F (90°C). A power source specification label shall be permanently attached to the apparatus near the operators control panel.

The door of the breaker box shall have a side hinge.

The load center shall be located in the forward left side compartment, up high.

Ten (10) 20 amp breaker(s) with ground fault interrupter shall be installed.

One (1) 70-05-0510 Generator Located Less Than 12 Ft from Load Center - Circuit Protection Not Req

One (1) 70-05-1930 Receptacle - 120V, 20 Amp for Cab Interior, for Auto Transfer Relay (Ea)

120 VOLT RECEPTACLE(S) IN CAB INTERIOR FOR AUTO TRANSFER RELAY

One (1) 120-volt, 20 amp, 3-wire receptacle(s) shall be provided in the cab interior in accordance with NFPA guidelines. A brushed stainless steel cover plate shall be provided to protect the receptacle. When the generator is shut down, the load is automatically returned to the shoreline. The receptacle shall be labeled accordingly.

Two (2) 70-05-195C Receptacle - 120V, 20 Amp f/ inside Body Compart, for Auto Transfer Relay (Ea)

120 VOLT RECEPTACLE IN BODY COMPARTMENT(S) FOR AUTO TRANSFER RELAY

A 120-volt, 20 amp, 3-wire receptacle shall be provided inside two (2) body compartment(s) in accordance with NFPA guidelines. A brushed stainless steel cover plate shall be provided to protect the receptacle. When the generator is shut down, the load is automatically returned to the shoreline. The receptacle shall be labeled accordingly.

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One (1) 70-05-2530 — NEMA Rating - 5-20R (20 Amp) Non-Twist-Lock, Single

NEMA Rating: 5-20R (20 Amp) Non-Twist-Lock, Single.

Two (2) 70-05-2535 — NEMA Rating - 5-20R (20 Amp) Non-Twist-Lock, Duplex

NEMA Rating: 5-20R (20 Amp) Non-Twist-Lock, Duplex.

Two (2) 70-05-2720 — Receptacle Cover - Stainless Steel Wall Plate (Interior Use Only) (Ea)

Two (2) stainless steel wall plate(s) shall be installed.

Two (2) 70-05-2720 — Receptacle Cover - Stainless Steel Wall Plate (Interior Use Only) (Ea)

Two (2) stainless steel wall plate(s) shall be installed.

Two (2) 70-05-2760 — Receptacle Location - As Specified

The receptacle shall be located:
(RS, L2)

One (1) 70-05-2765 — Receptacle Location - Determined at Time of Order

The location of the receptacle shall be determined at time of order.

One (1) 70-05-2820 — Breaker - 20 Amp, No Ground Fault Interrupter (Ea)

One (1) 20 amp breaker(s) shall be installed. It shall not have a ground fault interrupter.

One (1) 70-05-2910 — Auto Transfer Switch - Kussmaul #091-134 (Ea)

KUSSMAUL AUTO TRANSFER SWITCH

One (1) Kussmaul 091-134 Auto Interlock II switch(es) shall be provided to allow the receptacle to be fed from shore power through the Auto Eject when the generator is not in use. The switch(es) shall be installed near the breaker box.

One (1) 70-05-31L0 — Cord Reel - Hannay ECR 1618-17-18, 4-Conductor (Capacity: 200 ft of 10/4) (Ea)

CORD REEL(S)

One (1) Hannay Model ECR1618-17-18 power rewind cord reel(s) for live electric cable shall be provided. The reel(s) shall be 12 volt electric rewind and be equipped with an electrical collector ring with a minimum #10 gauge, 4-conductor wiring. Capacity of each reel shall be 200 feet 10/4 gauge electric cable.

One (1) Cord Reel - Hannay ECR 1618-17-18, 4-Conductor (Capacity: 200 ft of 10/4) (Ea)
70-05-31L0

CORD REEL(S)

One (1) Hannay Model ECR1618-17-18 power rewind cord reel(s) for live electric cable shall be provided. The reel(s) shall be 12 volt electric rewind and be equipped with an electrical collector ring with a minimum #10 gauge, 4-conductor wiring. Capacity of each reel shall be 200 feet 10/4 gauge electric cable.

One (1) 10/4 Cord Reel Cable - Per 200 foot length
70-05-4220

CORD REEL CABLE(S)

One (1) 200 foot length(s) of 10/4 type SO electric cable shall be provided and installed on the cord reel.

One (1) 10/4 Cord Reel Cable - Per 200 foot length
70-05-4220

CORD REEL CABLE(S)

One (1) 200 foot length(s) of 10/4 type SO electric cable shall be provided and installed on the cord reel.

One (1) Cord Cable Color - Yellow
70-05-45CY

The color of the cord cable shall be yellow.

One (1) Cord Cable Color - Yellow
70-05-45CY

The color of the cord cable shall be yellow.

One (1) Twist-Lock Female Plug on Cord Reel Cable, Split Load (Ea)
70-05-5112

TWIST-LOCK FEMALE PLUG(S) ON CORD REEL CABLE

One (1) Hubbell model L14-20 120V/20A heavy duty twist-lock female plug(s) with watertight safety-shroud and Insulgrip® connector body shall be provided for a split load junction box, 4 conductor cable. The plug(s) shall be installed on the working end of the cord reel cable(s).

Two (2) Junction Box - AkronBrass, 2-Loads,(4) 5-20R, Str Blade w/Pigtail & Mtg Box (Ea)
70-05-5440

ELECTRICAL JUNCTION BOX(ES)

Two (2) Akron Brass 4-receptacle junction box(es) shall be provided for distribution of electrical power on the fire ground. Each box shall be constructed of aluminum and shall be completely powder coated gray with gray hinged protective receptacle covers and the full length carry handle. Internally lighted faceplates shall provide sufficient light to make connections and alert the crew that the box is in "power-on" status. The junction box shall have dimensions of 9.25" long x 5.5" wide x 8.5" high. Each box shall be wired with 10 gauge/4 conductor cable so as to allow two 120 volt feeds from the truck's load center. (Two 5-20R on each circuit.) Each box shall be equipped with a 12-inch pigtail and a L14-20 connection.

For each total of four (4) NEMA 5-20R household, straight blade, single receptacles shall be provided. Each receptacle shall be rated for 20 amps at 125 Volts.

A mounting box, with brushed stainless finish, shall be provided for each junction box.

Two (2) Junction Box Mount Shall be Located at Time of Order
70-05-5588

The junction box mount shall be located at time of order.

Two (2) Junction Box Mount Shall be Placed Vertically
70-05-5590

The junction box mount shall be placed vertically.

Two (2) Cab 12V Frt Brow Mt Light - Whelen PCH2B w/ PBHSEAGB Mt, Black (Ea)
71-0W-AS2B

CAB 12V FRONT BROW MOUNT LIGHT(S)

Two (2) Whelen Pioneer Plus™ PCH2B dual panel LED combination flood/spot light(s) shall be installed on the cab front brow, using a Whelen PBHSEAGB mounting bracket. The light head shall provide 17,750 lumens and draw 13 amps. It shall operate at 12 volts DC.

The light head and mounting bracket shall be powder coated black.

Two (2) Cab Front Brow Mount Location - Left & Right Sides
71-1Z-0010

The mount shall be on the left and right sides of the cab front brow.

Two (2) Cab 12V Surface Mt - HiViz #FT-GESM, Guardian Elite, Chrome (Ea)
71-4V-GE0C

CAB 12V SURFACE MOUNT LIGHT(S)

Two (2) HiViz model FT-GESM, 12 volts, Guardian Elite LED, 7" x 9" surface mount light head(s) shall be installed on the cab side(s). Each light shall have a chrome plated flange.

The light shall be 10 amp, 125 watt and generate 20,000 raw lumens/ 12,500 effective lumens.

Two (2) 71-5Z-0010 Cab Surface Mt Light Location - Between Frt Cab Door & Crew Cab Side Window

The cab surface mounted lights(s) shall be located between the front cab door and the crew cab side window.

Four (4) 71-QW-BP2B Body 120V Pedestal Mt Light - Whelen PFP2APDB, Black (Ea)

BODY 120V PEDESTAL MOUNT LIGHT(S)

Four (4) Whelen Pioneer Plus™ LED PFP2APDB dual panel flood light top mount fixed pedestal light(s) shall be installed on the body roof. It shall operate at 120 volts AC, draw 1.2 amps, and generate 15,000 lumens of light.

The light head and mounting bracket shall be black.

Four (4) 71-QZ-0010 Body Pedestal Mt Light Location - As Specified

The pedestal lights shall be located on the body as follows:
TBD

Two (2) 71-Y0-0010 12V Light Switched at Cab Dash (Ea)

Two (2) 12 volt light(s) shall be black rocker switched at the cab dash.

Two (2) 71-Y0-0010 12V Light Switched at Cab Dash (Ea)

Two (2) 12 volt light(s) shall be black rocker switched at the cab dash.

Two (2) 71-Y0-0110 120V Light Switched at Cab Dash (Ea)

Two (2) 120 volt light(s) shall be black rocker switched at the cab dash.

Two (2) 71-Y0-0420 Light Shall Activate When Cab Door on that Side Opens

The light shall activate when a cab door on that side opens.

One (1) Reel Motor Speed - 60 Seconds to Rewind 100 Ft
77-41-0010

The AN250 motor shall take 60 seconds to rewind 100 feet.

One (1) Reel Motor Speed - 60 Seconds to Rewind 100 Ft
77-41-0010

The AN250 motor shall take 60 seconds to rewind 100 feet.

One (1) Reel Color - Hannay Graphite
77-41-0030

The reel shall be painted Hannay Graphite.

One (1) Reel Color - Hannay Graphite
77-41-0030

The reel shall be painted Hannay Graphite.

One (1) Reel Rewind Switch - Hannay Push Button #90030
77-41-0110

REEL REWIND SWITCH

The reel shall be equipped with a Hannay Reel Rewind Push-Button Control #90030.

One (1) Reel Rewind Switch - Hannay Push Button #90030
77-41-0110

REEL REWIND SWITCH

The reel shall be equipped with a Hannay Reel Rewind Push-Button Control #90030.

One (1) Reel Rewind Switch -Located at Manufacturer's Discretion
77-41-0150

The reel rewind switch shall be located at the manufacturer’s discretion in a position where the operator can safely observe the rewinding operation.

One (1) Reel Rewind Switch -Located at Manufacturer's Discretion
77-41-0150

The reel rewind switch shall be located at the manufacturer’s discretion in a position where the operator can safely observe the rewinding operation.

One (1) Reel Location - on Back Wall of Body Compartment
77-41-0370

The reel shall be installed on the back wall of the following compartment:

Fire & Specialty Equipment Company

One (1) Reel Location - on Back Wall of Body Compartment
77-41-0370

The reel shall be installed on the back wall of the following compartment:

One (1) Reel Location - As Specified
77-41-0389

The reel shall be located, as specified:___

One (1) Reel Location - As Specified
77-41-0389

The reel shall be located, as specified:___

One (1) Roller Assembly, On Reel
77-41-0420

ROLLER ASSEMBLY

The reel shall be equipped with a captive roller assembly mounted directly on reel frame. It shall be supplied by Hannay and have a 4-way roller assembly with stainless steel rollers mounted in a stamped steel housing.

One (1) Roller Assembly, On Reel
77-41-0420

ROLLER ASSEMBLY

The reel shall be equipped with a captive roller assembly mounted directly on reel frame. It shall be supplied by Hannay and have a 4-way roller assembly with stainless steel rollers mounted in a stamped steel housing.

One (1) Cable/Hose Stop
77-41-0480

CABLE STOP

A molded plastic spherical type stop shall be provided near the end of the cable/hose.

One (1) Cable/Hose Stop
77-41-0480

CABLE STOP

A molded plastic spherical type stop shall be provided near the end of the cable/hose.

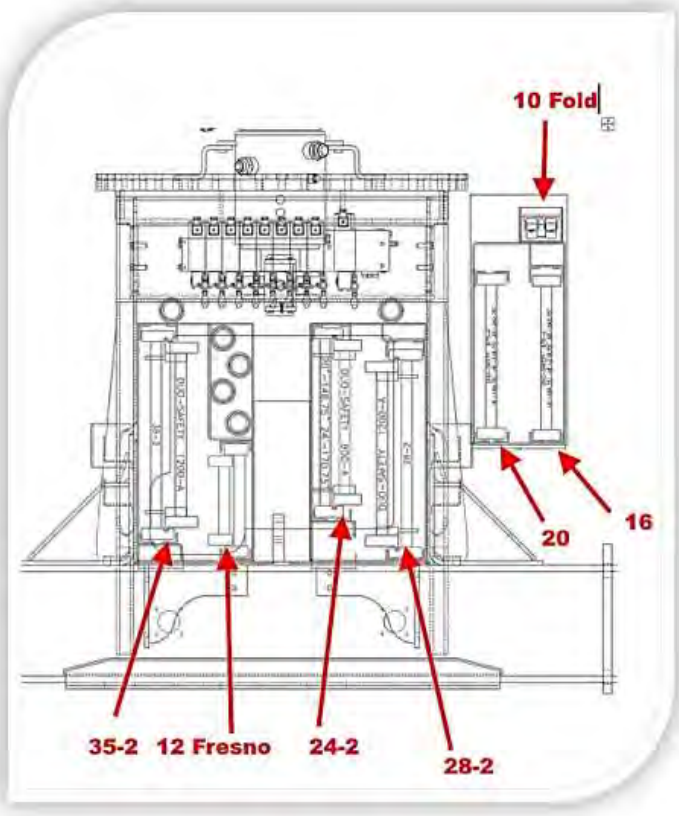
Fire & Specialty Equipment Company

One (1) 90-00-0070 Ground Ladders - Force/Apollo Long Q/NQ Body, Duo-Safety (SPCL)

GROUND LADDERS

Ladders shall be provided in full compliance with NFPA 1901 requirements for aerial trucks. Ladders shall be individually mounted vertically under the aerial turntable and open equipment area or hose bed inside of the torque box and properly labeled. Duo-Safety ladders shall be provided as follows:

- **One (1) 35 ft extension (2 section) #1200A**
- **One (1) 28 ft extension (2 section) #1200A**
- **One (1) 24 ft extension (2 section) #900A**
- **One (1) 12 ft Fresno with safty shoes**
-
- **One (1) 16 ft roof ladder #875A--curbside bay**
- **One (1) 20 ft roof ladder #875A--curbside bay**
- **One (1) 10 ft folding ladder -curb side bay**
-
- **One (1) 14 ft double-ended roof ladder (mounted to aerial)**
- **One (1) 10 ft doubel-ended roof ladder (mounted on aerial)**



One (1) Ladder Slides - for Force/Apollo II Torque Box Ladder Compartment
90-00-9770

LADDER SLIDES FOR TORQUE BOX LADDER COMPARTMENT

The ladders shall be stored on individual slides in the torque box ladder compartment to permit easy removal and shall be arranged to allow access and removal of each ladder individually.

One (1) Ladder Compartment Door - Roll-up
90-01-9100

LADDER COMPARTMENT DOOR

An aluminum shutter-type roll-up door shall be provided at the rear of the ground ladder compartment. The compartment lights shall be automatically activated by a door switch when door is opened. The door switch shall be integrated with the door ajar/hazard warning system.

One (1) Ladder Keeper for Roll-Up Ladder Door
90-01-9105

LADDER KEEPER

A stainless steel retaining flip-up plate shall be installed at the bottom of the ladder compartment to stop the ladders from hitting the roll-up door. The plate shall have a hinge on the bottom running the full width of the plate. There shall be a latch on the top center of the plate to hold the plate in the upright, retaining position.

One (1) Ladder Bay Lights - (2) Triton #TLPC, LED
90-01-9930

LADDER BAY LIGHTS

The ladder bay opening shall be illuminated by two (2) LED lights from Triton, model TLPC. Each weatherproof light shall have 15 LED bulbs and a lens that measures 1.125” in diameter. The lights shall be activated by opening the ladder bay doors. The door switch shall be integrated into the door ajar hazard warning system.

Fire & Specialty Equipment Company

One (1) Pike Poles
90-05-0100

PIKE POLES/MOUNTING

The following pike poles shall be furnished:

Two (2) Pike Pole - 8', Fire Hooks NHF-8 with Fiberglass Handle (Ea)
90-05-4200

PIKE POLE(S)

Two (2) 8 ft. Fire Hooks Unlimited NHF-8 pike pole(s) with fiberglass handle(s).

Two (2) Pike Pole - 10', Fire Hooks NHF-10 with Fiberglass Handle (Ea)
90-05-4300

PIKE POLE(S)

Two (2) 10 ft. Fire Hooks Unlimited NHF-10 pike pole(s) with fiberglass handle(s).

Two (2) Pike Pole - 12', Fire Hooks NHF-12 with Fiberglass Handle (Ea)
90-05-4400

PIKE POLE(S)

Two (2) 12 ft. Fire Hooks Unlimited NHF-12 pike pole(s) with fiberglass handle(s).

Six (6) Pike Pole Mounting - PVC Tube (Ea.)
90-05-6250

PVC PIKE POLE MOUNT(S)

Six (6) PVC tube(s) shall be mounted to facilitate storage of pike poles.

Six (6) Pike Pole Mount Location - in Ladder Compartment
90-05-718F

The pike pole mount shall be located in the ladder compartment.

One (1) Wheel Chocks - (4) Zico SAC-44-E Folding Aluminum (Aerial)
90-21-0400

ZICO FOLDING ALUMINUM WHEEL CHOCKS

Four (4) Zico folding aluminum wheel chocks Model SAC-44-E shall be furnished and shipped loose by the apparatus manufacturer. Four (4) SQCH-44-H holders shall be installed by the manufacturer, one in

front of and one behind the rear wheel(s), on both sides of the apparatus.

One (1) Chock Holder Location - Fore and Aft of Rear Axle
90-21-0900

The chock holders shall be located both fore and aft of the rear axle.

One (1) Spare Hardware Kit - Apparatus
90-25-0210

SPARE HARDWARE KIT

An assortment of nuts, bolts, capscrews, washers and other hardware used in vehicle construction shall be provided.

One (1) Spare Hardware Kit - Aerial Device
90-25-0220

SPARE HARDWARE KIT

An assortment of nuts, bolts, capscrews, washers and other hardware used the in construction of the aerial device shall be provided.

One (1) Warranty - R.O.M. Products
91-75-2990

WARRANTY

The R.O.M. Roll-Up Shutter shall be warrantied for manufacturing defects for a period of 7 years from the date of purchase. See warranty certificate for complete details.

One (1) Warranty - Harrison Hydraulic Generator, 6 Year
91-75-3115

HARRISON HYDRAULIC GENERATOR WARRANTY

The Harrison hydraulic generator shall have a 6 year / 1000 hour limited warranty from the manufacturer. See warranty certificate for complete details.

One (1) == Paint & Striping - Aerial, 100' NQ Force/Patriot - 0.000 ==

One (1) Paint - Preparation, Processes & Finish
91-00-1000

PROCESSES

The following processes shall be employed in the finishing of the apparatus:

MANUAL SURFACE PREPARATION

All metal surfaces on all custom body and cabs shall be thoroughly cleaned and prepared for paint. Surfaces that shall not be painted include all chrome plated, polished stainless steel and bright aluminum tread plate. As required, weld seams and other areas shall be caulked to prevent water leaks or for appearance reasons. Each imperfection on the exterior metal surface shall be removed or filled and then sanded for a smooth flat appearance.

CHEMICAL CLEANING AND TREATMENT

All painted surfaces shall be washed with a chemical degreaser, cleaner and surface conditioner to allow for proper adherence of primer coat. Then they shall be washed with a neutralizer product. All products used are approved by paint supplier and applied under strict process control to meet performance requirements on corrosion prevention and chip resistance.

PRIMER / SURFACE COATING FOR TOP COAT APPLICATION

A minimum of 2 coats of Epoxy based primer shall be applied to surfaces inside and outside of cabs and bodies and all other parts of apparatus that shall receive a Top color coat to achieve required corrosion protection. After that a minimum of 2 coats of sealer shall be applied over the primer surface. The overall thickness of the primer/sealer coat shall be between 3 to 8 mils wet. Once dried and cured all surfaces that shall receive a top coat shall be hand sanded to achieve a flat and smooth surface to meet gloss and other paint quality standards. All products used are approved by paint supplier and applied under strict process control to meet performance and appearance requirements according with Seagrave's Paint Quality Standard. The underside of the cab and body shall be finished with one coat of epoxy primer specifically designed for this application to prevent corrosion and provide chip resistance to typical paved road conditions.

TOP COAT APPLICATION

Each Top Coat final color on the apparatus is applied using a two stage paint process. The unit shall be thoroughly hand cleaned to eliminate dust residues and to detect any imperfection in the surfaces to be painted. A fast drying 3.5 VOC polyurethane base coat color shall be applied using a cross coat application technique. Additional coats may be applied as required until the coat thickness reaches 2.0 to 6.0 mils wet and a full hide appearance. If a second color is required, proper masking shall be applied to the unit and the base coat application process shall be repeated for the second color. A slow drying low VOC High Build clear coat shall be applied using a cross coat application technique until a minimum of 5.0 mils wet is achieved. The unit is then properly heated to assure flash and cure of the paint before leaving the paint booth. All products used are approved by paint supplier and applied under strict process control to meet performance and appearance requirements according to Seagrave's Paint Quality Standard.

Each batch of color topcoat shall be tested for precise color match following paint supplier color matching process. A visual color match shall be checked prior to paint using customer approved paint chips.

The cab and body shall be primed and finish painted prior to installation on the chassis to ensure paint coverage in all areas including the difficult to reach places. The exterior and interior of the cab shall be finish painted before the doors are installed or any assembly is started to ensure a finish painted surface beneath all trim items.

PRIMER / SURFACE COATING FOR SINGLE COAT APPLICATION

A minimum of 2 coats of Epoxy based primer shall be applied to all surfaces of the apparatus that shall receive a single color coat to achieve required corrosion protection. This is a wet coat process and it shall achieve a 3.0 to 8.0 mills wet thickness and complete coverage of all bare metal. All products used are approved by paint supplier and applied under strict process control to meet performance and appearance requirements according with Seagrave's Paint Quality Standard.

SINGLE COAT APPLICATION

A minimum of 2 coats of direct gloss paint shall be applied over all primed surface to achieve corrosion protection and appearance in accordance with Seagrave's Paint Quality Standard. This application shall be used for Gloss Black, Job Color and Color finishes in parts of the apparatus such as frame rails, outriggers, ladders and other aerial devices, suspension and other chassis parts, etc. as defined in the sales order.

ZOLATONE COAT APPLICATION

All areas to receive a Zolatone coat shall be primed following the primer/surface coating for top coat application. A high pressure coat of Zolatone paint shall be applied in a cross pattern technique to achieve smooth finished surface. A second low pressure coat of Zolatone paint shall be applied in a single pattern to achieve a textured appearance.

ZOLATONE CLEAR COAT APPLICATION

Starting with a completed and dry Zolatone coat application 2 to 3 coats of Zolatone clear coat shall be applied until a thickness of 5.0 mills wet is achieved.

PAINTERS

All painters shall be paint supplier certified. They shall be re-certified periodically in order to keep up to current standards and procedures required by the coatings manufacturer. This certification is performed independently by the paint supplier.

FACILITY

The finishing facility shall be certified independently by the paint supplier by meeting or exceeding its

extensive and stringent requirements. The paint facility shall be audited quarterly by the paint supplier to ensure proper equipment, procedures and safety regulations are being used and adhered to in addition to the controls implemented by Seagrave to assure paint quality requirements are met in every job.

QUALITY STANDARDS

The finish quality and appearance shall be in accordance with the Seagrave's Paint Quality Standards for dirt, gloss, reflectivity, clarity and depth of image. The standard is available to the customer at any time upon request.

One (1) 91-00-44ZB

CORROSION PROOFING

CORROSION PROOFING:

RUST/CORROSION PROOFING COMPOUND SHALL BE APPLIED TO ALL ACCESSIBLE RUST/CORROSION PRONE AREAS BY MEANS OF AIRLESS SPRAY. ACCESS HOLES SHALL BE SEALED EXCEPT WHERE NECESSARY FOR DRAINAGE. THE AREAS TO BE RUST/ CORROSION PROOFED SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING:
CAB & CHASSIS:
A) LIGHT WELLS
B) ROCKER PANELS AND REAR VERTICAL DOOR JAMS
C) FRONT HINGE DOORS PILLARS
D) FENDERS WELLS AND FENDERS
E) UNDERSIDE
F) ALL ENCLOSED, BOXED IN, AND DOUBLE PANELED SECTIONS IN THE CHASSIS

BODY:
A) FENDER WELLS AND FENDERS
B) ENTIRE UNDERBODY

IT IS UNDERSTOOD THAT RUST/CORROSION PROOFING COMPOUND SHALL NOT BE APPLIED TO ANY AREA WHERE ITS APPLICATION WILL INTERFERE WITH MECHANICAL OR ELECTRCAL PARTS INCLUDING, BUT NOT LIMITED TO: EXHAUST SYSTEM, TRANSMISSION,SHOCK ABSORBERS, DIFFERENTIAL HOUSEING,ENGINE JOINTS,WHEELS AND TIRES.
RUST/CORROSION PROOFING COMPOUND SHALL BE A PETROLEUM BASED RUST/CORROSION PREVENTATIVE.

SURFACE PREPARATION:WIRE BRUSHED OR WASHED WHERE DEEMED NECESSARY FOR PROPER APPLICATION OF RUST/CORROSION PROOFING MATERIAL BY CONTRACTOR

THE ZIEBART SHALL BE APPLIED PRIOR TO THE BODY BEING LOADED ON THE CHASSIS

Fire & Specialty Equipment Company

One (1) 91-00-480X

GLOSS BLACK PAINT ON CHASSIS COMPONENTS

GLOSS BLACK PAINT ON CHASSIS COMPONENTS

The following items shall have an additional coat of gloss black paint applied over the primed surface as supplied by the component manufacturer. Single coat application process shall be used to apply Gloss Black direct gloss paint on the parts identified below:

Front & rear axles and suspension.
Fuel tank.
Air reservoir tanks.
Pump module mounting brackets.
Body mounting brackets.
Steering gear box and steering link arm.
Drive shafts.
Front discharge plumbing
Front Suction plumbing

One (1) 91-00-4900

Seagrave FrameGard Extreme Corrosion Resistance - Tandem Axle

FRAME & UNDERCARRIAGE FINISH

The chassis frame, bumper extension, suspension, axles, air tanks, fuel tank, battery boxes, etc., shall be matte black finish as supplied by the component manufacturer.

The following items will be furnished with the finish as provided by their respective manufacturer.

- Engine, transmission and accessories.
- Exhaust system.
- Retarder (when furnished).
- PTO & hydraulic pump (when furnished).
- Cab lift cylinders & hydraulic pump.
- Shock absorbers.
- Fuel filter.
- Air drier and air cleaner.
- Electrical wiring and loom.
- Air brake lines, valves and mounting brackets.

SEAGRAVE FRAMEGARD

A corrosion barrier film shall be sprayed to all surfaces of the chassis frame rail(s) and cross members after frame assembly. Manual touch up shall be applied where/as necessary. The barrier shall be a corrosion inhibiting sealant which shall provide extreme resistance to abrasion and chemical deterioration. The sealant shall pass US Military spec MIL-C-0083933A for bend resistance, chip resistance and flexibility. It shall pass ASTM B117 (1000 hours corrosion resistance test standard).

One (1) Axle Ends - Matte Black
91-00-4950

AXLE ENDS COLOR

The axle ends shall be matte black in color.

One (1) Paint - Cab Interior, Black Zolatone Paint
91-00-5100

CAB INTERIOR PAINT FINISH

The inside of the cab shall be painted with black Zolatone paint following the Zolatone Coat application process.

The following components shall be painted:

- Exposed interior surfaces of the cab structure
- Exposed interior surfaces of the driver/officer/crew doors
- All interior "Metal" access/wire covers of the cab
- Head bumper brackets
- Miscellaneous brackets, if present: charger covers.

One (1) Paint - Cab Interior, Clear Coat (Full Tilt Cabs)
91-00-5400

PAINT INSIDE OF CAB

The inside of the full tilt cab shall be clear coated following the Zolatone Clear Coat application process in the same components that received a Zolatone application.

One (1) LINE-X® - Textured, Cab Interior
91-00-5510

LINE-X® - CAB INTERIOR

All cab interior LINE-X® shall have a textured finish.

One (1) Paint - Cab Exterior, One Color
91-00-5900

SINGLE COLOR CAB PAINT

The cab shall be painted one color. The paint shall follow the Top Coat application process for a single color.

Cab exterior paint number is #910785 Color: RED

Note: Paint prices do not allow for metallic or pearlescent paint colors.

One (1) 91-00-A110 Cab Decorative Trim Molding - 5G Radius

A decorative molding shall be provided around the cab. The decorative molding shall be horizontal across the front of the cab above the wipers and taper down with a radius even with the outside corners of the grille.

One (1) 91-02-1000 Paint - Body Exterior, Single Color

BODY PAINT, SINGLE COLOR

The body of the apparatus shall be painted to match the primary cab color. The paint shall follow the Top Coat application process for a single color.

Body exterior paint number is # 910785 Color: RED

One (1) 91-02-4500 Standard Finishes for Small Parts - Chassis, Cab

STANDARD FINISHES FOR SMALL PARTS, CUSTOM CAB

Definition: Mill Finish: as is from the manufacturer; no finish applied. It may have scratches, but it shall be shiny as a result of being cleaned through a deoxidization process. Parts with mill finish may have been cleaned in a dipping process to deoxidize the part.

Definition: Etchfinish: The part(s) shall be cleaned and etched to a uniform bright finish.

CHASSIS

Chassis bracket: Painted same as cab exterior

CAB

- Cab compartments, including cab side access compartments:
  - o Exterior Finish: LINE-X®.
  - o Interior Finish:

Δ Mill finish
Δ Upgrade available to DA or Paint

• Cab compartment shelves:
o DA -Just the outside edge of the shelf shall be DA'd.
o All other surfaces shall be mill finish.

• Bumper / running board hose wells:
o Flange: DA
o Interior & exterior walls: Mill finish
o If the hose well sticks above the gravel pan: DA the edges

• Inner liners: Mill finish

• All steps, including pull downs & those on access ladders: DA outsides

• Hat Section Bracket for Compartment, Ground or Step Lights:
o Mill finish.
o If compartment is painted, then the hat section brackets shall be painted.

• Trim Rings: Mill finish

• Patch plates: Brushed S/S (Upgrade available to polished or ATP) STD is No patch plates

• Label backing plates: DA

• Marker light guards: As purchased

• Switch guards – S/S: Brushed

• Pike poles tubes - Aluminum:
o D/A
o Upgrade available to paint

• Pike poles tubes – S/S:
o D/A
o Upgrade available to paint

One (1) Standard Finishes for Small Parts - Body Only
91-02-4510

STANDARD FINISHES FOR SMALL PARTS, BODY ONLY

Definition: Mill Finish: as is from the manufacturer; no finish applied. It may have scratches, but it shall be shiny as a result of being cleaned through a deoxidization process. Parts with mill finish may have been cleaned in a dipping process to deoxidize the part.

Definition: Etchfinish: The part(s) shall be cleaned and etched to a uniform bright finish.

BODY

- Bumper / running board hose wells:
  - o Flange: DA
  - o Interior & exterior walls: Mill finish
  - o If the hose well sticks above the gravel pan: DA the edges

- Inner liners: Mill finish

- All steps, including pull downs: DA outsides
-
- Hat Section Bracket for Compartment, Ground or Step Lights:
  - o Mill finish.
  - o If compartment is painted, then the hat section brackets shall be painted.

- Trim Rings: Mill finish

- Patch plates:
  - o STD is No patch plates
  - o Brushed S/S
  - o Upgrade available to polished or ATP

- Label backing plates: DA

- Marker light guards: As purchased

- Switch guards – S/S: Brushed

- Compartment louvers: Same color as compartment interior walls,

- Compartment shelves & trays:
  - o DA (Just the outside edge of the shelf shall be DA'd. All other surfaces shall be mill finish.
  - o Upgrades available: Paint Zolatone or job color. All surfaces shall be painted.

- Compartment shelf & tray brackets: Mill finish

- Brackets to hold compartment doors open: Mill finish

- Compartment door auxiliary locking brackets: Brushed

- Rear aluminum compartments:
  - o Mill finish

o Upgrade available to paint

• Rear aluminum compartment door interiors:
o ATP Exterior Door: DA Finish Interior
o Smooth Exterior Door: Etchfinish Interior

• Breaker box mounting brackets: Mill finish

• Pegboard:
o Mill finish
o Upgrade available to DA

• Ladders-Thru Compartments:
o Mill finish
o Upgrade available to paint

• Partition mounting brackets: Mill finish

• Hydraulic ladder rack:
o Etchfinish
o Upgrade to paint Job color

• Ground ladder brackets: Etchfinish

• Ground ladder or suction racking (fixtures, slides) within compartments: Mill finish

• Pike poles tubes - Aluminum:
o D/A
o Upgrade available to paint

• Pike poles tubes – S/S:
o D/A
o Upgrade available to paint

• Wheel chock holders: Mill finish

One (1) 91-02-4515 Standard Finishes for Small Parts - Aerial Components

STANDARD FINISHES FOR SMALL PARTS, CUSTOM CAB

Definition: Mill Finish: as is from the manufacturer; no finish applied. It may have scratches, but it shall be shiny as a result of being cleaned through a deoxidization process. Parts with mill finish may have been cleaned in a dipping process to deoxidize the part.

Fire & Specialty Equipment Company

Definition: Etchfinish: The part(s) shall be cleaned and etched to a uniform bright finish.

AERIAL COMPONENTS

- Turntable floor grating: DA sides
- Turntable underside (except cut away area): Painted
- Pedestal cover brackets: DA
- Pedestal cover interior: DA
- Pedestal compartment door interiors: Mill finish
- Electrical compartment panels:
  - Upper connection panel – Mill finish
  - Lower ECM panel – Mill finish
- Aerialscope forward body step, if present: DA
- Grating on top of body: DA sides
- Jack control boxes:
  - Interior – Mill finish
  - Door interiors – Mill finish
- Cab avoidance switch brackets: Mill finish
- Outrigger pad holder brackets: Mill finish
- Outrigger pads: Mill finish
- Downrigger watt pin & watt pin holder: DA
- Piping – Swivel to Waterway: Mill finish
- Waterway: Mill finish
- Waterway brackets : Mill finish
- Monitor: Mill finish
- Brass elbow on cord reel on aerial: Mill finish
- Cat Track holders/ boxes: Mill finish

- Aerialscope Boom:
o Base section and steel base collars – Painted boom color
o Aluminum extendable sections and collars - DA

- Aerialscope & Apollo Basket:
o Control box – DA
o Under basket L brackets – Mill finish
o Under basket L bracket covers – Mill finish
o Under basket L bracket piping – Mill finish
o Under basket heat pans – Mill finish
o Under basket waterway piping- Mill finish
o Basket assembly parts- Etchfinish

- Mounts/ brackets to hold ladders to aerial or boom: Painted same color as ladder

- Mounts/brackets to hold pike poles to aerial or boom: painted same color as ladder

- Mounts/brackets to hold stokes basket to ladder: painted same color as ladder
o ATP box to hold basket shall be mill finish

One (1) 91-02-4550 Acorn Nuts - Standard Operating Procedure for Use

ACORN NUTS

Acorn nuts shall be installed on all exposed screws and bolts in areas where personal injury may result and/or damage to equipment may occur. For further details, please refer to the enclosed standards document.

One (1) 91-02-4590 Compartment Locations - Seagrave Definition for Component Locations

COMPARTMENT LOCATIONS - SEAGRAVE DEFINITION FOR COMPONENT LOCATIONS

All definitions are based on facing the opening to the compartment.
These definitions apply to all compartments.

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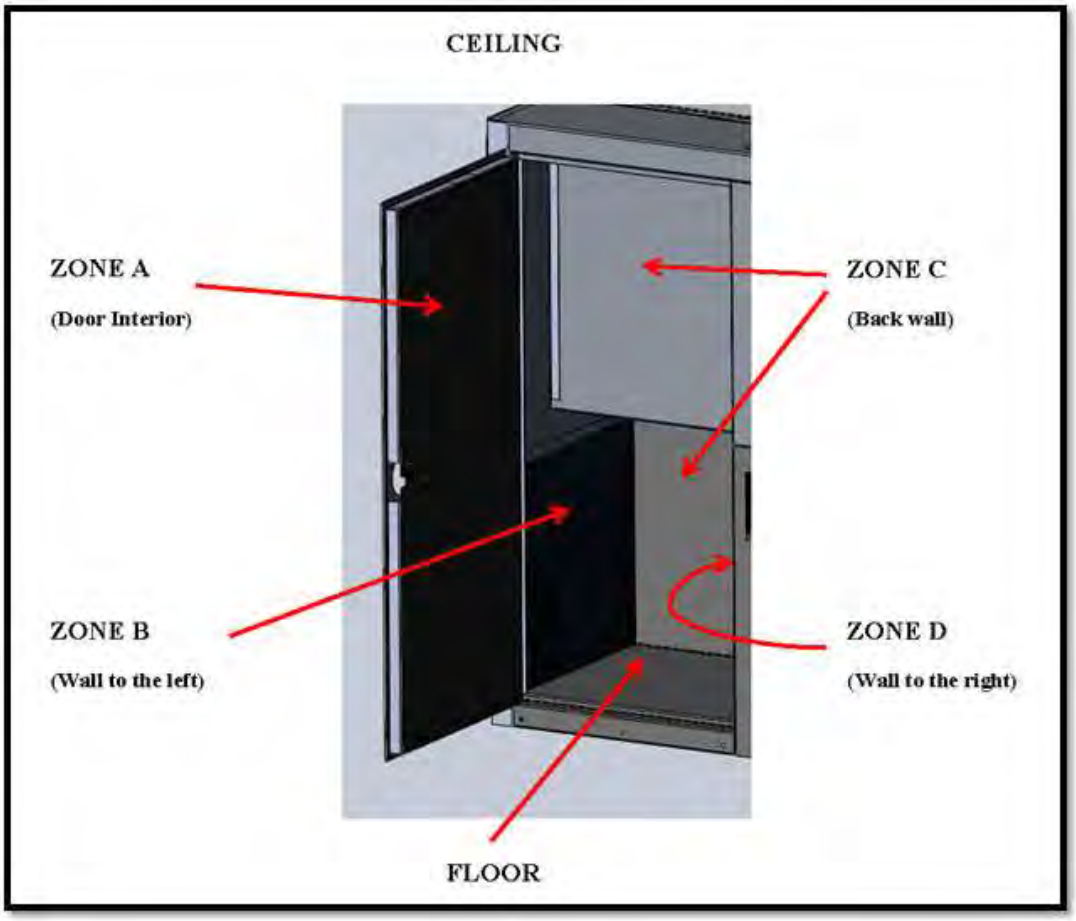


One (1)
91-02-5100

Paint - Outriggers & Jacks

OUTRIGGERS & JACKS PAINT

The outriggers and jacks shall be painted according to Seagrave paint standards. All paint shall follow the Single Coat application process.

Paint job color--customer understands that this will be a quality zone "D" and only the extendable parts will be painted job color Red--The paint shall follow the Top Coat Application process for a single color.

One (1)
91-02-6130

Paint - 100' Ladder & Components, Silver Blue Metallic

LADDER AND COMPONENTS PAINT

The ladder sections, turntable, lift cylinders and ladder rest shall be painted PPG 35913 silver blue metallic. Single Coat application process shall be used to apply the color selected in this order using direct gloss paint on identified parts.

One (1) Paint - Torque Box, Hyd Reservoir, Matte Black
91-02-7100

TORQUE BOX & HYDRAULIC RESERVOIR FINISH

The turntable support pedestal, the hydraulic reservoir tank, and the exterior and interior of the torque box shall be painted matte black following the Primer/Surface Coating Process for Single Coat Application.

One (1) Paint - Tip of Aerial Ladder, Fluorescent Red-Orange
91-02-8700

PAINT AERIAL TIP

The top three feet, or removable tip, of the fly section of the aerial ladder shall be painted with One-Shot fluorescent red-orange paint number 203F. Clear coat shall be applied over the fluorescent red-orange paint. Top Coat application process shall be used to apply the color selected.

One (1) Undercoating - PPG Corashield (for Aerial)
91-02-9030

UNDERCOATING

The apparatus shall be properly undercoated with PPG Corashield.

The underside of the vehicle, including body and cab, shall receive a spray-on application of black Corashield which is a heavy duty, pliable, waterborne, zero-VOC product with excellent resistance to chipping, cracking and corrosion. It shall also have excellent soundproofing qualities. The material shall be sag resistant and applied to a mil thickness of 5 to 10 with a cure time of 72 hours.

The material shall be applied in the following areas:

- Body and cab, fender wheel well areas.
- Underside of body compartments and cab floor structure.
- Underside of body sub-frame.
- Exterior of body compartment rear walls, up to top of water tank.

One (1) 6" Reflective Striping
91-03-0600

REFLECTIVE STRIPING

A 6" reflective stripe shall be provided around the perimeter of the vehicle. At least 50 percent of the cab and body sides, at least 50 percent of the rear body width and at least 25 percent of the width of the cab front shall have reflective material affixed to it per NFPA standards.

Exact location and presentation on the apparatus where the striping shall be installed: Determinded at pre-construction conference.

One (1) 91-03-290A — Reflective Striping Color shall be White

The reflective striping color shall be white.

One (1) 91-03-290A — Reflective Striping Color shall be Blue

The reflective striping color shall be **Blue**

One (1) 91-03-3000 — 1" Border - Each Side of Reflective Stripe

1" REFLECTIVE STRIPING

A one inch border shall be provided just above and below the large reflective apparatus striping.
Exact location and presentation on the apparatus where the striping shall be installed: Determinded at pre-construction conference.

One (1) 91-03-3820 — Chevron Striping - 3M™ Diamond Grade™, Front Bumper

CHEVRON STRIPING

The front bumper shall be covered with 6" wide 3M™ Diamond Grade™ Reflective striping in an alternating chevron pattern with the stripes running at a 45 degree downward angle from the top center of the bumper. Chevron shall meet or exceed NFPA 1901 regulations.

One (1) 91-03-461D — Chevron Striping - 3M™ Diamond, All Rear Body except Rear Ldr Door,Force/Apollo

CHEVRON STRIPING

The entire rear of the body, except the rear ladder compartment door, shall be covered with 6" wide 3M™ Diamond Grade™ reflective striping in an alternating chevron pattern with the stripes running at a 45 degree downward angle from the top center of the vehicle. Chevron shall meet or exceed NFPA 1901 regulations.

One (1) 91-03-4810 — Chevron Color - Scotchlite™ Red 983-72NL & Scotchlite™ Yellow 983-71NL

The chevron striping shall be alternating Scotchlite™ Red 983-72NL and Scotchlite™ Yellow 983-71NL.

Clear chip guard shall be provided on the cut ends of Diamond grade chevron if edge is exposed.

One (1) 91-03-4810 Chevron Color - Scotchlite™ Red 983-72NL & Scotchlite™ Yellow 983-71NL

The chevron striping shall be alternating Scotchlite™ Red 983-72NL and Scotchlite™ Yellow 983-71NL.

Clear chip guard shall be provided on the cut ends of Diamond grade chevron if edge is exposed.

One (1) 91-03-4999 Rear Corner Guards - (2) Brushed Stainless Steel

REAR CORNER GUARDS

Brushed stainless steel 0.75" x 0.75" corner guards shall be installed after the Chevron is applied to protect the edges.

One (1) 91-03-499A Corner Guard Location - Outside Vertical Edges Body Sides Meets Rear

The corner guards shall be applied to the outside vertical edges where the body sides meets the body rear.

One (1) 91-04-0009 Graphics Allowance

GRAPHICS ALLOWANCE

A graphics allowance of **$8500.00** shall be provided, to complete customer requested graphics and lettering of the apparatus.

If the graphics amount is less than the allowance, additional money shall be returned to the customer. If the graphics amount exceeds the allowance, the customer shall be responsible for the additional charge.

One (1) 91-04-000A Graphics Files Formats

GRAPHICS FILES FORMATS

In order to produce the desired lettering, seals and/or emblems, the customer shall provide graphics files of the lettering, seals and/or emblems in the following file formats:

- Vector images (Ai or EPS file types)
- Full Color (CMYK) version or

• Full color Pantone version, if exact color matching is required

The customer shall also provide the name and size of font for any graphics text, if specific font is desired.

One (1) Apparatus Logos and Name Plaques
91-04-9900

APPARATUS LOGOS AND NAME PLAQUES

Logos and name plaques shall be placed on the apparatus as identified on the attached PDF.

One (1) == Warranty & Docs - Force/Patriot Aerial, Non-Quint - 0.000 ==

One (1) Seagrave Limited Warranty - 2 Years Parts & Labor, Non-Quint Aerial
91-50-012L

MANUFACTURER'S LIMITED WARRANTY

A Seagrave limited two (2) year warranty for parts and labor shall be provided.

One (1) Seagrave Limited Warranty - Cab, Structural - 15 Years
91-50-0205

CAB FIFTEEN YEAR STRUCTURAL LIMITED WARRANTY

A Seagrave cab limited fifteen (15) year structural warranty shall be provided.

One (1) Seagrave Limited Warranty - Stainless Steel Body, Structural - 15 Years
91-50-030S

STAINLESS STEEL BODY FIFTEEN YEAR STRUCTURAL LIMITED WARRANTY

A Seagrave limited stainless steel body fifteen (15) year structural warranty shall be provided.

One (1) Seagrave Limited Warranty - Aerial, Structural - 20 Years
91-50-0400

AERIAL DEVICE TWENTY YEAR STRUCTURAL LIMITED WARRANTY

A Seagrave limited aerial twenty (20) year structural warranty shall be provided.

One (1) Seagrave Limited Lifetime Warranty - Frame Rail & Cross Members, Structural
91-50-0510

CHASSIS FRAME RAIL & CROSS MEMBER STRUCTURAL LIMITED LIFETIME WARRANTY

A Seagrave limited lifetime frame rail and cross members structural warranty shall be provided.

One (1) Seagrave Limited Warranty - Paint & Corrosion, 10 Years, Pro-Rated, SS, Aerial
91-50-060L

PAINT/CORROSION LIMITED WARRANTY

A Seagrave limited pro-rated paint ten (10) year warranty shall be provided.

One (1) Weight analysis - Required if over Minimum NFPA Equipment
92-00-1000

WEIGHT ANALYSIS - LOOSE EQUIPMENT

It shall be the responsibility of the purchaser to specify the details of the apparatus; its required performance, including where operations at elevations above 2000 ft (610m) or on grades greater than 6 percent are required; the maximum number of fire fighters to ride within the apparatus; specific added continuous electrical loads which exceed the minimum of this standard; and any hose, ground ladders, or equipment to be carried by the apparatus that exceed the minimum requirements of this standard.

One (1) Operation & Parts Manuals w/ Wiring Diagrams - (2) Electronic Copies (Aerial)
98-50-502C

ELECTRONIC OPERATOR'S & PARTS MANUAL

A binder shall be supplied that has electronic copies and paper documents as listed below.

The binder shall contain 2 duplicate electronic copies. Each electronic copy shall have:

- Operations & maintenance instructions for items on the vehicle, except all purchased components. The operations manual shall include locations of the Intelex electrical modules on the apparatus and an Emergency Troubleshooting Guide which includes emergency instructions if the apparatus won't start.
- Material Safety Data Sheets.
- Electrical diagrams including charts illustrating the individual wire color, number code, and function.
- Parts manuals.
- Parts drawings and an overall vehicle layout.
- Certificates
- Warranties

Printed documents shall include:

- Operations & maintenance instructions for items on the vehicle, not including the vendor literature.
- Operations & maintenance instructions for engine.
- Certificates of independent test results.
- Warranty documents.
- Manufacturer's record of construction details and engine power curve.

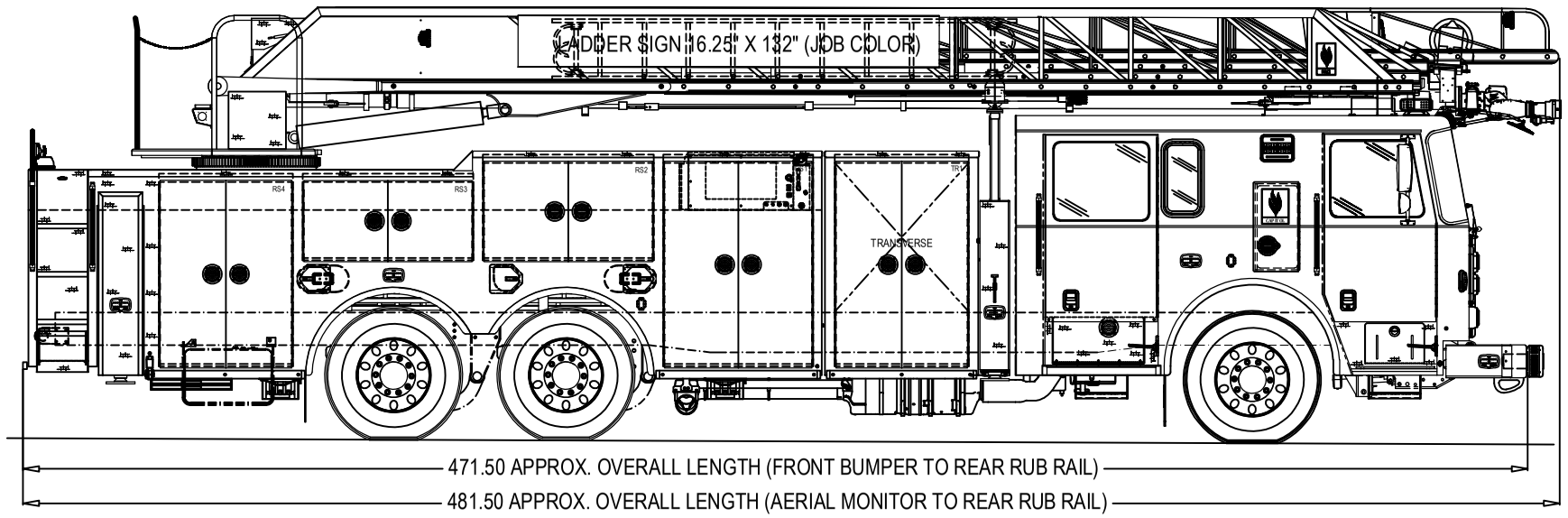
- Vehicle final alignment report.
- Vendor literature provided by the manufacturer that arrives with the purchased component.

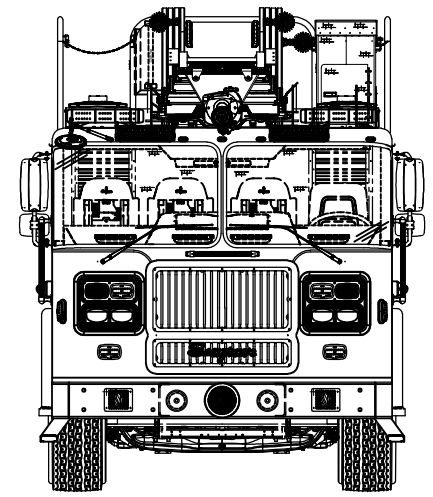
One (1) to two (2) manual electronic copies for the water pump shall be included, if there is a pump on the unit, and as provided by the pump manufacturer. Additional electronic copies and paper documents, as provided by other equipment suppliers, shall also be included.

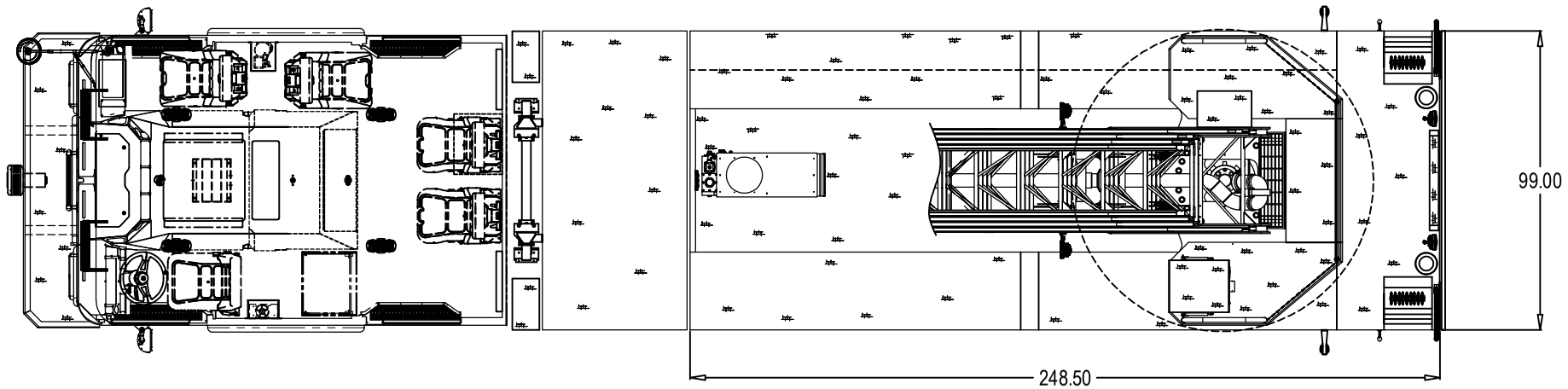
One (1) DEALER FURNISHED ITEMS
99-00-0000

4" BUTTERFLY VALVE
WATER WAY ADAPTER
WATERWAY CAP & CHAIN

One (1) DFI
99-00-0099







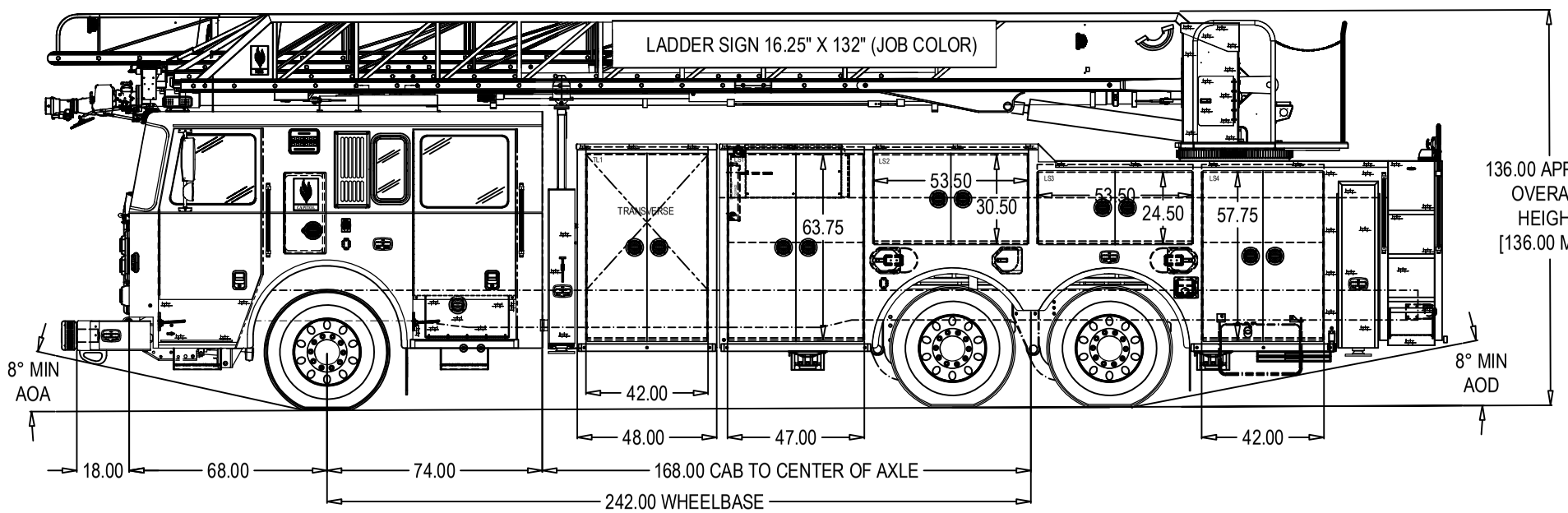
FWD SEAGRAVE HOLDINGS, LP / 105 EAST 12TH STREET
CLINTONVILLE, WI 54929

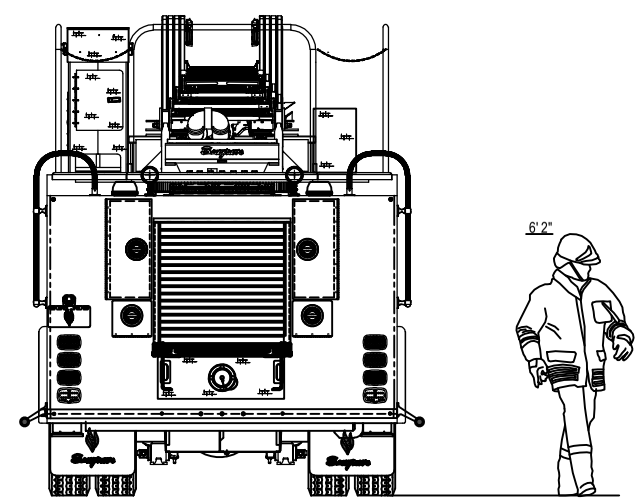
LEXINGTON FIRE DEPARTMENT
LEXINGTON, KENTUCKY

PREPARED BY: DMP	DATE: 12-08-2022	MODEL: DP05CT
CAB: CAPITOL 142	FRONT AXLE: DANA D2200 / 22.8K / DISC	
ENGINE: CUMMINS X12 525HP	REAR AXLE: DANA D / R46-170H / 47K / DISC	
PUMP: N/A	FRONT TIRES: CO / 425 / 65R22.5 / CONTI HAC3	
BODY: 3CR12 S/S / FORCE (248.50")	REAR TIRES: CO / 12R22.5 / HDR2+	
TANK: N/A	AERIAL: 100' / #500 FORCE	

GROUND LADDERS:
- DUO-SAFETY #1200-A 35' 2-SECTION LADDERS
- DUO-SAFETY #1200-A 28' 2-SECTION LADDERS
- DUO-SAFETY #900-A 24' ROOF LADDERS
- FRESNO 12' LADDER WITH SAFETY SHOES
- DUO-SAFETY #875-A 20' ROOF LADDER (CURBSIDE BAY)
- DUO-SAFETY #875-A 16' ROOF LADDER (CURBSIDE BAY)
- DUO-SAFETY #585-A 10' FOLDING LADDER (CURBSIDE BAY)
- DUO-SAFETY #775-DR 14' DOUBLE ENDED ROOF LADDER (LADDER BASE SECTION)
- DUO-SAFETY #775-DR 10' DOUBLE ENDED ROOF LADDER (LADDER BASE SECTION)

PIKE POLE STORAGE:
- (6) PVC PIKE POLE TUBES
- (2) FIRE HOOKS #NHF-10 10' PIKE POLES FIBERGLASS HANDLE
- (2) FIRE HOOKS #NHF-8 8' PIKE POLES FIBERGLASS HANDLE
- (2) FIRE HOOKS #NHF-12 12' PIKE POLES FIBERGLASS HANDLE





PRELIMINARY DRAWING **F3479**

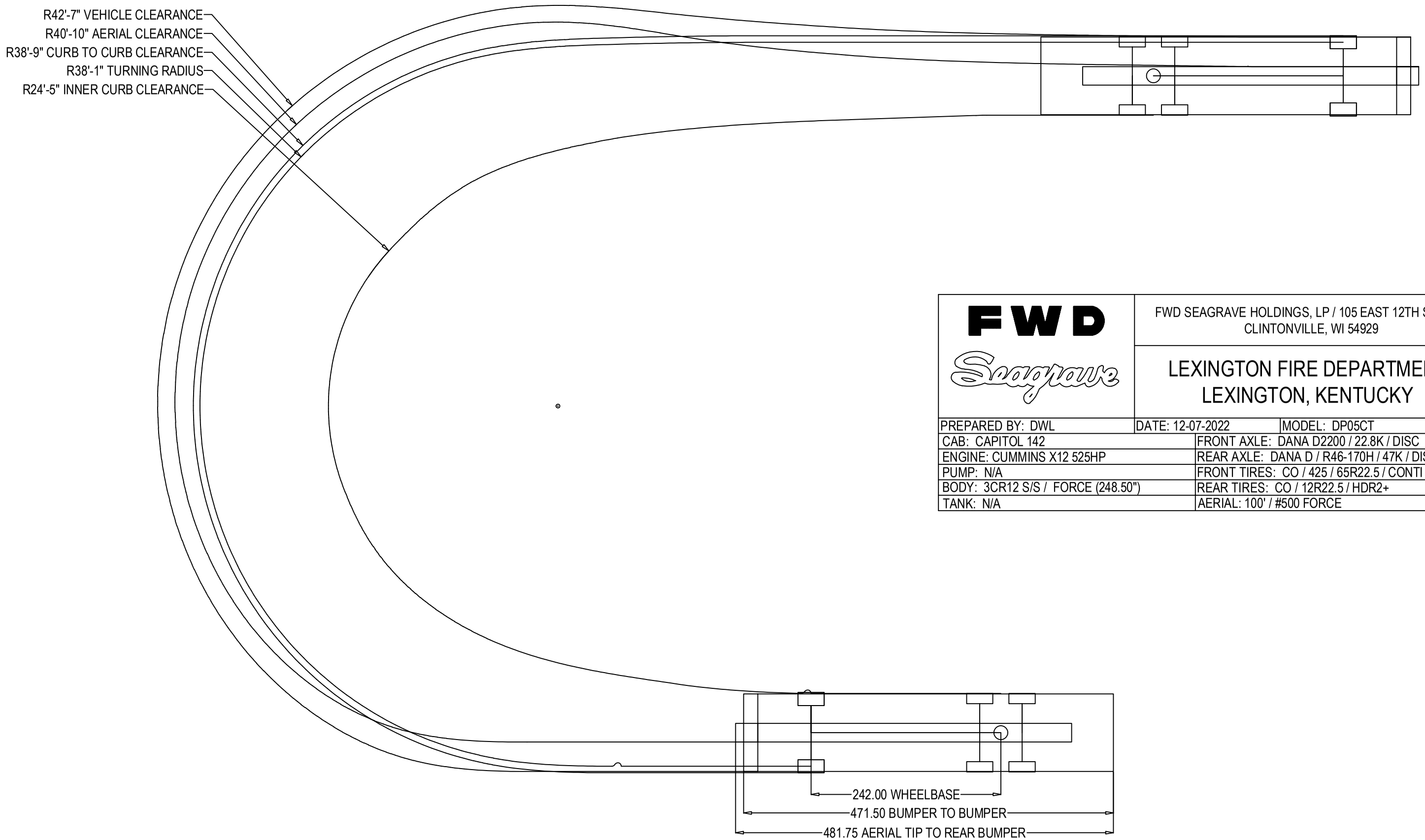
INTERNAL SALES REPRESENTATIVE SIGNATURE OF APPROVAL			SIG. DATE
BRETT ROMBERG			**12-08-2022**
REV.	DATE	DESCRIPTION	REV. BY
-	12-08-2022	PER QW #10174-0004	DMP

ALL DIMENSIONS ARE MEASURED IN INCHES, UNLESS OTHERWISE NOTED.

THIS DRAWING IS FOR REFERENCE OF CONFIGURATION; MINOR DETAILS MAY NOT BE SHOWN. DIMENSIONS SHOWN ARE APPROXIMATE AND SUBJECT TO CHANGE. THE SALES ORDER AND APPROVED SALES ORDER CHANGES WILL PREVAIL, WHERE DISCREPANCIES EXIST.

THE INDICATED VEHICLE HEIGHT REPRESENTS A CALCULATED DIMENSION. ACTUAL SHIPPED HEIGHT MAY VARY.

THE HOSE CAPACITY IS A CALCULATED AMOUNT. ACTUAL CAPACITY MAY VARY DEPENDING ON VENDOR OF THE HOSE.



FWD SEAGRAVE HOLDINGS, LP / 105 EAST 12TH STREET
CLINTONVILLE, WI 54929

LEXINGTON FIRE DEPARTMENT
LEXINGTON, KENTUCKY

PREPARED BY: DWL	DATE: 12-07-2022	MODEL: DP05CT
CAB: CAPITOL 142	FRONT AXLE: DANA D2200 / 22.8K / DISC	
ENGINE: CUMMINS X12 525HP	REAR AXLE: DANA D / R46-170H / 47K / DISC	
PUMP: N/A	FRONT TIRES: CO / 425 / 65R22.5 / CONTI HAC3	
BODY: 3CR12 S/S / FORCE (248.50")	REAR TIRES: CO / 12R22.5 / HDR2+	
TANK: N/A	AERIAL: 100' / #500 FORCE	

TURNING RADIUS DRAWING F3479 T-RAD

ALL DIMENSIONS ARE MEASURED IN INCHES, UNLESS OTHERWISE NOTED.

THIS DRAWING IS FOR REFERENCE OF CONFIGURATION; MINOR DETAILS MAY NOT BE SHOWN. DIMENSIONS SHOWN ARE APPROXIMATE AND SUBJECT TO CHANGE. THE SALES ORDER AND APPROVED SALES ORDER CHANGES WILL PREVAIL, WHERE DISCREPANCIES EXIST.

THE INDICATED VEHICLE HEIGHT REPRESENTS A CALCULATED DIMENSION. ACTUAL SHIPPED HEIGHT MAY VARY.

THE HOSE CAPACITY IS A CALCULATED AMOUNT. ACTUAL CAPACITY MAY VARY DEPENDING ON VENDOR OF THE HOSE.

Dealer Service Center and Capabilities

Fire & Specialty Equipment Company, LLC is the selling dealer and will provide all warranty and service required on your new Seagrave Fire Apparatus. We will also provide any required parts and service your new vehicle may require after the warranty period.

Our service center is located in Northern Bullitt County (Shepherdsville, KY) and is approximately 81.2 miles from the Lexington Fire Repair Shop. There is approximately 10,000 sq. ft. under roof for service area, parts storage, brake area, and offices. Besides our front parking area, we have a rear and side parking area for fire apparatus which is completely fenced and paved.

We have six (6) fully stocked service vehicles assigned to our service technicians. One (1) of these vehicles has a 4,000# crane for lifting capabilities. Four (4) of our technicians are assigned take-home vehicles and can be called on a 24 hours basis around the clock to perform after hours service calls. We also have one (1) technician with a service vehicle located in Western Kentucky.

Our entire staff is made up of fifteen (15) dedicated individuals and perform many tasks.

1 – Owner
1 – General Manager
7 – Service Technicians
1 – Receptionist
1 – Service Writer
1 – Parts Consultant
1 – Bookkeeper
1 – Seagrave Sales Representative

We welcome anyone to view our facility and speak with any of our staff. If you have any questions, we would be glad to discuss them with anyone from the Fire District.


ENTRANCE

Seagrave Fire Apparatus, LLC

CAB

Fifteen Year Structural Integrity Limited Warranty

Seagrave Fire Apparatus, LLC ("Seagrave") warrants the cab tubular support and mounting structures and other structural components, as identified in Seagrave's specifications, of the cab ("Cab") of each new custom fire and rescue vehicle, so equipped and manufactured by Seagrave, to be free of structural failures caused by defective materials or workmanship for a warranty period equal to fifteen (15) years after the date on which the vehicle is first delivered ("Warranty Start Date" or "WSD") to the original purchaser ("Purchaser") or 100,000 miles, whichever occurs first.

This warranty terminates upon transfer of possession or ownership of the vehicle from the original purchaser.

Seagrave's obligation under this warranty is limited to repairing or replacing, as Seagrave may elect, without charge to the original purchaser, the structural component or components which Seagrave, after examination, finds, to Seagrave's satisfaction, to have structurally failed due to defective design or workmanship. This warranty is limited to the cab tubular support and mounting structures and to the other structural components, as identified in Seagrave's specifications, of the cab.

Seagrave's obligation under this warranty is subject to the following conditions precedent: (a) that the claimed failure shall have first appeared during the warranty period; (b) that the original purchaser shall have notified Seagrave in writing of the claimed failure within thirty (30) days after the first date of discovery, but in any event prior to the expiration of the warranty period; (c) that, unless Seagrave directs otherwise, the claimed failed item or items shall have been returned to Seagrave, or to Seagrave's designee, promptly after the notification, with transportation charges prepaid; (d) Seagrave reserves the right to thoroughly examine the vehicle or parts thereof, prior to conducting or approving any repair or replacement, to determine whether the claimed failure is covered by this warranty; (e) in advance of the original purchaser effecting repair or replacement of a structural component or components found by Seagrave to have structurally failed due to defective design or workmanship, written approval for the repair or replacement must be obtained from Seagrave's Manager Customer Service or the CEO; (f) repair or replacement must be made by a facility approved in advance by Seagrave. Failure to obtain all of the advance approvals voids this warranty; and (g) coverage under this warranty of labor for repair or replacement is limited to the time or amounts reasonably necessary, as determined by Seagrave, to make the repair or replacement. Labor time or amounts deemed excessive by Seagrave are not covered under this warranty.

This warranty does not apply to or cover: (a) normal maintenance services or adjustments; (b) any item that has been repaired, replaced or altered by a facility not approved in advance, in writing, by Seagrave's Customer Service Department, or in a manner which, in Seagrave's judgment, may adversely affect the operation or longevity of the vehicle or item; (c) integral parts, components, aftermarket or trade accessories not manufactured by Seagrave; (d) special, incidental or consequential damages including, but not limited to, loss of time, inconvenience, loss of use, or lost profits; (e) any malfunction resulting from misuse, negligence, alteration, accident or lack of operational knowledge or normal maintenance or adjustments; (f) time required to unload or reload the vehicle or item; (g) nonstructural breakage or cracking; (h) material bending, buckling or other metal deformation unless caused by a structural failure of a structural component, as identified in Seagrave's specifications, of the Cab due to defective design or workmanship; (i) transportation fees or charges to or from any facility; or (j) defects if the Cab is damaged, dented, scratched, corroded or rusted from severe salt or road corrosive materials; faded or discolored by exposure to heat or severe sun conditions or environmental conditions.

This warranty is void if Seagrave determines that the Cab has been neglected, misused, altered, overloaded, loaded to a state of excessive imbalance side-to-side, or damaged. This warranty is also void if Seagrave determines that the warranty claim is false or misrepresented, that the Cab has been damaged in an accident or by an act of God, or that the structural failure is attributable to use or operation of the vehicle or item in a manner or for a purpose other than that for which Seagrave intended or designed the Cab.

Purchaser's Exclusive Remedy

If the Cab fails to conform to the warranty set forth in the limited warranty on this page during the warranty period, and such nonconformity is not due to misuse, neglect, accident or improper maintenance, Purchaser must notify Seagrave within the time period specified above and shall make the Cab and all maintenance records available for inspection by Seagrave or its designated agent. At the request of Seagrave, any allegedly defective Cab shall be returned to Seagrave or an authorized Seagrave representative by the Purchaser for examination and/or repair. Purchaser shall be responsible for the cost of all such transportation including loading and unloading and for loss of or damage to the vehicle during transportation. Within a reasonable time, Seagrave shall repair or replace (at Seagrave's option and expense) any nonconforming or defective parts. Repair or replacement shall be made only by a facility approved in advance, in writing, by Seagrave. THIS REMEDY SHALL BE THE EXCLUSIVE AND SOLE REMEDY FOR ANY BREACH OF WARRANTY.

Exclusion of Consequential and Incidental Damages

Notwithstanding anything to the contrary herein or in any agreement between Seagrave and Purchaser, IN NO EVENT SHALL SEAGRAVE BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, SPECIAL, INDIRECT, OR PUNITIVE DAMAGES WHATSOEVER, WHETHER ARISING OUT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHER THEORY OF LAW OR EQUITY, WITH RESPECT TO VEHICLES OR OTHER PRODUCTS SOLD BY SEAGRAVE OR THEIR OPERATION OR FAILURE TO OPERATE, OR ANY DEFECTS THEREIN, OR ANY UNDERTAKINGS, ACTS, OR OMISSIONS RELATED THERETO, REGARDLESS OF WHETHER SEAGRAVE HAS BEEN INFORMED OF THE POSSIBILITY OF ANY SUCH DAMAGES. Without limiting the generality of the foregoing, Seagrave specifically disclaims any liability for property or personal injury damages, penalties, damages for lost profits or revenues, loss of vehicles or products or any associated equipment, cost of substitute vehicles or products, down-time, delay damages, any other types of economic loss, or for any claims by any third party for any such damages.

Disclaimer of Warranties

THE WARRANTY SET FORTH IN THE PREVIOUS PARAGRAPHS IS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY SEAGRAVE. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY AND WARRANTIES ARISING BY OPERATION OF LAW, ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTIES ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE OR USAGE OF TRADE. NO PERSON IS AUTHORIZED TO MAKE ANY REPRESENTATIONS OR WARRANTIES ON BEHALF OF SEAGRAVE FIRE APPARATUS, LLC, OTHER THAN AS SET FORTH HEREIN. ANY MODIFICATION TO THIS WARRANTY MUST BE IN WRITING AND APPROVED AND SIGNED BY THE CEO OF SEAGRAVE FIRE APPARATUS, LLC.

Seagrave reserves the right to make changes to Seagrave's products without incurring any obligation to modify or improve previously manufactured products.

NOTE: Surety bond, if required, applies only to Seagrave's Basic Limited Warranty, and not to this or any other or extended warranty made by Seagrave or any of Seagrave's suppliers.

Seagrave Fire Apparatus, LLC

Stainless Steel Body

Fifteen Year Structural Integrity Limited Warranty

Seagrave Fire Apparatus, LLC ("Seagrave") warrants the body tubular support and mounting structures and other structural components, as identified in Seagrave's specifications of the stainless steel body ("Body") of each new custom fire and rescue vehicle, so equipped and manufactured by Seagrave, to be free of structural failures caused by defective materials or workmanship for a warranty period of fifteen (15) years after the date on which the vehicle is first delivered ("Warranty Start Date" or "WSD") to the original purchaser ("Purchaser") or 100,000 miles, whichever comes first.

This warranty terminates upon transfer of possession or ownership of the vehicle from the original purchaser.

Seagrave's obligation under this warranty is limited to repairing or replacing, as Seagrave may elect, without charge to the original purchaser, the structural component or components which Seagrave, after examination, finds, to Seagrave's satisfaction, to have structurally failed due to defective design or workmanship.

Seagrave's obligation under this warranty is subject to the following conditions precedent: (a) that the claimed failure shall have first appeared during the warranty period; (b) that the original purchaser shall have notified Seagrave in writing of the claimed failure within thirty (30) days after the first date of discovery, but in any event prior to the expiration of the warranty period; (c) that, unless Seagrave directs otherwise, the claimed failed item or items shall have been returned to Seagrave, or to Seagrave's designee, promptly after the notification, with transportation charges prepaid; (d) Seagrave reserves the right to thoroughly examine the vehicle or parts thereof, prior to conducting or approving any repair or replacement, to determine whether the claimed failure is covered by this warranty; (e) in advance of the original purchaser effecting repair or replacement of a structural component or components found by Seagrave to have structurally failed due to defective design or workmanship, written approval for the repair or replacement must be obtained from Seagrave's Manager Customer Service or the CEO; (f) repair or replacement must be made by a facility approved in advance by Seagrave. Failure to obtain all of the advance approvals voids this warranty; and (g) coverage under this warranty of labor for repair or replacement is limited to the time or amounts reasonably necessary, as determined by Seagrave, to make the repair or replacement. Labor time or amounts deemed excessive by Seagrave are not covered under this warranty.

This warranty does not apply to or cover: (a) normal maintenance services or adjustments; (b) any item that has been repaired, replaced or altered by a facility not approved in advance, in writing, by Seagrave's Customer Service Department, or in a manner which, in Seagrave's judgment, may adversely affect the operation or longevity of the vehicle or item; (c) integral parts, components, aftermarket or trade accessories not manufactured by Seagrave; (d) special, incidental or consequential damages including, but not limited to, loss of time, inconvenience, loss of use, or lost profits; (e) any malfunction resulting from misuse, negligence, alteration, accident or lack of operational knowledge or normal maintenance or adjustments; (f) time required to unload or reload the vehicle or item; (g) nonstructural breakage or cracking; (h) material bending, buckling or other metal deformation unless caused by a structural failure of a structural component (fatigued sheet metal is NOT considered structural), as identified in Seagrave's specifications, of the Body due to defective design or workmanship; (i) transportation fees or charges to or from any facility; or (j) defects if the Body is damaged, dented, scratched, corroded or rusted from severe salt or road corrosive materials; faded or discolored by exposure to heat or severe sun conditions or environmental conditions.

This warranty is void if Seagrave determines that the Body has been neglected, misused, altered, overloaded, loaded to a state of excessive imbalance side to side, or damaged. This warranty is also void if Seagrave determines that the warranty claim is false or misrepresented, that the Body has been damaged in an accident or by an act of God, or that the structural failure is attributable to use or operation of the vehicle or item in a manner or for a purpose other than that for which Seagrave intended or designed the Body.

Purchaser's Exclusive Remedy

If the Body fails to conform to the warranty set forth in the limited warranty on this page during the warranty period, and such nonconformity is not due to misuse, neglect, accident or improper maintenance, Purchaser must notify Seagrave within the time period specified above and shall make the Body and all maintenance records available for inspection by Seagrave or its designated agent. At the request of Seagrave, any allegedly defective Body shall be returned to Seagrave or an authorized Seagrave representative by the Purchaser for examination and/or repair. Purchaser shall be responsible for the cost of all such transportation including loading and unloading and for loss of or damage to the vehicle during transportation. Within a reasonable time, Seagrave shall repair or replace (at Seagrave's option and expense) any nonconforming or defective parts. Repair or replacement shall be made only by a facility approved in advance, in writing, by Seagrave. THIS REMEDY SHALL BE THE EXCLUSIVE AND SOLE REMEDY FOR ANY BREACH OF WARRANTY.

Exclusion of Consequential and Incidental Damages

Notwithstanding anything to the contrary herein or in any agreement between Seagrave and Purchaser, IN NO EVENT SHALL SEAGRAVE BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, SPECIAL, INDIRECT, OR PUNITIVE DAMAGES WHATSOEVER, WHETHER ARISING OUT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHER THEORY OF LAW OR EQUITY, WITH RESPECT TO VEHICLES OR OTHER PRODUCTS SOLD BY SEAGRAVE OR THEIR OPERATION OR FAILURE TO OPERATE, OR ANY DEFECTS THEREIN, OR ANY UNDERTAKINGS, ACTS, OR OMISSIONS RELATED THERETO, REGARDLESS OF WHETHER SEAGRAVE HAS BEEN INFORMED OF THE POSSIBILITY OF ANY SUCH DAMAGES. Without limiting the generality of the foregoing, Seagrave specifically disclaims any liability for property or personal injury damages, penalties, damages for lost profits or revenues, loss of vehicles or products or any associated equipment, cost of substitute vehicles or products, down-time, delay damages, any other types of economic loss, or for any claims by any third party for any such damages.

Disclaimer of Warranties

THE WARRANTY SET FORTH IN THE PREVIOUS PARAGRAPHS IS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY SEAGRAVE. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY AND WARRANTIES ARISING BY OPERATION OF LAW, ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTIES ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE OR USAGE OF TRADE. NO PERSON IS AUTHORIZED TO MAKE ANY REPRESENTATIONS OR WARRANTIES ON BEHALF OF SEAGRAVE FIRE APPARATUS, LLC, OTHER THAN AS SET FORTH HEREIN. ANY MODIFICATION TO THIS WARRANTY MUST BE IN WRITING AND APPROVED AND SIGNED BY THE CEO OF SEAGRAVE FIRE APPARATUS, LLC.

Seagrave reserves the right to make changes to Seagrave's products without incurring any obligation to modify or improve previously manufactured products.

NOTE: Surety bond, if required, applies only to Seagrave's Basic Limited Warranty, and not to this or any other or extended warranty made by Seagrave or any of Seagrave's suppliers.

Seagrave Fire Apparatus, LLC
CHASSIS FRAME RAIL & CROSSMEMBERS
Structural Integrity Limited Lifetime Warranty

Seagrave Fire Apparatus, LLC ("Seagrave") warrants each new chassis frame rail and crossmember manufactured by Seagrave ("Frame Rail and Crossmember") of each new custom fire and rescue vehicle, so equipped and manufactured by Seagrave, to be free of structural failures caused by defective materials or workmanship for a warranty period equal to the vehicle's useful life (twenty (20) years or 100,000 miles) after the date on which the vehicle is first delivered ("Warranty Start Date" or "WSD") to the original purchaser ("Purchaser").

This warranty terminates upon transfer of possession or ownership of the vehicle from the original purchaser.

Seagrave's obligation under this warranty is limited to repairing or replacing, as Seagrave may elect, without charge to the original purchaser, the structural component or components which Seagrave, after examination, finds, to Seagrave's satisfaction, to have structurally failed due to defective design or workmanship.

Seagrave's obligation under this warranty is subject to the following conditions precedent: (a) that the claimed failure shall have first appeared during the warranty period; (b) that the original purchaser shall have notified Seagrave in writing of the claimed failure within thirty (30) days after the first date of discovery, but in any event prior to the expiration of the warranty period; (c) that, unless Seagrave directs otherwise, the claimed failed item or items shall have been returned to Seagrave, or to Seagrave's designee, promptly after the notification, with transportation charges prepaid; (d) Seagrave reserves the right to thoroughly examine the vehicle or parts thereof, prior to conducting or approving any repair or replacement, to determine whether the claimed failure is covered by this warranty; (e) in advance of the original purchaser effecting repair or replacement of a structural component or components found by Seagrave to have structurally failed due to defective design or workmanship, written approval for the repair or replacement must be obtained from Seagrave's Manager Customer Service or the CEO; (f) repair or replacement must be made by a facility approved in advance by Seagrave. Failure to obtain all of the advance approvals voids this warranty; (g) coverage under this warranty of labor for repair or replacement is limited to the time or amounts reasonably necessary, as determined by Seagrave, to make the repair or replacement. Labor time or amounts deemed excessive by Seagrave are not covered under this warranty; and (h) the Frame Rail and Cross Member bolts must be inspected and serviced, including re-torqueing or replacement if needed, annually at the customer's expanse by an Authorized Service Representative in accordance with Seagrave's recommended procedures. Such annual inspection shall be performed within twelve months directly following the Warranty Start Date and each successive twelve months thereafter for the full term of the warranty. All documentation must be sent to Seagrave's Customer Service Department within thirty (30) days after the inspection; failure to submit such documentation will void this warranty.

This warranty does not apply to or cover: (a) normal maintenance services or adjustments; (b) any item that has been repaired, replaced or altered by a facility not approved in advance, in writing, by Seagrave's Customer Service Department, or in a manner which, in Seagrave's judgment, may adversely affect the operation or longevity of the vehicle or item; (c) integral parts, components, aftermarket or trade accessories not manufactured by Seagrave; (d) special, incidental or consequential damages including, but not limited to, loss of time, inconvenience, loss of use, or lost profits; (e) any malfunction resulting from misuse, negligence, alteration, accident or lack of operational knowledge or normal maintenance or adjustments; (f) time required to unload or reload the vehicle or item; (g) nonstructural breakage or cracking; (h) material bending, buckling or other metal deformation unless caused by a structural failure of a structural component, as identified in Seagrave's specifications, of the Frame Rail and Crossmember due to defective design or workmanship; (i) transportation fees or charges to or from any facility; or (j) defects if the Frame Rail and Crossmember is damaged, dented, scratched, corroded or rusted from severe salt or road corrosive materials; faded or discolored by exposure to heat or severe sun conditions or environmental conditions.

This warranty is void if Seagrave determines that the Frame Rail and Crossmember has been neglected, misused, altered, overloaded, loaded to a state of excessive imbalance side-to-side, or damaged. This warranty is also void if Seagrave determines that the warranty claim is false or misrepresented, that the Frame Rail and Crossmember has been damaged in an accident or by an act of God, or that the structural failure is attributable to use or operation of the vehicle or item in a manner or for a purpose other than that for which Seagrave intended or designed the Frame Rail and Crossmember.

Purchaser's Exclusive Remedy

If the Frame Rail and Crossmember fails to conform to the warranty set forth in the limited warranty on this page during the warranty period, and such nonconformity is not due to misuse, neglect, accident or improper maintenance, Purchaser must notify Seagrave within the time period specified above and shall make the Frame Rail and Crossmember and all maintenance records available for inspection by Seagrave or its designated agent. At the request of Seagrave, any allegedly defective Frame Rail and Crossmember shall be returned to Seagrave or an authorized Seagrave representative by the Purchaser for examination and/or repair. Purchaser shall be responsible for the cost of all such transportation including loading and unloading and for loss of or damage to the vehicle during transportation. Within a reasonable time, Seagrave shall repair or replace (at Seagrave's option and expense) any nonconforming or defective parts. Repair or replacement shall be made only by a facility approved in, advance in, writing by Seagrave. THIS REMEDY SHALL BE THE EXCLUSIVE AND SOLE REMEDY FOR ANY BREACH OF WARRANTY.

Exclusion of Consequential and Incidental Damages

Notwithstanding anything to the contrary herein or in any agreement between Seagrave and Purchaser, IN NO EVENT SHALL SEAGRAVE BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, SPECIAL, INDIRECT, OR PUNITIVE DAMAGES WHATSOEVER, WHETHER ARISING OUT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHER THEORY OF LAW OR EQUITY, WITH RESPECT TO VEHICLES OR OTHER PRODUCTS SOLD BY SEAGRAVE OR THEIR OPERATION OR FAILURE TO OPERATE, OR ANY DEFECTS THEREIN, OR ANY UNDERTAKINGS, ACTS, OR OMISSIONS RELATED THERETO, REGARDLESS OF WHETHER SEAGRAVE HAS BEEN INFORMED OF THE POSSIBILITY OF ANY SUCH DAMAGES. Without limiting the generality of the foregoing, Seagrave specifically disclaims any liability for property or personal injury damages, penalties, damages for lost profits or revenues, loss of vehicles or products or any associated equipment, cost of substitute vehicles or products, down-time, delay damages, any other types of economic loss, or for any claims by any third party for any such damages.

Disclaimer of Warranties

THE WARRANTY SET FORTH IN THE PREVIOUS PARAGRAPHS IS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY SEAGRAVE. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY AND WARRANTIES ARISING BY OPERATION OF LAW, ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTIES ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE OR USAGE OF TRADE. NO PERSON IS AUTHORIZED TO MAKE ANY REPRESENTATIONS OR WARRANTIES ON BEHALF OF SEAGRAVE FIRE APPARATUS, LLC, OTHER THAN AS SET FORTH HEREIN. ANY MODIFICATION TO THIS WARRANTY MUST BE IN WRITING AND APPROVED AND SIGNED BY THE CEO OF SEAGRAVE FIRE APPARATUS, LLC.

Seagrave reserves the right to make changes to Seagrave's products without incurring any obligation to modify or improve previously manufactured products.

NOTE: Surety bond, if required, applies only to Seagrave's Basic Limited Warranty, and not to this or any other or extended warranty made by Seagrave or any of Seagrave's suppliers.

Seagrave Fire Apparatus, LLC

AERIAL DEVICE

Twenty Year Structural Integrity Limited Warranty

Limited Warranty

Seagrave Fire Apparatus, LLC ("Seagrave") warrants each new aerial device manufactured by Seagrave to be free of structural failures caused by defective design or workmanship for a warranty period of twenty (20) years after the date on which the new aerial device is first delivered ("Warranty Start Date" or "WSD") to the original purchaser ("Purchaser").

This warranty is limited to the torque box, turntable, aerial sections, boom sections and structural components of outriggers or jack beams, as identified in Seagrave's specifications, of the aerial device ("Aerial Device"). This warranty applies only if the original purchaser provides to Seagrave dated test results showing that the Aerial Device: (a) has been, at least annually, visually examined by a third party testing agency approved by Seagrave; and (b) has been nondestructive tested by a third party testing agency approved by Seagrave in accordance with the then latest revision of NFPA 1914. All results must be submitted to Seagrave's Customer Service Department within thirty (30) days after the examination or test or otherwise this warranty is void. Further, the Aerial Device must be properly maintained in accordance with Seagrave's maintenance instructions and manuals and is used in service, which is normal to the particular Aerial Device model. Normal service means service, which does not subject the Aerial Device to stresses or impacts greater than those that normally result from the careful use of the Aerial Device. All maintenance performed must be documented for proof of compliance. Such documentation must be made readily available and provided to Seagrave within ten (10) days upon request.

This warranty terminates upon transfer of possession or ownership of the vehicle or Aerial Device from the original purchaser.

Seagrave's obligation under this warranty is limited to repairing or replacing, as Seagrave may elect, without charge to the original purchaser, the structural component or components which Seagrave, after examination, finds, to Seagrave's satisfaction, to have structurally failed due to defective design or workmanship.

Seagrave's obligation under this warranty is subject to the following conditions precedent: (a) that the claimed failure shall have first appeared during the warranty period; (b) that the original purchaser shall have notified Seagrave in writing of the claimed failure within thirty (30) days after the first date of discovery, but in any event prior to the expiration of the warranty period; (c) that, unless Seagrave directs otherwise, the claimed failed item or items shall have been returned to Seagrave, or to Seagrave's designee, promptly after the notification, with transportation charges prepaid; (d) Seagrave reserves the right to thoroughly examine the vehicle or parts thereof, prior to conducting or approving any repair or replacement, to determine whether the claimed failure is covered by this warranty; (e) in advance of the original purchaser effecting repair or replacement of a structural component or components found by Seagrave to have structurally failed due to defective design or workmanship, written approval for the repair or replacement must be obtained from Seagrave's Manager Customer Service or the CEO; (f) repair or replacement must be made by a facility approved in advance by Seagrave. Failure to obtain all of the advance approvals voids this warranty; and (g) coverage under this warranty of labor for repair or replacement is limited to the time or amounts reasonably necessary, as determined by Seagrave, to make the repair or replacement. Labor time or amounts deemed excessive by Seagrave are not covered under this warranty.

This warranty does not apply to or cover: (a) normal maintenance services or adjustments; (b) any item that has been repaired, replaced or altered by a facility not approved in advance, in writing, by Seagrave's Customer Service Department, or in a manner which, in Seagrave's judgment, may adversely affect the operation or longevity of the vehicle or item; (c) integral parts, components, aftermarket or trade accessories not manufactured by Seagrave; (d) special, incidental or consequential damages including, but not limited to, loss of time, inconvenience, loss of use, or lost profits; (e) any malfunction resulting from misuse, negligence, alteration, accident or lack of operational knowledge or normal maintenance or adjustments; (f) time required to unload or reload the vehicle or item; (g) nonstructural breakage or cracking; (h) material bending, buckling or other metal deformation unless caused by a structural failure of a structural component, as identified in Seagrave's specifications, of the aerial device due to defective design or workmanship; (i) transportation fees or charges to or from any facility; or ten (10) defects if the Aerial Device is damaged, dented, scratched, corroded or rusted from severe salt or road corrosive materials; faded or discolored by exposure to heat or severe sun conditions or environmental conditions.

This warranty is void if Seagrave determines that the Aerial Device has been neglected, misused, altered, overloaded, loaded to a state of excessive imbalance side-to-side, or damaged. This warranty is also void if Seagrave determines that the warranty claim is false or misrepresented, that the Aerial Device has been damaged in an accident or by an act of God, or that the structural failure is attributable to use or operation of the vehicle or item in a manner or for a purpose other than that for which Seagrave intended or designed the Aerial Device.

Purchaser's Exclusive Remedy

If the Aerial Device fails to conform to the warranty set forth in the limited warranty on this page during the warranty period, and such nonconformity is not due to misuse, neglect, accident or improper maintenance, Purchaser must notify Seagrave within the time period specified above and shall make the Aerial Device and all maintenance records available for inspection by Seagrave or its designated agent. At the request of Seagrave, any allegedly defective Aerial Device shall be returned to Seagrave or an authorized Seagrave representative by the Purchaser for examination and/or repair. Purchaser shall be responsible for the cost of all such transportation including loading and unloading and for loss of or damage to the vehicle during transportation. Within a reasonable time, Seagrave shall repair or replace (at Seagrave's option and expense) any nonconforming or defective parts. Repair or replacement shall be made only by a facility approved in advance, in writing, by Seagrave. THIS REMEDY SHALL BE THE EXCLUSIVE AND SOLE REMEDY FOR ANY BREACH OF WARRANTY.

Exclusion of Consequential and Incidental Damages

Notwithstanding anything to the contrary herein or in any agreement between Seagrave and Purchaser, IN NO EVENT SHALL SEAGRAVE BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, SPECIAL, INDIRECT, OR PUNITIVE DAMAGES WHATSOEVER, WHETHER ARISING OUT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHER THEORY OF LAW OR EQUITY, WITH RESPECT TO VEHICLES OR OTHER PRODUCTS SOLD BY SEAGRAVE OR THEIR OPERATION OR FAILURE TO OPERATE, OR ANY DEFECTS THEREIN, OR ANY UNDERTAKINGS, ACTS, OR OMISSIONS RELATED THERETO, REGARDLESS OF WHETHER SEAGRAVE HAS BEEN INFORMED OF THE POSSIBILITY OF ANY SUCH DAMAGES. Without limiting the generality of the foregoing, Seagrave specifically disclaims any liability for property or personal injury damages, penalties, damages for lost profits or revenues, loss of vehicles or products or any associated equipment, cost of substitute vehicles or products, down-time, delay damages, any other types of economic loss, or for any claims by any third party for any such damages.

Disclaimer of Warranties

THE WARRANTY SET FORTH IN THE PREVIOUS PARAGRAPHS IS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY SEAGRAVE. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY AND WARRANTIES ARISING BY OPERATION OF LAW, ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTIES ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE OR USAGE OF TRADE. NO PERSON IS AUTHORIZED TO MAKE ANY REPRESENTATIONS OR WARRANTIES ON BEHALF OF SEAGRAVE FIRE APPARATUS, LLC, OTHER THAN AS SET FORTH HEREIN. ANY MODIFICATION TO THIS WARRANTY MUST BE IN WRITING AND APPROVED AND SIGNED BY THE CEO OF SEAGRAVE FIRE APPARATUS, LLC.

Seagrave reserves the right to make changes to Seagrave's products without incurring any obligation to modify or improve previously manufactured products.

NOTE: Surety bond, if required, applies only to Seagrave's Year Limited Warranty, and not to this or any other or extended warranty made by Seagrave or any of Seagrave's suppliers.

Seagrave Fire Apparatus, LLC
PAINT/CORROSION
Ten Year Limited Warranty

Subject to the limitations and exclusions set forth below, Seagrave Fire Apparatus, LLC ("Seagrave") warrants the exterior paint on each new cab and body manufactured by Seagrave for a period of ten (10) years after the date on which the vehicle is first delivered ("Warranty Start Date" or "WSD") to the original purchaser ("Purchaser") as established by Seagrave's original invoice. Seagrave warrants the Purchaser that its finished cab and body ("Cab and Body") areas will be free from corrosion, blistering, peeling, or any other adhesion defect caused by defective manufacturing methods or paint material selection for exterior surfaces of the body of the vehicle.

Seagrave's obligation under this warranty is subject to the conditions precedent: (a) Original Purchaser must notify Seagrave in writing of the claimed defect or perforation within thirty (30) days of discovery, but in any event prior to the expiration of the warranty period; (b) written approval must be obtained from Seagrave's Customer Service Manager **prior** to any repair or replacement of any materials covered within this Limited Warranty; (c) unless Seagrave directs otherwise, the claimed defective or perforated item(s) shall be returned to Seagrave, or to Seagrave's designee, promptly after the notification. Original Purchaser shall be responsible for the cost of transportation and for risk of loss or damage to the vehicle or materials during transportation; (d) Seagrave reserves the right to thoroughly examine the vehicle or parts thereof, prior to conducting or approving any repair or replacement, to determine whether the claimed defect or perforation is covered by this warranty; (e) repair or replacement must be made by a facility approved in advance, in writing, by Seagrave. Failure to obtain all of the advance approvals voids this warranty. Coverage under this warranty of labor for repair or replacement is limited to the time or amounts reasonably necessary, as determined by Seagrave, to make the repair or replacement. Labor time or amounts deemed excessive by Seagrave are not covered under this warranty; (f) the Cab and Body exterior must be properly maintained; and (g) the Cab and Body exterior must be inspected and serviced annually at the customer's expanse by an Authorized Service Representative in accordance with Seagrave's recommended procedures. Such annual inspection shall be performed within twelve months directly following the Warranty Start Date and each successive twelve months thereafter for the full term of the warranty. All documentation must be sent to Seagrave's Customer Service Department within thirty (30) days after the inspection; failure to submit such documentation will void this warranty.
This warranty terminates upon transfer of possession or ownership of the vehicle from the original purchaser.

This Limited Warranty is applicable to the vehicle in the following percentage costs of warranty repair, if any:

Period	Portion of Cost Covered
0 – 24 Months	100%
25 - 36 Months	90%
37 - 48 Months	70%
49 – 60 Months	60%
61 - 72 Months	50%
73 – 84 Months	40%
85 – 96 Months	30%
97 – 108 Months	20%
109 – 120 Months	10%

Seagrave also warrants, subject to all of the terms and conditions of this Limited Warranty, except cost allocations, each new Cab and Body manufactured by Seagrave against exterior corrosion perforation for a warranty period of ten (10) years after the date on which the vehicle is first delivered to the original purchaser or 100,000 miles, whichever occurs first.

This limited warranty covers only repair or replacement of any part of a Seagrave vehicle in which a defect in materials or workmanship appears within the limited warranty period. This warranty is void if Seagrave determines that the warranty claim is false or misrepresented.

Examples of items not covered include, but are not limited to:

I. Major components or trade accessories such as purchased chassis, engines, signaling devices, batteries, generators, tires, rims or transmissions that have a separate warranty by the original manufacturer, or to equipment used in firefighting.
II. An unauthorized alteration or modification to the vehicle, including the body, chassis or components, after completion of the vehicle assembly by Seagrave and any problems that occur as a result of such alterations or modifications.
III. Damage caused by collision, fire, theft, freezing, vandalism, riot, explosion, acts of nature, war or objects striking the vehicle or any damage covered by owner insurance.
IV. Damage caused by misuse, neglect or improper operation of the vehicle such as driving over curbs, overloading, racing or off–road use.
V. Corrosion caused by exposed sheet metal, accidents, or normal wear and tear are not defects in material or workmanship
VI. Damage caused by failure to follow the requirements of the maintenance schedule, failure to maintain proper fluid and lubricant levels and failure to follow operating instructions.
VII. Incidental expenses such as loss of vehicle use, inconvenience, loss of time, vehicle rental, loading or travel costs, vacation pay, liability for personal or property damages, penalties, damages for lost profits or revenues, any other types of economic loss or any third party claims for damages.
VIII. Gold leaf, striping, exotic and/or custom finishes and Scotchlite emblems or decals installed by anyone other than the Seagrave factory.
IX. Damage caused from exposure to road de-icing compounds or use in an acidic environment.
X. Normal paint deterioration due to exposure
XI. Damage caused from not following cab and body washing procedures on truck and in Operation and Maintenance Manual.
XII. Defects if vehicle is damaged, dented, scratched, corroded or rusted from severe salt or road corrosive materials, or faded or discolored by exposure to heat or severe sun conditions or environmental conditions.
XIII. This warranty shall not apply to non-exterior surface areas (i.e. compartment interiors, cab and body interior, undercarriages)
XIV. This warranty shall only apply to exterior coating applied by Seagrave and specifically excludes all coating applications applied by other manufacturers including chassis and chassis compartments.
XV. This warranty shall exclude accessory vendor equipment that is painted to match finished vehicle.
XVI. This warranty shall exclude painted roll-up doors.
XVII. Hazing, chalking or loss of gloss caused by improper care, abrasive polishes, cleaning agents, heavy duty pressure washing or aggressive mechanical wash system.
XVIII. Paint deterioration caused by abuse, accidents, acid rain, chemical fallout or acts of nature.
XIX. Accidents, scratches, chips, bruises, and gloss reduction or blemishes due to normal vehicle use and maintenance.

Purchaser's Exclusive Remedy

If the Cab and Body fails to conform to the warranty set forth in the limited warranty on this page during the warranty period, and such nonconformity is not due to misuse, neglect, accident or improper maintenance, Purchaser must notify Seagrave within the time period specified above and shall make the vehicle and all maintenance records available for inspection by Seagrave or its designated agent. At the request of Seagrave, any allegedly defective Cab and Body shall be returned to Seagrave or an authorized Seagrave representative by the Purchaser for examination and/or repair. Purchaser shall be responsible for the cost of all such transportation including loading and unloading and for loss of or damage to the vehicle during transportation. Within a reasonable time, Seagrave shall repair or replace (at Seagrave's option and expense) any nonconforming or defective parts. Repair or replacement shall be made only by a facility approved in advance, in writing, by Seagrave. THIS REMEDY SHALL BE THE EXCLUSIVE AND SOLE REMEDY FOR ANY BREACH OF WARRANTY.

Exclusion of Consequential and Incidental Damages

Notwithstanding anything to the contrary herein or in any agreement between Seagrave and Purchaser, IN NO EVENT SHALL SEAGRAVE BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, SPECIAL, INDIRECT, OR PUNITIVE DAMAGES WHATSOEVER, WHETHER ARISING OUT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHER THEORY OF LAW OR EQUITY, WITH RESPECT TO VEHICLES OR OTHER PRODUCTS SOLD BY SEAGRAVE OR THEIR OPERATION OR FAILURE TO OPERATE, OR ANY DEFECTS THEREIN, OR ANY UNDERTAKINGS, ACTS, OR OMISSIONS RELATED THERETO, REGARDLESS OF WHETHER SEAGRAVE HAS BEEN INFORMED OF THE POSSIBILITY OF ANY SUCH DAMAGES. Without limiting the generality of the foregoing, Seagrave specifically disclaims any liability for property or personal injury damages, penalties, damages for lost profits or revenues, loss of vehicles or products or any associated equipment, cost of substitute vehicles or products, down-time, delay damages, any other types of economic loss, or for any claims by any third party for any such damages.

Disclaimer of Warranties

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Seagrave reserves the right to make changes to Seagrave's products without incurring any obligation to modify or improve previously manufactured products.

NOTE: Surety bond, if required, applies only to Seagrave Basic Limited Warranty, and not to this or any other warranty made by Seagrave or any of Seagrave's suppliers.

Seagrave Fire Apparatus, LLC
Two Year Limited Warranty

Limited Warranty

Subject to the limitations and exclusions set forth below, and provided the vehicle shall have been placed in service within sixty (60) days after delivery ("Warranty Start Date" or "WSD") to the original purchaser (the "Purchaser") as established by our original invoice, Seagrave Fire Apparatus, LLC ("Seagrave") warrants to the Purchaser that the portions of its custom cab and chassis that are manufactured by Seagrave ("Chassis or Custom Cab" or "Vehicle") shall be free from defects in material and workmanship for a warranty period ending two (2) years after the date of delivery of the vehicle to the original purchaser or the first 20,000 miles of use, or 10,000 hours as determined by engine hours or 10,000 In-Service hours, whichever occurs first ("Warranty Period").

Seagrave's obligation under this warranty is subject to the following conditions precedent: (a) Purchaser must notify Seagrave in writing of the claimed defect within thirty (30) days after the first date of discovery, but in any event prior to the expiration of the warranty period; (b) written approval must be obtained from Seagrave's Customer Service Manager prior to any repair or replacement of any materials covered within this Limited Warranty; (c) unless Seagrave directs otherwise, the claimed defective item(s) shall be returned to Seagrave, or to Seagrave's designee, promptly after the notification. Purchaser shall be responsible for the cost of transportation and for risk of loss or damage to the Vehicle or materials during transportation; (d) Seagrave reserves the right to thoroughly examine the Custom Cab or Chassis, or parts thereof, prior to conducting or approving any repair or replacement, to determine whether the claimed defect is covered by this warranty; (e) repair or replacement must be made by a facility approved in advance, in writing, by Seagrave. Failure to obtain all of the advance approvals voids this warranty. Coverage under this warranty of labor for repair or replacement is limited to the time or amounts reasonably necessary, as determined by Seagrave, to make the repair or replacement. Labor time or amounts deemed excessive by Seagrave are not covered under this warranty; and (f) this limited warranty shall apply only if the Vehicle is properly maintained in accordance with Seagrave's maintenance instructions and manuals and is used In Service, which is normal to the particular Vehicle model. Normal service means service, which does not subject the vehicle to stresses or impacts greater than those that normally result from the careful use of the Vehicle. All maintenance performed must be documented for proof of compliance. Such documentation must be made readily available and provided to Seagrave within ten (10) days upon request.

This warranty terminates upon transfer of possession or ownership of the vehicle from the original purchaser.

Notwithstanding anything to the contrary herein, Seagrave makes no warranty whatsoever as to: (a) any other integral parts, components, attachments or trade accessories of or to the vehicle that are not manufactured by Seagrave, including but not limited to engines, transmissions, drivelines, axles, water pumps and generators; with respect to all such parts, components, attachments and accessories, Seagrave shall assign to Purchaser the applicable warranties, if any, made by the respective manufacturers thereof; (b) the Chassis, Custom Cab or their components, any part, attachment or accessory damaged by misuse, neglect, improper maintenance or accident. Any determination of neglect or damage during the full limited warranty term will void this warranty; (c) the Chassis, Custom Cab or their components, any part, attachment or accessory that has been repaired, altered or assembled in any way by any person or entity other than Seagrave which, in the sole judgment of Seagrave, adversely affects the performance, stability or purpose for which it was manufactured; (d) any modification or repair performed during the full term of the limited warranty excluding regular scheduled maintenance or the replacement of non-warrantable wearable components without prior written authorization from Seagrave will void this warranty; (e) products or parts which may, in the ordinary use, wear out and have to be replaced during the warranty period, including, but not limited to, tires, fluids, gaskets, filters and light bulbs. Seagrave assumes no responsibility for the assembly of its parts or subassemblies into finishing products or vehicles unless the assembly is performed by Seagrave; (f) normal maintenance services or adjustments, including but not limited to fuel system cleaning, wheel alignment and balancing, engine tune-up, brake inspection or adjustment, nor to the replacement of fluids, oil seals or filters.

Purchaser's Exclusive Remedy

If the Vehicle fails to conform to the warranty set forth in the limited warranty on this page during the warranty period, and such nonconformity is not due to misuse, neglect, accident or improper maintenance, Purchaser must notify Seagrave within the time period specified above and shall make the vehicle and all maintenance records available for inspection by Seagrave or its designated agent. At the request of Seagrave, any allegedly defective Vehicle shall be returned to Seagrave or an authorized Seagrave representative by the Purchaser for examination and/or repair. Purchaser shall be responsible for the cost of all such transportation including loading and unloading and for loss of or damage to the vehicle during transportation. Within a reasonable time, Seagrave shall repair or replace (at Seagrave's option and expense) any nonconforming or defective parts. Repair or replacement shall be made only by a facility approved in advance, in writing, by Seagrave. THIS REMEDY SHALL BE THE EXCLUSIVE AND SOLE REMEDY FOR ANY BREACH OF WARRANTY.

Exclusion of Consequential and Incidental Damages

Notwithstanding anything to the contrary herein or in any agreement between Seagrave and Purchaser, IN NO EVENT SHALL SEAGRAVE BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, SPECIAL, INDIRECT, OR PUNITIVE DAMAGES WHATSOEVER, WHETHER ARISING OUT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHER THEORY OF LAW OR EQUITY, WITH RESPECT TO VEHICLES OR OTHER PRODUCTS SOLD BY SEAGRAVE OR THEIR OPERATION OR FAILURE TO OPERATE, OR ANY DEFECTS THEREIN, OR ANY UNDERTAKINGS, ACTS, OR OMISSIONS RELATED THERETO, REGARDLESS OF WHETHER SEAGRAVE HAS BEEN INFORMED OF THE POSSIBILITY OF ANY SUCH DAMAGES. Without limiting the generality of the foregoing, Seagrave specifically disclaims any liability for property or personal injury damages, penalties, damages for lost profits or revenues, loss of vehicles or products or any associated equipment, cost of substitute vehicles or products, down-time, delay damages, any other types of economic loss, or for any claims by any third party for any such damages.

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NO PERSON IS AUTHORIZED TO MAKE ANY REPRESENTATIONS OR WARRANTIES ON BEHALF OF SEAGRAVE FIRE APPARATUS, LLC, OTHER THAN AS SET FORTH HEREIN. ANY MODIFICATION TO THIS WARRANTY MUST BE IN WRITING AND APPROVED AND SIGNED BY THE CEO OF SEAGRAVE FIRE APPRATUS, LLC.

Seagrave reserves the right to make changes to Seagrave's products without incurring any obligation to modify or improve previously manufactured products.

Note: Any Surety Bond, if part of the sale of the vehicle as to which this limited warranty is provided, applies only to this Seagrave Limited Warranty for such vehicle, and not to other warranties made by Seagrave in a separate document (if any) or to the warranties (if any) made by any manufacturer (other than Seagrave) of any part, component, attachment or accessory that is incorporated into or attached to the vehicle.