

PROCUREMENT AGREEMENT

for

101' TRACTOR DRAWN AERIAL FIRE TRUCK

between

COUNTY OF RIVERSIDE

and

KOVATCH MOBILE EQUIPMENT

DBA KME FIRE APPARATUS



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This Agreement, made and entered into this 1st day of May, 2019, by and between Kovatch Mobile Equipment DBA KME Fire Apparatus (herein referred to as "CONTRACTOR"), and the COUNTY OF RIVERSIDE, a political subdivision of the State of California, (herein referred to as "COUNTY"). The parties agree as follows:

1. Description

1.1 CONTRACTOR shall provide 101' Tractor Drawn Aerial Fire Apparatus as specified in Exhibit A, at the prices stated in Exhibit B, Payment Provisions.

1.2 CONTRACTOR represents that it has the skills, experience, and knowledge necessary to perform under this Agreement and the COUNTY relies upon this representation. CONTRACTOR shall perform to the satisfaction of the COUNTY and in conformance to and consistent with the highest standards of firms in the same discipline in the State of California.

1.3 CONTRACTOR affirms this it is fully apprised of all of the work to be performed under this Agreement; and the CONTRACTOR agrees it can properly perform this work at the prices stated in Exhibit B. CONTRACTOR is not to perform services or provide additional products outside of the Agreement.

1.4 Acceptance by the COUNTY of the CONTRACTOR's performance and deliverables under this Agreement does not operate as a release of CONTRACTOR's responsibility for full compliance with the terms of this Agreement.

2. Period of Performance

2.1 This Agreement shall be effective upon signature by both parties and will continue in effect until April 30th, 2024, unless terminated earlier. The COUNTY's shall place individual Purchase Orders against this contract for the apparatus specified in Exhibit A at the prices stipulated in Exhibit B. The Riverside County Board of Supervisors is the only authority that may obligate the County for a non-cancelable multi-year agreement.

3. Compensation

3.1 The COUNTY shall pay the CONTRACTOR for the apparatus specified in Exhibit A in accordance with the terms of Exhibit B, Payment Provisions. Maximum payments by COUNTY to CONTRACTOR shall not exceed the per unit price of the apparatus, including all expenses. The COUNTY is not responsible for any fees or costs incurred above or beyond the contracted amount and shall have no obligation to purchase any specified amount. Unless otherwise specifically stated in Exhibit B, COUNTY shall not be responsible for payment of any of CONTRACTOR's expenses related to this Agreement.

3.2 No price increases will be permitted during the first year of this Agreement. All price decreases (for example, if CONTRACTOR offers lower prices to another governmental entity) will automatically be extended to the COUNTY. The COUNTY requires written proof satisfactory to COUNTY of cost increases prior to any approved price adjustment. After the first year of the award, a minimum of 30-days advance notice in writing is required to be considered and approved by COUNTY. No retroactive price adjustments will be considered. Any price increases must be stated in a written amendment to this Agreement. The Annual increases shall not exceed the Producer Price Index 1413-027 – Buses and firefighting vehicles, complete, produced on purchased chassis and be subject to satisfactory performance review by the COUNTY and approved (if needed) for budget funding by the Board of Supervisors.

3.3 CONTRACTOR shall be paid in accordance with a proper invoice submitted to the COUNTY by CONTRACTOR, and COUNTY shall pay the invoice within thirty (30) working days from the date of receipt of the invoice or acceptance of the apparatus, whichever is later. Payment shall be made to CONTRACTOR only after delivery and acceptance has been made by COUNTY. Prepare invoices in duplicate. For this Agreement, send the original and duplicate copies of invoices to:

Riverside County Fire Department

Attn: Accounts Payable

210 West San Jacinto Ave.

Perris, CA 92570

- a) Each invoice shall contain a minimum of the following information: invoice number and date; remittance address; bill-to and ship-to addresses; Agreement number (FPARC-07057-002-05/24); purchase order number; quantities; item descriptions, unit prices, extensions, sales/use tax if applicable, and an invoice total.

3.4 The COUNTY obligation for payment of this Agreement beyond the current fiscal year end is contingent upon and limited by the availability of COUNTY funding from which payment can be made. In the State of California, Government agencies are not allowed to pay excess interest and late charges, per Government Codes, Section 926.10. No legal liability on the part of the COUNTY shall arise for payment beyond June 30 of each calendar year unless funds are made available for such payment. In the event that such funds are not forthcoming for any reason, COUNTY shall immediately notify CONTRACTOR in writing; and this Agreement shall be deemed terminated, have no further force, and effect.

4. Alteration or Changes to the Agreement

4.1 The Board of Supervisors and the COUNTY Purchasing Agent and/or his designee are the only authorized representatives who may alter this Agreement. Any alteration to the terms, conditions and pricing of this Agreement shall only be authorized via a written Amendment to this Agreement issued by the COUNTY.

5. Termination

5.1 COUNTY may terminate this Agreement without cause upon 30 days written notice served upon the CONTRACTOR stating the extent and effective date of termination.

5.2 COUNTY may, upon five (5) days written notice terminate this Agreement for CONTRACTOR's default, if CONTRACTOR refuses or fails to comply with the terms of this Agreement or fails to make progress that may endanger performance and does not immediately cure such failure.

5.3 CONTRACTOR's rights under this Agreement shall terminate (except for fees accrued prior to the date of termination) upon dishonesty or a willful or material breach of this Agreement by CONTRACTOR; or in the event of CONTRACTOR's unwillingness or inability for any reason whatsoever to perform the terms of this Agreement. In such event, CONTRACTOR shall not be entitled to any further compensation under this Agreement.

5.4 If the Agreement is federally or State funded, CONTRACTOR cannot be debarred from the System for Award Management (SAM). CONTRACTOR must notify the COUNTY immediately of a debarment. Reference: System for Award Management (SAM) at <https://www.sam.gov> for Central Contractor Registry (CCR), Federal Agency Registration (Fedreg), Online Representations and Certifications Application, and Excluded Parties List System (EPLS)). Excluded Parties Listing System (EPLS) (<http://www.epls.gov>) (Executive Order 12549, 7 CFR Part 3017, 45 CFR Part 76, and 44 CFR Part 17). The System for Award Management (SAM) is the Official U.S. Government system that consolidated the capabilities of CCR/FedReg, ORCA, and EPLS.

5.5 The rights and remedies of COUNTY provided in this section shall not be exclusive and are in addition to any other rights and remedies provided by law or this Agreement.

6. Ownership/Use of Contract Materials and Products

The CONTRACTOR agrees that all materials, reports or products in any form, including electronic, created by CONTRACTOR for which CONTRACTOR has been compensated by COUNTY pursuant to this Agreement shall be the sole property of the COUNTY. The material, reports or products may be used by the COUNTY for any purpose that the COUNTY deems to be appropriate. CONTRACTOR agrees not to release or

circulate in whole or part such materials, reports, or products without prior written authorization of the COUNTY.

7. Conduct of Contractor

7.1 The CONTRACTOR covenants that it presently has no interest, including, but not limited to, other projects or contracts, and shall not acquire any such interest, direct or indirect, which would conflict in any manner or degree with CONTRACTOR's performance under this Agreement. The CONTRACTOR further covenants that no person or subcontractor having any such interest shall be employed or retained by CONTRACTOR under this Agreement. The CONTRACTOR agrees to inform the COUNTY of all the CONTRACTOR's interests, if any, which are or may be perceived as incompatible with the COUNTY's interests.

7.2 The CONTRACTOR shall not, under circumstances which could be interpreted as an attempt to influence the recipient in the conduct of his/her duties, accept any gratuity or special favor from individuals or firms with whom the CONTRACTOR is doing business or proposing to do business, in accomplishing the work under this Agreement.

7.3 The CONTRACTOR or its employees shall not offer gifts, gratuity, favors, and entertainment directly or indirectly to COUNTY employees.

8. Inspection of Service; Quality Control/Assurance

8.1 All performance (which includes services, workmanship, materials, supplies and equipment furnished or utilized in the performance of this Agreement) shall be subject to inspection and test by the COUNTY or other regulatory agencies at all times. The CONTRACTOR shall provide adequate cooperation to any inspector or other COUNTY representative to permit him/her to determine the CONTRACTOR's conformity with the terms of this Agreement. If any services performed or products provided by CONTRACTOR are not in conformance with the terms of this Agreement, the COUNTY shall have the right to require the CONTRACTOR to perform the services or provide the products in conformance with the terms of the Agreement at no additional cost to the COUNTY. When the services to be performed or the products to be provided are of such nature that the difference cannot be corrected; the COUNTY shall have the right to: (1) require the CONTRACTOR immediately to take all necessary steps to ensure future performance in conformity with the terms of the Agreement; and/or (2) reduce the Agreement price to reflect the reduced value of the services performed or products provided. The COUNTY may also terminate this Agreement for default and charge to CONTRACTOR any costs incurred by the COUNTY because of the CONTRACTOR's failure to perform.

8.2 CONTRACTOR shall establish adequate procedures for self-monitoring and quality control and assurance to ensure proper performance under this Agreement; and shall permit a COUNTY representative or other regulatory official to monitor, assess, or evaluate CONTRACTOR's performance under this Agreement at any time, upon reasonable notice to the CONTRACTOR.

9. Independent Contractor/Employment Eligibility

9.1 The CONTRACTOR is, for purposes relating to this Agreement, an independent contractor and shall not be deemed an employee of the COUNTY. It is expressly understood and agreed that the CONTRACTOR (including its employees, agents, and subcontractors) shall in no event be entitled to any benefits to which COUNTY employees are entitled, including but not limited to overtime, any retirement benefits, worker's compensation benefits, and injury leave or other leave benefits. There shall be no employer-employee relationship between the parties; and CONTRACTOR shall hold COUNTY harmless from any and all claims that may be made against COUNTY based upon any contention by a third party that an employer-employee relationship exists by reason of this Agreement. It is further understood and agreed by the parties that CONTRACTOR in the performance of this Agreement is subject to the control or direction of COUNTY merely as to the results to be accomplished and not as to the means and methods for accomplishing the results.

9.2 CONTRACTOR warrants that it shall make its best effort to fully comply with all federal and state statutes and regulations regarding the employment of aliens and others and to ensure that employees performing work under this Agreement meet the citizenship or alien status requirement set forth in federal statutes and regulations. CONTRACTOR shall obtain, from all employees performing work hereunder, all verification and other documentation of employment eligibility status required by federal or state statutes and regulations including, but not limited to, the Immigration Reform and Control Act of 1986, 8 U.S.C. §1324 et seq., as they currently exist and as they may be hereafter amended. CONTRACTOR shall retain all such documentation for all covered employees, for the period prescribed by the law.

9.3 Ineligible Person shall be any individual or entity who: Is currently excluded, suspended, debarred or otherwise ineligible to participate in the federal health care programs; or has been convicted of a criminal offense related to the provision of health care items or services and has not been reinstated in the federal health care programs after a period of exclusion, suspension, debarment, or ineligibility.

9.4 CONTRACTOR shall screen prospective Covered Individuals prior to hire or engagement. CONTRACTOR shall not hire or engage any Ineligible Person to provide services directly relative to this Agreement. CONTRACTOR shall screen all current Covered Individuals within sixty (60) days of execution of this Agreement to ensure that they have not become Ineligible Persons unless CONTRACTOR has performed

such screening on same Covered Individuals under a separate agreement with COUNTY within the past six (6) months. Covered Individuals shall be required to disclose to CONTRACTOR immediately any debarment, exclusion or other event that makes the Covered Individual an Ineligible Person. CONTRACTOR shall notify COUNTY within five (5) business days after it becomes aware if a Covered Individual providing services directly relative to this Agreement becomes debarred, excluded or otherwise becomes an Ineligible Person.

9.5 CONTRACTOR acknowledges that Ineligible Persons are precluded from providing federal and state funded health care services by contract with COUNTY in the event that they are currently sanctioned or excluded by a federal or state law enforcement regulatory or licensing agency. If CONTRACTOR becomes aware that a Covered Individual has become an Ineligible Person, CONTRACTOR shall remove such individual from responsibility for, or involvement with, COUNTY business operations related to this Agreement.

9.6 CONTRACTOR shall notify COUNTY within five (5) business days if a Covered Individual or entity is currently excluded, suspended or debarred, or is identified as such after being sanction screened. Such individual or entity shall be promptly removed from participating in any activity associated with this Agreement.

10. Subcontract for Work or Services

No contract shall be made by the CONTRACTOR with any other party for furnishing any of the work or services under this Agreement without the prior written approval of the COUNTY; but this provision shall not require the approval of contracts of employment between the CONTRACTOR and personnel assigned under this Agreement, or for parties named in the proposal and agreed to under this Agreement.

11. Disputes

11.1 The parties shall attempt to resolve any disputes amicably at the working level. If that is not successful, the dispute shall be referred to the senior management of the parties. Any dispute relating to this Agreement, which is not resolved by the parties, shall be decided by the COUNTY's Purchasing Department's Compliance Contract Officer who shall furnish the decision in writing. The decision of the COUNTY's Compliance Contract Officer shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, capricious, arbitrary, or so grossly erroneous to imply bad faith. The CONTRACTOR shall proceed diligently with the performance of this Agreement pending the resolution of a dispute.

11.2 Prior to the filing of any legal action related to this Agreement, the parties shall be obligated to attend a mediation session in Riverside County before a neutral third party mediator. A second mediation session shall be required if the first session is not successful. The parties shall share the cost of the mediations.

12. Licensing and Permits

CONTRACTOR shall comply with all State or other licensing requirements, including but not limited to the provisions of Chapter 9 of Division 3 of the Business and Professions Code. All licensing requirements shall be met at the time proposals are submitted to the COUNTY. CONTRACTOR warrants that it has all necessary permits, approvals, certificates, waivers and exemptions necessary for performance of this Agreement as required by the laws and regulations of the United States, the State of California, the County of Riverside and all other governmental agencies with jurisdiction, and shall maintain these throughout the term of this Agreement.

13. Use By Other Political Entities

The CONTRACTOR agrees to extend the same pricing, terms, and conditions as stated in this Agreement to each and every political entity, special district, and related non-profit. It is understood that other entities shall make purchases in their own name, make direct payment, and be liable directly to the CONTRACTOR; and COUNTY shall in no way be responsible to CONTRACTOR for other entities' purchases. Government agencies interested in "piggybacking" against this Agreement and who would like to utilize this "piggyback" option, must receive written approval from the COUNTY authorizing their agency contractual rights through assignment of this contract.

14. Non-Discrimination

CONTRACTOR shall not be discriminate in the provision of services, allocation of benefits, accommodation in facilities, or employment of personnel on the basis of ethnic group identification, race, religious creed, color, national origin, ancestry, physical handicap, medical condition, marital status or sex in the performance of this Agreement; and, to the extent they shall be found to be applicable hereto, shall comply with the provisions of the California Fair Employment and Housing Act (Gov. Code 12900 et. seq), the Federal Civil Rights Act of 1964 (P.L. 88-352), the Americans with Disabilities Act of 1990 (42 U.S.C. S1210 et seq.) and all other applicable laws or regulations.

15. Records and Documents

CONTRACTOR shall make available, upon written request by any duly authorized Federal, State, or COUNTY agency, a copy of this Agreement and such books, documents and records as are necessary to certify the nature and extent of the CONTRACTOR's costs related to this Agreement. All such books, documents and

records shall be maintained by CONTRACTOR for at least five years following termination of this Agreement and be available for audit by the COUNTY. CONTRACTOR shall provide to the COUNTY reports and information related to this Agreement as requested by COUNTY.

16. Confidentiality

16.1 The CONTRACTOR shall not use for personal gain or make other improper use of privileged or confidential information which is acquired in connection with this Agreement. The term “privileged or confidential information” includes but is not limited to: unpublished or sensitive technological or scientific information; medical, personnel, or security records; anticipated material requirements or pricing/purchasing actions; COUNTY information or data which is not subject to public disclosure; COUNTY operational procedures; and knowledge of selection of contractors, subcontractors or suppliers in advance of official announcement.

16.2 The CONTRACTOR shall protect from unauthorized disclosure names and other identifying information concerning persons receiving services pursuant to this Agreement, except for general statistical information not identifying any person. The CONTRACTOR shall not use such information for any purpose other than carrying out the CONTRACTOR’s obligations under this Agreement. The CONTRACTOR shall promptly transmit to the COUNTY all third party requests for disclosure of such information. The CONTRACTOR shall not disclose, except as otherwise specifically permitted by this Agreement or authorized in advance in writing by the COUNTY, any such information to anyone other than the COUNTY. For purposes of this paragraph, identity shall include, but not be limited to, name, identifying number, symbol, or other identifying particulars assigned to the individual, such as finger or voice print or a photograph.

17. Administration/Contract Liaison

The COUNTY Purchasing Agent, or designee, shall administer this Agreement on behalf of the COUNTY. The Purchasing Department is to serve as the liaison with CONTRACTOR in connection with this Agreement.

18. Notices

All correspondence and notices required or contemplated by this Agreement shall be delivered to the respective parties at the addresses set forth below and are deemed submitted two days after their deposit in the United States mail, postage prepaid:

COUNTY OF RIVERSIDE

Riverside County Fire Department

Attn: Mr. John Miller

CONTRACTOR

Kovatch Mobile Equipment

DBA KME Fire Apparatus

210 West San Jacinto Ave
San Jacinto, CA 92570

5400 E. Jurupa Street
Ontario, CA 91761

19. Force Majeure

If either party is unable to comply with any provision of this Agreement due to causes beyond its reasonable control, and which could not have been reasonably anticipated, such as acts of God, acts of war, civil disorders, or other similar acts, such party shall not be held liable for such failure to comply.

20. EDD Reporting Requirements

In order to comply with child support enforcement requirements of the State of California, the COUNTY may be required to submit a Report of Independent Contractor(s) form **DE 542** to the Employment Development Department. The CONTRACTOR agrees to furnish the required data and certifications to the COUNTY within 10 days of notification of award of Agreement when required by the EDD. This data will be transmitted to governmental agencies charged with the establishment and enforcement of child support orders. Failure of the CONTRACTOR to timely submit the data and/or certificates required may result in the contract being awarded to another contractor. In the event a contract has been issued, failure of the CONTRACTOR to comply with all federal and state reporting requirements for child support enforcement or to comply with all lawfully served Wage and Earnings Assignments Orders and Notices of Assignment shall constitute a material breach of Agreement. If CONTRACTOR has any questions concerning this reporting requirement, please call (916) 657-0529. CONTRACTOR should also contact its local Employment Tax Customer Service Office listed in the telephone directory in the State Government section under "Employment Development Department" or access their Internet site at www.edd.ca.gov.

21. Hold Harmless/Indemnification

21.1 CONTRACTOR shall indemnify and hold harmless the County of Riverside, its Agencies, Districts, Special Districts and Departments, their respective directors, officers, Board of Supervisors, elected and appointed officials, employees, agents and representatives (individually and collectively hereinafter referred to as Indemnitees) from any liability, action, claim or damage whatsoever, based or asserted upon any services of CONTRACTOR, its officers, employees, subcontractors, agents or representatives arising out of or in any way relating to this Agreement, including but not limited to property damage, bodily injury, or death or any other element of any kind or nature. CONTRACTOR shall defend the Indemnitees at its sole expense including all costs and fees (including, but not limited, to attorney fees, cost of investigation, defense and settlements or awards) in any claim or action based upon such acts, omissions or services.

21.2 With respect to any action or claim subject to indemnification herein by CONTRACTOR, CONTRACTOR shall, at their sole cost, have the right to use counsel of their own choice and shall have the right to adjust, settle, or compromise any such action or claim without the prior consent of COUNTY; provided, however, that any such adjustment, settlement or compromise in no manner whatsoever limits or circumscribes CONTRACTOR indemnification to Indemnitees as set forth herein.

21.3 CONTRACTOR'S obligation hereunder shall be satisfied when CONTRACTOR has provided to COUNTY the appropriate form of dismissal relieving COUNTY from any liability for the action or claim involved.

21.4 The specified insurance limits required in this Agreement shall in no way limit or circumscribe CONTRACTOR'S obligations to indemnify and hold harmless the Indemnitees herein from third party claims.

22. Insurance

22.1 Without limiting or diminishing the CONTRACTOR'S obligation to indemnify or hold the COUNTY harmless, CONTRACTOR shall procure and maintain or cause to be maintained, at its sole cost and expense, the following insurance coverage's during the term of this Agreement. As respects to the insurance section only, the COUNTY herein refers to the County of Riverside, its Agencies, Districts, Special Districts, and Departments, their respective directors, officers, Board of Supervisors, employees, elected or appointed officials, agents, or representatives as Additional Insureds.

A. Workers' Compensation:

If the CONTRACTOR has employees as defined by the State of California, the CONTRACTOR shall maintain statutory Workers' Compensation Insurance (Coverage A) as prescribed by the laws of the State of California. Policy shall include Employers' Liability (Coverage B) including Occupational Disease with limits not less than \$1,000,000 per person per accident. The policy shall be endorsed to waive subrogation in favor of The County of Riverside.

B. Commercial General Liability:

Commercial General Liability insurance coverage, including but not limited to, premises liability, unmodified contractual liability, products and completed operations liability, personal and advertising injury, and cross liability coverage, covering claims which may arise from or out of CONTRACTOR'S performance of its obligations hereunder. Policy shall name the COUNTY as Additional Insured. Policy's limit of liability shall not be less than \$1,000,000 per occurrence combined single limit. If such insurance contains a general aggregate limit, it shall apply separately to this agreement or be no less than two (2) times the occurrence limit.

C. Vehicle Liability:

If vehicles or mobile equipment is used in the performance of the obligations under this Agreement, then CONTRACTOR shall maintain liability insurance for all owned, non-owned, or hired vehicles so used in an amount not less than \$1,000,000 per occurrence combined single limit. If such insurance contains a general aggregate limit, it shall apply separately to this agreement or be no less than two (2) times the occurrence limit. Policy shall name the COUNTY as Additional Insureds.

E. General Insurance Provisions - All lines:

1) Any insurance carrier providing insurance coverage hereunder shall be admitted to the State of California and have an A M BEST rating of not less than A: VIII (A:8) unless such requirements are waived, in writing, by the County Risk Manager. If the County's Risk Manager waives a requirement for a particular insurer such waiver is only valid for that specific insurer and only for one policy term.

2) The CONTRACTOR must declare its insurance self-insured retention for each coverage required herein. If any such self-insured retention exceeds \$500,000 per occurrence each such retention shall have the prior written consent of the County Risk Manager before the commencement of operations under this Agreement. Upon notification of self-insured retention unacceptable to the COUNTY, and at the election of the County's Risk Manager, CONTRACTOR'S carriers shall either; 1) reduce or eliminate such self-insured retention as respects this Agreement with the COUNTY, or 2) procure a bond which guarantees payment of losses and related investigations, claims administration, and defense costs and expenses.

3) CONTRACTOR shall cause CONTRACTOR'S insurance carrier(s) to furnish the County of Riverside with either 1) a properly executed original Certificate(s) of Insurance and certified original copies of Endorsements effecting coverage as required herein, and 2) if requested to do so orally or in writing by the County Risk Manager, provide original Certified copies of policies including all Endorsements and all attachments thereto, showing such insurance is in full force and effect. Further, said Certificate(s) and policies of insurance shall contain the covenant of the insurance carrier(s) that thirty (30) days written notice shall be given to the County of Riverside prior to any material modification, cancellation, expiration or reduction in coverage of such insurance. In the event of a material modification, cancellation, expiration, or reduction in coverage, this Agreement shall terminate forthwith, unless the County of Riverside receives, prior to such effective date, another properly executed original Certificate of Insurance and original copies of endorsements or certified original policies, including all endorsements and attachments thereto evidencing coverage's set forth herein and the insurance required herein is in full force and effect. CONTRACTOR shall not commence operations until the COUNTY has been furnished original Certificate (s) of Insurance and certified original copies of endorsements and if requested, certified original policies of insurance including all endorsements and

any and all other attachments as required in this Section. An individual authorized by the insurance carrier shall sign the original endorsements for each policy and the Certificate of Insurance.

4) It is understood and agreed to by the parties hereto that the CONTRACTOR'S insurance shall be construed as primary insurance, and the COUNTY'S insurance and/or deductibles and/or self-insured retention's or self-insured programs shall not be construed as contributory.

5) If, during the term of this Agreement or any extension thereof, there is a material change in the scope of services; or, there is a material change in the equipment to be used in the performance of the scope of work; or, the term of this Agreement, including any extensions thereof, exceeds five (5) years; the COUNTY reserves the right to adjust the types of insurance and the monetary limits of liability required under this Agreement, if in the County Risk Manager's reasonable judgment, the amount or type of insurance carried by the CONTRACTOR has become inadequate.

6) CONTRACTOR shall pass down the insurance obligations contained herein to all tiers of subcontractors working under this Agreement.

7) The insurance requirements contained in this Agreement may be met with a program(s) of self-insurance acceptable to the COUNTY.

8) CONTRACTOR agrees to notify COUNTY of any claim by a third party or any incident or event that may give rise to a claim arising from the performance of this Agreement.

23. General

23.1 CONTRACTOR shall not delegate or assign any interest in this Agreement, whether by operation of law or otherwise, without the prior written consent of COUNTY. Any attempt to delegate or assign any interest herein shall be deemed void and of no force or effect.

23.2 Any waiver by COUNTY of any breach of any one or more of the terms of this Agreement shall not be construed to be a waiver of any subsequent or other breach of the same or of any other term of this Agreement. Failure on the part of COUNTY to require exact, full, and complete compliance with any terms of this Agreement shall not be construed as in any manner changing the terms or preventing COUNTY from enforcement of the terms of this Agreement.

23.3 In the event the CONTRACTOR receives payment under this Agreement, which is later disallowed by COUNTY for nonconformance with the terms of the Agreement, the CONTRACTOR shall promptly refund the disallowed amount to the COUNTY on request; or at its option the COUNTY may offset the amount disallowed from any payment due to the CONTRACTOR.

23.4 CONTRACTOR shall not provide partial delivery or shipment of services or products unless specifically stated in the Agreement.

23.5 CONTRACTOR shall not provide any services or products subject to any chattel mortgage or under a conditional sales contract or other agreement by which an interest is retained by a third party. The CONTRACTOR warrants that it has good title to all materials or products used by CONTRACTOR or provided to COUNTY pursuant to this Agreement, free from all liens, claims, or encumbrances.

23.6 Nothing in this Agreement shall prohibit the COUNTY from acquiring the same type or equivalent equipment, products, materials or services from other sources, when deemed by the COUNTY to be in its best interest. The COUNTY reserves the right to purchase more or less than the quantities specified in this Agreement.

23.7 The COUNTY agrees to cooperate with the CONTRACTOR in the CONTRACTOR's performance under this Agreement, including, if stated in the Agreement, providing the CONTRACTOR with reasonable facilities and timely access to COUNTY data, information, and personnel.

23.8 CONTRACTOR shall comply with all applicable Federal, State and local laws and regulations. CONTRACTOR will comply with all applicable COUNTY policies and procedures. In the event that there is a conflict between the various laws or regulations that may apply, the CONTRACTOR shall comply with the more restrictive law or regulation.

23.9 CONTRACTOR shall comply with all air pollution control, water pollution, safety and health ordinances, statutes, or regulations, which apply to performance under this Agreement.

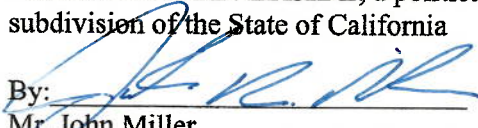
23.10 CONTRACTOR shall comply with all requirements of the Occupational Safety and Health Administration (OSHA) standards and codes as set forth by the U.S. Department of Labor and the State of California (Cal/OSHA).

23.11 This Agreement shall be governed by the laws of the State of California. Any legal action related to the performance or interpretation of this Agreement shall be filed only in the Superior Court of the State of California located in Riverside, California, and the parties waive any provision of law providing for a change of venue to another location. In the event any provision in this Agreement is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions will nevertheless continue in full force without being impaired or invalidated in any way.

23.12 This Agreement, including any attachments or exhibits, constitutes the entire Agreement of the parties with respect to its subject matter and supersedes all prior and contemporaneous representations, proposals, discussions and communications, whether oral or in writing. This Agreement may be changed or modified only by a written amendment signed by authorized representatives of both parties.

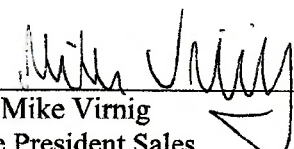
IN WITNESS WHEREOF, the Parties hereto have caused their duly authorized representatives to execute this Agreement.

COUNTY OF RIVERSIDE, a political
subdivision of the State of California

By: 
Mr. John Miller
Procurement Contract Specialist

Dated: 5-1-2019

CONTRACTOR NAME HERE

By: 
Mr. Mike Virnig
Vice President Sales

Dated: 5-1-19

EXHIBIT A
CONTRACT SPECIFICATION
101' TRACTOR DRAWN AERIAL FIRE APPARATUS
(Please see Exhibit A – Attachment # 2 for details in CONTRACTOR bid exceptions)

EXHIBIT A – SECTION I

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SECTION I – GENERAL

1.1 Scope

These specifications are intended to describe, among other things, the vehicle chassis, cab, build- up, type, size, and quality of apparatus required by the COUNTY. The apparatus proposed by the CONTRACTOR shall conform to these specifications and shall meet the specified standards. At the COUNTY's discretion, any conflicts between the Contract Specifications and the CONTRACTOR's Build Specification (Exhibit C) the Contract Specification shall prevail.

1.2 Contract Specification - 101' Tractor Drawn Aerial Fire Apparatus

Exhibit A consist of the following contract specification documents:

- 1.2.1 Attachment # 1
 - 1.2.1.1 Section I – General (19 pages)
 - 1.2.1.2 Section II – Cab and Chassis (42 pages)
 - 1.2.1.3 Section III – Aerial Body and Trailer (38 pages)
 - 1.2.1.4 Section IV – Electrical (19 pages)
 - 1.2.1.5 Section V – Equipment (2 pages)
- 1.2.2 Attachment # 2, CONTRACTOR's exceptions to COUNTY's specifications (6 pages)
- 1.2.3 Attachment # 3, CONTRACTOR's technical proposal clarifications (6 pages)
- 1.2.4 Attachment # 4, Pre-Construction changes (16 pages)
- 1.2.5 Attachment # 5, Drawings
 - 1.2.5.1 Drawing # 1 – 101' TDA Model
 - 1.2.5.2 Drawing # 2 – DOT Lighting (1 page)
 - 1.2.5.3 Drawing # 3 – Warning Lights (1 page)
 - 1.2.5.4 Drawing # 4 – Driver Side Compartment Layout (1 page)
 - 1.2.5.5 Drawing # 5 – Officer Side Compartment Layout (1 page)
 - 1.2.5.6 Drawing # 6 – TDA Body Doors Open (1 page)
 - 1.2.5.7 Drawing # 7 – Dash Layout (1 page)
- 1.2.6 Attachment # 6 – Aerial Reach Chart (1 page)
- 1.2.7 Attachment # 7 – AMP Report (1 page)

1.3 Payment and Annual Price Escalation

- 1.3.1 Total fixed price to the COUNTY for each apparatus, including all applicable taxes, fees, travel or any other costs associated with manufacture and delivery of the apparatus.
- 1.3.2 Price increases shall take place at the conclusion of each contract year based on the most current Producer Price Index published by the U.S. Bureau of Labor Statistics. Annual price increases shall be calculated using Commodity Code 1413-027 – Buses and firefighting vehicles, complete, produced on purchased chassis. The baseline index to be used for price escalation shall be 121.2 (published March 2019). Price increases shall remain fixed for each given contract year.

1.4 General

- 1.4.1 All specifications contained herein are considered minimum requirements for the manufacturer and delivery of the new apparatus.
- 1.4.2 The apparatus shall be of the latest type, symmetrically proportioned, carefully designed and constructed with due consideration to the nature and distribution of the load to be sustained.
- 1.4.3 Details of construction and materials not otherwise specified are left to the discretion of the CONTRACTOR. The CONTRACTOR shall be solely responsible for the design and construction of all features.
- 1.4.4 The CONTRACTOR shall provide principal dimensions and weight distribution of the fully loaded, completed vehicle.

- 1.4.5 The apparatus shall meet the requirements for automotive fire apparatus according to the current edition of the NFPA 1901 Standard'
- 1.4.6 If used in these specifications, the term "or equal" shall define the degree of determined quality level. It shall be the sole responsibility of the COUNTY to judge whether a proposed "equal" submitted by the CONTRACTOR meets the minimum established quality level.
- 1.4.7 The apparatus shall conform to the requirements of the current NFPA 1901 Standard for Automotive Fire Apparatus, unless otherwise stated in these specifications. The apparatus shall comply in every respect with the California Vehicle Code, Federal Motor Vehicle Safety Standards, California Code of Regulations (Title 8, Title 13, Title 15), California Health and Safety Code, California Air Resources Board Regulations, OEM Body Builders Standards and Guidelines and Occupational Safety and Health Act.
- 1.4.8 A plate identifying the manufacturer, gross vehicle weight, date of manufacture and all other information as specified in the National Traffic and Motor Vehicle Safety Act, Section 114, and Federal Code of Regulations, Title 49, shall be attached to the vehicle frame or body in an easily accessible location. Should a conflict arise between an NFPA Standard and any portion of these specifications, the NFPA Standard will prevail. Any test equipment required or expense incurred for the Certification Tests shall be borne by the Contractor supplying this equipment.
- 1.4.9 All materials and components used in the construction of the apparatus shall be new. Used or reconditioned material or components are not acceptable.
- 1.4.10 Any identifying numbers on any components shall be the original equipment manufacturer's numbers. The numbers shall be easily read and shall not be painted over.
- 1.4.11 The CONTRACTOR shall employ industry acceptable engineering criteria in the design of the apparatus; and be able to certify compliance with all applicable standards in force at the time of manufacture. Vehicle safety shall be important design criteria.

CONTRACTOR Complies with Section 1.4: YES

1.5 Progress Reports

The CONTRACTOR shall post weekly updates on the progression of the apparatus being constructed. Included will be a brief written summary of the current construction process occurring. A minimum of six (6) digital photos showing all aspects of the apparatus (ie front, left side, right side, rear, top side, pump/plumbing layout, etc.) will be included. Riverside County Fire Department will be able to view digital images of their apparatus as its being manufactured. The digital images shall be posted once a week, starting when the construction of the cab/chassis process is initiated and will continue throughout the entire construction of the apparatus. This shall include, but not limited to, production of the cab/chassis, and construction of the fire body. During the entire process additional photos may be requested at any time to ensure quality control, mitigate additional travel, and ensure compliance to Riverside County's specification. These updates and photos will be distributed as progress reports to various entities (City Council Members, Board of Supervisors, Fire Chiefs, etc.) who have a vested interest in the production of the apparatus.

CONTRACTOR Complies with Section 1.5: YES

1.6 Construction Drawing

Production drawings shall be submitted after the conclusion of the pre-construction meeting.

The drawings shall be produced on computer aided design (CAD) equipment to assure critical tolerance and detail only available with CAD equipment. The drawings shall be on "B" size paper, 17" x 11" in size, and views must be 1/4" = 1' - 0" scale. The drawings shall be completed only by the body manufacturer and must be exactly to the specifications. For easy of reviewing drawings, they must be on a 17" x 11" sheet as follows:

- 1.6.1 There shall be five (5) views of the truck with the doors closed (Top, Left, Right, Front, Rear), five (5) views of the apparatus with the doors open (Top, Left, Right, Rear, Front) and five (5) views of any walk-in area (Top, Left, Right, Rear, Front).
- 1.6.2 All compartment door openings and usable space shall be clearly shown in inches.

- 1.6.3 The apparatus overall length, wheelbase and cab-to-axle dimensions shall be clearly shown.
- 1.6.4 The apparatus width, width at mirrors, width with the cab doors open, width with compartment doors open and width with position shall be clearly shown.
- 1.6.5 The apparatus height and height with the cab tilted.
- 1.6.6 The angles of approach and departure and break-over angle shall be shown in the maximum loaded condition to the nearest degree.
- 1.6.7 Ground clearance shall be shown in the maximum loaded condition to the nearest inch.
- 1.6.8 All lighting packages will be clearly shown on the drawing and verified accurate per the most current NFPA standards (when applicable).
- 1.6.9 The exterior view shall show all scene lights, marker lights, speakers, horns, exhaust, tow points, exterior outlets, windows, tow hitches, exterior ladders and any other item important to the function of the vehicle.
- 1.6.10 The open view shall show all trays, shelves, air system components, hydraulic, components, tool boards, storage modules and any other items important to function of the vehicle.
- 1.6.11 The interior view for all walk-in areas shall show all seating positions, windows, tech equipment, radio locations, MDC location, Vista screens locations, dash layout, and any other item important to the function of the vehicle.
- 1.6.12 There shall be a drawing of the aerial vertical reach, horizontal reach, tip load, angle of elevation and overall width with the stabilizers deployed.

CONTRACTOR Complies with Section 1.6: YES

1.7 Liquidated Damages

- 1.7.1 The CONTRACTOR shall state the number of calendar days required for delivery of the completed apparatus after receipt of order.
- 1.7.2 Delays in delivery will severely impact the operation of the Fire Department. Should proper delivery not be completed by the promised date, liquidated damages will be assessed by the County against the amount owed to the CONTRACTOR for the apparatus. An amount of one hundred and fifty dollars (\$150.00) per calendar day for each day of delay for each unit is established as the liquidated damage to the County (and not as a penalty or forfeiture). After a delay in delivery of ninety (90) days, the Fire Department may cancel the order.
- 1.7.3 Liquidated damages shall also apply in cases where delivery of non- acceptable apparatus is made.

CONTRACTOR Complies with Section 1.7: YES

1.8 Materials Required at Delivery of Apparatus

The CONTRACTOR shall provide all of the materials and documentation as stated in these specifications. The CONTRACTOR shall provide two (2) printed copies and two (2) computer thumb drives for each apparatus. The documentation shall be in PDF format. The apparatus manual shall contain the following items which shall be required at the time of delivery of the apparatus:

- 1.8.1 Operation manuals for all components and accessories.
- 1.8.2 Service manuals for engine, transmission, and other major components.
- 1.8.3 Bill of materials or factory work order showing part numbers of all components on vehicle.
- 1.8.4 Engineering drawings as built.
- 1.8.5 Chassis drawing as built.
- 1.8.6 Color coded chassis air brake system drawing as built.
- 1.8.7 Color coded electrical system schematic (12-Volt) as built, large and easy to read.
- 1.8.8 Color coded chart sheet showing all points of lubrication and type/amount of lubrication.
- 1.8.9 Color coded aerial diagram to include hydraulic and electrical schematics.
- 1.8.10 Color coded engine charts.
- 1.8.11 Color coded transmission charts.
- 1.8.12 Color coded regeneration operation charts.
- 1.8.13 UL inspection and test records.
- 1.8.14 FMVSS compliance certification label.

- 1.8.15 Weight certificate. The weight certificate shall show the total apparatus weight, the front axle weight, the rear axle weight, the right front tire weight, the left front tire weight, the right rear tire weight, and the left rear tire weight.
- 1.8.16 Documents required for transferring ownership to County.
- 1.8.17 Aerial testing and certification per NFPA standards.
- 1.8.18 Performance test reports.
- 1.8.19 Operating instructions for the aerial and components.
- 1.8.20 Operating instructions for the chassis and any major components.
- 1.8.21 Precautions related to multiple configurations of aerial devices, if applicable.
- 1.8.22 Instructions regarding the frequency and procedure for recommended maintenance.
- 1.8.23 Parts list for replacement.
- 1.8.24 Operations and maintenance documents for components and equipment of the apparatus.
- 1.8.25 All required equipment, manuals, charts, and books shall accompany the apparatus at time of delivery. Failure to deliver these items shall be cause for non-acceptance of the apparatus.
- 1.8.26 All documents must be exact representations of the apparatus delivered and General drawings are not acceptable.
- 1.8.27 NFPA REQUIRED DOCUMENTATION FORMAT – Computer thumb drive. The vehicle construction details and the operations and service documentation as required per NFPA 1901 latest edition shall be provided on a computer thumb drive in PDF format. These manuals shall be divided into sections for ease of reference. There shall be two (2) copies of the computer thumb drive in PDF format provided with the completed vehicle.
- 1.8.28 A letter from the CONTRACTOR attesting to the fact that the finished, fully loaded apparatus will meet all federal motor vehicle and California Vehicle Code requirements; that the axles, tires, brakes and frame are all designed to support and carry the anticipated load safely under harsh driving conditions; and that the combination of wheelbase, center of gravity, weight distribution and other factors affecting safe vehicle operation are within acceptable limits of vehicle design practice and all applicable law. The president of the CONTRACTOR's firm and their chief engineer shall jointly sign this letter.
- 1.8.29 The CONTRACTOR shall furnish a copy of the record of the current certified brake horsepower curve and torque curve.
- 1.8.30 The CONTRACTOR shall provide a Cummins Quick Check current year standard kit diagnostic readers and computers, with appropriate adapters and hardware. Two (2) kits will be delivered with the first apparatus completed. Subsequently, one (1) Cummins Quick Check kit shall be delivered with each apparatus ordered beginning with the second, if multiple orders are placed. The kit shall be updated with the latest software for the apparatus being delivered.
- 1.8.31 Software updates shall be provided for each Cummins Quick Check, for the expected service life of the apparatus as specified in Appendix "A", Section 1.0 at no additional cost.

CONTRACTOR Complies with Section 1.8: YES

1.9 Quality of Workmanship

- 1.9.1 The CONTRACTOR shall employ the latest approved automotive design practices in the design of the apparatus. Nothing in these specifications will relieve the CONTRACTOR from the responsibility to provide a safe and functional vehicle. Workmanship shall be of the highest caliber in its respective field (first class)
- 1.9.2 The CONTRACTOR shall comply with the following provisions:
 - 1.9.2.1 There shall be easy access to components which require routine periodic maintenance, ease and safety of operations, symmetry of design and finish quality of welding, coating, plating and fabrication work. Where threaded fasteners are used, sheet metal screws are not acceptable. Threaded fasteners shall be secured utilizing lock tight or equal to prevent screws from coming loose.
 - 1.9.2.2 Where blind attachment is necessary, expandable nut inserts or other blind attachment threaded devices shall be used.

- 1.9.2.3 Bolted construction consisting of machine screws with nuts and lock washers shall be employed. Tapped holes, stud-welded fasteners shall be used where necessary to permit items to be removed by one person where they cannot reach the opposite side of the fastener. All fasteners shall meet SAE J429 Standards.
- 1.9.2.4 Self-tapping machine screws may be used in the attachment of labels, trim plates and strips, provided attachment is made to steel. Blind attachment of nonferrous metals shall use alternative methods approved by the County.
- 1.9.3 In the event of a failure or breakdown during the warranty period and upon written notice from the Fire Department, action must be taken by the CONTRACTOR to begin repairs or other correction within three (3) working days. The warranty vendor shall complete any and all warranty repairs within ten (10) working days after receiving apparatus. If repairs extended beyond the ten (10) working day period, vendor shall pay the Riverside County Fire Department in liquidated damages in the amount of \$150.00 per day, or the equivalent in parts credit, for each additional day the apparatus repairs are delayed. The time period payment penalty may be waived with prior approval, by the Riverside County Fire Department.
- 1.9.4 Transportation of the apparatus to and from service facilities, including apparatus driver and towing as necessary, shall be the responsibility of the CONTRACTOR. The apparatus will be delivered back to County within one (1) day of completion of work at no additional cost to the County.
- 1.9.5 If the CONTRACTOR does not respond as required after three (3) working days, the County may immediately proceed to have the apparatus repaired by another source. The CONTRACTOR shall be liable to the County for all costs associated with such warranty work.
- 1.9.6 The CONTRACTOR shall furnish the necessary documentation on any and all new and/or replacement parts to enable the County to verify warranties with original equipment manufacturer.
- 1.9.7 Defective parts will be labeled and retained by the County until parts are replaced. The CONTRACTOR shall take full responsibility for returning any defective parts to their supplier.
- 1.9.8 The CONTRACTOR shall provide the name and phone number of one warranty contact person at the CONTRACTOR's manufacturing facility. If warranty repairs are necessary, this person and a Fire Department representative shall determine how to handle the specific repair. Options shall include the following:
 - 1.9.8.1 The CONTRACTOR shall provide one point of contact for all warranty issues for the entire apparatus.
 - 1.9.8.2 The warranty contact shall be available by phone, 24 hours per day, 7 days per week, 365 days per year (including holidays).
 - 1.9.8.3 Send the apparatus to a repair facility that the CONTRACTOR and the County agree upon. (Repair facility must be within a 30 mile radius of Riverside County Fire Department Headquarters in Perris, CA 92570)
 - 1.9.8.4 The County does the repair work with factory furnished parts and is reimbursed for its labor and costs.
 - 1.9.8.5 The CONTRACTOR sends personnel to the apparatus location to do the repair work.
 - 1.9.8.6 The CONTRACTOR shall provide a list of two (2) of the closest, approved warranty facilities to Perris Headquarters.
 - 1.9.8.7 The warranty facility shall have the ability to make warranty repairs both at their facility and in the field.
 - 1.9.8.8 The warranty facility staff shall be State or EVT certified and ASE certified to perform repairs on the specific apparatus.
- 1.9.9 CONTRACTOR shall maintain a parts inventory that is appropriate with the replacement needs based on the Riverside County Fire Departments fleet size in stock. A positive guarantee shall accompany bids stating that the manufacturer will make available a complete stock of all captive parts or components.

CONTRACTOR Complies with Section 1.9: YES

1.10 Warranty Length

- 1.10.1 Components and apparatus shall be provided with a two (2) year, minimum, bumper to bumper warranty.
- 1.10.2 Compressor, five (5) years, unlimited mileage / hours.
- 1.10.3 Alternator, two (2) years, unlimited mileage (Alternator, Mounting Brackets).
- 1.10.4 Batteries three (3) years, unlimited mileage.
- 1.10.5 Belts, two (2) years, unlimited mileage
- 1.10.6 Body Paint Adhesion, five (5) years, unlimited mileage
- 1.10.7 Body ten (10) years, unlimited mileage
- 1.10.8 Cross Members: five (5) years, unlimited mileage / hours
(Coverage includes cross members)
(Gusset and Huck- Mounting Bolts)
(Attached to Gusset to Cross Members)
(Cross Member to Frail Rails)
- 1.10.9 Drivetrain including complete Transmission: five (5) years, unlimited mileage / hours
(Rear axle housing, differential housing and gears)
(Rear axle shafts, front axle beams and spindles)
(Steering gear and case, excluding delivery mileage)
- 1.10.10 Engine warranty: five (5) years, unlimited mileage / hours
(Comprehensive Components that fail under normal and severe duty service)
(Cylinder Block, Cylinder Heads, Crankshaft, Camshaft)
(Main Bearing Bolts, Flywheel Housing, Connecting Rod)
(Turbocharger, Intake and Exhaust Manifolds)
(Timing Gears and Housing, Oil Cooler Housing)
(Water Pump Housing, Air Inlet Housing, Engine Electronics)
(Fuel Pumps and Injectors and all internal parts)
(Warranty includes parts, labor, and repairs)
(Excluding delivery mileage, whichever is greater)
- 1.10.11 Engine Main Cooling System: five (5) years, unlimited mileage / hours
(Coverage Includes Radiator Core, Radiator Tanks)
(Cooling Fans, Fan Hub Assembly, Brackets, Braces)
- 1.10.12 Engine Charge Air Cooler and related Parts five (5) years, unlimited mileage / hours
- 1.10.13 Emergency Light Bar and Bulbs three (3) years, unlimited mileage / hour
(Components, LED Lights, All Bulbs, Power Supply)
(Electronic Siren, Speakers)
- 1.10.14 Frame Rails and Cross-Members: Lifetime Warranty
(Frame Rail Liners, Frame Rail Extensions)
(And Any Item(s) Factory Welded to Them)
- 1.10.15 Mirror: two (2) years, unlimited mileage
- 1.10.16 Paint (Paint Peeling, Cracking, blistering) seven (7) years, unlimited mileage
(Paint shall be covered 100% including UV Paint Fade)
- 1.10.17 Paint (Corrosion, Adhesion, Perforation) ten (10) years, unlimited mileage/hours
- 1.10.18 Radio: five (5) years, unlimited mileage / hours
- 1.10.19 Seats: two (2) years, unlimited mileage / hours
- 1.10.20 Starter: two (2) years, unlimited mileage / hours
(Starter Motor, Solenoid, Mounting Brackets)
- 1.10.21 Steering: five (5) years, unlimited mileage / hours
(Steering Pump, Steering Gear Box, Hoses)
- 1.10.22 Structure Components, Defects, Workmanship: five (5) years, unlimited mileage/hours
(Including Parts, Labor and Repairs)

- 1.10.23 Towing: two (2) years, dated when placed in service. If the apparatus has a warrantable defect and is deemed unsafe or unlawful to operate, the contractor shall be responsible for towing the apparatus to the warranty repair facility which shall be located within a 30-mile radius of Riverside County.
- 1.10.24 Transmission: shall have a five (5) year unlimited mileage / hour warranty.
- 1.10.25 The warranty period shall begin upon formal written acceptance by the county.
- 1.10.26 The manufacturer of the final product will be the single point of contact and assumes all responsibility for any/all warranty issues on the entire apparatus. NO EXCEPTIONS (This is due to eliminating any warranty contractor issues).
- 1.10.27 If any component, unit or subsystem is repaired, rebuilt or replaced during the warranty period, the remaining unexpired warranty period shall remain.

CONTRACTOR Complies with Section 1.10: YES

1.11 Warranty Repair Parts

The CONTRACTOR shall maintain a parts inventory that is appropriate with the replacement needs based on the Riverside County Fire Departments fleet size in stock. This parts inventory shall be available to be delivered within 24 hours to Riverside County Fire Department.

CONTRACTOR Complies with Section 1.11: YES

1.12 Warranty Item General Repairs

Warranties in this document are in addition to any statutory remedies or warranties imposed on Contractor. Consistent with this requirement, Contractor warrants to County each complete chassis, body, specific subsystems, and components as follows: The warranty is based on regular operation of the fire engine under the operating conditions prevailing in Riverside County under serve duty service and fire service environment. This warranty shall include all labor and materials required in repairing or replacing all parts.

CONTRACTOR Complies with Section 1.12: YES

1.13 Repairs by Contractor

- 1.13.1 All repairs shall be completed in a timely manner. Contractor shall make every reasonable attempt to complete each repair upon receipt of the apparatus.
- 1.13.2 For normal warranty repair work, the contractor shall be responsible to transport the apparatus to and from the warranty facility at no cost to the County. The Chilton manual shall be utilized for chassis items. Once the apparatus is at the warranty facility, the apparatus shall not be parked awaiting service. All repairs shall be completed as soon as possible with no delays.
- 1.13.3 Contractor shall provide to the County one (1) legible copy of the warranty work order describing all work performed and parts provided; including, the total cost for repairs. For all warranty repairs, contractor shall pick-up and deliver each apparatus to one of two location determined by the County, either the Perris shop or Indio shop.
- 1.13.4 Contractor shall pick up the apparatus in need of warranty repair within twenty-four (24) hours of being notified by the County. The County may elect, at their own discretion, to deliver the apparatus to the warranty repair facility, or pick up the apparatus from the warranty repair facility as needed.

CONTRACTOR Complies with Section 1.13: YES

1.14 Repairs made by County

- 1.14.1 All warranty repairs performed inhouse by County Technician's shall be considered the same as if the repairs were conducted at the Contractor's warranty facility. The repairs shall in no way negatively affect the apparatus or component warranties. Prior to any inhouse warranty repairs, the Contractor shall provide to the County written authorization to perform the warranty repair work. This authorization shall be included in the County's submittal to the Contractor for reimbursement of labor and parts.
- 1.14.2 Contractor shall provide and deliver to Riverside County Fire Department, all parts required for repairs within seventy-two (72) hours, upon request by Riverside County Fire Department. If Contractor fails to deliver said requested parts within seventy-two (72) hours, Riverside County Fire Department

reserves the right to separately procure said required parts, from another source. Contractor shall reimburse Riverside County Fire Department for any invoiced cost, including applicable sales taxes and freight charges. Contractor shall replace and deliver to Riverside County Fire Department, all parts used for warranty repairs from Riverside County Fire Department inventory, within seventy-two (72) hours, upon request by Riverside County Fire Department. Riverside County Fire Department shall return to Contractor for pick-up, upon Contractor request, all defective parts covered under warranty and replaced by Riverside County Fire Department, for a period of not less than sixty (60) days upon completion of repairs. Riverside County Fire Department shall be reimbursed by Contractor within thirty (30) calendar days for any Riverside County Fire Department labor provided for repairs under warranty. The amount of reimbursement shall be determined by multiplying the number of man-hours allowed by O.E.M., times standards including the flat rate manual fee of one- hundred and ten (\$110.00) dollars per hour. Furthermore, Riverside County Fire Department will charge an additional cost to tow the fire engine (within the normal warranty service area) to the warranty repair facility, or to Contractor should such action be necessary.

CONTRACTOR Complies with Section 1.14: YES

1.15 Acceptance Authority

Formal acceptance of each apparatus shall be provided in writing by the County's Fire Chief and/or his designee and will be made after the vehicle has passed all operational tests and all identified problems have been fixed.

CONTRACTOR Complies with Section 1.15: YES

1.16 Required Meetings

1.16.1 Cost is to be pre-set at the time of contract award and included in the base price of the apparatus. All travel shall depart and return from Palm Springs International Airport (PSP). It shall be the responsibility of the County Apparatus Committee representatives to arrive and depart from Palm Springs International Airport (PSP), all travel cost between departing from and returning to PSP shall be the responsibility of the awarded contractor. Travel costs that are the responsibility of the awarded contractor shall include:

1.16.1.1 All air travel

1.16.1.2 Baggage fees up to one checked bag per traveling Apparatus Committee member

1.16.1.3 Car Rental Fee

1.16.1.4 Lodging expenses. (Single room occupancy per person)

1.16.1.5 All Meals

1.16.2 Engineering Support at Pre-Construction Meeting

The Contractor shall provide an engineer to be present at the pre-construction meeting held at the factory location. The engineer will address all engineering related questions for the truck as purchased and for all proposed changes. The engineer is to remain present during the entire meeting. No Exception (Due to the Departments requirement to eliminate design oversights). The engineer will have the 2D and/or 3D AutoCAD electronic drawings projected on screen and be able to provide dimensional data for proposed changes and proposed layouts. This will help ensure that the final design matches the County's intentions to the maximum extent possible.

1.16.3 Pre-Construction Meeting

The CONTRACTOR shall provide transportation and all per diem costs for five (5) County representatives to meet with CONTRACTOR's staff as described below. These meetings typically follow an agenda of four (4) full working days and will be held at the manufacturing location. Tasks may be changed as requested by the County. The production drawings shall be available on computer aided design (CAD) equipment to assure critical tolerance and detail only available with CAD equipment. Should the County determine that the CONTRACTOR has not properly interpreted the specifications or does not intend to manufacture the apparatus as specified; the County may cancel the

contract at no cost to the County. No Exceptions (Due to the Departments requirement to eliminate design oversights).

- 1.16.3.1 CAD operator shall be present and fully functional during all phases of the pre-construction meeting when any discussion is taking place relating to the design and/construction of apparatus.
- 1.16.3.2 During the time when the CAD operator is required in the pre- construction meeting, the CAD operator shall project onto a large enough screen for all to clearly see, the construction drawing of the area of the apparatus being discussed. Any and all changes to the designed features shall be updated in real time while the meeting is being conducted.
- 1.16.3.3 Prior to the pre-construction meeting being completed, six (6) complete sets of CAD drawings on 17" X 11" paper shall be provided to the Riverside County Fire Department representatives. These updated construction drawings shall clearly show:
 - a. There shall be five (5) views of the truck with the doors closed (Top, Left, Right, Front, Rear), five (5) views of the apparatus with the doors open (Top, Left, Right, Rear, front) and five (5) views of any walk-in area (Top, Left, Right, Rear, Front) If applicable to current project).
 - b. All compartment door openings and usable space shall be clearly shown in inches with the door seal included
 - c. The apparatus overall length, height, width, wheelbase and cab-to-axle dimensions shall be clearly shown.
 - d. The apparatus overall length, height, width, wheelbase and cab-to-axle dimensions shall be clearly shown.
 - e. The angles of approach and departure shall be shown in the maximum loaded condition to the nearest degree.
 - f. All lighting packages will be clearly shown on the drawing and verified accurate per the most current NFPA standards (when applicable).
 - g. The exterior view shall show all scene lights, marker lights, speakers, horns, exhaust, tow points, exterior outlets, windows, tow hitches, and any other item important to the function of the vehicle
 - h. The open view shall show all trays, shelves, air system components, hydraulic components, tool boards, storage modules and any other items important to the function of the vehicle.
 - i. The interior view for all walk-in areas shall show all seating positions, windows, tech equipment, radio locations and any other item important to the function of the vehicle. Dash layout to include radios, code 3 control electronics, spot light controllers, headset communications system, Department supplied MDC (Mobile Data Computer) and transmission gear selector control unit.
 - j. There shall be a drawing of the aerial vertical reach, horizontal reach, tip load, angle of elevation and overall width with the stabilizers deployed.
- 1.16.3.4 Failure to provide a qualified and functioning CAD operator during the pre-construction meeting shall constitute an immediate cancelation of the pre-construction meeting. Another date for the pre-construction meeting will be scheduled and all representatives of Riverside County Fire Department will be transported back to PSP airport at the CONTRACTOR's expense. It will be the CONTRACTOR's responsibility to arrange for travel back to their facility for the rescheduled pre-construction meeting. The CONTRACTOR shall be responsible for all expenses relating to the rescheduled meeting.
- 1.16.3.5 Confirmation of the availability of the CAD operator and his/her ability to produce all of the required materials for the scheduled pre-construction meeting shall be provide by e-mail prior to the representatives of the Riverside County Fire Department traveling to the CONTRACTORs facility for the pre-construction meeting.
- 1.16.3.6 The requirement of the CAD operator and his/her ability to produce all the required drawings at the pre-construction meeting is a NO EXCEPTION ITEM (Due to the Departments

requirement to eliminate design oversights). This ability shall be confirmed at the time of bid submission. Failure to comply with this requirement shall be grounds for automatic rejection of the bid proposal

- a. Body compartment layout requirement.
- b. Compartment lights: type, size, mounting and protection.
- c. In-cab console design, location.
- d. Blind attachments discussion.
- e. Dash controls and gauges (type & location).
- f. Seating arrangement.
- g. Emergency warning system controls, location and overall design.
- h. Radio installation.
- i. Aerial trailer design and configuration.
- j. Access, ergonomics, appearance.
- k. Turn circle data: chassis turn radius, wall-to-wall, and curb-to-curb.
- l. Sigtronics radio/intercom system installation and interface.
- m. Discuss printed, visual materials list.
- n. Mounting rechargeable flashlights, pike poles, rubbish hooks.
- o. Electrical system design and layout.
- p. Aluminum electrolysis engineering.

1.16.4 **Cab Chassis Inspection**

The CONTRACTOR shall provide transportation and all per diem costs for two (2) County representatives to meet with CONTRACTOR's staff as described below. The chassis inspection meeting shall be conducted inside of a clean, properly illuminated, temperature controlled apparatus bay that is intended specifically for the purposes of conducting vehicle inspections. These meetings typically follow an agenda of eight (8) hours per apparatus and will be held at the manufacturing location. The chassis will be available for inspection in a clear area, away from the production line. Tasks may be changed as requested by the County.

- 1.16.4.1 Obtain line setting sheet for chassis, filter, hose, and belt numbers for service center and shop.
- 1.16.4.2 Dana application and certification.
- 1.16.4.3 Alternator output curve.
- 1.16.4.4 Spring ratings.
- 1.16.4.5 Creeper inspection: axles, springs driveline, engine, transmission, steering.
- 1.16.4.6 Check for unauthorized blind attachments.
- 1.16.4.7 Still photo profile for department records.
- 1.16.4.8 Air-conditioning mounting.
- 1.16.4.9 Vehicle operation controls and gauges: type, location.
- 1.16.4.10 Front and rear axle weights and total vehicle weight.
- 1.16.4.11 The manufacturer shall make available the following items to be utilized during the chassis inspection:
 - a. Tape measure that reads in inches and is long enough to allow the length of apparatus to be measured at one time.
 - b. An operational flashlight.
 - c. Green or blue "painters type" tape.
 - d. An operational mechanics creeper.

1.16.5 **Trailer & Aerial Pre-Paint Inspection**

The CONTRACTOR shall provide transportation and all per diem costs for three (3) County representatives to meet with CONTRACTOR's staff as described below. The pre-paint inspection meeting shall be conducted inside of a clean, properly illuminated, temperature controlled apparatus bay that is intended specifically for the purposes of conducting vehicle inspections. These meetings typically follow an agenda of a minimum of two (2) working days and will be held at the manufacturing location. Tasks may be changed as requested by the County.

- 1.16.5.1 Creeper inspection: specification compliance.
- 1.16.5.2 Compartment location, dimensions.
- 1.16.5.3 Electrical system fabrication (12-Volt & 110-Volt).
- 1.16.5.4 Paint, striping and decal scheme.
- 1.16.5.5 Radio, communications system layout.
- 1.16.5.6 Emergency warning system.
- 1.16.5.7 Cab layout, scuff protection.
- 1.16.5.8 Overall vehicle layout.
- 1.16.5.9 Documentation that UL testing has been completed.
 - a. Tape measure that reads in inches and is long enough to allow the length of apparatus to be measured at one time.
 - b. An operational flashlight.
 - c. Green or blue “painters type” tape.
 - d. An operational mechanics creeper.

1.16.6 **Final Inspection**

The CONTRACTOR shall provide transportation and all per diem costs for four (4) County representatives to meet with CONTRACTOR’s staff as described below. The final inspection meeting shall be conducted inside of a clean, properly illuminated, temperature controlled apparatus bay that is intended specifically for the purposes of conducting vehicle inspections. These meetings typically follow an agenda of two (2) full working days per apparatus and will be held at the manufacturing location. Tasks may be changed as requested by the County.

- 1.16.6.1 Creeper inspection: specification compliance.
- 1.16.6.2 Compartment location, dimensions.
- 1.16.6.3 Electrical system operations (12-Volt & generator power).
- 1.16.6.4 Finish details, workmanship
- 1.16.6.5 Paint, striping
- 1.16.6.6 Radio, communications system
- 1.16.6.7 Emergency warning system operations.
- 1.16.6.8 Performance testing: NFPA 1901 standard vehicle operational tests.
- 1.16.6.9 Cab Seating capacity tag specifying that seating for six (6) shall be provided.
- 1.16.6.10 Front and rear axle weights and total vehicle weight without personnel.
- 1.16.6.11 Trailer and aerial inspection.
- 1.16.6.12 UL Testing documentation.
- 1.16.6.13 The manufacture shall make available the following items to be utilized during the final inspection:
 - a. Tape measure that reads in inches and is long enough to allow the length of apparatus to be measured at one time.
 - b. An operational flashlight.
 - c. Green or blue “painters type” tape.
 - d. An operational mechanics creeper.

CONTRACTOR Complies with Section 1.16: YES

1.17 **Delivery**

- 1.17.1 The apparatus shall be delivered from the manufacturing facility to a local vendor (located within a 50-mile radius of Riverside County Fire Departments Headquarters) service/warranty facility after successful approval by the Riverside County Fire Department at the final inspection meeting. Prior to delivering the apparatus to the Riverside County Fire Department, the vendor shall:
 - 1.17.1.1 Fully inspect the apparatus for any/all issues that may have developed during the drive between the manufacturing facility and the vendors service/warranty facility.
 - 1.17.1.2 Verify that all of the items that were noted during the final inspection meeting were properly repaired and/or addressed.

- 1.17.1.3 Change the oil and oil filter.
- 1.17.1.4 Change the transmission filter.
- 1.17.1.5 Check differential fluid and change if required.
- 1.17.1.6 Check coolant fluid level.
- 1.17.1.7 Lube apparatus.
- 1.17.1.8 Clean apparatus.
- 1.17.1.9 Fill the diesel fuel tank.
- 1.17.1.10 Fill DEF tank.
- 1.17.2 The CONTRACTOR shall deliver each apparatus to the Riverside County Fire Department at a location to be determined at the pre-construction meeting for final inspection and performance testing. The CONTRACTOR shall remain responsible for each apparatus until it is delivered to and accepted by the Riverside County Fire Department.
- 1.17.3 **Delivery Engineer**
 - 1.17.3.1 The apparatus shall be operated throughout all performance testing by the delivery engineer of the CONTRACTOR. This delivery engineer shall also summarize the results with the County
 - 1.17.3.2 The CONTRACTOR assumes all liability in connection with any accidents, injuries, or damages related to the tests, and shall hold the County, its employees, agents and representatives harmless.
 - 1.17.3.3 The CONTRACTOR's delivery engineer shall provide forty (40) hours of operation training for Fire Department personnel in a Train-the-Trainer format, at a location to be determined by the County.
 - 1.17.3.4 The CONTRACTOR shall deliver onsite training for Fire Apparatus Technician's and provide forty (40) hours of operation training for Riverside County Fire Department personnel in a Train-the-Trainer format. All training shall be conducted at the Ben Clark Training Center located at 16791 Davis Avenue, Riverside, CA. Such training shall include general maintenance, trouble shooting, repair techniques, and timesaving suggestions. A minimum level of training in each area below shall also be provided to the Fire Department Fire Apparatus Technician's, which will include (2) shop locations one in (Perris) and one in (Indio) with an intent to provide a minimum of sixteen (16) hours per site to be determined by the County. This includes training handouts, and materials as required. The first class shall be within thirty (30) days from the first apparatus delivery. The second class shall be within six (6) months from the first apparatus delivery.
 - 1.17.3.5 The delivery engineer shall possess extensive knowledge in tractor drawn aerials construction, layout & operational capabilities.
- 1.17.4 **Delivery Schedule**
 - 1.17.4.1 The CONTRACTOR shall provide a firm delivery schedule to the County within 10 days of completion of the pre-construction meeting.
 - 1.17.4.2 The CONTRACTOR shall have 365 days from the date of the Purchase Order to deliver the 1st unit and 30 days thereafter for each additional unit.

CONTRACTOR Complies with Section 1.17: YES

1.18 Performance Test and Requirements

- 1.18.1 All performance requirements and testing shall be based on the apparatus fully loaded to the manufacturer's certified weight rating and operating in ambient temperatures from 25 degrees Fahrenheit to 115 degrees Fahrenheit, with 50 percent humidity, at elevations from sea level to 7,000 feet above sea level.
- 1.18.2 The completed apparatus shall meet the air system, brake system, air conditioning system and engine and transmission cooling system performance requirements reflected herein.
- 1.18.3 An acceptance road test shall be conducted with the apparatus loaded to the manufacturer's certified weight rating. A continuous run of fifty (50) miles or more shall be made under any or all of the aforementioned operating conditions, during which time the apparatus shall show no loss of power or

- overheating. The transmission, drive shaft or shafts and rear drive axle shall run quietly and be free from abnormal vibration or noise throughout the operating range of apparatus.
- 1.18.4 The apparatus shall be capable of accelerating on a level concrete road, from a standing start to a speed of not less than 35 mph within 17 seconds.
 - 1.18.5 The loaded apparatus shall be capable of starting up and ascending a 20% grade.
 - 1.18.6 The loaded apparatus shall be capable of attaining a speed of not less than 4 mph from a standing start on a 20% grade.
 - 1.18.7 The loaded apparatus shall be capable of ascending a continuous 6% grade, from sea level to an elevation of 7,000 feet at a speed of not less than 25 mph.
 - 1.18.8 122.8 The loaded apparatus shall be electronically governed to not exceed the most current NFPA 1901 recommendation. NO EXCEPTIONS.
 - 1.18.9 The service brakes, without auxiliary brakes, shall be capable of stopping the fully loaded vehicle in 30 feet at 20mph on a level concrete highway.
 - 1.18.10 The service brakes shall be capable of stopping the fully loaded apparatus on a 20% grade and the parking brakes shall be capable of holding the fully loaded apparatus on a 20% grade.
 - 1.18.11 The completed apparatus, as delivered, shall have equal turning diameters both left and right and shall have a maximum curb to curb diameter of 55' and a maximum wall to wall diameter of 58'.
 - 1.18.12 The manufacturer at his expense shall have the apparatus tested and approved by Underwriters Laboratories Incorporated, in accordance with the latest version of NFPA Standard 1901.
 - 1.18.13 It shall be required that the apparatus be operated throughout all tests by the delivery engineer of the successful CONTRACTOR, and during such tests shall have a representative to work with from Riverside County Fire Department's Fleet Division in summarizing results of the tests. Riverside County Fire shall be notified a minimum of twenty-one (21) working days in advance of these tests and may elect to have a representative present.
 - 1.18.14 A complete demonstration of how the apparatus and aerial ladder operates shall be conducted by the manufacturer during the on-site inspection of the completed apparatus.

CONTRACTOR Complies with Section 1.18: YES

1.19 Failure to Meet Tests and Requirements

- 1.19.1 In the event the apparatus fails to meet the test requirements on first trials, second trials shall be made within thirty (30) calendar days of the first trials. Such trials shall be final and conclusive, and failure to comply with the requirements shall be cause for rejection.
- 1.19.2 Failure to make changes as the Fire Department may consider necessary to conform to these specifications, within thirty (30) calendar days after written notice is given to the CONTRACTOR to make such changes and shall be cause for rejection of the apparatus.
 - 1.19.2.1 Failure of an inspection (Cab/chassis or Pre-paint) shall require a re-inspection prior to the CONTRACTOR/builder moving on to the next phase of the apparatus construction. All costs of this re- inspection shall be the responsibility of the CONTRACTOR. The Riverside County Fire Department shall send two (2) representatives to the re-inspection to ensure contract compliancy. The Riverside County Fire Department shall not allow another inspection to be scheduled until confirmation of completion has been achieved on the previous inspection has been achieved.
 - 1.19.2.2 Failure of a pre-paint inspection shall require that a re-inspection take place before any finish work (application of any filler materials and/or painting) take place.
 - 1.19.2.3 Failure of the final inspection shall require a re-inspection prior to the CONTRACTOR/builder delivering the apparatus. The final re- inspection shall take place at the vendors service/warranty facility. The Riverside County Fire Department shall send two (2) representatives to the re-inspection to insure contract compliancy.
- 1.19.3 All required equipment, manuals, charts, and books shall accompany the apparatus at the time of delivery. Failure to deliver the equipment and printed material as required may be cause for non-acceptance of the apparatus.

CONTRACTOR Complies with Section 1.19: YES**1.20 General Apparatus Construction Criteria**

- 1.20.1 The design of the apparatus shall embody the latest approved SAE automotive and JIC hydraulic engineering practices and standards. The construction and workmanship throughout the apparatus shall be of the highest professional quality.
- 1.20.2 Welded construction shall not be used in the attachment of the following items: running boards, compartment hinges and fenders. Welded compartments are acceptable, but shelving within compartments must be adjustable.
- 1.20.3 All steel welding shall be performed to American Welding Society Standard D1.1-83 for structural steel welding. All aluminum welding shall be performed to American Welding Society Standard and ANSI D1.2-83 for structural welding of aluminum. All Flex cord arc welding shall use alloy rods type 7000 American Welding Society Standards A5.20-E70T1.
- 1.20.4 Welding shall not be employed in assembly of the apparatus in any manner that shall prevent the ready removal of any mechanical part or component for service or repair, including the attachment of fenders, running boards or compartment hinges.
- 1.20.5 All welding shall be neat and have uniform beads. All welding spatter shall be removed. Any torch cut metal shall have cuts ground smooth.
- 1.20.6 Anodized couplings used in connection with "Aeroquip" type lines are acceptable.
- 1.20.7 All sharp edges, burrs, etc., shall be ground or filed to a smooth radius. All exposed sharp corners of structural members shall be ground to a minimum radius of ½-inch or one-half the material width whichever is less.
- 1.20.8 Aluminum diamond-plate or stainless steel covering shall be used in all areas that have high exposure to paint finish damage under normal use. These areas include, but are not limited to, surface adjacent to walking or stepping surfaces, equipment mounting locations and areas subject to hose coupling and equipment damage.
- 1.20.9 The fire-body shall be built in accordance with design requirements and specifications listed in the trailer body & aerial section III.
- 1.20.10 Bolted construction consisting of machine screws with nuts and lock-washers shall be employed. Tapped holes, stud-welded fasteners or similar shall be used where necessary to permit items to be removed by one person where they cannot reach the opposite side of the fastener. All fasteners shall meet SAE J429 Standards.

CONTRACTOR Complies with Section 1.20: YES**1.21 Finish**

- 1.21.1 All exposed metal surfaces will be painted. In preparation for painting running boards, rear steps, all aluminum tread-plate, stainless steel, chrome, compartment doors, pumps panels and similar parts shall be removed from apparatus.
- 1.21.2 All metal shall be thoroughly sanded and primed. A sufficient number of filler coats shall be applied to insure a smooth pit-free surface.
- 1.21.3 The apparatus body compartment interiors and inner door panels shall have a "Line-X" two-component spray-in-place thermoplastic polyurethane coating to provide maximum protection for everyday equipment removal and shifting.
- 1.21.4 The exterior cab and apparatus body will be painted in PPG FBCH 72626 Alt special red, in all areas.
- 1.21.5 The apparatus lettering and decal will be done to meet Riverside County Fire Department specifications. Photos and vendor information will be provided at the pre-construction meeting.
- 1.21.6 The apparatus lettering and decal will be done to meet Riverside County Fire Department specifications. Photos and vendor information will be provided at the pre-construction meeting.
- 1.21.7 The entire chassis frame rails shall be properly prepared and finish painted in job color prior to installation of body brackets, stiffeners, and support members or similar items. The entire chassis, engine and other components shall be thoroughly painted and free of rust when delivered to the Fire Department.

- 1.21.8 Any accessory equipment mounted before final painting must be removed prior to painting. Drilled holes for lights, sirens, compartments or similar items shall receive the final prime and finish paint so that all the holes, cut-outs, louvers and similar are painted.
- 1.21.9 After final painting all parts that have been removed and all aluminum tread-plate overlays and running boards must be assembled with coated nuts, bolts, and coated self-tapping screws, using special tape to preclude electrolysis and gasket to inhibit rust and corrosion. The use of gaskets under the accessories is required so brackets do not dig in and break the paint.
- 1.21.10 All metal surfaces will be painted, including areas covered by aluminum tread-plate, stainless or similar.
- 1.21.11 When painting the apparatus, the engine compartment shall be masked off so that paint will be kept off fan belts, radiator hoses, wiring or other electrical appurtenance.
- 1.21.12 Chromium plating shall be of the highest quality decorative type and comply with ASTM Table II, Class 4 "Service: Very Severe"; and also shall meet ASTM-A-219-58 "Thickness" and ASTM-B-380-61T, "Corrosion Test Methods" latest editions.
- 1.21.13 The body exterior shall have no mounted components prior to painting to assure full coverage of metal treatments and paint to the exterior surfaces of the body.

CONTRACTOR Complies with Section 1.21: NO

1.22 Paint Process

The metal is to be thoroughly cleaned and prepped in accordance with paint manufacturer's recommendations for polyurethane enamel finish. Color primer will be applied at 2 to 4- mil thickness, and a minimum of 2-3 coat finish to provide a smooth blemish free surface for a final color application of 2 to 3- mil thicknesses. Exterior paint shall average at least eighty even (87) reflectivity measured at not fewer than twelve location per the paint manufacturer's standard test method. A mirror finish is expected. No runs, sags, fish-eyes, orange-peel, foggy topcoat, or other finish defects will be accepted. Apparatus body shall be free from sharp corners, edges, burrs and other conditions hazardous to passengers, driver and maintenance personnel.

CONTRACTOR Complies with Section 1.22: YES

1.23 Reflective Markings

- 1.23.1 A white 6-inch reflective tape will be applied on the vehicle that meets the latest NFPA 1901 Standard and must match existing County standards. Photographs and specifications will be provided to the CONTRACTOR upon request.
- 1.23.2 In addition to the custom striping pattern on the apparatus, there shall be additional reflective striping applied to the entire rear of the unit. The striping shall consist of alternating red and fluorescent yellow reflective stripes. Each stripe shall be a minimum of six (6) inches in width and shall be applied to the apparatus at a 45 degree angle. Chevron striping to the entire recessed portion of the rear of the body around the T1 door and under the tiller cab.
- 1.23.3 There shall be a 1 1/2 inch strip of chevron on the edge of the inner pan of all compartments on the cab, and fire body. The colors shall be the same as the chevron striping on the rear of the apparatus.
- 1.23.4 There shall be a four (4) inch wide Red/Yellow chevron that shall be applied to the outer most edge all of the compartment interior door pans. This reflective material shall run the full height of the compartment door.
- 1.23.5 The interior of each cab door shall include high visibility reflective tape. A white reflective tape one (1) inch in width shall be provided vertically along the rear outer edge of the door. The lowest portion of each door skin shall include a reflective tape chevron with red and white stripes. The chevron tape shall measure twelve (12) inches in height.
- 1.23.6 There shall be two (2) inch reflective striping installed in the rub rail channel. The reflective striping shall be diamond grade quality material for increased visibility. The reflective tape shall be silver in color.
- 1.23.7 There shall be two (2) reflective American Flags installed on the apparatus. Location to be determined at the pre-construction meeting. All red/yellow chevron striping shall match throughout the entire apparatus

CONTRACTOR Complies with Section 1.23: YES

1.24 Materials

All materials shall conform to the detailed specifications. When not specifically listed, materials shall be of the best quality for commercial use. Materials shall be free of all defects and imperfections that might affect the completed apparatus.

CONTRACTOR Complies with Section 1.24: YES

1.25 Replacement Parts

1.25.1 The CONTRACTOR shall list and attach to their proposal any proprietary parts; to include, part #'s, item description and unit price for all proprietary parts exclusively manufactured for the apparatus being offered.

1.25.2 CONTRACTOR shall provide a guarantee confirming the manufacturer of the apparatus will have readily available for immediate shipment to the County a complete stock of all proprietary parts for a period of twenty (20) years from date the apparatus is delivered/accepted by the County.

1.25.3 The manufacturer of the apparatus shall not provide any components or parts that reflect their name or logo which are not proprietary to them; thereby, preventing the County from purchasing an "exact" replacement component or part through regular supply distribution channels (i.e. manufacturing jobbers or retail outlets).

CONTRACTOR Complies with Section 1.25: YES

1.26 Compliance

The CONTRACTOR shall be liable for all costs associated with failure of the apparatus to comply with these specifications. Final acceptance of the apparatus will not be made, nor any payments made, until such time as all discrepancies are corrected to the satisfaction of the County.

CONTRACTOR Complies with Section 1.26: YES

1.27 Vehicle Registration

1.27.1 CONTRACTOR shall be licensed by the California Department of Motor Vehicles as a dealer for commercial vehicles and have the ability legally register any vehicles purchased.

1.27.2 Contractor shall ship all vehicles with temporary registration.

CONTRACTOR Complies with Section 1.27: YES

1.28 Quality Assurance Provisions

1.28.1 The County reserves the right, at the County's expense, to maintain a representative(s) in Manufacturer's Plant and assembly line during the production of its apparatus to observe the assembly with the intent to provide clarification to the bid specifications. The County also reserves the right, at the County's expense, to maintain a representative(s) in Contractor's Dealership pre-delivery preparation facility location during the pre-delivery production of its apparatus. The County shall observe the pre-delivery preparation and provide clarification of the departments bid specifications prior to delivery of apparatus to the County's delivery and acceptance location.

1.28.2 The manufacturer shall build one complete apparatus prior to the construction of any others. The County's must approve everything on the first apparatus to ensure everything has been built to the spec

CONTRACTOR Complies with Section 1.28: YES

End of Section I – General

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SECTION II – CAB & CHASSIS

2.1 Model

The chassis shall be a four-door model. The cab and chassis shall include design considerations for multiple emergency vehicle applications, rapid transit and maneuverability. The chassis shall be manufactured for heavy duty service with the strength and capacity to support a fully laden apparatus, one hundred (100) percent of the time.

CONTRACTOR Complies with Section 2.1: YES

2.2 Country of Service

The chassis shall be put in service in the country of United States of America (USA). The chassis will meet applicable U.S.A. federal motor vehicle safety standards per CFR Title 49 Chapter V Part 571 as clarified in the incomplete vehicle book per CFR Title 49 Chapter V Part 568 Section 4 which accompanies each chassis.

CONTRACTOR Complies with Section 2.2: YES

2.3 Cab and Chassis Labeling Language

The cab and chassis shall include the applicable caution, warning, and safety notice labels with text to be written in English.

CONTRACTOR Complies with Section 2.3: YES

2.4 Apparatus Type

The apparatus shall be a mid-mount aerial vehicle designed for emergency service use. The apparatus shall be equipped with a mid-mount aerial ladder, minimum 100' in length.

CONTRACTOR Complies with Section 2.4: YES

2.5 Vehicle Type

The chassis shall be manufactured for use as a tractor type vehicle, designed to accept a trailer through the use of a fifth wheel hitch. The trailer shall be supplied and installed by the apparatus manufacturer.

CONTRACTOR Complies with Section 2.5: YES

2.6 Axle Configuration

The chassis shall feature a 4 x 2 axle configuration consisting of a single rear drive axle with a single front steer axle.

2.6.1 Front Steer Axle

The front steer axle shall be Steertek NXT with a manufacturer's certified weight rating of not less than 22,000 lbs.

2.6.2 Drive Axle

The rear axle shall be a Meritor model RS-30-185 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a fire service rated capacity of 33,000 pounds. The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.56 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance. The axle shall have heavy-duty Hypoid gearing for longer life, greater strength and quieter operation. Industry-standard wheel ends for compatibility with both disc and drum brakes, and unitized oil seal technology to keep lubricant in and help prevent contaminant damage will be used.

2.6.3 Rear Trailer Steer Axle

The rear trailer steer axle shall be Meritor MFS-20-133 A-N having a manufacturer's certified weight rating of not less than 23,000 lbs.

CONTRACTOR Complies with Section 2.6: YES

2.7 Gross Axle Weight Ratings Front

The front gross axle weight rating (GAWR) of the chassis shall be 21,500 pounds. This front gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

CONTRACTOR Complies with Section 2.7: YES

2.8 Gross Drive Axle Weight Rating

The rear gross axle weight rating (GAWR) of the chassis shall be 31,000 pounds. This rear gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

CONTRACTOR Complies with Section 2.8: YES

2.9 Gross Combination Weight Rating

The gross combination weight rating (GCWR) shall be 74,500 lbs. The sum of the gross weight of the vehicle and the gross weight of the trailer intended to be towed shall not exceed this GCWR.

CONTRACTOR Complies with Section 2.9: YES

2.10 Cab Style

The cab shall be a custom, fully enclosed, four door model with a flat roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to six (6) seating positions. The cab shall incorporate a fully enclosed design with side wall roof supports, allowing for a spacious cab area with no partition between the front and rear sections of the cab. The cab shall be constructed of 5052-H32 corrosion resistant aluminum plate. The cab shall incorporate tongue and groove fitted 6061-T6 0.13 & 0.19-inch-thick aluminum extrusions for extreme duty situations. A single formed, one (1) piece extrusion shall be used for the "A" pillar, adding strength and rigidity to the cab as well as additional roll-over protection. The cab side walls and roof skin shall be 0.13-inch-thick; the rear wall skin shall be 0.09-inch-thick; the front cab structure shall be 0.19 inch thick. The exterior width of the cab shall be a minimum 99.00 inches wide with a minimum interior width of 91.00 inches. The cab interior shall be designed to afford the maximum usable interior space and attention to ergonomics with hip and leg room while seated which exceeds industry standards. The crew cab floor shall be flat across the entire walking area for ease of movement inside the cab.

CONTRACTOR Complies with Section 2.10: NO

2.11 Cab Front Fascia

The front cab fascia shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate which shall be an integral part of the cab. The cab fascia will encompass the entire front of the aluminum cab structure from the bottom of the windshield to the bottom of the cab and shall be the "Classic" design. The front cab fascia shall include two (2) molded plastic modules on each side accommodating a total of up to four (4) Hi/Low beam headlights and two (2) turn signal lights or up to four (4) warning lights. A chrome plated molded plastic bezel shall be provided on each side around each set of four lamps.

CONTRACTOR Complies with Section 2.11: YES

2.12 Front Grille

The front cab fascia shall include a classic box style, 304 stainless steel front grille. The grille shall measure approximately approximate 55" wide X 33" inches high X 1.50 inches deep. The upper portion of the grille shall be hinged to provide service access behind the grille. The grille shall include a minimum free air intake of approximately 750.00 square inches

CONTRACTOR Complies with Section 2.12: NO

2.13 Cab Undercoat

There shall be a rubberized undercoating applied to the underside of the cab that provides abrasion protection, sound deadening and corrosion protection.

CONTRACTOR Complies with Section 2.13: YES

2.14 Cab Side Drip Rail

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

CONTRACTOR Complies with Section 2.14: YES

2.15 Cab Paint Exterior

The cab shall be painted prior to the installation of glass accessories and all other cab trim to ensure complete paint coverage and the maximum in corrosion protection of all metal surfaces. All metal surfaces on the entire cab shall be ground by disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once the surface is machine ground a high-quality acid etching of base primer shall be applied. Upon the application of body fillers and their preparation, the cab shall be primed with a coating designed for corrosion resistance and surface paint adhesion. The maximum thickness of the primer coat shall be 2.00 mils. The entire cab shall then be coated with an intermediate solid or epoxy surfacing agent that is designed to fill any minor surface defects, provide an adhesive bond between the primer and the paint and improve the color and gloss retention of the color. The finish to this procedure shall be a sanding of the cab with 360 grit paper followed by sealing the seams with SEM brand seam sealer. The cab shall then be painted the specific color designated by the customer with an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on the fire ground or emergency scene. The paint shall have a minimum thickness of 2.00 mils, followed by a clear top coat not to exceed 2.00 mils. The entire cab shall then be baked at 180 degrees for one (1) hour to speed the curing process of the coatings.

CONTRACTOR Complies with Section 2.15: YES

2.16 Cab Paint Manufacturer

The cab shall be painted with PPG Industries paint.

CONTRACTOR Complies with Section 2.16: NO

2.17 Cab Paint Primary/Lower Color

The lower paint color shall be PPG FBCH 72626 ALT Red.

CONTRACTOR Complies with Section 2.17: NO

2.18 Cab Paint Roof Color (Section referenced in Question # 2 vendor questions)

The cab roof paint color shall be PPG FBCH 72626 ALT Red.

CONTRACTOR Complies with Section 2.18: NO

2.19 Cab Roof Coating

The cab roof shall be coated with a flexible, non-skid textured truck bed type coating to the uppermost curve of the roofline so as to not be visible from the ground. Areas where attached components seal to shall be masked off. The color of the roof coating shall be white.

CONTRACTOR Complies with Section 2.19: YES

2.20 Cab Paint Warranty

The cab and chassis shall be covered by a limited manufacturer paint warranty which shall be in effect for ten (10) years from the first owner's date of purchase or in service or the first 100,000 actual miles, whichever occurs first.

CONTRACTOR Complies with Section 2.20: YES

2.21 Cab Paint Interior

The visible interior cab structure surfaces shall be painted with a black Rhino Liner type finish.

CONTRACTOR Complies with Section 2.21: YES

2.22 Cab Entry Doors

The cab shall include four (4) entry doors, two (2) front doors and two (2) crew doors designed for ease of entering and egress when outfitted with an SCBA. The doors shall be constructed of extruded aluminum with a nominal thickness of 0.13 inch. The exterior skins shall be constructed of 0.13-inch aluminum plate. The doors shall include a double rolled style automotive rubber seal around the perimeter of each door frame and door edge which ensures a weather tight fit. All door hinges shall be hidden within flush mounted cab doors for a pleasing smooth appearance and perfect fit along each side of the cab. Each door hinge shall be piano style with a 0.38-inch pin and shall be constructed of stainless steel.

CONTRACTOR Complies with Section 2.22: NO

2.23 Cab Entry Door Type

All cab entry doors shall be barrier clear design resulting in exposed lower cab steps. The doors shall provide approximately 32.00 inches of clearance from the ground to the bottom of the door so cab doors may be opened un-hindered by most obstacles encountered, such as guard rails along interstate highways.

CONTRACTOR Complies with Section 2.23: YES

2.24 Cab Insulation

The cab ceiling and walls shall include 1.00-inch-thick foam insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

CONTRACTOR Complies with Section 2.24: YES

2.25 Cab Structural Warranty

The cab structure shall be warranted for a period of ten (10) years which ever may occur first. The warranty period shall commence on the date the vehicle is placed into service by Riverside County Fire.

CONTRACTOR Complies with Section 2.25: YES

2.26 Cab Test Information

The cab shall have successfully completed the preload side impact, static roof load application and frontal impact without encroachment to the occupant survival space when tested in accordance with Section 4 of SAE J2420 COE Frontal Strength Evaluation Dynamic Loading Heavy Trucks, Section 5 of SAE J2422 Cab Roof Strength Evaluation Quasi –Static Loading Heavy Trucks and ECE R29 Uniform Provisions Concerning the Approval of Vehicles with regard to the Protection of the Occupants of the Cab of a Commercial Vehicles Annex 3 Paragraph 5. The above tests have been witnessed by and attested to by an independent third party. The test results were recorded using cameras, high speed imagers, accelerometers and strain gauges. Documentation of the testing shall be provided upon request.

CONTRACTOR Complies with Section 2.26: YES

2.27 Roof Mounted Antenna Array

Provide a sealed antenna array on top of the cab, constructed of welded 3"x3" square aluminum tubing and welded to the cab roof. The array shall be a "U" shape extending 60" along the outer sides of the cab roof and tied together across the rear. A minimum of four (4) exterior access openings shall be provided in each of the three sections (inboard on sides and outboard on rear) to allow for antenna mounting. The rear section shall be provided with no less than three drain tunnels to promote roof drainage and shall provide a through the roof transition into the rear bad communications cabinet. This transition shall be provided with a 100% welded ¾" bulkhead trim to prevent accumulated moisture from dripping into the communications compartment.

CONTRACTOR Complies with Section 2.27: YES

2.28 Electrical System

The chassis shall include a single starting electrical system which shall include a 12-volt direct current system, suppressed per SAE J551. The wiring shall be appropriate gauge cross link with 311-degree Fahrenheit insulation.

All SAE wires in the chassis shall be color coded and shall include the circuit number and function where possible. The wiring shall be protected by 275-degree Fahrenheit minimum high temperature flame retardant loom.

CONTRACTOR Complies with Section 2.28: YES

2.29 OEM Wiring

The wiring system shall include a custom J1939 interface harness drop provided by the chassis manufacturer designed to meet the requirements provided by the OEM. The wiring system shall also include a prewire for ECM park brake input and engine ground return circuits located behind the switch panel. The circuits shall include an extra 2 feet of wire and shall be labeled "ECM Park Brake Input".

CONTRACTOR Complies with Section 2.29: YES

2.30 Trailer Electrical Connection

A seven (7) pin round electrical trailer electrical connection shall be provided with the chassis. The wiring shall include a ground wire which shall be in the white cavity; wiring for marker lights which shall be black; left turn signal wiring which shall be yellow, wiring for stop lights which shall be red; right turn signal wiring which shall be green, additional marker lights which shall be brown and ABS brake power which shall be in the blue cavity.

CONTRACTOR Complies with Section 2.30: YES

2.31 Data Recording System

The chassis shall have a Class One Vehicle Data Recorder (VDR) system installed. The system shall be designed to meet NFPA 1901. The following information shall be recorded:

- a. Vehicle Speed
- b. Acceleration
- c. Deceleration
- d. Engine Speed
- e. Engine Throttle Position
- f. ABS Event
- g. Seat Occupied Status
- h. Seat Belt Status
- i. Master Optical Warning Device Switch Position
- j. Time
- k. Date

Each portion of the data shall be recorded at the specified intervals and stored for the specified length of time to meet NFPA 1901 guidelines and shall be retrievable by connecting a laptop computer to the VDR system. The laptop connection shall be a panel mounted female type B USB connection point, remotely mounted in the left side foot well of the cab.

CONTRACTOR Complies with Section 2.31: YES

2.32 Accessory Power

The electrical distribution panel shall include two (2) power studs. The studs shall be size #10 and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall be capable of carrying up to a 40-amp battery direct load. One (1) power stud shall be capable of carrying up to a 15-amp ignition switched load. The two (2) power studs shall share one (1) #10 ground stud. A 225-amp battery direct power and ground stud shall be provided and installed on the chassis near the left-hand battery box for OEM body connections.

CONTRACTOR Complies with Section 2.32: YES

2.33 Auxiliary Accessory Power

An auxiliary set of power and ground studs shall be provided and installed behind the electrical center cover with a 40-amp breaker. The studs shall be 0.38-inch diameter and capable of carrying up to a 40-amp battery direct load.

CONTRACTOR Complies with Section 2.33: YES

2.34 Exterior Electrical Terminal Coating

All terminals exposed to the elements will be sprayed with a high visibility protective rubberized coating to prevent corrosion.

CONTRACTOR Complies with Section 2.34: YES

2.35 Engine

The apparatus shall be equipped with a current model year Cummins X15 or equal diesel engine governed at 2100RPM and rated for fire service. The following requirements shall be met:

- a. 15.0 Liter maximum displacement.
- b. 600 Minimum horsepower.
- c. 1850 lb/ft minimum torque at 1,200RPM.

The engine shall meet the current 50 State emission requirements.

CONTRACTOR Complies with Section 2.35: YES

2.36 Cab Engine Tunnel

The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade 0.19 of an inch-thick aluminum alloy plate. The tunnel shall be a maximum of 46.50 inches wide X 29.00 inches high.

CONTRACTOR Complies with Section 2.36: YES

2.37 Diesel Particulate Filter Control

There shall be two (2) controls for the diesel particulate filter. One (1) control shall be for regeneration and one (1) control shall be for regeneration inhibit.

CONTRACTOR Complies with Section 2.37: YES

2.38 Engine Programming High Idle Speed

The engine high idle control shall maintain the engine idle at approximately 1250 RPM when engaged.

CONTRACTOR Complies with Section 2.38: YES

2.39 Engine High Idle Control

The vehicle shall be equipped with a high-idle speed button on the Vista screen, which shall be pre-set to maintain the engine idle at a pre-determined rate when activated manually. This device shall operate when the master switch is activated and safely interlocked only to function when the transmission is in neutral with the parking brake set.

CONTRACTOR Complies with Section 2.39: YES

2.40 Engine Programming Road Speed Governor

The engine shall include programming which will govern the top speed of the vehicle per NFPA 1901's recommendation.

CONTRACTOR Complies with Section 2.40: YES

2.41 Auxiliary Engine Brake

A compression brake, for the six (6) cylinder engine shall be provided. A cutout relay shall be installed to disable the compression brake when in pump mode or when an ABS event occurs. The engine compression brake shall activate upon 0% accelerator when in operation mode and actuate the vehicle's brake lights. The engine shall utilize a variable geometry turbo (VGT) as an integrated auxiliary engine brake to offer a variable rate of exhaust flow, which when activated in conjunction with the compression brake shall enhance the engine's compression braking capabilities.

CONTRACTOR Complies with Section 2.41: YES

2.42 Auxiliary Engine Brake Control

An engine compression brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all the following conditions are simultaneously detected:

- a. A valid gear ratio is detected.
- b. The driver has requested or enabled engine compression brake operation.
- c. The throttle is at a minimum engine speed position.
- d. The electronic controller is not presently attempting to execute an electronically controlled final drive gear shift.
- e. There is no active ABS event.

The compression brake shall be controlled through an off/low/high rocker switch on the dash.

CONTRACTOR Complies with Section 2.42: YES

2.43 Electronic Engine Oil Level Indicator

The engine oil shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal. The warning shall activate in a low oil situation upon turning on the master battery and ignition switches without the engine running.

CONTRACTOR Complies with Section 2.43: NO

2.44 Fluid Fills

The front of the chassis shall accommodate fluid fill for the engine oil through the grille. This area shall also accommodate a check for the engine oil. The transmission, power steering, and coolant fluid fills and checks shall be under the cab. The windshield washer fill shall be accessible through the front left side mid step.

CONTRACTOR Complies with Section 2.44: NO

2.45 Engine Drain Plug

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

CONTRACTOR Complies with Section 2.45: YES

2.46 Engine Programming Idle Speed

The engine low idle speed will be programmed at 700 rpm.

CONTRACTOR Complies with Section 2.46: YES

2.47 Engine Fan Drive

The engine cooling system fan shall incorporate a thermostatically controlled, Horton clutched type fan drive. When the clutched fan is disengaged, it shall facilitate improved vehicle performance, cab heating in cold climates, and fuel economy. The fan clutch design shall be fail safe so that if the clutch drive fails the fan shall engage to prevent engine overheating due to the fan clutch failure.

CONTRACTOR Complies with Section 2.47: YES

2.48 Engine Cooling System

There shall be a heavy-duty aluminum cooling system designed to meet the demands of the emergency response industry. The cooling system shall have the capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and all EPA requirements. The complete cooling system shall be mounted to isolate the entire system from vibration or stress. The individual cores of the cooling system shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores. The cooling system shall be comprised of a charge air cooler to radiator serial flow package that provides the maximum cooling capacity for the specified engine as well as serviceability. The main components shall include a surge tank, a charge air cooler bolted to the front of the radiator, recirculation shields, a shroud, a fan, and required tubing. The radiator shall be a down-flow design constructed with aluminum cores, steel end tanks, and a steel frame. The radiator shall be equipped with a drain cock to drain the coolant for serviceability. The radiator shall have a sight glass visible when the cab is lifted. The sight shall eliminate the need to remove the radiator cap to check the coolant level. The cooling system shall include a one piece injected molded polymer eleven (11) blade fan with a three (3) piece fiberglass fan shroud. The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and sight glass to monitor the level of the coolant. The sight glass shall be easily visible when the cab is raised. The surge tank shall have a dual seal cap that meets the engine manufacturer's pressure requirements, and allows for expansion and recovery of coolant into a separate integral expansion chamber. All radiator tubes shall be formed from aluminized steel tubing. Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting performance. The charge air cooler shall be a cross-flow design constructed completely of aluminum with cast tanks. All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicone hump hoses and stainless steel "constant torque" style clamps meeting the engine manufacturer's requirements. The radiator and charge air cooler shall be removable through the bottom of the chassis.

CONTRACTOR Complies with Section 2.48: YES

2.49 Engine Cooling System Protection

The engine cooling system shall include a recirculation shield designed to act as a light duty skid plate below the radiator to provide additional protection for the engine cooling system from light impacts, stones, and road debris. The skid plate shall be painted to match the frame color.

CONTRACTOR Complies with Section 2.49: YES

2.50 Engine Coolant

The cooling package shall include Extended Life Coolant (ELC). The use of ELC provides longer intervals between coolant changes over standard coolants providing improved performance. The coolant shall contain a 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees Fahrenheit. Proposals offering supplemental coolant additives (SCA) shall not be considered, as this is part of the extended life coolant makeup.

CONTRACTOR Complies with Section 2.50: YES

2.51 Engine Cooling Recovery Tank

There shall be a non-pressurized engine coolant recovery tank.

CONTRACTOR Complies with Section 2.51: YES

2.52 Engine Coolant Filter

An engine coolant filter with a shut-off valve for the inlet and outlet shall be installed on the chassis. The location of the filter shall allow for easy maintenance. Proposals offering engines equipped with coolant filters shall be supplied with standard non-chemical type particulate filters.

CONTRACTOR Complies with Section 2.52: YES

2.53 Electronic Coolant Level Indicator

The instrument panel shall feature a low engine coolant indicator light which shall be located in the center of the instrument panel. An audible tone alarm shall also be provided to warn of a low coolant incident.

CONTRACTOR Complies with Section 2.53: YES

2.54 Coolant Hoses

The cooling system hoses shall be standard black gates heater hose with rubber hoses in the cab interior. The radiator hoses shall be formed standard black gates coolant hoses with formed aluminized steel tubing. All heater hose, standard black gates coolant hose, and tubing shall be secured with stainless steel constant torque band clamps. (2) seasonal heater shutoff valves shall be installed. (location TBD at PreCon)

CONTRACTOR Complies with Section 2.54: NO

2.55 Engine Air Intake

The engine air intake system shall include an ember separator air intake filter. This filter ember separator shall be designed to protect the downstream air filter from embers, using a combination of unique flat and crimped metal screens packaged in a corrosion resistant heavy duty galvanized steel frame. This multilayered screen shall be design traps embers and allows them to burn out before passing through the pack. The air cleaner shall utilize a replaceable filter element designed to prevent dust and debris from being ingested into the engine. The air cleaner housing and connections in the air intake system shall be designed to mitigate water intrusion into the system during severe weather conditions. The air intake system shall also include a restriction indicator light in the warning light cluster on the instrument panel, which shall activate when the air cleaner element requires replacement.

CONTRACTOR Complies with Section 2.55: YES

2.56 Air Intake Protection

A light duty skid plate shall be supplied for the engine air intake. The skid plate shall provide protection for the air intake system from light impacts, stones, and road debris. The skid plate shall be painted to match the frame color.

CONTRACTOR Complies with Section 2.56: NO

2.57 Engine Exhaust System

The exhaust system shall include an end-in end-out horizontally mounted single module after treatment device, downpipe from the charge air cooled turbo. The single module shall include four temperature sensors, diesel particulate filter (DPF), urea dosing module (UL2), and a selective catalytic reduction (SCR) catalyst to meet current EPA standards. The selective catalytic reduction catalyst utilizes a diesel exhaust fluid solution consisting of urea and purified water to convert NOx into nitrogen, water, and trace amounts of carbon dioxide. The solution shall be mixed and injected into the system through the between the DPF and SCR. The system shall utilize 0.07-inch-thick stainless steel exhaust tubing between the engine turbo and the DPF. Zero leak clamps seal all system joints between the turbo and DPF. The single module after treatment through the end of the tailpipe shall be connected with zero leak clamps. The discharge shall terminate horizontally on the right side of the vehicle ahead of the rear tires. The exhaust system after treatment module shall be mounted below the frame in the inboard position.

CONTRACTOR Complies with Section 2.57: YES

2.58 Diesel Exhaust Fluid Tank

The exhaust system shall include a molded cross linked polyethylene tank for Diesel Exhaust Fluid (DEF). The tank shall have a capacity of ten (10) usable gallons and shall be mounted on the left-hand side located mid chassis underneath the cab door to provide easy access to the DEF filler.

CONTRACTOR Complies with Section 2.58: NO**2.59 Engine Exhaust Accessories**

An exhaust temperature mitigation device shall be shipped loose for installation by the body manufacturer on the vehicle. The temperature mitigation device shall lower the temperature of the exhaust by combining ambient air with the exhaust gasses at the exhaust outlet. The engine exhaust shall terminate at a 90-degree angle on the officer side with the ability to accommodate a Plymovent connection.

CONTRACTOR Complies with Section 2.59: YES

2.60 Engine Exhaust Wrap

The exhaust tubing between the engine turbo and the diesel particulate filter (DPF) shall be wrapped with a thermal cover to retain the necessary heat for DPF regeneration. The exhaust wrap shall also help protect surrounding components from radiant heat which can be transferred from the exhaust.

CONTRACTOR Complies with Section 2.60: YES

2.61 Heat Deflector Shield, Exhaust

Increased standards for emission have caused most exhaust temperatures to increase. To keep the exhaust heat from adversely affecting anything stored in the body, a deflector shield shall be provided to aid in dissipating the heat.

CONTRACTOR Complies with Section 2.61: YES

2.62 Transmission

The drive train shall include an Allison model EVS 4000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing. The transmission shall include two (2) internal oil filters which shall offer Castrol TranSynd™ synthetic TES 295 transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

The transmission gear ratios shall be:

- a. 1st 3.51:1
- b. 2nd 1.91:1
- c. 3rd 1.43:1
- d. 4th 1.00:1
- e. 5th 0.74:1
- f. 6th 0.64:1 (if applicable)
- g. Rev 4.80:1

CONTRACTOR Complies with Section 2.62: YES

2.63 Transmission Mode Programming

The transmission, upon start-up, will select a six (6) speed operation without the need to press the mode button.

CONTRACTOR Complies with Section 2.63: YES

2.64 Transmission Feature Programming

The Allison Gen V-E transmission EVS group package number 127 shall contain the 227-vocational package in consideration of the duty of this apparatus for rescue. This package shall incorporate an automatic neutral with selector override. This feature commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector. This requires re-selecting drive range to shift out of neutral for the override.

A transmission interface connector shall be provided in the cab. This package shall contain the following input/output circuits to the transmission control module. The Gen V-E transmission shall include prognostic

diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance. Function ID Description Wire assignment:

- a. Inputs
- b. C PTO Request 143 F Aux. Function Range Inhibit (Special) 101/142
- c. Outputs
- d. G PTO Enable Output (See Input Function C) 130
- e. S Neutral Indicator for PTO 145
- f. Signal Return 103

CONTRACTOR Complies with Section 2.64: YES

2.65 Electronic Transmission Oil Level Indicator

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

CONTRACTOR Complies with Section 2.65: YES

2.66 Transmission Shift Selector

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

CONTRACTOR Complies with Section 2.66: YES

2.67 Transmission Pre-Select with Auxiliary Brake

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

CONTRACTOR Complies with Section 2.67: YES

2.68 Transmission Cooling System

The transmission shall include a water to oil cooler system located in the cooling loop between the radiator and the engine. The transmission cooling system shall meet all transmission manufacturer requirements. The transmission cooling system shall feature continuous flow of engine bypass water to maintain uninterrupted transmission cooling.

CONTRACTOR Complies with Section 2.68: YES

2.69 Transmission Drain Plug

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

CONTRACTOR Complies with Section 2.69: YES

2.70 Power Take Off (PTO)

A ten (10) bolt standard duty PTO shall be installed on the transmission. Installation shall include mounting of the PTO and wiring the unit with a control switch if required for the PTO model.

CONTRACTOR Complies with Section 2.70: YES

2.71 PTO Model

A ten (10) bolt Muncie model CS41-A1007-H3CX heavy duty transmission driven PTO shall be installed. The clutched shift PTO is designed specifically for the Allison world transmission and features a maximum torque rating of 545 lb. ft.

CONTRACTOR Complies with Section 2.71: YES

2.72 PTO Location

The transmission shall have two (2) power take off (PTO) mounting locations.

CONTRACTOR Complies with Section 2.72: YES

2.73 PTO Control

The power take off shall be controlled by the transmission. The power take off shall be activated by a locking on/off rocker switch which contains an integral light which shall illuminate upon a positive engagement of the power take off. This switch shall be located on dash. Required operating conditions for enabling this function are:

- a. Throttle position is low
- b. Engine speed is within customer specified constant limits
- c. Transmission output speed is within customer specified constant limits
- d. Park brake set

CONTRACTOR Complies with Section 2.73: YES

2.74 Driveline

All drivelines shall be heavy duty metal tube and equipped with Spicer 1810 series universal joints. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®.

CONTRACTOR Complies with Section 2.74: YES

2.75 Driveline Retarder

A Telma electromagnetic driveline retarder shall be focal mounted on the rear axle to act as an auxiliary braking system.

CONTRACTOR Complies with Section 2.75: YES

2.76 Driveline Retarder Control

There shall be four (4) stages of activation for the driveline retarder. The first stage shall be 25% activation, the second stage shall be 50% activation, the third stage shall be 75% activation and the fourth stage shall be 100% activation. The stages of retardation shall work off pressure applied to the service brake. The driveline retarder shall be controlled by an On/Off switch located on the dash. There shall be an auxiliary drive line retarder lever controller mounted on the dash mounted next to the ON/OFF switch. The auxiliary lever shall activate the drive line retarder in lieu of applied service brake. There shall be an indicator light mounted on the instrument panel. The indicator light shall indicate the four (4) stages of activation. The driveline retarder shall disengage in pump mode or during an ABS event. A positive activation of the driveline retarder shall activate the brake lights.

CONTRACTOR Complies with Section 2.76: YES

2.77 Fuel Filter/Water Separator

The fuel system shall have a Racor S3238 fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve and a see-through cover to allow visual inspection of fuel and filter condition. The Racor S3238 shall be a 10-micron filter capable of handling a maximum flow rate of 150 gallons per hour. A secondary fuel filter shall be included as approved by the engine manufacturer. An instrument panel lamp and audible alarm which indicates when water is present in the fuel-water separator shall also be included.

CONTRACTOR Complies with Section 2.77: YES

2.78 Fuel Lines

The fuel system supply and return lines installed from the fuel tank to the engine shall be black textile braided lines which are reinforced with braided high tensile steel wire. The fuel lines shall be connected with reusable steel fittings.

CONTRACTOR Complies with Section 2.78: NO

2.79 Electric Fuel Primer

Integral to the engine assembly is an electric lift pump that serves the purpose of pre-filter fuel priming.

CONTRACTOR Complies with Section 2.79: YES

2.80 Fuel Cooler

An aluminum cross flow air to fuel cooler shall be provided to lower fuel temperature allowing the vehicle to operate at higher ambient temperatures. The fuel shall not exceed a temperature of 140 degrees with the engine running at an ambient air temperature of 115 degrees.

CONTRACTOR Complies with Section 2.80: YES

2.81 Fuel Tank

The fuel tank shall have a capacity of seventy (70) gallons.

CONTRACTOR Complies with Section 2.81: YES

2.82 Fuel Tank Material and Finish

The fuel tank shall be constructed of 12-gauge aluminized steel. The exterior of the tank shall be powder coated black and then painted to match the frame color. All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used.

CONTRACTOR Complies with Section 2.82: NO

2.83 Fuel Tank Strap Material

The fuel tank straps shall be constructed of ASTM A-36 steel.

CONTRACTOR Complies with Section 2.83: YES

2.84 Fuel Tank Fill Port

The fuel tank fill ports shall be in-line with the left and right side.

CONTRACTOR Complies with Section 2.84: YES

2.85 Fuel Tank Serviceability Provisions

The chassis fuel lines shall have additional length provided so the tank can be easily lowered and removed for service purposes. The additional 8.00 feet of length shall be located above the fuel tank and shall be coiled and secured. The fuel line fittings shall be pointed towards the right side (curbside) of the chassis. Fuel level sending units shall be readily accessible for easy removal without removing the fuel tank or cutting holes in the body. An easily removable access panel is acceptable.

CONTRACTOR Complies with Section 2.85: YES

2.86 Fuel Tank Drain Plug

A 0.5 inch NPT drain plug shall be centered in the bottom of the fuel tank.

CONTRACTOR Complies with Section 2.86: YES

2.87 Front Wheel Bearing Lubrication

The front axle wheel bearings shall be lubricated with oil. The oil level can be visually checked via clear inspection windows in the front axle hubs.

CONTRACTOR Complies with Section 2.87: YES

2.88 Front Shock Absorbers

Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the front suspension system. The shocks shall be a mono tubular design and fabricated using a special extrusion method, utilizing a single blank of steel without a welded seam, achieving an extremely tight peak-to-valley tolerance and maintains consistent wall thickness. The mono tubular design shall provide superior strength while maximizing heat dissipation and shock life. The ride afforded through the use of a gas shock is more consistent and shall not deteriorate with heat, the same way a conventional oil filled hydraulic shock would. The Bilstein front shocks shall include a digressive working piston assembly allowing independent tuning of the compression and rebound damping forces to provide optimum ride and comfort without compromise. The working piston design shall feature fewer parts than most conventional twin tube and “road sensing” shock designs and shall contribute to the durability and long life of the Bilstein shock absorbers. Proposals offering the use of conventional twin tube or “road sensing” designed shocks shall not be considered.

CONTRACTOR Complies with Section 2.88: NO

2.89 Front Suspension

The front suspension shall include a nine (9) leaf spring pack in which the longest leaf measures 54.00-inch-long and 4.00 inches wide and shall include a military double wrapped front and rear eye. Both spring eyes shall have a case hardened threaded bushing installed with lubrication counter bore and lubrication land off cross bore with grease fitting. The spring capacity shall be rated at 21,500 pounds.

CONTRACTOR Complies with Section 2.89: NO

2.90 Front End Torque

All front-end suspension components shall be re-torqued to the manufacturers specifications once delivered to the local California warranty facility.

CONTRACTOR Complies with Section 2.90: YES

2.91 Steering Column/Wheel

The cab shall include a Douglas Autotech steering column which shall include a seven (7) position tilt, a 2.25-inch telescopic adjustment, and an 18.00 inch, four (4) spoke steering wheel located at the driver’s position. The steering wheel shall be covered with black polyurethane foam padding. The steering column shall contain a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.

CONTRACTOR Complies with Section 2.91: YES

2.92 Electronic Power Steering Fluid Level Indicator

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

CONTRACTOR Complies with Section 2.92: NO

2.93 Power Steering Pump

The hydraulic power steering pump shall be a Vickers V20F and shall be gear driven from the engine. The pump shall be a fixed displacement vane type. The power steering system shall include an oil to air passive cooler.

CONTRACTOR Complies with Section 2.93: NO

2.94 Tiller Steering Provisions

The chassis shall include an additional power steering pump and reservoir which is necessary with a vehicle designed for a tiller application. The pump shall be a three (3) line type with a seven (7) GPM flow control and a 2000 PSI pressure relief valve. The power steering pump shall be a type which is designed to be driven by a PTO. The body manufacturer shall be responsible for the design, installation, plumbing, and validation of the tiller cab steering system.

CONTRACTOR Complies with Section 2.94: NO

2.95 Front Axle Cramp Angle

The chassis shall have a front axle cramp angle of 48-degrees to the left and 44-degrees to the right.

CONTRACTOR Complies with Section 2.95: YES

2.96 Power Steering Gear

The power steering gear shall be a TRW model TAS 85 with an assist cylinder.

CONTRACTOR Complies with Section 2.96: NO

2.97 Chassis Alignment

The chassis frame rails shall be measured to insure the length is correct and cross checked to make sure they run parallel and are square to each other. The front and rear axles shall be laser aligned. The front tires and wheels shall be aligned and toe-in set on the front tires by the chassis manufacturer.

CONTRACTOR Complies with Section 2.97: YES

2.98 Rear Axle Differential Lubrication

The rear axle differential shall be lubricated with oil.

CONTRACTOR Complies with Section 2.98: YES

2.99 Rear Wheel Bearing Lubrication

The rear axle wheel bearings shall be lubricated with oil.

CONTRACTOR Complies with Section 2.99: YES

2.100 Vehicle Top Speed

The top speed of the vehicle shall meet NFPA 1901 requirements at governed engine RPM.

CONTRACTOR Complies with Section 2.100: YES

2.101 Rear Suspension

The single rear axle shall feature a heavy-duty air suspension with a single optimized air spring mounted to a fabricated load beam trailing arm on each side with a single fixed transverse torque rod. Axle alignment is maintained using eccentric bolts at each frame bracket. Dual air height control valves shall be installed to ensure equal frame height on both sides of the vehicle regardless of the load. The rear suspension capacity shall be rated equivalent to the axle rating.

CONTRACTOR Complies with Section 2.101: YES

2.102 Rear Shock Absorbers

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

CONTRACTOR Complies with Section 2.102: YES

2.103 Front Tire / Trailer Steer Tire

The front and rear trailer steer tires shall be Continental 425 / 65R22.5 L HTR2.

CONTRACTOR Complies with Section 2.103: YES

2.104 Rear Drive Tire

The rear drive tires shall be Continental 315 / 80R225 L HSC1.

CONTRACTOR Complies with Section 2.104: NO

2.105 Rear Axle Ratio

The rear axle ratio shall be 6.14:1.

CONTRACTOR Complies with Section 2.105: YES

2.106 Tire Pressure Equalization System

There shall be a Crossfire dual tire equalization system provided on both sets of dual tires on the rear axle. The Crossfire pressure system shall equalize and monitor tire pressure through the valve which is mounted between the dual tires. This shall bolt easily to the drive axle end allowing air to flow freely from one tire to the other, maintaining equal tire pressure and load distribution. The Crossfire system shall maximize tire life, decrease rolling resistance for increased fuel mileage and improve stability braking and overall safety. The Crossfire dual tire equalization system shall be redeemed upon the vehicle manufacturer's receipt of the voucher along with the vehicle in-service weight for each axle.

CONTRACTOR Complies with Section 2.106: YES

2.107 Tire Pressure Indicator

There shall be a voucher provided with the chassis for a pop up style tire pressure indicator at the front tire valve stem. The indicator shall provide visual indication of pressure in the specific tire. The tire pressure indicators shall be redeemed upon the vehicle manufacturer's receipt of the voucher for installation by the customer.

CONTRACTOR Complies with Section 2.107: YES

2.108 Front Wheel

The front wheels shall be Alcoa hub piloted, 22.50 inch X 12.25 inch LvL One™ polished aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and shall include Alcoa's Dura-Bright® finish with XBR technology as an integral part of the wheel surface. Alcoa Dura-Bright® wheels keep their shine without polishing. Brake dust, grime and road debris are easily removed by simply cleaning the wheels with soap and water.

CONTRACTOR Complies with Section 2.108: YES

2.109 Rear Wheel

The rear wheels shall be Alcoa hub piloted, heavy duty, 22.50 inch X 9.00 inch LvL One™ polished aluminum wheels with Alcoa Dura-Bright® wheel treatment with XBR® technology as an integral part of the wheel. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

CONTRACTOR Complies with Section 2.109: YES

2.110 Balance Wheels and Tires

All the wheels and tires, including any spare wheels and tire assemblies, shall be dynamically balanced.

CONTRACTOR Complies with Section 2.110: YES

2.111 Wheel Trim

The front wheels shall include stainless steel lug nut covers and stainless steel baby moons shipped loose with the chassis for installation by the apparatus builder. The baby moons shall have cutouts for oil seal viewing when applicable. The rear wheels shall include stainless steel lug nut covers and band mounted spring clip stainless steel high hats shipped loose with the chassis for installation by the apparatus builder. The lug nut covers, baby moons, and high hats shall be RealWheels® brand constructed of 304L grade, non-corrosive stainless steel with a mirror finish. Each wheel trim component shall meet D.O.T. certification.

CONTRACTOR Complies with Section 2.111: YES

2.112 Wheel Guards

The rear dual wheels shall include a plastic isolator approximately 0.04" installed between the inner and outer wheel hub to help prevent corrosion caused by metal to metal contact. There shall also be a plastic isolator between the axle hub and the wheels on both front and rear axles.

CONTRACTOR Complies with Section 2.112: YES

2.113 Rear Wheel Wells Tractor

The tiller tractor rear wheel well area shall be constructed of diamond tread plate overlays, forming a fender with a seamless appearance over the wheels. The fenders shall be fitted with bolt-in removable full circular inner liners in the wheel well area for ease of cleaning and maintenance. There shall be sufficient clearance provided in the wheel well to allow the use of tire chains when the apparatus is fully loaded.

2.113.1 Rear Fenderettes

Two (2) stainless steel fenderettes shall be installed at the outboard edge of the rear wheel well area, one on each side. The fenderettes shall be bolted to the apparatus body using nylon washers to space them slightly away from the body to reduce build-up of road grime. The fenderettes shall be constructed of stainless steel that has been polished to a high-quality finish.

CONTRACTOR Complies with Section 2.113: YES

2.114 Brake System

A rapid build-up air brake system shall be provided. All air reservoirs provided on the chassis shall be labeled for identification. The rear axle spring brakes shall automatically apply in any situation when the air pressure falls below 25 PSI and shall include a mechanical means for releasing the spring brakes when necessary. An audible alarm shall designate when the system air pressure is below 60 PSI. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

CONTRACTOR Complies with Section 2.114: YES

2.115 Front Brakes

The front brakes shall be Meritor EX225 Disc Plus disc brakes with 17.00 inch vented rotors.

CONTRACTOR Complies with Section 2.115: YES

2.116 Rear Brakes

The rear brakes shall be Meritor 16.50 inch X 8.63-inch S-cam drum type. The brakes shall feature a cast iron shoe.

CONTRACTOR Complies with Section 2.116: YES

2.117 Park Brake

Upon application of the push-pull valve in the cab, the rear brakes will engage via mechanical spring force. In addition to the mechanical rear brake engagement, the front service brakes will also engage via air pressure, providing additional braking capability. The air pressure to the front service brakes will be limited to 40 psi.

CONTRACTOR Complies with Section 2.117: YES

2.118 Park Brake Control

A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake. The parking brake actuation valve shall be mounted to the center of the engine tunnel with easy access for both the driver and officer positions. The park brake shall be protected as to prevent accidental release of the braking system.

CONTRACTOR Complies with Section 2.118: NO

2.119 Rear Brake Slack Adjuster

HalDEX rear brake automatic slack adjusters shall be installed on the axle.

CONTRACTOR Complies CONTRACTOR Complies with Section 2.119: YES

2.120 Air Dryer

The brake system shall include a Wabco System Saver 1200 air dryer with an integral heater with a Metri-Pack sealed connector.

CONTRACTOR Complies with Section 2.120: YES

2.121 Brake Chambers

The air brake chambers shall be as provided from the brake system manufacturer to meet stopping and holding requirements. Spring actuated chambers shall apply drive and tiller axle brakes for parking.

CONTRACTOR Complies with Section 2.121: YES

2.122 Air Compressor

The air compressor provided for the engine shall be a Wabco® SS318 single cylinder pass-through drive type compressor which shall be capable of producing 18.7 CFM at 1200 engine RPMs.

CONTRACTOR Complies with Section 2.122: YES

2.123 Air Governor

An air governor shall be provided to control the cut-in and cut-out pressures of the engine mounted air compressor. The governor shall be calibrated to meet FMVSS requirements. The air governor shall be located on the air dryer bracket on the left frame rail behind the battery box.

CONTRACTOR Complies with Section 2.123: YES

2.124 Moisture Ejectors

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

CONTRACTOR Complies with Section 2.124: YES

2.125 Air Supply Lines

The air system on the chassis shall be plumbed with color coded reinforced nylon tubing air lines. Brass compression type fittings shall be used on the nylon tubing. All drop hoses shall be fiber reinforced neoprene covered hoses. All nylon air tubing on the chassis shall be covered with high temperature plastic split loom.

CONTRACTOR Complies with Section 2.125: YES

2.126 Air Inlet Connection

An air connection for the shoreline air inlet shall be supplied.

2.126.1 Air Inlet Location

The air inlet shall be installed in the left-hand side lower front step in the forward position.

2.126.2 Air Inlet/Outlet Fitting Type

The air connector supplied shall be a 0.25-inch size Tru-Flate Interchange style manual connection which is compatible with Milton 'T' style, Myers 0.25-inch Automotive style and Parker 0.25 inch 10 Series connectors.

CONTRACTOR Complies with Section 2.126: YES

2.127 Trailer Air Brake Connection Package

The trailer air brake connection shall be accomplished via tractor connection points provided at the rear of the chassis.

CONTRACTOR Complies with Section 2.127: YES

2.128 Wheelbase

The chassis wheelbase shall measure 143.00 inches.

CONTRACTOR Complies with Section 2.128: NO

2.129 Rear Overhang

The chassis rear overhang shall be 54.00 inches.

CONTRACTOR Complies with Section 2.129: YES

2.130 Frame

The frame shall consist of triple side rails and cross members forming a ladder style frame. The side rails shall be formed in the shape of a "C" channel. The frame and cross members shall carry a lifetime warranty to the original purchaser. A copy of the frame warranty shall be made available upon request. Proposals offering warranties for frames not including cross members shall not be considered.

CONTRACTOR Complies with Section 2.130: NO

2.131 Frame Warranty

The frame and cross members shall carry a limited lifetime warranty to the original purchaser. The warranty period shall commence on the date the vehicle is placed in service by the user.

CONTRACTOR Complies with Section 2.131: YES

2.132 Rear Tow Device

Two (2) heavy duty painted tow eyes shall be installed extending rearward from the frame at the rear of the chassis. The tow eyes shall be fabricated from 0.75-inch-thick #1020 ASTM-36 hot rolled steel. The inside diameter of the tow eye shall be 2.00 inches and shall have a chamfered edge. The tow eyes shall be bolted one (1) on each side to the outside of the chassis frame with grade 8 bolts. The tow eyes shall be painted to match the chassis frame.

CONTRACTOR Complies with Section 2.132: YES

2.133 Frame Paint

The frame shall be powder coated black prior to any attachment of components. All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The chassis under carriage consisting of frame, axles, driveline running gear, air tanks and other chassis mounted components shall be painted the primary/lower cab color. Paint shall be applied prior to airline and electrical wiring installation.

CONTRACTOR Complies with Section 2.133: YES

2.134 Front Bumper

A one piece, two (2) rib wrap-around style, polished stainless steel front bumper shall be provided. The material shall be 10 gauge 304 stainless steel, 12" high and 104.50 inches wide.

2.134.1 Front Bumper Extension Length

The front bumper shall be extended approximately 6.00 inches ahead of the cab.

2.134.2 Front Bumper Apron

The 6.00 inch extended front bumper shall include an apron constructed of 0.19-inch-thick embossed aluminum tread plate. The apron shall be installed between the bumper and the front face of the cab affixed using stainless steel bolts attaching the apron to the top bumper flange.

2.134.3 Front Bumper Tow Eyes

The bumper shall include two (2) chrome plated tow eyes shall be installed through the front bumper. The eyes shall be fabricated from 0.75-inch-thick #1020 ASTM-A36 hot rolled steel. The inside diameter of the eye shall be 2.00 inches and include a chamfered edge.

CONTRACTOR Complies with Section 2.134: YES

2.135 Air Horn

The chassis shall include two (2) Grover brand Stutter Tone air horns. One shall measure 24" long and one shall measure 15" long with a 6.00-inch round flare. The air horns shall be trumpet style with a chrome finish.

2.135.1 Air Horn Location

The air horns shall be recess mounted in the front bumper face on the left side of the bumper in the inboard and outboard positions relative to the left-hand frame rail.

2.135.2 Air Horn Reservoir

One (1) air reservoir, with a 1200 cubic inch capacity, shall be installed on the chassis to act as a supply tank for operating air horns. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

CONTRACTOR Complies with Section 2.135: YES**2.136 Cab Height Adjustment**

The cab shall include 0.75-inch-thick shims raising the cab to provide additional clearance under the cab.

CONTRACTOR Complies with Section 2.136: YES**2.137 Cab Tilt System**

The entire cab shall be capable of tilting approximately 45-degrees to allow for easy maintenance of the engine and transmission. The cab tilt pump assembly shall be located on the right side of the chassis above the battery box. The electric-over-hydraulic lift system shall include an ignition interlock and red cab lock down indicator lamp on the tilt control which shall illuminate when holding the "Down" button to indicate safe road operation. It shall be necessary to activate the master battery switch and set the parking brake to tilt the cab. As a third precaution the ignition switch must be turned off to complete the cab tilt interlock safety circuit. Two (2) spring-loaded hydraulic hold down hooks located outboard of the frame shall be installed to hold the cab securely to the frame. Once the hold-down hooks are set in place, it shall take the application of pressure from the hydraulic cab tilt lift pump to release the hooks. Two (2) cab tilt cylinders shall be provided with velocity fuses in each cylinder port. The cab tilt pivots shall be 1.90-inch ball and be anchored to frame brackets with 1.25-inch diameter studs. A steel safety channel assembly, painted safety yellow shall be installed on the right-side cab lift cylinder to prevent accidental cab lowering. The safety channel assembly shall fall over the lift cylinder when the cab is in the fully tilted position. A cable release system shall also be provided to retract the safety channel assembly from the lift cylinder to allow the lowering of the cab.

CONTRACTOR Complies with Section 2.137: YES**2.138 Cab Tilt Auxiliary Pump**

A manual cab tilt pump module shall be attached to the cab tilt pump housing.

CONTRACTOR Complies with Section 2.138: YES**2.139 Cab Tilt Control Receptacle**

The cab tilt control cable shall include a receptacle which shall be temporarily located on the right-hand chassis rail rear of the cab to provide a place to plug in the cab tilt remote control pendant. The tilt pump shall include 8.00 feet of cable with a six (6) pin Deutsch receptacle with a cap. The remote-control pendant shall include 20.00 feet of cable with a mating Deutsch connector. The remote-control pendant shall be shipped loose with the chassis.

CONTRACTOR Complies with Section 2.139: YES**2.140 Cab Windshield**

The cab windshield shall have a surface area of approximately 2969.88 square inches and be of a two (2) piece wraparound design for maximum visibility. The glass utilized for the windshield shall include standard automotive tint. The left and right windshield shall be fully interchangeable thereby minimizing stocking and replacement costs. Each windshield shall be installed using black self-locking window rubber.

CONTRACTOR Complies with Section 2.140: YES**2.141 Glass Front Door**

The front cab doors shall include a window which is approximately 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished electronically utilizing a push button on the inside of the door. The driver side door shall have electronic controls for all electronically controlled windows in the cab. A reinforced window regulator assembly shall be provided for severe duty use. There shall be an irregular shaped fixed window which shall measure approximately 2.50 inches wide at the top, 8.00 inches wide at the bottom X 26.00 inches in height, more

commonly known as “cozy glass” ahead of the front door roll down windows. The windows shall be mounted within the frame of the front doors trimmed with a black anodized ring on the exterior.

2.141.1 Glass Tint Front Door

The windows located in the left and right front doors shall have a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

CONTRACTOR Complies with Section 2.141: NO

2.142 Glass Rear Door Right Hand

The rear right hand side door shall include a window which is approximately 27.00 inches in width X 26.00 inches in height. This window shall roll up and down electronically utilizing a push button on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

2.142.1 Glass Tint Rear Door Right Hand

The window located in the right-hand side rear window shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

CONTRACTOR Complies with Section 2.142: YES

2.143 Glass Rear Door Left Hand

The rear left hand side door shall include a window which is approximately 27.00 inches in width X 26.00 inches in height. This window shall roll up and down electronically utilizing a push button on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

2.143.1 Glass Tint Rear Door Left Hand

The window located in the left-hand side rear door shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

CONTRACTOR Complies with Section 2.143: YES

2.144 Glass Side Mid Right Hand

The cab shall include a window on the right side behind the front and ahead of the crew doors which shall measure approximately 16.00 inches wide X 26.00 inches high. This window shall be capable of sliding vertically within this space and shall be rectangular. The window shall be mounted in a black anodized aluminum frame with lower drain slots. The glass utilized for the window shall include a green automotive tint unless otherwise noted.

2.144.1 Glass Tint Side Mid Right Hand

The window located on the right-hand side of the cab between the front and rear doors shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

CONTRACTOR Complies with Section 2.144: YES

2.145 Glass Side Mid Left Hand

The cab shall include a window on the left side behind the front door and ahead of the crew doors and above the wheel well which shall measure approximately 16.00 inches wide X 26.00 inches high. This window shall be capable of sliding vertically within this space and shall be rectangular. The window shall be mounted in a black anodized aluminum frame with lower drain slots. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

2.145.1 Glass Tint Side Mid Left Hand

The window located on the left-hand side of the cab between the front and rear doors shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

CONTRACTOR Complies with Section 2.145: YES**2.146 Climate Control**

A ceiling mounted combination defroster and cabin heating and air conditioning system shall be located above the engine tunnel area. The system covers and plenums shall be of severe duty design made of aluminum which shall be coated with a customer specified interior paint. The design of the system's covers shall provide quick access to washable air intake filters as well as easy access to other serviceable items. The air delivery plenums provide targeted airflow directly to the vehicle occupants. It shall be capable of reducing the interior cabin air temperature from 122° F (+/- 3° F) to 80° F in thirty minutes with 50% relative humidity and full solar load as described in SAE J2646. The system shall also provide heater pull up performance which meets or exceeds the performance requirements of SAE J1612 as well as defrost performance that meets or exceeds the performance requirements of SAE J381. A gravity drain system shall be provided that is capable of evacuating condensate from the vehicle while on a slope of up to a 13% grade in any direction. Any component which needs to be accessed to perform system troubleshooting shall be accessible by one person using basic hand tools. Regularly serviced items shall be replaceable by one person using basic hand tools.

2.146.1 Climate Control Activation

The heating, defrosting and air conditioning controls shall be located in the cab.

2.146.2 HVAC Overhead Cover Paint

The overhead HVAC cover shall be painted with a black texture finish.

2.146.3 A/C Condenser Location

A roof mounted A/C condenser shall be installed on the left side of the cab, mid-roof.

2.146.4 A/C Compressor

The air-conditioning compressor shall be a belt driven, engine mounted compressor. The compressor shall be compatible with R134-a refrigerant.

2.146.5 Auxiliary A/C Cab Ceiling/Roof

A Bergstrom Model # BSP00029AC24 24-volt. The system shall consist of one (1) 110-volt air conditioning roof mounted unit which shall be located above the crew area and offset left of center on the cab roof above the crew area. The cover of the air conditioning unit shall be painted red (job/body color). The system shall be pre-wired with enough cable for the body builder to connect to a 110-volt power source. The air conditioning system shall be wired to a transfer switch allowing for power supplied via the following: shorepower, batteries, inverter, converters and/or generator, in order to provide uninterrupted (no idle) A/C to the cab. The condensation drain line shall be installed as to not have water run down the front or sides of the cab.

CONTRACTOR Complies with Section 2.146: YES**2.147 Under Cab Insulation**

The underside of the cab tunnel surrounding the engine shall be lined with multi-layer insulation, engineered for application inside diesel engine compartments. In addition, the insulation shall have a removable aluminum overlay installed to protect the insulation and assist in retaining the insulation tight against the engine tunnel surfaces. The insulation shall act as a noise barrier, absorbing noise thus keeping the decibel level in the cab well within NFPA recommendations.

CONTRACTOR Complies with Section 2.147: YES**2.148 Interior Trim**

The cab interior shall include trim on the front ceiling, rear crew ceiling, and the cab walls. It shall be easily removable to assist in maintenance. The trim shall be constructed of insulated vinyl over a hard board backing.

2.148.1 Interior Trim Floor

The floor of the cab shall be covered with a multi-layer mat consisting of 0.25-inch-thick sound absorbing closed cell foam with a 0.06-inch-thick non-slip vinyl surface with a pebble grain finish. The covering shall be held in place by a pressure sensitive adhesive and aluminum trim molding. All

exposed seams shall be sealed with silicone caulk matching the color of the floor mat to reduce the chance of moisture and debris retention. The floor shall have an overlay of 3003-H22 aluminum embossed tread plate. The tread plate shall be held down with screws and aluminum trim molding.

2.148.2 Interior Trim Rear Wall

The rear wall of the cab shall be trimmed with vinyl.

2.148.3 Header Trim

The cab interior shall feature header trim over the driver and officer dash constructed of 5052-H32 Marine Grade, 0.13-inch-thick aluminum.

2.148.4 Center Dash Trim

The main center dash area shall be constructed of 5052-H32 Marine Grade, 0.13-inch-thick aluminum plate. There shall be four (4) holes located on the top of the dash near each outer edge of the electrical access cover for ventilation.

2.148.5 Trim Left Hand Dash

The left-hand dash shall be constructed of 5052-H32 Marine Grade, 0.13-inch-thick aluminum plate for a perfect fit around the instrument panel. For increased occupant protection, the extreme duty left hand dash utilizes patent pending break away technology to reduce rigidity in the event of a frontal crash. The left-hand dash shall offer lower vertical surface area to the left and right of the steering column to accommodate control panels.

2.148.6 Trim Right Hand Dash

The left-hand dash shall be constructed of 5052-H32 Marine Grade, 0.13-inch-thick aluminum plate for a perfect fit around the instrument panel. For increased occupant protection, the extreme duty left hand dash utilizes patent pending break away technology to reduce rigidity in the event of a frontal crash. The left-hand dash shall offer lower vertical surface area to the left and right of the steering column to accommodate control panels.

CONTRACTOR Complies with Section 2.148: NO

2.149 Engine Tunnel Trim

The cab engine tunnel shall be covered with a multi-layer mat consisting of 0.25-inch closed cell foam with a 0.06-inch-thick non-slip vinyl surface with a pebble grain finish. The mat shall be held in place by pressure sensitive adhesive. The engine tunnel mat shall be trimmed with anodized aluminum stair nosing trim for an aesthetically pleasing appearance. The multi-layer mat on the lower side area of the engine tunnel at the driver and officer positions shall be provided with a brushed stainless steel kick plate. The top of each kick plate shall be even with the top of the seat risers. In addition, the multi-layer mat on the rear sloped face of the tunnel shall be covered with a brushed stainless steel overlay.

CONTRACTOR Complies with Section 2.149: NO

2.150 Power Point Dash Mount

The cab shall include two (2) 12-volt cigarette lighter type receptacles and two (2) USB charging receptacles in the dash to provide a power source for 12-volt electrical equipment. The receptacles shall be wired battery direct.

CONTRACTOR Complies with Section 2.150: YES

2.151 Auxiliary Power Point Engine Tunnel

The cab interior shall include two (2) 12-volt cigarette lighter type receptacles and two (2) USB charging receptacles to provide power sources for 12-volt electrical equipment. The receptacles shall be connected directly to the batteries. The receptacles shall be located on the rear of the engine tunnel near the top, one (1) near the left corner and one (1) near the right corner.

CONTRACTOR Complies with Section 2.151: YES

2.152 Step Trim

Each cab entry door shall include a three-step entry. The first step closest to the ground shall be constructed of 14 gauge 304 stainless steel with indented perforations. The perforations shall allow water and other debris to flow

through rather than becoming trapped within the stepping surface. The stainless-steel material shall have a number 7 mirror finish. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed in 0.08-inch-thick 3003-H22 embossed aluminum tread plate.

CONTRACTOR Complies with Section 2.152: NO

2.153 Step Well Compartment

Provide a watertight removable storage compartment in the officer step well. The compartment shall be as large as possible, minimum dimensions 25" wide x 12" deep x 14" high. The dropdown door shall have a positive action, stainless steel recessed large D handle twist type single point cam latch, easily operable with a gloved hand. The horizontally hinged door shall be provided with a full length, heavy duty, stainless steel, piano type hinge and stainless steel pin. The hinge shall have a positive action. Pin shall be secured to prevent creeping.

CONTRACTOR Complies with Section 2.153: YES

2.154 Kick Panel Compartment

Provide a bottom hinged storage box in the officer kick panel, below the dash panel. The box shall be as large as possible and have large, stainless steel locking D ring handle or paddle latch with single point lock. The lock shall be 1250.

CONTRACTOR Complies with Section 2.154: YES

2.155 Step Trim Kickplate

The cab steps shall include a kick plate in the rise of each step. The risers shall be trimmed in 3003-H22 bright aluminum tread-plate which is 0.07 inch thick.

CONTRACTOR Complies with Section 2.155: YES

2.156 Interior Door Trim

The interior doors of the cab shall include two (2) piece stainless steel trim panels. The panel material shall consist of AISI 304, 13-gauge stainless steel. The panels shall feature a brushed finish. The 2-piece configuration shall allow for ease of access to interior door hardware and wiring. The interior door panels and all sheet metal attachments shall be fastened to door with lock coated screws. The panels shall provide for easy access to the interior of the door for servicing.

CONTRACTOR Complies with Section 2.156: YES

2.157 Cab Door Trim Reflective

The interior of each door shall include high visibility reflective tape. A white reflective tape shall be provided vertically along the outer rear edge of each cab. The lowest portion of each cab door skin shall include a reflective tape chevron with red and yellow stripes. The chevron tape shall measure 12.00 inches in height. The chevron tape shall match throughout the entire apparatus.

CONTRACTOR Complies with Section 2.157: YES

2.158 Interior Grab Handle "A" Pillar

There shall be two (2) rubber covered 11.00-inch grab handles installed inside the cab, one on each "A" post at the left and right door openings.

CONTRACTOR Complies with Section 2.158: YES

2.159 Foot Rest

The Officer position shall have a fold up tread plate foot rest mounted on the forward bulkhead wall.

CONTRACTOR Complies with Section 2.159: YES

2.160 Interior Grab Handle Front Door

Each front door shall include one (1) ergonomically contoured 9.00-inch cast aluminum handle mounted diagonally on the interior door panels. The handles shall feature a textured black powder coat finish to assist personnel entering and exiting the cab.

CONTRACTOR Complies with Section 2.160: YES

2.161 Interior Grab Handle Rear Door

Each rear door shall include one (1) ergonomically contoured 9.00-inch cast aluminum handle mounted diagonally on the interior door panels and one (1) horizontally mounted 9.00 inch cast aluminum handle. The handles shall feature a textured black powder coat finish to assist personnel entering and exiting the cab. Exact mounting locations to be determined at pre-con.

CONTRACTOR Complies with Section 2.161: YES

2.162 Interior Rear Wall Compartment

An enclosed cab area storage compartment shall be installed on the rear wall between the rear wall forward facing flip down seats. The frame shall measure approximately 36 inches wide X 55 inches high X 22.00 inches deep (exact measurements to be determined at pre-con). The frame shall be constructed of Marine Grade 5052-H32 0.19 inch thick aluminum plate. The box shall be painted with the same color as the remaining interior. The compartment will provide full front access via a roll up door and side access to the lower approximately 20" of the compartment on both sides via roll up doors. The compartment design will include Unistrut vertically mounted to accommodate the installation of shelves trays and other miscellaneous equipment. The compartment will be ducted to the HVAC system for cooling of sensitive equipment.

The compartment shall include a 12 volt / 120 VAC shorepower outlet wired to a transfer switch allowing for power supplied via shorepower and generator.

2.162.1 EMS/Charging/Storage Roll-up Compartment Front Access

There shall be one (1) access points to the charging storage area. The access point shall be covered by a roll-up door which measures approximately 34.00 inches in width X 53.00 inches in height.

EMS/Charging/Storage Roll-up Compartment Side Access

There shall be two (2) access points to the EMS storage area, one (1) on each side of the frame. Each access point shall be covered by a roll-up door or net enclosure which measures approximately 20.00 inches in width X 20.00 inches in height when open.

2.162.2 EMS/Charging/Storage Roll-up Compartment Shelving

Three (3) adjustable extruded aluminum shelves will be provided for the compartment.

CONTRACTOR Complies with Section 2.162: YES

2.163 Interior Rear Wall Compartment Interior Finish

The interior of the interior rear wall compartment shall have a DA sanded finish.

CONTRACTOR Complies with Section 2.163: YES

2.164 Interior Rear Wall Compartment Lighting

There shall be a minimum two (2) Sound Off Signal brand LED strip light installed to illuminate the interior compartment at the rear wall inside the crew area of the cab. The strip light shall provide efficient lighting to illuminate the entire compartment. The light shall be activated when the compartment doors are opened.

CONTRACTOR Complies with Section 2.164: YES

2.165 Interior Soft Trim Color

The cab interior soft trim surfaces shall be black in color.

CONTRACTOR Complies with Section 2.165: YES

2.166 Interior Trim Sun Visor

The header shall include two (2) sun visors, one each side forward of the driver and officer seating positions above the windshield. Each sun visor shall be constructed of Masonite and covered with padded vinyl trim.

CONTRACTOR Complies with Section 2.166: YES

2.167 Cab Paint Interior Door Trim

The inner door panel surfaces shall be painted with a black texture finish.

CONTRACTOR Complies with Section 2.167: YES

2.168 Header Trim Interior Paint

The metal surfaces in the header area shall be coated with a black texture finish.

CONTRACTOR Complies with Section 2.168: YES

2.169 Trim Center Dash Interior Paint

The entire center dash shall be coated with a black texture finish. Any accessory pods attached to the dash shall also be painted this color.

CONTRACTOR Complies with Section 2.169: YES

2.170 Trim Left Hand and Right Hand Dash Interior Paint

The left-hand and right-hand dash shall be painted with a black texture finish.

CONTRACTOR Complies with Section 2.170: YES

2.171 Switches Overhead Panel

The center dash panel shall include six (6) rocker switch positions in a single row configuration above the driver in the overhead panel. A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

CONTRACTOR Complies with Section 2.171: NO

2.172 Switches Dash Panel

The dash panel shall include five (5) switches in a three (3) over two (2) staggered switch configuration. Two (2) rocker switches, one (1) headlight switch, one (1) windshield wiper/washer control switch and one (1) instrument lamp dimmer switch shall be provided. A rocker switch with a blank legend installed directly above shall be provided for any position not designated by a specific option. The non-designated switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

CONTRACTOR Complies with Section 2.172: NO

2.173 Seating

2.173.1 Seat Belt Warning

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall provide a visual warning indicator in the Vista display and control screen(s), an indicator light in the instrument panel, an indicator light in the switch panel, and an audible alarm. The warning system shall activate when any seat is occupied with a minimum of 60 pounds, the corresponding seat belt remains unfastened, and the park brake is released. The warning system shall also activate when any seat is occupied, the corresponding seat belt was fastened in an incorrect sequence, and the park brake is released. Once activated, the visual indicators and audible alarm shall remain active until all occupied seats have the seat belts fastened.

2.173.2 Seat Color

All seats supplied with the chassis shall be black in color. All seats shall include red seat belts

2.173.3 **Seat Driver**

The driver's seat shall be an USSC Valor G2A - R-Style back, ABTS seat with dual retractor 3-point seat belts. The seat shall include "Ready Reach" seatbelt extension. The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly. The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches measured with the seat height adjusted to the lowest position of travel. This model of seat shall have successfully completed the static load tests set forth by FMVSS 207, 209, and 210 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. The materials used in construction of the seat shall also have successfully completed testing with regard to the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which dictates the allowable burning rate of materials in the occupant compartments of motor vehicles.

2.173.3.1 **Seat Back Driver**

The driver's seat shall include an R-style seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a contoured head rest. The seat shall include "Ready Reach" seatbelt extension.

2.173.4 **Seat Mounting Driver**

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

2.173.5 **Seat Officer**

The officer's seat shall be an USSC Valor G2A - Dynamic back with a 95-degree back pitch, ABTS seat with dual retractor 3-point seat belts. The seat shall include "Ready Reach" seatbelt extension. The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly. The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches measured with the seat height adjusted to the lowest position of travel. This model of seat shall have successfully completed the static load tests by FMVSS 207, 209, 210 and 302 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

2.173.5.1 **Seat Back Officer**

The officer's seat back shall be a dynamic back with a 95-degree pitch and include an IMMI brand SmartDock® Gen 2 hands-free self-contained breathing apparatus (SCBA) holder.

- a. The hands-free holder shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of emergency response vehicles.
- b. The bracket shall accommodate and secure most types of self-contained breathing apparatus cylinders.
- c. The hands-free holder shall consist of a back plate, bottom cradle, non-marring top claws, and claw height adjustment knob.
- d. The height adjustment knob shall allow for easy adjustment of the claws to the SCBA.
- e. The hands-free holder's claws shall lock from inertial forces to prevent the SCBA from becoming a projectile in the event of a crash to meet the NFPA 1901-03 standard for SCBA retention.
- f. The SCBA holder shall offer single-motion insertion into the claws and hands-free release when the SCBA fitted seat occupant rises.

g. The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

h. The seat shall include "Ready Reach" seatbelt extension

2.173.6 Seat Mounting Officer

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

2.173.7 Power Seat Wiring

The power seat or seats installed in the cab shall be wired directly to battery power.

2.173.8 Seat Belt Orientation Crew

The crew position seat belts shall follow the standard orientation which extends from the outboard shoulder extending to the inboard hip.

2.173.9 Seat Rear Facing Outer Location

The crew area shall include (2) seats in the REAR facing position which shall be USSC Valor seats dynamic back with a 95-degree back pitch. The seat shall feature a tapered and padded seat, and 20" cushion. The seat and cushion shall be "Flip and Hold" and compact in design for additional room and shall remain in the stored position until occupied. The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant. The seats shall include "Ready Reach" seatbelt extensions. The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This type of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

2.173.10 Seat Back Rear Facing Outer

The crew area seat backs shall be dynamic back with a 95-degree pitch and include an IMMI brand SmartDock® Gen 2 hands-free self-contained breathing apparatus (SCBA) holder.

- a. The hands-free holder shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of emergency response vehicles.
- b. The bracket shall accommodate and secure most types of self-contained breathing apparatus cylinders.
- c. The hands-free holder shall consist of a back plate, bottom cradle, non-marring top claws, and claw height adjustment knob.
- d. The height adjustment knob shall allow for easy adjustment of the claws to the SCBA.
- e. The hands-free holder's claws shall lock from inertial forces to prevent the SCBA from becoming a projectile in the event of a crash to meet the NFPA 1901-03 standard for SCBA retention.
- f. The SCBA holder shall offer single-motion insertion into the claws and hands-free release when the SCBA fitted seat occupant rises.
- g. The seat back shall include a removable padded cover which shall be provided over the SCBA cavity. The seats shall include "Ready Reach" seatbelt extensions.

2.173.11 Seat Forward Facing Outer Location

The crew area shall include two (2) forward facing outboard seats, which include one (1) located next to the outer wall of the cab on the left side of the cab and one (1) located next to the outer wall on the right side of the cab. The seat shall be manufactured by Valor seats and incorporate a back pad mounted to the rear wall of the cab. Seats shall have 3-point dual retractor seat belts.

CONTRACTOR Complies with Section 2.173: YES**2.174 Cab Front Under Seat Storage Access**

The left and right under seat storage areas shall have a vented aluminum hinged door with locking latch.

CONTRACTOR Complies with Section 2.174: YES

2.175 Seat Compartment Door Finish

All under seat storage compartment access doors shall have a black texture finish.

CONTRACTOR Complies with Section 2.175: YES

2.176 Windshield Wiper System

The cab shall include a dual arm wiper system which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers which shall be affixed to a radial wet arm. The system shall include a single motor which shall initiate the arm in which both the left hand and right hand windshield wipers are attached, initiating a back and forth motion for each wiper. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver's position. All windshield wipers shall turn off when the parking brakes are set.

CONTRACTOR Complies with Section 2.176: NO

2.177 Electronic Windshield Fluid Level Indicator

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

CONTRACTOR Complies with Section 2.177: NO

2.178 Cab Door Hardware

The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of aluminum with chrome plated finish and be in the vertical position. The interior exit door handles shall be flush paddle type with a black finish, which are incorporated into the upper door panel. All cab entry doors shall include locks which are keyed alike. The door locks shall be designed to prevent accidental lockout. The exterior pull handles shall include a scuff plate behind the handle constructed of polished stainless steel to help protect the cab finish.

CONTRACTOR Complies with Section 2.178: YES

2.179 Door Locks

Each cab entry door shall include a manually operated door lock. Each door lock may be actuated from the inside of the cab by means of a red knob located on the paddle handle of the respective door or by using a TriMark key from the exterior. The door locks are designed to prevent accidental lock out.

CONTRACTOR Complies with Section 2.179: YES

2.180 Grab Handles

The cab shall include one (1) 18.00 inch 3-peice knurled, aluminum LED lit anti-slip assist handle with red reflective stipe at each cab access door. Handle shall be 1.25-inch diameter to enable non-slip assistance with a gloved hand. Light activation will be with the ground light circuit.

CONTRACTOR Complies with Section 2.180: YES

2.181 Auxiliary Grab Handles

There shall be an 18.00 inch 3-peice knurled, aluminum, anti-slip assist handle attached to the front fascia of the cab in the center below the windshield. The handle installation shall include steel reinforcement behind the front cab fascia.

CONTRACTOR Complies with Section 2.181: YES**2.182 Rearview Mirrors**

Ramco model 6015-FFHR-750R bus style mirrors shall be provided. The mirror heads shall be polished cast aluminum and shall measure 9.75 inches wide X 13.00 inches high with an additional top mount convex assembly. The mirrors shall be mounted one (1) on each front cab corner radius below the windshield with 15.00-inch-long polished cast aluminum arms. The mirrors shall feature a remote controlled heated full flat glass and a top mounted remote controlled convex glass. The mirror control switches shall be located within easy reach of the driver. The mirrors shall be manufactured using the finest quality non-glare glass and shall feature a rigid mounting thereby reducing vibration. The mirrors shall be corrosion free under all weather conditions.

2.182.1 Rearview Mirror Heat Switch

The heat for the rearview mirrors shall be controlled through a rocker switch on the dash in the switch panel.

CONTRACTOR Complies with Section 2.182: YES**2.183 Exterior Trim Rear Corner**

There shall be mirror finish stainless steel scuff plates on the outside corners at the back of the cab. The stainless-steel plate shall be affixed to the cab using two-sided adhesive tape.

CONTRACTOR Complies with Section 2.183: YES**2.184 Trim Roof**

This paragraph was deleted in its entirety via Addendum # 1 of the RFP.

2.185 Cab Fender

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Each two-piece liner shall consist of an inner liner 16.00 inches wide made of vacuum formed ABS composite and an outer fenderette 3.50 inches wide made of 14 gauge 304 polished stainless steel.

CONTRACTOR Complies with Section 2.185: NO**2.186 Ignition**

A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a one-quarter turn Cole Hersee switch, both of which shall be mounted to the left of the steering wheel on the dash. A chrome push type starter button shall be provided adjacent to the master battery and ignition switches. Each switch shall illuminate a green LED indicator light on the dash when the respective switch is placed in the "ON" position. The starter button shall only operate when both the master battery and ignition switches are in the "ON" position.

CONTRACTOR Complies with Section 2.186: YES**2.187 Instrument Panel**

- 2.187.1 The fully hinged metal instrument panel shall be non-glare black. The panel shall be provided with a stainless-steel piano type hinge and quick release attachments for maintenance.
- 2.187.2 All instruments or gauges requiring pressure or vacuum lines shall have flexible connector hoses with enough slack to allow the panel to be hinged for maintenance.
- 2.187.3 Ends of flexible hoses leaving instruments shall be fastened to securely mounted connector fittings or bars.
- 2.187.4 Panel wiring shall be connected to a terminal strip.
- 2.187.5 Instrument panel, including gauge descriptions, shall be submitted to Riverside County Fire for approval prior to the start of manufacture.
- 2.187.6 The panel shall contain the following in addition to any instruments and indicators reflected herein:
 - a. Speedometer (Direct Data Bus)
 - b. Tachometer (Direct Data Bus)
 - c. Ammeter with yellow LED discharge indicator light.

- d. Voltmeter with yellow LED low voltage indicator light. (Direct Data Bus)
 - e. Engine temperature gauge with high temperature buzzer and red LED indicator light and low coolant level indicator light. (Direct Data Bus)
 - f. Oil Pressure gauge with low pressure buzzer and red LED indicator light. (Direct Data Bus)
 - g. Air cleaner restriction gauge with indicator light.
 - h. Fuel gauge with yellow LED low fuel indicator light.
 - i. Fuel filter restriction light (yellow).
 - j. Transmission temperature gauge (measuring converter outlet temperature) and high temperature buzzer and red LED indicator light. (Direct Data Bus)
 - k. Primary and secondary air reservoir pressure gauges with low air pressure buzzer and red LED indicator lights. (Direct Data Bus)
 - l. Air application gauge (each axle).
 - m. Parking brake "ON" light.
 - n. Cab not latched indicator light.
 - o. DPF regeneration indicator light.
 - p. DEF fluid level gauge.
- 2.187.7 All instruments shall have SAE J1939 direct data bus interface. The instruments shall have black bezels, multi-color graphics, 270-degree pointer sweep, red LED backlighting, tip to hub illuminated pointers, return to zero feature and integral LED warning lights. Use of apparatus manufacturer's face plate is unacceptable.
- 2.187.8 All data bus instrument options, i.e., programming warning light colors and activation points, dial graphics and fonts, etc., shall be approved by the County at pre-construction meeting.
- 2.187.9 The engine and transmission temperature gauge graphics shall display the temperature in 10 degree increments.
- 2.187.10 The instruments shall have English graphics and displays only. Metric graphics or displays are unacceptable.
- 2.187.11 All warning lights shall either be integral in the gauge or adjacent to its corresponding gauge.
- 2.187.12 Provide separate, standard layout diagnostic/warning light bar with seven (7) digit odometer. Odometer to read with battery on, ignition off.
- 2.187.13 Separate sending units shall be provided for the instrument panel fuel gauge. Float-type sending units with moving parts unacceptable.
- 2.187.14 Low air buzzer shall sound different than low oil pressure and high temperature buzzers. Custom buzzer options and events to be approved by Riverside County Fire at pre-con.
- 2.187.15 All panel mounted data bus instruments, warning lights and buzzers shall be activated by a pushbutton test switch mounted convenient to the vehicle operator.
- 2.187.16 Provide a matching speedometer in the officer position overhead with direct data bus input.
- 2.187.17 Provide an audible and visual warning system to alert both the driver and tiller operator when the tractor and trailer approaches the maximum allowable "jackknife" angle.

CONTRACTOR Complies with Section 2.187: NO

2.188 Audible Alarms

Air Filter Restriction; Cab Tilt Lock; Check Engine; Check Transmission; Open Door/Compartment; High Coolant Temperature; High or Low System Voltage; High Transmission Temperature; Low Air Pressure; Low Coolant Level; Low DEF Level; Low Engine Oil Pressure; Low Fuel; Seatbelt Indicator; Stop Engine; Water in Fuel

Extended Left/Right Turn Signal On; ABS System Fault.

CONTRACTOR Complies with Section 2.188: YES

2.189 Backlighting Color

The instrumentation gauges and the switch panel legends shall be backlit using red LED backlighting. There shall be a brightness adjustment located in the instrument panel.

CONTRACTOR Complies with Section 2.189: NO

2.190 Auxiliary Speedometer

Auxiliary speedometer shall be integrated into the Vista digital display.

CONTRACTOR Complies with Section 2.190: YES

2.191 Air Pressure Gauge Auxiliary Air Tank

The dash panel shall include an additional air pressure gauge for the auxiliary air tank.

CONTRACTOR Complies with Section 2.191: YES

2.192 Cab Exterior Protection

The cab face shall have a removable plastic film installed over the painted surfaces to protect the paint finish during transport to the body manufacturer.

CONTRACTOR Complies with Section 2.192: YES

2.193 Fire Extinguisher

A 2.50-pound D.O.T approved fire extinguisher with BC rating shall be shipped loose with the cab.

CONTRACTOR Complies with Section 2.193: YES

2.194 Door Keys

The cab and chassis shall include a total of four (4) door keys for the manual door locks.

CONTRACTOR Complies with Section 2.194: YES

2.195 Warranty

The chassis manufacturer shall provide a limited parts and labor warranty to the original purchaser of the custom-built cab and chassis for a period of twenty-four (24) months, or the first 36,000 miles, whichever occurs first. The warranty period shall commence on the date the vehicle user places it into service.

CONTRACTOR Complies with Section 2.195: YES

2.196 Chassis Operation Manual

There shall be one (1) Hard copy and two (2) digital copies of the chassis operation manual provided with the chassis. The digital data shall include a parts list specific to the chassis model. The digital copies shall be provided on thumb drives.

CONTRACTOR Complies with Section 2.196: YES

2.197 Engine and Transmission Operation Manuals

The following manuals specific to the engine and transmission models ordered will be included with the chassis in the ship loose items:

- a. (2) Hard copies of the Engine Operation and Maintenance manual with CD
- b. (2) Digital copies of the Transmission Operator's manual (thumb drives)
- c. (2) Digital copies of the Engine Owner's manual (thumb drives)

CONTRACTOR Complies with Section 2.197: YES

2.198 Engine Service Manuals

There shall be two (2) printed hard copy sets of Cummins ISX 15 engine service reference manuals which shall be provided with the chassis.

CONTRACTOR Complies with Section 2.198: YES

2.199 Transmission Service Manuals

There shall be one (1) printed hard copy set of Allison 4000 transmission service manuals included with the chassis.

CONTRACTOR Complies with Section 2.199: YES

2.200 Cab/Chassis As-Built Wiring Diagrams

The cab and chassis shall include two (2) digital copies of wiring schematics and option wiring diagrams.

CONTRACTOR Complies with Section 2.200: YES

2.201 Driveline Layout Confirmation

During the design phase of the chassis the vendor driveline engineer shall submit the driveline layout to an OEM engineer to review the chassis design for any potential problems integrating the OEM body to the chassis. The OEM engineer shall provide approval to the driveline engineer prior to driveline bills of materials being released.

CONTRACTOR Complies with Section 2.201: YES

2.202 Overall Height

The overall height of the vehicle shall not exceed 147" (12' 3") from the ground. This measurement shall be taken with the tires properly inflated with the apparatus in the unloaded condition. The actual measurement shall be taken that highest point of the apparatus.

CONTRACTOR Complies with Section 2.202: YES

2.203 Overall Length

The overall length of the vehicle shall be approximately 672" (56').

CONTRACTOR Complies with Section 2.203: NO

2.204 Chassis Wheel Base

The chassis wheel base shall be approximately 143" (11' 11"). The measurement shall be taken from the center of the tractor front axle to the center of the tractor drive axle.

CONTRACTOR Complies with Section 2.204: NO

2.205 Tiller Wheel Base

The tiller wheel base shall be approximately 345" (28' 9"). This measurement shall be taken from the center of the tractor drive axle to the center of the tiller axle.

CONTRACTOR Complies with Section 2.205: YES

2.206 Angle of Approach

The angle of approach shall be approximately 15 degrees.

CONTRACTOR Complies with Section 2.206: NO

2.207 Angle of Departure

The angle of departure shall be approximately 14 degrees.

CONTRACTOR Complies with Section 2.207: NO

2.208 Miscellaneous Equipment Allowance (Section referenced in Question # 6)

This paragraph was deleted in its entirety via Addendum # 1 of the RFP

2.209 Hose Storage Compartment C1, Tiller Tractor

There shall be a hose storage compartment located behind the chassis cab on the tiller tractor. This compartment shall be designated as C1. The compartment shall have three fixed sides constructed of treadbrite material. In addition, the compartment shall have a lid that covers the top and front of the compartment. The compartment shall be able to hold 130' of 3" hose with 2 ½" couplings.

CONTRACTOR Complies with Section 2.209: YES**2.210 Compartment****2.210.1 CL-1**

There shall be a compartment located behind the chassis cab on the left side of the tiller tractor. This compartment shall be designated as CL1 within these specifications and any ensuing paperwork or drawings after contract execution. It shall be equipped with a single, horizontally hinged lift up, treadbrite door. Door Opening shall be a minimum of 18" Wide x 24" High. The compartment shall have a minimum usable depth of 26".

2.210.2 CL-2

A compartment shall be located behind the chassis cab on the left side of the tiller tractor. This compartment shall be designated as CL2 within these specifications and any ensuing paperwork or drawings after contract execution. It shall be equipped with a single, vertically hinged swing out door. Door Opening - 26" Wide x 30" High. The compartment shall have a usable depth of 24". There shall be one (1) Streamlight Model Fire Vulcan LED, with 12-volt vehicle charger, mounted inside the compartment. The light shall be orange in color. There shall be one (1) Zico Walkaway SCBA bracket mounted inside the compartment.

2.210.3 CL-3

A compartment shall be located behind the chassis cab on the left side of the tiller tractor . This compartment shall be designated as CL3. It shall be equipped with a single, vertically hinged swing out door. Door Opening -19" Wide x 13" High. The compartment shall have a usable depth of 12"

2.210.4 CR-1

There shall be a compartment located behind the chassis cab on the right side of the tiller tractor. This compartment shall be designated as CR1. It shall be equipped with a single, horizontally hinged lift up, treadbrite door. Door Opening shall be a minimum of 16" Wide x 23" High. The compartment shall have a minimum usable depth of 26".

2.210.5 CR-2

A compartment shall be located behind the chassis cab on the right side of the tiller tractor. This compartment shall be designated as CR2. It shall be equipped with a single, vertically hinged swing out door. Door Opening shall be a minimum of 26" Wide x 30" High. The compartment shall have a minimum usable depth of 24". There shall be one (1) Streamlight Model Fire Vulcan LED, with 12-volt vehicle charger, mounted inside the compartment. The light shall be orange in color. There shall be one (1) Zico Walkaway SCBA bracket mounted inside the compartment.

2.210.6 CR-3

A compartment shall be located behind the chassis cab on the right side of the tiller tractor. This compartment shall be designated as CR3. It shall be equipped with a single, vertically hinged swing out door. Door Opening minimum of 19" Wide x 13" High. The compartment shall have a minimum usable depth of 12".

CONTRACTOR Complies with Section 2.210: YES**2.211 Steps, Turntable Access, Tiller, Left**

For access to the turntable from the left side of the apparatus, one set of steps shall be furnished behind the tiller tractor cab. The left side tiller tractor compartments shall be an integral part of the turntable access steps. The steps shall be constructed of aluminum grip-strut. The steps shall have a maximum stepping height which shall not exceed 18" with the exception of the ground to the first step which shall not exceed NFPA standard of 24". Steps shall be illuminated for night time operation. The lights shall be activated by the parking brake. To aid in ascending and descending the access steps, handrails shall be provided in appropriate locations.

CONTRACTOR Complies with Section 2.211: YES**2.212 Steps, Turntable Access, Tiller, Right**

For access to the turntable from the right side of the apparatus, one set of steps shall be furnished behind the tiller tractor cab. The right-side tiller tractor compartments shall be an integral part of the turntable access steps. The steps shall be constructed of aluminum grip-strut. The steps shall have a maximum stepping height which shall not exceed 18" with the exception of the ground to the first step which shall not exceed NFPA standard of 24". Steps shall be illuminated for night time operation. The lights shall be activated by the parking brake. To aid in ascending and descending the access steps, handrails shall be provided in appropriate locations.

CONTRACTOR Complies with Section 2.212: YES

2.213 Hand Lanterns

There shall be two (2) Streamlight Model Fire Vulcan LED, with 12 volt vehicle chargers, mounted inside the cab. The lights shall be orange in color.

CONTRACTOR Complies with Section 2.213: YES

2.214 Cab Lift Hooks

The cab shall have two (2) removable swiveling hoist rings that allow the cab to be lifted with a mechanical hoist for service operations. These lifting points will be rated sufficiently to lift the weight of the cab and all of the contents and hold in place indefinitely. The swiveling hoist rings shall be easily removable and attached by service personnel. Cab lifting points shall integral to the cabs structure and allow the mounting of an appropriately weight rated commercially available swiveling hoist ring. Hoist ring locations shall be in the upper corner areas of the rear cab walls, both right and left sides. The exterior of the cab wall in the areas of the swiveling hoist rings shall be protected by a stainless-steel plate sized appropriately to provide protection from paint damage while lifting system is in use. The hoist ring bolt hole shall be closed by a stainless steel allen pan bolt that is threaded into a grade 8 nut that is built into the cab structure. These bolts shall be sealed to prevent any water intrusion into the cab. Access to the hoist ring mount in the interior of the cab shall be designed in. Interior access shall be covered, but easily accessible. A minimum of two swiveling hoist rings shall be provided loose with the apparatus.

CONTRACTOR Complies with Section 2.214: YES

2.215 Auxiliary Air Compressor

A Kussmaul Auto Pump 120V air compressor shall be supplied. The air compressor shall be temporarily installed behind the officer's seat with 4.00-foot additional hose length. The air compressor shall be plumbed to the air brake system to maintain air pressure.

CONTRACTOR Complies with Section 2.215: YES

2.216 Mechanics Override Switch

A mechanics override switch shall be located in the tractor cab, below the dash, on the driver's side, in an accessible but inconspicuous location. The switch shall disengage the tiller power steering pump so the apparatus may be driven as a regular tractor trailer. For mechanical locking please see Section 3.111.1 for details

CONTRACTOR Complies with Section 2.216: YES

2.217 Electric Cord Reels

There shall be two (2) Hannay 120-volt electric rewind cord reels, model ECR1616-17-18 installed on the apparatus with a push button labeled REEL REWIND installed for 12 volt rewinding for each cord reel. The reel shall be equipped with 200' of yellow STW Seoprene 105 degree Celsius 10/3 wire installed with a cable stop to prevent damage to cable fittings. Rollers shall be supplied to prevent damage to the electrical cable if pulled in any direction.

a. One cord reel shall be in CL1 and one in CR1 on the tiller chassis body.

CONTRACTOR Complies with Section 2.217: YES

2.218 Cord Reel Junction Box

There shall be two (2) Circle D model PF51G-3 electrical junction box, equipped with four (4) electrical receptacles, provided and hard wired to the cord reel. The receptacles shall be enclosed in a UL listed, NEMA Type 3R cast aluminum box with aluminum finish and NFPA required indicator light.

CONTRACTOR Complies with Section 2.218: YES

2.219 Receptacle Junction Box

There shall be eight (8) Circle D, NEMA L5-15R DPLX, duplex twist lock type receptacles installed in the junction box. The receptacle shall be rated at 15 amps and 120 volts. Receptacles shall be installed in the following locations of the junction box: 1, 2, 3, 4.

CONTRACTOR Complies with Section 2.219: YES

2.220 Volt Twist Lock, Single Receptacle

There shall be two (2), single outlet boxes. The box shall contain one (1) NEMA L5-15, 120-volt 15 ampere rating twist lock type receptacles wired to the generator. The receptacles shall have spring loaded weather resistant covers. The receptacles shall be located on the rear of the tiller body one on the left and one on the right.

CONTRACTOR Complies with Section 2.220: YES

2.221 Generator

- a. A current year Onan model, hydraulic driven generator shall be installed on the apparatus. The generator shall be rated at a minimum of 10,000 watts at 120/240 volts. Current frequency shall be stable at 60 hertz.
- b. The generator shall be a modular unit, housed in stainless steel with acoustic material added for maximum sound dampening. The modular generator shall consist of a hydraulic motor, generator, blower, cooler, and all other necessary components.
- c. For ease of maintenance, there shall be accessibility for the oil reservoir and all filters contained within the generator.

CONTRACTOR Complies with Section 2.221: YES

2.222 Manufacturing Labels

A permanent plate shall be mounted in the driver's compartment specifying the quantity and type of the following fluids that may be used in the apparatus for normal maintenance. Where a fluid is not applicable to the unit, the plate shall be marked N/A to inform the service technician who may not be familiar with the apparatus.

- a. Engine oil
- b. Engine coolant
- c. Transmission fluid
- d. Pump transmission fluid
- e. Pump primer fluid
- f. Drive axle fluid
- g. Air conditioning refrigerant
- h. Power steering fluid
- i. Cab tilt mechanism fluid
- j. Transfer case fluid
- k. Equipment rack fluid
- l. Air compressor system lubricant
- m. Generator system lubricant
- n. Front tires air pressure
- o. Rear tires air pressure

- 2.222.1 A permanent plate shall be affixed in the driver's area that states the maximum number of personnel allowed to ride on the apparatus at any time.
- 2.222.2 A sign shall be affixed in the chassis cab, in plain sight of the driver that states the overall travel height, overall length, and gross GVWR of the apparatus.
- 2.222.3 All other appropriate label to ensure safe operation of the apparatus shall be permanently affixed in conspicuous locations.

CONTRACTOR Complies with Section 2.222: YES

End of Section II – Cab & Chassis

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SECTION III – AERIAL BODY & TRAILER

3.1 Trailer Structure and Components

The tiller trailer frame shall be a gooseneck design. The frame of the trailer shall be constructed of a welded "C" channel design incorporating a forward section for the aerial turntable and a rearward section for the body and tiller. The gooseneck area frame shall have a section modulus of a minimum of 452. inches cubed and a RBM of 13,560,000 inch pounds.

- 3.1.1 There shall be two (2) hard point anchors installed on each side below the turntable.
- 3.1.2 The front goose neck section of the trailer frame shall incorporate a welded torque box to support the ladder turntable and the rear section of the trailer frame shall support the body and tiller. The front goose neck section shall be constructed with an actual minimum RBM rating of 17,500,000 inch pounds and the rear section shall be constructed with an actual minimum RBM rating of 14,450,000 inch pounds. The square corner method shall not be used for calculating the RBM.
- 3.1.3 There shall be two (2) Class IV rated receivers mounted on each side of the trailer body, directly beneath the compartments. These are in addition to the anchors below the turntable.
- 3.1.4 The fifth wheel shall have a minimum 1.25" diameter ball monorace bearing, 3.88" x 34" diameter, with the mounting plate bolted to the tractor. There shall be three grease zerks spaced at 120° intervals provided.
- 3.1.5 All grease zerks shall be readily accessible for ease of maintenance. The longitudinal pivot point mounting shall utilize two, 2" diameter steel pins. A bronze bushing with full width and circumference grease groove shall be utilized with this installation.
- 3.1.6 The trailer axle shall be a Meritor model MFS20 with a weight rating of 23,000 lbs. The trailer axle shall have a DSP Ride Tech maintenance free suspension to compensate for vehicle load changes. Deflection shall be limited by a three stage urethane spring. Two double acting shock absorbers, capable of dampening the shock of the load carried, shall be supplied per axle.
- 3.1.7 The tiller axle shall be equipped with Meritor, 16.5" x 6" S-cam type brakes with automatic slack adjusters. Spring brakes are necessary on both the rear tractor and trailer axles to hold the vehicle on a 32 percent grade. A Meritor Wabco anti-lock braking system shall be installed on the Arvin Meritor axles. A dash mounted warning light shall be provided in the tractor cab to notify the driver of a system malfunction.
- 3.1.8 The trailer brakes shall be plumbed to a brake release control valve in the tractor cab within easy reach of the driver and officer seat position and shall be labeled as to its function. An "ON" indicator light shall be installed in the tractor cab dash adjacent to the control.
- 3.1.9 The trailer tiller axle 22.5 x 12.25, hub piloted wheels shall be Alcoa polished. The wheels shall be 120 psi rated. Tires shall be Continental steel belted radials 425/65R22.5 "L" HTR2.
- 3.1.10 A TRW TAS-85 hydraulic power assist steering gear with a hydraulic power assist cylinder shall be provided.
- 3.1.11 A lock bar and a tiller power steering pump override switch shall be provided so the apparatus may be driven as a regular truck and trailer.
- 3.1.12 Provisions shall be provided at the front and rear for easy lubrication, service and repair.

CONTRACTOR Complies with Section 3.1: NO

3.2 Tiller Cab Structure and Components

A fully enclosed tiller cab that may be removed for repair in the event of cab damage shall be provided. The tiller cab shall have a maximum exterior width of 42" and a minimum interior floor to ceiling height of 55". The lower 4" of the tiller cab shall have a polished stainless steel toe kick around the walk areas.

- 3.2.1 The tiller cab roof panel assembly shall have extruded hat section supports welded to the roof skin. The roof hat sections shall be joined to the cab roof rail section to complete the upper cab skeletal structure. The completed roof panel rails shall provide a grid for maximum roof strength.

The front wall shall be designed with a double wall construction to reduce the effects of exterior noise.

- 3.2.2 Instruments and warning lights shall be conveniently located in the operator area of the cab on one of two operator control panels. The panels shall be hinged for easy access to warning light connections. All instruments and warning lights shall be easily visible to the tiller driver.
- 3.2.3 The interior of the cab shall be gray Line-X. The color of any vinyl upholstery shall match the upholstery of the cab seats.
- 3.2.4 The tiller operator's seat shall be an USSC Valor G2A - R-Style back, ABTS seat with dual retractor 3-point seat belts. The seat shall include "Ready Reach" seatbelt extension.
- 3.2.5 The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.
- 3.2.6 The seat shall have a minimum of 37" from the seat H-point to the headliner. The female seat belt clasp shall extend up from the seat base 14" to be within easy reach of the occupant.
- 3.2.7 The tiller cab shall meet current NFPA standards for tiller cab roll over protection.

CONTRACTOR Complies with Section 3.2: NO

3.3 Doors

The tiller cab shall be provided with horizontal sliding doors on each side of the cab. The door shall open so as to provide unobstructed access to the tiller cab. The door when closed shall lock in place. An aluminum drip rail shall be installed above the door to prevent water from entering. The door shall be equipped with slide open tinted automotive safety type windows. The window shall provide maximum visibility for the tiller operator. Spray applied tint shall not be acceptable. The inside of the tiller cab doors shall be covered with gray line-X.

CONTRACTOR Complies with Section 3.3: YES

3.4 Rear Window

There shall be a rear window provided in the tiller cab that shall drop down to open. The window shall have automotive type tinted safety glass and shall provide maximum visibility for the tiller operator. Spray applied tint shall not be acceptable.

CONTRACTOR Complies with Section 3.4: YES

3.5 Windshield

- 3.5.1 The tiller cab shall not have windshield corner posts that inhibit the tiller operator's field of vision. The windshield shall be readily available and non-proprietary.
- 3.5.2 Provide a self-parking, electric windshield wiper motor. Two speed switches to be mounted in the tiller cab's overhead switch panel. The wiper motor shall have an access panel and be easily serviceable.
- 3.5.3 A windshield washer system shall be provided. The control switch to be mounted in the tiller cab's overhead switch panel. The windshield wipers shall turn off when the parking brake is set.
- 3.5.4 The windshield shall be large enough as to provide maximum visibility for the tiller operator.

CONTRACTOR Complies with Section 3.5: YES

3.6 Steering Column

There shall be a steering column with telescoping/tilt feature provided. The steering wheel shall be a minimum of 18 in diameter and shall align with the center of the tiller operators' seat. There shall be a high beam switch lever located on the right side of the steering column that shall activate the forward-facing tiller driving lights, and a blinker lever located on the left side of the steering column that shall activate the left and right turn tiller driving lights. All grease fittings shall be easily accessible.

CONTRACTOR Complies with Section 3.6: YES

3.7 Turn Indicator Lights

Amber turn signal indicator lights shall be mounted in the upper right and upper left corners of the tiller cab, and on the lower tiller cab control panel. The lights shall alert the tiller operator of the tractor driver's intent.

CONTRACTOR Complies with Section 3.7: YES

3.8 Transmission Selector Safety Switch

There shall be a pressure foot switch located on the tiller cab floor to the right of the steering column tied to the tractor transmission selector. The switch shall require a seated operator in the tiller cab to engage a foot switch before the tractor transmission can be shifted into gear. The switch shall need to be reset any time after the parking brake has been engaged. In addition there shall be a light in the tractor cab that when illuminated shall indicate to the driver that the tiller operator is not in position and the safety foot switch has not been depressed.

CONTRACTOR Complies with Section 3.8: YES

3.9 Buzzer Signaling System

There shall be a buzzer signaling system provided between the tractor cab and the tiller cab. The signaling system shall include an activation switch and buzzer located in the tractor cab. The buzzer shall be controlled by a foot switch located on the floor to the left of the tiller drivers steering column or by a switch located in the center of the steering wheel. A switch in the tractor cab located within reach of the driver shall allow the tractor operator to reply to the tiller operator's signal. The buzzer shall not use warning devices provided for low air, ignition, or any other components. Buzzers shall be audible when headsets are worn. The switch shall be labeled 1-Stop, 2-Go, and 3-Back-up.

CONTRACTOR Complies with Section 3.9: YES

3.10 Dimmer Switch

Provide a dimmer switch to control the tiller cabs overhead switch panel illumination. The dimmer switch shall be located in the overhead switch panel.

CONTRACTOR Complies with Section 3.10: YES

3.11 Tiller Cab Heating and Air Conditioning System

3.11.1 The venting for the heating and air conditioning system shall be designed to serve the functions of heating, cooling and defrosting the tiller cab.

3.11.2 The tiller cab shall be equipped with a 110-volt Coleman Mach 8 Roughneck low profile high capacity air conditioning system shall be provided to cool the crew area of the cab. The system shall consist of one (1) 110-volt air conditioning roof mounted unit. The cover of the air conditioning unit shall be painted the trailer body color. The system shall be pre-wired with enough cable for the body builder to connect to a 110-volt power source. The air conditioning system shall be wired to a transfer switch allowing for power supplied via shorepower and/or generator. All components including compressor, condenser and evaporator shall be mounted in a single sound shielded aluminum case. The system shall also include a heat strip. The system controls shall be in the tiller operators upper control panel. The keypad control shall feature a plastic housing, sealed membrane keypad and electronics with anticorrosion coating. The keypad shall have a large easy to read digital display that shall show temperature, set point, and fault code warnings.

CONTRACTOR Complies with Section 3.11: YES

3.12 Tiller Cab Rear Vents

There shall be two (2) manual vents supplied at the rear of the tiller cab to insure adequate ventilation.

CONTRACTOR Complies with Section 3.12: YES

3.13 Defogger Fans

There shall be two (2) defogger fans located in the tiller cab. The fans shall be pointed at the front windshield of the cab.

CONTRACTOR Complies with Section 3.13: YES

3.14 Auxiliary Fans

There shall be two (2) auxiliary fans installed inside the tiller cab.

CONTRACTOR Complies with Section 3.14: YES

3.15 Rear View Mirror, Tiller Cab

3.15.1 There shall be one set of rear view mirrors installed on the tiller cab. The mirrors shall be located on the front outside portion of the tiller cab to provide the tiller operator with a maximum view of the rear of the apparatus.

3.15.2 There shall also be a set of rear view mirrors (round/convex style) mounted on the trailer sides above the trailer axle.

CONTRACTOR Complies with Section 3.15: YES

3.16 Rear Axle Steering Display

Exact model shall be determined at pre-construction meeting.

CONTRACTOR Complies with Section 3.16: YES

3.17 Steps, Tiller Cab Access, Left

For access to the tiller cab, one set of steps shall be furnished at the left rear of the apparatus at the furthest point behind the tiller trailer axle. The steps shall be constructed of aluminum grip-strut. The steps shall have a maximum stepping height which shall not exceed 18" with the exception of the ground to first step which shall not exceed NFPA standard of 24". Steps shall be illuminated for night time operation. The lights shall be activated by the parking brake. To aid in ascending and descending the access steps, handrails shall be provided on each side. The steps and handrails shall have LED lighting incorporated into each.

CONTRACTOR Complies with Section 3.17: YES

3.18 Steps, Tiller Cab Access, Right

For access to the tiller cab, one set of steps shall be furnished at the right rear of the apparatus at the furthest point behind the tiller trailer axle. The steps shall be constructed of aluminum grip-strut. The steps shall have a maximum stepping height which shall not exceed 18" with the exception of the ground to first step which shall not exceed NFPA standard of 24". Steps shall be illuminated for night time operation. The lights shall be activated by the parking brake. To aid in ascending and descending the access steps, handrails shall be provided on each side. The steps and handrails shall have LED lighting incorporated into each.

CONTRACTOR Complies with Section 3.18: YES

3.19 Aluminum

All body compartments shall be fabricated of 1/8", 5052-H32, smooth aluminum plate. The complete body shall be fabricated using break and bend techniques to form strong yet flexible.

CONTRACTOR Complies with Section 3.19: YES

3.20 Body Subframe

The main body sub frame shall be constructed from galvanized steel tubing. The sub frame shall be located at the front and rear of the body and in front and rear of the wheel well opening.

a. The compartment area behind the rear axle shall be supported by a drop frame fabricated of steel tube and angles. All drop frame structures shall be welded directly to the torque box to allow the body to be a separate structure from the chassis

CONTRACTOR Complies with Section 3.20: NO**3.21 Vertical Hinges**

All vertical hinges shall be designed as to prevent the hinge pin from coming loose and sliding up or down.

CONTRACTOR Complies with Section 3.21: YES

3.22 Compartments Left Side**3.22.1 Compartment LO (Section referenced in Question # 8)**

There shall be a compartment located above the front stabilizer on the left side of the apparatus body. This compartment shall be designated as LO. It shall be equipped with a single, horizontally hinged lift up, treadbrite door. The compartment shall be able to hold One (1) 8' Werner NXT1A08 Type IA fiberglass single sided step ladder. The compartment shall be transverse.

3.22.2 Compartment L1

A compartment shall be located above the front stabilizers on the left side of the apparatus body. This compartment shall be designated as L1. It shall be equipped with a single, horizontally hinged lift-up treadbrite door. Door Opening minimum 30" Wide x 15" High. The compartment shall be transverse. The compartment floor shall be lined with a poly type material to allow the stokes basket to slide in and out of the compartment.

3.22.3 Compartment L2

3.22.3.1 A compartment shall be located behind the front stabilizers on the left side of the apparatus body. This compartment shall be designated as L2. It shall be equipped with a single, vertically hinged swing out door. Door Opening minimum 20" Wide x 40" High. The compartment upper portion minimum 20" wide x 11" high shall have a usable depth of minimum 23" The compartment lower portion 20" wide x 29" high shall be transverse.

3.22.3.2 The entire 120/240-volt electrical system shall be installed in compliance with NFPA 1901 newest edition. This shall include all testing, labeling, wiring methodology, and dimensional requirements. Certification of compliance shall accompany the apparatus at the time of delivery.

3.22.3.3 There shall be a 120/240-volt load center incorporated into the 120/240-volt wiring system. The load center shall include adequate circuit breakers to protect the loads specified on this apparatus.

3.22.3.4 All 120/240-volt AC wiring shall be done in accordance with NFPA 1901 newest edition as well as nationally accepted electrical codes.

3.22.3.5 The compartment shall have branch circuit overcurrent protection in accordance with NFPA 1901 newest version. The load center shall be equipped with a non-GFI two pole main breaker when the six or more individual branch circuits are present. Over current protection devices shall be marked with labels to identify the function of the circuit they protect.

3.22.3.6 There shall be a FROG D provided with the generator. The FROG D shall automatically sense a generator signal and begin displaying information. The digital meter display shall constantly monitor and display voltage, frequency and current draw on two separate lines. The display shall be capable of displaying total accumulated run time hours when the MODE button is pressed. The information shall be stored in a non-erasable memory. The FROG display shall be located next to the load center in L-2.

3.22.4 Compartment L3

A compartment shall be located behind the front stabilizers on the left side of the apparatus body. This compartment shall be designated as L3. It shall be equipped with double vertically hinged swing-out doors. Door Opening minimum 35" Wide x 60" High. The compartment upper portion minimum 35" wide x 16" high shall be transverse. The compartment intermediate portion minimum 35" wide x 13" high shall have a usable depth of minimum 23". The compartment lower portion minimum 35" wide x 29" high shall be transverse.

3.22.5 Compartment L4

There shall be a full height compartment located behind the front stabilizers on the left side of the apparatus body. This compartment shall be designated as L4. It shall be equipped with double, vertically hinged swingout doors. Door Opening - 35" Wide x 60" High. The compartment upper portion 35" wide x 16" high shall be transverse. The compartment intermediate portion 35" wide x 13" high shall have a usable depth of 23" The compartment lower portion 35" wide x 29" high shall be transverse.

3.22.6 Compartment L5

There shall be a full height compartment located behind the front stabilizers on the left side of the apparatus body. This compartment shall be designated as L5. It shall be equipped with double, vertically hinged swingout doors. Door Opening - 35" Wide x 60" High. The compartment upper portion 35" wide x 12" high shall be transverse. The compartment intermediate portion 35" wide x 35" high shall have a usable depth of 13.5" The compartment lower portion 35" wide x 13" high shall be transverse.

3.22.7 Compartment L6

There shall be a full height compartment located behind the front stabilizers on the left side of the apparatus body. This compartment shall be designated as L6. It shall be equipped with double, vertically hinged swingout doors. Door Opening minimum 35" Wide x 60" High. The compartment upper portion minimum 35" wide x 12" high shall be transverse. The compartment intermediate portion minimum 35" wide x 35" high shall have a usable depth of minimum 13.5" The compartment lower portion minimum 35" wide x 13" high shall be transverse.

3.22.8 Compartment L7

There shall be a compartment located in front of the rear trailer axle on the left side of the apparatus body. This compartment shall be designated as L7. It shall be equipped with a single, vertically hinged swing-out door. Door Opening minimum 26" Wide x 29" High. The compartment shall have a usable depth of minimum 20".

3.22.9 Compartment L8

There shall be a compartment located behind the rear trailer axle on the left side of the apparatus body. This compartment shall be designated as L8. It shall be equipped with a single, vertically hinged swing-out door. Door Opening minimum 32" Wide x 39" High. The compartment upper portion shall have a minimum usable depth of 13.5". The compartment lower portion shall have a minimum usable depth of 24".

3.22.10 Compartment L9

There shall be a compartment located in front of the rear trailer axle above compartment L7 on the left side of the apparatus body. This compartment shall be designated as L9. It shall be equipped with a single, horizontally hinged flip-down door. Door Opening minimum 24" Wide x 15" High. The compartment shall be transverse.

CONTRACTOR Complies with Section 3.22: NO

3.23 Compartments Right Side

3.23.1 Compartment RO

There shall be a compartment located above the front stabilizer on the right side of the apparatus body. This compartment shall be designated as RO. It shall be equipped with a single, horizontally hinged lift up, treadbrite door. The compartment shall be able to hold One (1) 8' Werner NXT1A08 Type IA fiberglass single sided step ladder. The compartment shall be transverse.

3.23.2 Compartment R1 (change in Amendment # 1)

A compartment shall be located above the front stabilizers on the right side of the apparatus body. This compartment shall be designated as R1. It shall be equipped with a single, horizontally hinged lift-up treadbrite door. Door Opening minimum 30" Wide x 15" High. The compartment shall be transverse. The compartment floor shall be lined with a poly type material to allow the stokes basket to slide in and out of the compartment.

3.23.3 Compartment R2

A compartment shall be located behind the front stabilizers on the right side of the apparatus body. This compartment shall be designated as R2. It shall be equipped with a single, vertically hinged swing out

door. Door Opening minimum 20" Wide x 40" High. The compartment upper portion minimum 20" wide x 11" high shall have a usable depth of minimum 23". The compartment lower portion minimum 20" wide x 29" high shall be transverse.

3.23.4 Compartment R3

A compartment shall be located behind the front stabilizers on the right side of the apparatus body. This compartment shall be designated as R3. It shall be equipped with double vertically hinged swing-out doors. Door Opening minimum 35" Wide x 60" High. The compartment upper portion minimum 35" wide x 16" high shall be transverse. The compartment intermediate portion minimum 35" wide x 13" high shall have a usable depth of minimum 23". The compartment lower portion minimum 35" wide x 29" high shall be transverse.

3.23.5 Compartment R4

There shall be a full height compartment located behind the front stabilizers on the right side of the apparatus body. This compartment shall be designated as R4. It shall be equipped with double, vertically hinged swingout doors. Door Opening minimum 35" Wide x 60" High. The compartment upper portion minimum 35" wide x 16" high shall be transverse. The compartment intermediate portion minimum 35" wide x 13" high shall have a minimum usable depth of 23" The compartment lower portion minimum 35" wide x 29" high shall be transverse.

3.23.6 Compartment R5

There shall be a full height compartment located behind the front stabilizers on the right side of the apparatus body. This compartment shall be designated as R5. It shall be equipped with double, vertically hinged swingout doors. Door Opening minimum 35" Wide x 60" High. The compartment upper portion minimum 35" wide x 12" high shall be transverse. The compartment intermediate portion minimum 35" wide x 35" high shall have a minimum usable depth of 13.5" The compartment lower portion minimum 35" wide x 13" high shall be transverse.

3.23.7 Compartment R6

There shall be a full height compartment located behind the front stabilizers on the right side of the apparatus body. This compartment shall be designated as R6. It shall be equipped with double, vertically hinged swingout doors. Door Opening minimum 35" Wide x 60" High. The compartment upper portion minimum 35" wide x 12" high shall be transverse. The compartment intermediate portion minimum 35" wide x 35" high shall have a usable depth of minimum 13.5" The compartment lower portion minimum 35" wide x 13" high shall be transverse.

3.23.8 Compartment R7

There shall be a compartment located in front of the rear trailer axle on the right side of the apparatus body. This compartment shall be designated as R7. It shall be equipped with a single, vertically hinged swing-out door. Door Opening minimum 26" Wide x 29" High. The compartment shall have a usable depth of minimum 20".

3.23.9 Compartment R8

There shall be a compartment located behind the rear trailer axle on the right side of the apparatus body. This compartment shall be designated as R8. It shall be equipped with a single, vertically hinged swing-out door. Door Opening minimum 32" Wide x 39" High. The compartment upper portion shall have a minimum usable depth of 13.5" The compartment lower portion shall have a minimum usable depth of 24"

3.23.10 Compartment R9

There shall be a compartment located in front of the rear trailer axle above compartment R7 on the right side of the apparatus body. This compartment shall be designated as R9. It shall be equipped with a single, horizontally hinged flip-down door. Door Opening minimum 24" Wide x 15" High. The compartment shall be transverse.

CONTRACTOR Complies with Section 3.23: NO

3.24 Compartment Scuff Platers

Anodized aluminum angle scuff plates shall be installed in the bottom sill area of all major equipment carrying compartments to reduce paint damage from equipment. The scuff plates shall be attached using a permanent bonding double sided tape.

CONTRACTOR Complies with Section 3.24: YES

3.25 Sweep-Out Construction

Compartment floors shall have a "sweep-out" design with the door opening threshold positioned lower than compartment floor, permitting easy cleaning of compartments.

CONTRACTOR Complies with Section 3.25: YES

3.26 Compartment Door Construction

The lap type compartment doors shall be of double panel construction. The outer panel shall be fabricated of .190, 5052-H32 aluminum and the inner panel of .125, 3003-H14 aluminum. There shall be a heavy-duty automotive type extruded rubber molding installed on the overlap area of the doors to insure a weatherproof seal and prevent water from collecting in the door sills. All of the compartment doors shall have a polished stainless steel continuous hinge connected to both the body and the door with stainless steel bolts and nuts. The hinge pin shall be stainless steel with a minimum diameter of 1/4".

CONTRACTOR Complies with Section 3.26: YES

3.27 Compartment Locking Door Handles, Double Pan Doors

Exterior door latches shall incorporate a polished LOCKING D-paddle handle with rotary style latch. For ease of operation, the D-handle opening shall be large enough to accommodate a gloved hand. There shall be a safety latch with striker plate included with the door handle assembly. No lock shall be installed on compartment where cab lift control is located.

CONTRACTOR Complies with Section 3.27: YES

3.28 Compartment Door Holders Gas Struts

3.28.1 Gas strut with dampeners door holders shall be furnished on all vertically hinged, swing-open compartment doors to hold the door in either the fully open or partially closed position. The door holder shall close the door automatically when it is positioned past center or return the door to the fully open position if the center point is not reached and the door is released.

3.28.2 On compartments having double doors, the secondary door shall have a latch mechanism to secure the door when the primary door is opened

CONTRACTOR Complies with Section 3.28: YES

3.29 Compartment Door Holders, Gas Struts

Gas strut with dampeners door holders shall be furnished on all horizontally hinged, lift-up compartment doors to hold the door in either the fully open or partially closed position and assist in raising it. The door holder shall close the door automatically when it is positioned past center or return the door to the fully open position if the center point is not reached and the door is released.

CONTRACTOR Complies with Section 3.29: YES

3.30 Rear Compartment, Tiller

There shall be a compartment located at the rear of the apparatus. The compartment shall have a single horizontally hinged lift up door. The compartment shall extend in depth to the front of the torque box assembly and shall have a framework installed to hold the proper compliment of ladders and tools specified in sections 301.75 and 301.76.

CONTRACTOR Complies with Section 3.30: YES**3.31 Storage Compartment, Rear, Below Torque Box Compartment T4**

There shall be a compartment located at the rear of the apparatus below the torque box compartment. This compartment shall be designated as T4. The compartment shall have a horizontally hinged flip down door. Door Opening minimum 30" wide x 9" high. The compartment shall have a usable depth of minimum 72".

CONTRACTOR Complies with Section 3.31: YES**3.32 Aluminum Tray(s) for Pike Pole Storage**

There shall be four (4) aluminum tray(s) for storage of pike pole(s) installed in the storage compartment located below the torque box compartment. The following pike poles shall be supplied with the apparatus.

- a. Two (2) 6' Aluminum D-Handle Fiberglass Rubbish Hook, Nupla RH-6DA
- b. Two (2) 4' Aluminum D-Handle Fiberglass Ceiling & Wall Hook, Nupla CWH-4YDA

CONTRACTOR Complies with Section 3.32: YES**3.33 Storage Compartment, Tiller, Right Side, Rear Compartment T3**

There shall be a storage compartment located on the right rear of the tiller body. This compartment shall be designated as T3. The compartment shall have a vertically hinged treadbrite door with a pop latch. Door Opening minimum 9" wide x 18" high. The compartment shall have a minimum usable depth of 15". The compartment shall not have any venting into any other compartment as this compartment is designed for portable fuel storage.

CONTRACTOR Complies with Section 3.33: YES**3.34 Storage Compartment, Tiller, Left Side, Rear Compartment T2**

There shall be a storage compartment located on the left rear of the tiller body. This compartment shall be designated as T2. The compartment shall have a vertically hinged treadbrite door with a pop latch. Door Opening minimum 9" wide x 18" high. The compartment shall have a minimum usable depth of 15". There shall be a female air connection located in the compartment to allow for connecting an air hose.

CONTRACTOR Complies with Section 3.34: YES**3.35 Door Handle, Locking Single Pan Lap Type Door**

- 3.35.1 Exterior door latches shall incorporate a polished LOCKING D-paddle handle with rotary style latch. For ease of operation, the D-handle opening shall be large enough to accommodate a gloved hand.
- 3.35.2 Double doors shall utilize concealed rotary latches on the secondary door, actuated by a recessed stainless steel paddle handle. The door design shall not impede into the compartment opening when in the open position. The watertight door seal shall exceed the current KKK-1822 water infiltration standards.

CONTRACTOR Complies with Section 3.35: YES**3.36 NFPA Step Requirements**

All steps shall have a surface area of at least 35 square inches and shall be able to withstand a load of at least 500 pounds. Steps shall be provided at any area that personnel may need to climb and shall be adequately lighted.

CONTRACTOR Complies with Section 3.36: YES**3.37 Stokes Basket Storage**

Provisions shall be provided on the R1/L1 compartment for storage of one (1) Stokes Basket, and one backboard.

CONTRACTOR Complies with Section 3.37: YES**3.38 Frame Ladder Storage (Inside Compartment)**

Storage provisions shall be provided in a transverse compartment for the following ladder (s):

- a. One (1) 8' Werner NXT1A08 Type IA fiberglass single sided step ladder shall be provided with the apparatus.

The ladder shall be stored in the RO compartment above the stabilizers.

CONTRACTOR Complies with Section 3.38: YES

3.39 Compartment Venting

Each body compartment shall be properly vented in a manner that will reduce the amount of dirt and water that may enter the compartment. Venting shall be directly to the atmosphere rather than into another compartment, which would only spread moisture throughout the body rather than dissipate it. Additionally, each compartment shall be equipped with drain holes to allow standing water to exit.

CONTRACTOR Complies with Section 3.39: YES

3.40 Ultra Stainless Screws

Stainless steel screws shall be provided throughout the body in locations such as overlays and other numerous hardware mounting locations.

CONTRACTOR Complies with Section 3.40: YES

3.41 Stepping, Standing, Walking Surfaces

All exterior surfaces designated by the manufacturer as stepping, standing, or walking areas shall be constructed of Grip Strut or Textured Treadbrite and shall provide a highly slip resistant surface, even when the surface is wet. All interior surfaces designated by the manufacturer as stepping, standing, or walking areas shall be slip resistant when the surface is dry. The degree of slip resistance shall be in compliance with the intent of NFPA 1901 newest version. It is the desire of the fire department to purchase an apparatus that utilizes aluminum treadplate as an overlay of the main apparatus body structure. Aluminum treadplate may also be utilized in the construction of enclosure doors, lids and covers where applicable. Aluminum treadplate is not to be utilized as a main structural member of the apparatus body or pump enclosure.

CONTRACTOR Complies with Section 3.41: YES

3.42 Walkways and Overlays

The running boards and walkways shall be constructed of structural sheet metal that is integral with the body. They shall be overlaid with aluminum tread plate material to provide a slip resistant surface, resulting in a full 1/4" thickness for maximum strength. Overlays shall be installed that are totally insulated from the apparatus with nylon shoulder washers that extend into holes in the body. Stainless steel cap nuts shall be employed where bolt ends may damage equipment or cause injury. After the apparatus is painted and the overlays are reinstalled, they shall be additionally sealed at the edges with a caulking compound.

Tread plate overlays shall be provided in the following areas:

- a. All walkways and running board
- b. The entire rear surface of the body below the tiller cab.
- c. Gooseneck portion of the tiller trailer.
- d. The top surface of the tiller trailer, bending over the outside edge to form a drip rail.
- e. The fifth wheel area of the tiller tractor forming a complete cover over the chassis frame.

CONTRACTOR Complies with Section 3.42: YES

3.43 Mud Flaps

Two (2) mud flaps (black no writing) shall be installed on the apparatus to the rear of the wheel well. The mud flaps shall be a minimum of 3/8" thick to prevent "sailing".

CONTRACTOR Complies with Section 3.43: YES

3.44 Rear Wheel Wells Tiller Trailer

The fenders shall be integral with the body sides and compartments with a seamless appearance. The fenders shall be fitted with bolt-in removable full circular inner liners in the wheel well area for ease of cleaning and maintenance.

CONTRACTOR Complies with Section 3.44: YES

3.45 Rear Fenderettes

Two (2) stainless steel fenderettes shall be installed at the outboard edge of the rear wheel well area, one on each side. The fenderettes shall be bolted to the apparatus body using nylon washers to space them slightly away from the body to reduce build-up of road grime. The fenderettes shall be constructed of stainless steel that has been polished to a high-quality finish.

CONTRACTOR Complies with Section 3.45: YES

3.46 Body Rub Rails

Rub rails shall be installed beneath the compartment doors to protect them from damage should the body be brushed or rubbed against another object. The rub rails shall be 3/16 inch aluminum channel, 2-1/2 inch x 1 inch. The rub rails shall be highly polished and then Bright Dip anodized. It shall be installed on the body utilizing non-corrosive nylon spacers and secured with stainless steel bolts. The outside edge of the rub rails shall be even with the fenderettes and bolt-on steps to prevent snagging.

CONTRACTOR Complies with Section 3.46: YES

3.47 Two Rear Tow Eyes

There shall be two (2) chrome plated tow eyes installed at the rear of the apparatus. The tow eyes shall be bolted to a heavy-duty assembly that is welded to the torque box. The tow eyes shall have a 2-1/2" ID hole.

CONTRACTOR Complies with Section 3.47: YES

3.48 Handrails, Grab Rails and Steps

Handrails shall be stainless steel tubing of not less than 1-1/4" in diameter covered with ribbed rubber grips. All railing shields and brackets shall be chrome plated, and bolted with stainless steel bolts. The lower bracket on all vertical handrails shall have a drain hole drilled in it at the lowest point. Handrails shall be provided in the following areas:

- a. Handrail(s) for left and right turntable access steps.
- b. Vertical handrail on left and right tiller cab access steps.

CONTRACTOR Complies with Section 3.48: YES

3.49 Dri-Dek Tiles

There shall be Dri-Dek tiles provided with the apparatus. The tiles shall be black in color. When installed in compartments, yellow leading edges shall be provided.

CONTRACTOR Complies with Section 3.49: YES

3.50 Shelving Channels

There shall be twenty (20) Strut channels installed in twenty (20) standard height compartment(s) for future shelves.

CONTRACTOR Complies with Section 3.50: YES

3.51 Adjustable Shelves

There shall be twenty-five (25) adjustable shelves installed on the apparatus. The shelves shall be constructed of 3/16" aluminum sheet with 2" lips. The shelves shall have an abraded finish. The shelves shall be designed in such a manner that will allow liquids to readily drain when spilled. The shelves shall be installed in the EMS compartment supplied with the chassis cab.

CONTRACTOR Complies with Section 3.51: YES**3.52 Roll Out Equipment Tray(s)**

There shall be eight (8) rollout tray(s) installed on the apparatus. Each tray shall be provided with a SlideMaster™ model SM3-MP roller type assembly. The roller assembly shall have a rated capacity of 6001b distributed load, and shall have 100% extension capabilities. A mechanical lock assembly shall be provided to lock the tray in the extended position and the retracted position. The tray(s) shall be constructed of 3/16" aluminum sheet with 3" lips. The tray(s) shall have an abraded finish. The tray roller assembly shall have a power coated finish for added corrosion protection.

CONTRACTOR Complies with Section 3.52: YES**3.53 Wheel Well Storage**

3.53.1 There shall be a compartment on the right and left side in the rear wheel well area on the front side of the trailer axle. The compartment shall be able to accommodate two (2) 60-minute carbon fiber cylinders with valve (Scott Part # 804723-01). The compartment shall have drain holes towards the rear wall. The rear wall of the compartment shall have rubber padding to prevent damage when the bottle comes in contact with the wall. The compartment doors shall be vertically hinged, weather stripped and shall be painted to match the trailer.

3.53.2 There shall also be a compartment on the right and left side in the rear wheel well area on the rear side of the trailer axle. The compartment on the right side shall be able to accommodate two (2) 2.5-gallon pressurized water extinguishers. The compartment on the left side shall be able to accommodate a 20lb Ansul cartridge dry chemical fire extinguisher. The compartment doors shall be vertically hinged, weather stripped and shall be painted to match the trailer.

CONTRACTOR Complies with Section 3.53: YES**3.54 Ground Ladders, Tiller**

3.54.1 All ground ladders, unless otherwise specified herein, shall be individually mounted vertically, side by side, on their beams, in a ground ladder storage compartment accessible from the rear of the trailer. The compartment shall be fully enclosed and shielded from underside road debris and moisture. All ladders shall be capable of being removed independently without removing another and shall be mounted according to length.

3.54.2 Each ladder shall be supported in four (4) continuous full length PTFE Teflon or approved equal UV resistant 3"x3" angle ways. The ladder ways shall have forward ladder stops, tapered pockets and hold down rollers and all ladder ends shall be even at the rear of the trailer when stowed.

3.54.3 A hinged locking gate with hold down rollers shall be provided for the vertically mounted ladders. Neoprene covered nylon or approved equal UV resistant rollers or nylon pads shall be provided as necessary in the compartment to protect the ladders from damage.

3.54.4 The access door to the torque box ladder storage compartment shall be constructed of smooth aluminum for overlay of Chevron reflective material. The ladder bay shall be able to hold the following ladder complement:

- a. Three (3) 10' folding attic ladders, Duo Safety 585A
- b. Two (2) 16' roof ladders, Duo Safety 875A
- c. One (1) 18' roof ladder, Duo Safety 875A
- d. One (1) 20' roof ladder, Duo Safety 875A
- e. Two (2) 28' two section extension ladders, Duo Safety 1200A
- f. Two (2) 35' two section extension ladders, Duo Safety 1200A

CONTRACTOR Complies with Section 3.54: YES**3.55 Pike Poles and Hooks**

Pike poles & hooks shall be stored in individual tubes within the torque box, adjacent to the ladders. The following fiberglass handled pike poles shall be supplied with the apparatus at the time of delivery:

- a. Two (2) 10' Fiberglass Pike Pole(s), Nupla YPD-10
- b. One (1) 12' Fiberglass Pike Pole(s), Nupla YPD-12
- c. One (1) 18' Fiberglass Pike Pole(s), Nupla YPD-18
- d. Three (3) 6' Rubbish Hook(s), Nupla RH-6DA (Aluminum "D" Handle)
- e. One (1) 4' Rubbish Hook(s), Nupla RH-4DA (Aluminum "D" Handle)
- f. Two (2) 6' New York Roof Hook, Fire Hooks Unlimited
- g. Two (2) 4' New York Roof Hook, Fire Hooks Unlimited

CONTRACTOR Complies with Section 3.55: YES

3.56 Thermoplastic Coating

In the designated areas, a Line X or equivalent system shall be used for maximum protection of the body and equipment. The system shall utilize flexible 100% solids applied with high pressure impingement-mix polyurethane dispensing equipment.

- a. The coating shall be a fast cure, textured surface, multi-purpose material designed for commercial and industrial applications. It shall exhibit excellent adhesion to the body and serve as a protective, abrasion resistant liner where applied.
- b. The density of the material shall be a minimum of 70 PCF as measured using ASTM test method D-1622. The taber abrasion resistance shall be a minimum of 0.03% per 1000 cycles as measured utilizing ASTM test method D-4060.
- c. The minimum tensile strength as measured using ASTM D-2370 shall be 1540 pounds per square inch.

CONTRACTOR Complies with Section 3.56: YES

3.57 Body Compartment Coating

The interior of the body compartments shall be coated with a gray thermo-plastic polyurethane coating. The coating shall be durable enough to withstand everyday abuse of equipment removal and shifting.

CONTRACTOR Complies with Section 3.57: YES

3.58 Body Compartmentation Door Pans Coating

The body compartment door pans shall be constructed of stainless steel.

CONTRACTOR Complies with Section 3.58: YES

3.59 Body Paint Preparation

After the body and components have been fabricated and assembled they shall then be disassembled prior to painting so when the apparatus is completed there shall be finish paint beneath the removable components. The apparatus body and components shall be metal finished as follows to provide a superior substrate for painting:

- a. All aluminum sections of the body shall undergo a thorough cleaning process starting with a phosphoric acid solution to begin the etching process followed by a complete rinse. The next step shall consist of a chemical conversion coating applied to seal the metal substrate and become part of the aluminum surface for greater film adhesion.
- b. After the cleaning process the body and its components shall be primed with a High Solids primer and the seams shall be caulked.
- c. All bright metal fittings, if unavailable in stainless steel or polished aluminum, shall be heavily chrome plated. Iron fittings shall be copper under plated prior to chrome plating.

CONTRACTOR Complies with Section 3.59: YES

3.60 Paint Process

The paint process shall follow the strict standards as set forth by PPG Fleet Finish Guidelines. The body shall go through a three-stage paint process: Primer Coat, Base Coat (Color), and Clear Coat. In the first stage of the paint process the body shall be coated with PPG F3980 Low VOC I High Solids primer to achieve a total thickness of 2-4 mills. In the second stage of the paint process the body shall be painted with PPG FBCH Delfleet™ High Solids Polyurethane Base Coat. A minimum of two to three coats of paint shall be applied to achieve hiding. In the final stage of the paint process the body shall be painted with PPG DCU-2002 Clear Coat. A minimum of two to three coats shall be applied to achieve a total dry film thickness of 2-3 mills. As part of the curing process the painted body shall go through a Force Dry I Bake Cycle process. The painted components shall be baked at 185 degrees for 3 hours to achieve a complete coating cure on the finished product.

CONTRACTOR Complies with Section 3.60: NO

3.61 Hand Polished

After the force dry I bake cycle and ample cool down time, the coated surface shall be sanded using 3M 1000, 1200, and or 1500 grit sandpaper to remove surface defects. In the final step, the surface shall be buffed with 3M Superduty compound to add extra shine to coated surface. No more than .5 mil of clear shall be removed in this process.

CONTRACTOR Complies with Section 3.61: YES

3.62 Aerial Component Protection/Paint

All aerial device components above the rotation point that are not chrome plate bright aluminum treadplate or stainless steel shall be painted. All areas to be painted shall be sanded to remove any metal flakes and smooth any rough surfaces. All surfaces to be painted shall be phosphatized to remove metal impurities, aid paint adhesion and inhibit rust. The components shall be prime painted with a Low V.O.C. high solids non-isocyanate primer and finish painted with a Low V.O.C. extremely durable, single stage ultra-high solids high gloss polyurethane paint. The support structure and components below the rotation point shall be painted black.

The extending stabilizer beams, inner jack cylinder protective tubes, and stabilizer pads shall be hot dip galvanized as follows:

- a. The extending stabilizer beams, inner jack tubes, and stabilizer pads shall be wheel-a-braided to remove any mill scale, or contamination prior to galvanizing.
- b. Following this preparation, the individual components shall be hot dip galvanized. The galvanizing process shall require that the entire assembly be completely submerged. Following the galvanizing process, the surface shall be ground smooth to remove dross. This preparation shall provide maximum protection for these critical components. Following surface preparation, components shall be coated with Black water base self-etching coating. No Exceptions ·
- c. To enhance durability and appearance, the high gloss polyurethane paint applied to the aerial ladder sections and other components above the rotation point, shall be cured at an elevated temperature for a period not less than 2 hours. The temperature shall not be less than 180 degrees F. Curing of the paint shall promote a chemical reaction within the substrate that shall harden the paint. The curing shall be performed in a clean, sealed, controlled atmosphere. The atmosphere shall CONTRACTOR Complies with all environmental standards and any air entering the chamber shall be filtered.

CONTRACTOR Complies with Section 3.62: NO

3.63 Aerial Device Paint Color

The aerial device shall be painted with PPG Delfleet polyurethane enamel paint. The color shall be (White) PPG# FOG -2185.

CONTRACTOR Complies with Section 3.63: NO

3.64 Aerial Ladder Egress Paint

The aerial ladder egress shall be painted with PPG Delfleet polyurethane enamel paint. The color shall be meet current NFPA recommendations.

CONTRACTOR Complies with Section 3.64: NO

3.65 Aerial Torque Box Paint

The aerial torque box shall be painted with PPG polyurethane enamel paint. The color shall be (Black) PPG# MTK - 9000.

CONTRACTOR Complies with Section 3.65: NO

3.66 Apparatus Body Color

The apparatus shall be painted with PPG polyurethane enamel paint PPG # FBCH-72626-ALT, color red.

CONTRACTOR Complies with Section 3.66: NO

3.67 Touch-up Paint

here shall be three (3) paint sticks supplied per color with each apparatus for touch up.

CONTRACTOR Complies with Section 3.67: YES

3.68 Reflective Lettering

3.68.1 There shall be thirty-eight (38) reflective letters provided and installed on the apparatus. The letters shall be approximately 3" tall with black outline and shadow.

a. "RIVERSIDE COUNTY"- Arched above door emblem

b. " FIRE" - Straight below door Emblem

3.68.2 There shall be sixteen (16) reflective letters provided and installed on the apparatus; The letters shall be approximately 6" tall with black outline and shadow. Lettering shall be installed on vehicle lettering mounting plates per County's direction.

3.68.3 There shall be reflective letters provided and installed on the aerial signs, left and right. The letters shall be approximately 12" tall with black outline and shadow.

CONTRACTOR Complies with Section 3.68: YES

3.69 Custom Door Decals

There shall be a pair of custom door decals provided. The decals shall be installed as per the customer specifications at pre-paint inspection.

CONTRACTOR Complies with Section 3.69: YES

3.70 Reflective "S" Ribbon

There shall be one (1) reflective "S" located in the reflective stripe on each side of the apparatus. The "S" portion of the stripe shall be shaded and highlighted to give it a ribbon effect.

CONTRACTOR Complies with Section 3.70: YES

3.71 NFPA Compliant Reflective Striping

Reflective striping shall be applied to the exterior of the apparatus in a manner consistent with the National Fire Protection Association Pamphlet 1901, latest edition. It shall consist of a 6" wide stripe low across the front of the chassis and along the sides up to the first compartment on each side where it shall then angle up and back to a point above the wheel well area where it shall then run level to the back edge of the body. The reflective striping shall be white in color.

CONTRACTOR Complies with Section 3.71: YES

3.72 Chevron Reflective Striping on Rear Torque Box Ladder Access Door

In addition to the custom striping pattern supplied on the apparatus, there shall be additional reflective striping applied to the torque box ladder access door on the rear of the apparatus. The striping shall consist of alternating 4" red and yellow reflective stripes applied in a "Chevron" pattern. Chevron reflective material shall be applied to the entire rear face of the trailer body (not the tiller box).

CONTRACTOR Complies with Section 3.72: YES

3.73 Rub Rail Reflective Striping

There shall be 2" reflective striping installed in the rub rail channel. The reflective striping shall be diamond grade quality material for increased visibility. The reflective shall be silver in color.

CONTRACTOR Complies with Section 3.73: YES

3.74 Paint Aerial Underside

The underside of the aerial shall be painted.

CONTRACTOR Complies with Section 3.74: YES

3.75 Wheel Chocks & Mounting

There shall be two (2) pairs of Zico #SAC-44 wheel chocks provided with the apparatus. The chocks shall be mounted in Zico #SQCH-44-H mounting brackets in locations that are easily accessible under both the right and left sides of the body.

CONTRACTOR Complies with Section 3.75: YES

3.76 Third Party Certifications

3.76.1 All bids shall include copies of the certification of testing of the aerial device. The County desires a device that has been tested by a third party for compliance with the 2 to 1 safety factor specified by NFPA Pamphlet 1901, latest edition. Devices that have not been certified by an engineer that is independent of the manufacturer shall not be acceptable.

3.76.2 Welds shall be tested using two (2) Non-Destructive methods by a third-party inspection firm. Steel and aluminum ladders shall, at a minimum, have all welds tested using two (2) separate NOT methods.

3.76.3 Aerial structures shall have 100 % of all structural welds tested using both magnetic particle method and visual testing method. Aerials that are fabricated of aluminum shall have 100% of all structural welds tested using dye penetrant method and visual method. Manufacturers who rely only on visual inspection (performed in-house or by any third party) as a primary method of testing shall not be considered and their bid shall be rejected.

CONTRACTOR Complies with Section 3.76: YES

3.77 NFPA Aerial Stability Factors & Testing

3.77.1 A one and one half to one (1.5:1) stability factor shall be provided. These capabilities shall be established in an unsupported configuration. Since the device is rated while flowing water, stability testing shall account for the distributed weight of water in a full waterway and water reactionary force as required by NFPA 1901. The following are specific descriptions of what tests are to be performed, and conditions they shall be performed under. The aerial manufacturer shall strictly adhere to these tests and conditions as set forth in these specifications and NFPA 1901, newest revision.

a. For both of the following tests, the only obstructions to a full 360-degree rotation with the aerial at 0 degrees' elevation and full extension; shall be presented by the apparatus itself (if any), and NOT external obstructions at the manufacturer's test location(s). This shall mean that the aerial device manufacturer shall ensure that the testing grounds present no obstruction (trees, buildings, etc..) to the full 360-degree rotation at 0 degrees' elevation and full extension, which may cause the need to raise the aerial to clear the obstruction.

b. Additionally, the apparatus shall be tested for stability only after the entire apparatus is complete. This requirement is specified in NFPA 1901 as the apparatus being in "service ready condition".

There shall be No Exception to this requirement since it would be unlikely that actual weight distribution could be accurately simulated for the stability testing. "Counter weighting" shall not be allowed under any circumstance in place of the actual body and equipment.

3.77.2 **Test One (1)**

After the above conditions have been satisfied, the aerial shall be subjected to the following test in the presence of the third-party testing company that is in compliance with these specifications. Specifically, the aerial device shall be placed on level ground with the stabilizers deployed per manufacturer recommendations. The aerial device shall then have 1.5 times the rated capacity placed at the tip of the aerial, with the device at full extension and at 0 degrees' elevation; which is the most stringent configuration. The device shall be rotated 360 degrees, raising and lowering the aerial as needed to clear the cab of the apparatus. The aerial shall prove to be stable during the entire test and no component of the aerial shall permanently deform.

3.77.3 **Test Two (2)**

After the above conditions have been satisfied, the aerial shall be subjected to the following test in the presence of the third-party testing company that is in compliance with these specifications. Specifically, the aerial device shall be placed on a 5-degree downward slope with the stabilizers deployed per manufacturer recommendations. The aerial device shall then have 1.33 times the rated capacity placed at the tip of the aerial, with the device at full extension and at 0 degrees' elevation; which is the most stringent configuration. The device shall be rotated 360 degrees, raising and lowering the aerial as needed to clear the cab of the apparatus. The aerial shall prove to be stable during the entire test and no component of the aerial shall permanently deform.

CONTRACTOR Complies with Section 3.77: YES

3.78 **Inspection Certificate (NFPA 1901 Compliance)**

A third-party inspection certificate for the aerial device shall be furnished upon delivery of the aerial device. The purpose of this NFPA 1901 compliance inspection shall be to serve as proof to the customer that all applicable standards have been met or exceeded by the responsible aerial manufacturer. The following objectives shall be achieved as a result {this listing shall not be construed as being all inclusive):

- a. Ensure that understanding of all parties respective responsibilities have been addressed by the actual referencing of NFPA 1901 and the amendments in these specifications and the purchase contract and documentation.
- b. Ensure that only structural materials comply with appropriate standards and codes, are used for construction.
- c. Ensure that applicable standards of design and manufacture have been met or exceeded.
- d. Ensure that Safety Factors have been met or exceeded where required.
- e. Ensure that applicable standards for testing and inspection have been met or exceeded by personnel with the appropriate qualifications, experience, and certifications.
- f. Ensure that where applicable; components, equipment, and loose equipment carry the appropriate characteristics, classifications, and I or certifications.
- g. Ensure that in general and whole, all applicable requirements set forth in NFPA 1901, newest revision; and those codes, standards, and specifications referenced by said; are met, exceeded, and I or addressed.

CONTRACTOR Complies with Section 3.78: YES

3.79 **Illustrated Aerial Operation/Maintenance Manuals**

Four (4) thumb drives and two (2) hard copies containing operation and maintenance manuals shall be provided at the time of delivery. These manuals shall be written in a "step by step" format for ease of reference.

- a. Information included in the manuals shall include, but no be limited to the following:
- b. Manufacturer Defined Terminology; {to help impart full understanding of terminology used in the manuals)
- c. Safety Information & Warnings; (to warn of dangerous conditions I personnel injury I equipment damage)
- d. Complete Rated Capacities Information; {allowable loads & GPM flows)
- e. Complete & Detailed Operating Systems Descriptions; (to impart understanding of operation I capabilities I working principles)

- f. Instruction for Manufacturer Recommended Deployment & Operation of All Systems During All Specific Conditions; {to ensure safer- more efficient operation of the aerial device) Current, Actual Illustrations of Aerial Components Throughout the Manual; (to aid in location of specific components, being addressed in the manual)
- g. Complete Maintenance Instructions I Methods I Materials /Intervals I And Inspections.

CONTRACTOR Complies with Section 3.79: YES

3.80 Special Tools Package

Special tools required for periodic maintenance of the aerial device shall be provided with the apparatus at the time of delivery. These tools shall be as follows:

- a. One (1) 1/2" drive, torque wrench
- b. One (1) 1/2" drive, 15/16" socket
- c. One (1) combination 1/2" x 9/16" box end wrench
- d. One (1) set of allen wrenches (5/64", 3/32", 1/8", 5/32", 3/16", 7/32", 1/4")

The special tools package above shall be provided as standard equipment by the aerial manufacturer.

CONTRACTOR Complies with Section 3.80: YES

3.81 Manual Rotation Drive Tool

As required by NFPA 1901, newest revision, one (1) manual rotation drive tool shall be provided to rotate the turntable in the unlikely event of power loss. This drive tool shall be provided as standard equipment, and shall not be "optional" equipment.

CONTRACTOR Complies with Section 3.81: NO

3.82 Aerial Device Instruction Provided

3.82.1 A factory authorized aerial apparatus engineer shall instruct the fire department personnel in the safe operation and maintenance of the entire apparatus. The instruction shall last for a period of five (5) days. During the instruction period, users shall observe operation of the aerial device as well as themselves operating it. Instruction/demonstration shall take place covering the following items (this list is not intended to be all inclusive).

- a. Aerial rated load capacity /load minder.
- b. Acceptable aerial operational performance parameters and characteristics.
- c. Proper aerial device deployment conditions.
- d. Safety during aerial operations.
- e. Aerial device care and maintenance.
- f. Use of the operation and maintenance manuals.

3.82.2 The instruction period and content shall be so designed to provide department personnel with basic fundamental aerial training as recommended by the aerial manufacturer. This training period may include a "classroom" type of instruction as well as "hands-on" training of the apparatus. Training aids utilized by the instructor, which are to be considered in addition to the operations and maintenance manuals are encouraged. Upon completion of the training course, all attendees will have been provided the proper instructional training, which shall provide the operational knowledge necessary in order to feel comfortable with the aerial operations and continue additional training as set forth by the department training officer.

CONTRACTOR Complies with Section 3.82: YES

3.83 Twenty Year Aerial Warranty

The aerial device shall have a twenty (20) year warranty, parts and labor. The warranty shall be provided with the apparatus at the time the apparatus is placed in service by Riverside County Fire.

CONTRACTOR Complies with Section 3.83: YES

3.84 Aerial Corrosion Protection

- 3.84.1 The majority of the internal structural members of the aerial structure shall be 100% concealed from oxygen. Totally concealed members are not subject to the possibility of corrosion attacking the metal from the interior. Structural tubing of the aerial structure that contains drilled holes or is exposed to outside air and elements shall be protected to eliminate the possibility of corrosion occurring from the inside of the tube.
- 3.84.2 The interior of exposed tubing shall be coated with a compound labeled NWAC 120-4. The application of the coating shall be applied after the welding process of the aerial structure is complete and shall cover 100% of the interior of the structural tube.
- 3.84.3 NWAC 120-4 is an effective cavity corrosion inhibitor that provides long-term protection for both ferrous and non-ferrous metals. The resulting water-repellant, flexible, air-dried film has a remarkable crevice penetrating, spreading and clinging characteristic. The product dries to a nearly transparent film and provides maximum corrosion protection for all void spaces subject to humidity and condensation.
- 3.84.4 Use of this process shall constitute a 20-year internal corrosion warranty for the aerial structure.

CONTRACTOR Complies with Section 3.84: YES**3.85 NFPA Safety Factor and Rated Capacities**

The methodology, definitions, testing, and criteria used by the aerial manufacturer to determine the preceding and following Safety Factor and Rated Capacity of the aerial device shall be in strict compliance with the definitions of such, as found in NFPA 1901, newest edition and these specifications.

CONTRACTOR Complies with Section 3.85: YES**3.86 Aerial Device Safety Factor & Rated Capacity**

The County desires to purchase with these specifications, an aerial device with a minimum 2.0:1 Safety Factor as required and defined by NFPA 1901 newest edition. Therefore, the aerial manufacturer shall hereby certify, by submitting a bid for these specifications; that the aerial device meets or exceeds the following requirements. The design stress or primary stress within all structural load supporting members of the aerial device shall not exceed 50% of the minimum as welded yield strength of the material based on the combination of the dead load of the aerial + the rated capacity of 750 LBS. at the tip of the aerial; at a 90 degree angle to ladder centerline; with the structural load supporting members of the aerial device at either; an ambient temperature of 75 degrees F or an elevated temperature of 350 degrees F- thereby exhibiting a minimum 2.0:1 Safety Factor in all feasible operational conditions. These capabilities shall be valid and true when the apparatus is deployed in the unsupported configuration, based upon 360 degree rotation, up to full extension, and at any degree of elevation (-11 to +72) that the aerial can achieve.

CONTRACTOR Complies with Section 3.86: YES**3.87 Aerial Device Safety Factor Service Life**

The County desires to purchase with these specifications, an aerial device with a safety factor that remains NFPA compliant and constant throughout the life of the aerial device. The Safety Factor of every structural load bearing member in the aerial device shall remain above 2.0:1 for a "Safety Factor Service Life" of up to 20 years minimum.

CONTRACTOR Complies with Section 3.87: YES**3.88 Tiller Aerial Construction Standards**

- 3.88.1 The aerial ladder shall be of the mid mount design with the turntable mounted directly behind the cab of the apparatus, and the ladder extending toward the rear of the apparatus when in the bedded position.
- 3.88.2 The aerial ladder shall be comprised of four sections and shall extend to a nominal height of 100' at 72 degrees, measured in a vertical plane from the top rung of the fly section (not including the egress) to the ground.

CONTRACTOR Complies with Section 3.88: NO

3.89 Operational Envelope/Reach

The aerial ladder shall have an operations range of -5 degrees elevation to +72 degrees elevation. The aerial device shall have a minimum horizontal reach of 100' and shall be measured from the turntable centerline to the outermost rung on the outermost fly section, with the aerial at full extension and at 0 degrees elevation. Reach and height shall be measured in accordance with the requirements set forth in NFPA 1901, latest edition.

CONTRACTOR Complies with Section 3.89: NO

3.90 Structural Material

3.90.1 The primary load support members of the ladder shall be constructed of certified 70,000 PSI yield strength (minimum) steel tubing. Each section shall be trussed diagonally, vertically, and horizontally using welded steel tubing. All critical points shall be reinforced for extra rigidity and to provide a high strength to weight ratio.

3.90.2 All ladder rungs shall constructed of A606 Type 4 certified steel tested per ASTM A370 standards. A606 Type 4 exhibits superior corrosion resistance over regular carbon steel as a result of the development of a protective oxide film on the on the surface. A606 Type 4 shall meet a minimum 6.0 Atmospheric Corrosion Factor. The ladder rungs shall be round and welded to each section utilizing "K" bracing for torsional rigidity.

CONTRACTOR Complies with Section 3.90: YES

3.91 Lifting Eyes

Two (2) lifting eyes will be provided at the end of the ladder fly section. The lifting eyes will give the fire department the capabilities to perform short haul and high point rescuer systems from the ladder fly section. The lifting eyes shall be third party tested and certified with the device for a minimum capacity of 250lbs each. The rating will include a 2:1 safety factor. The lifting eyes shall not be mounted onto the egress section at the tip of the ladder.

CONTRACTOR Complies with Section 3.91: YES

3.92 Primary Dimensions

3.92.1 The inside dimensions of the ladder shall be as follows: (Minimum width)

- a. Base Section – 42.25"
- b. First Fly Section – 34"
- c. Second Fly Section – 27.50"
- d. Last Fly Section - 22"

3.92.2 The height of the handrails above the center line of the rungs shall be as follows: (Minimum height)

- a. Base Section - 29.25"
- b. First Fly Section – 24"
- c. Second Fly Section – 20.25"
- d. Last Fly Section – 17.25"

CONTRACTOR Complies with Section 3.92: NO

3.93 Rung Coverings

Each rung shall be covered with secure, heavy duty, deep serrated rubber sheathing. Attachment of the sheathing to the rung shall be by mechanical means and an adhesive application. Under no circumstance shall the rung covers turn when a rung is at ambient temperature (75 degrees F) or at an elevated temperature (350 degrees F); there shall be No Exception to this requirement for the safety of persons climbing the ladder sections. The sheathing shall be easily replaceable if the rubber becomes worn, however the rung covers shall be designed, constructed, and installed with lifetime service as the objective.

CONTRACTOR Complies with Section 3.93: NO

3.94 Bolt-on Egress

- 3.94.1 A bolt on removable egress shall be installed on the tip of the fly section. Only certified structural fasteners shall be utilized to attach the egress to the tip of the fly section. Additionally, the fasteners shall be stainless steel. This design shall allow for easy replacement should the egress become damaged during rescue operations. This shall prevent the department from experiencing serious downtime, as is common with welded on egresses. For this reason, a design that allows the egress to be welded to the fly section shall not be acceptable.
- 3.94.2 When the ladder is at 0 degrees' elevation, the rung(s) on the egress shall be on a plane of -11 degrees. This shall provide a smoother transition onto the ladder when it is at a high angle elevation.
- 3.94.3 Additionally, the egress shall have handrails that match the fly section handrails for an unnoticeable transition between the two. The egress handrails shall have a radius design at the tip to eliminate two corner joints, increase strength, and provide a professional appearance.
- 3.94.4 The rung(s) on the egress shall be held to the same design load criteria as the rungs of the aerial ladder sections. This shall mean that each egress rung shall be able to support a design load of 750 lbs. Minimum, distributed across the rung, as specified in NFPA 1901, newest revision. This shall be more than that required by the afore mentioned standard. No Exceptions shall be allowed to this requirement.
- 3.94.5 The bolt on egress color shall meet current NFPA requirements.

CONTRACTOR Complies with Section 3.94: NO

3.95 Turntable

The turntable shall be designed in such a manner as to allow a generous working area, regardless of the position of the aerial. The turntable shall allow ample working room, within the perimeter hand-rail with the aerial positioned at maximum elevation. The turntable shall also be designed to allow for the most efficient use of space on the apparatus body as follows:

- a. The turntable shall be a minimum of 95" side to side and 95" forward to aft. It shall be covered with Treadbrite decking to allow the walking surface to shed liquids with unparalleled ease and complies with NFPA intent, so as to provide secure footing for the operator in all weather conditions.
- b. A downward lip shall "skirt" the turntable decking around the entire circumference to provide protection from hazards.
- c. The three handrails shall each be of one piece construction and provide large sweep corners at the edge of the turntable. Each shall be 42" high and be covered with deeply serrated rubber sheathing for maximum grip in all environments. The handrails shall be installed around the rear 180 degree perimeter of the turntable for operator and personnel safety. Each individual handrail shall be secured to the turntable by the use of two (2) minimum 5/8" anchor bolts on the underside of the turntable. Additionally, chrome plated stanchions with rubber gaskets shall be provided on the top surface of the turntable where each railing meets the decking surface.
- d. A stainless-steel swing arm which swings inward and upward shall, be installed in the two gaps between the handrails. These swing arms shall be permanently attached at one end.
- e. All hoses and electrical lines shall be routed under removable covers so they do not present a tripping hazard. The covers shall also be designed to prevent damage from occurring to these components. Likewise, the center of the turntable shall have a removable step cover to prevent tripping hazards as well as provide for easier transition to the first rung of the aerial ladder.

CONTRACTOR Complies with Section 3.95: YES

3.96 Aerial Pivot Pins

The aerial device pivot pins shall be located on the turntable and shall attach the aerial device base section to the turntable. To maintain a suitable safety factor, the pivot pins shall be composed of certified structural steel, thereby ensuring structural integrity. In the interest of safety, the pivot pins shall be located as low as possible, and shall be at the aerial device base rails. This shall keep the pivot points away from the areas where persons egressing to and from the aerial base section, might place their hand(s). Aerial pivot pins shall be installed with a

means provided to keep the pins in place. The design shall not inhibit the pins from being removed by a trained mechanic.

CONTRACTOR Complies with Section 3.96: YES

3.97 Turntable Work Lighting

The turntable shall be lighted for night time operation as follows:

- a. Minimum of three (3) LED work lights which shall be automatically activated by the aerial master switch (day or night). The work lights shall be so positioned that the light shall be directed toward the decking.
- b. The lights shall have integral chrome hoods to keep light from glaring upward into the operator's eyes.
- c. An additional light shall be recess mounted in the front access door of the control stand.
- d. The turntable shall have LED strip lighting incorporated into the handrailing. The handrail lighting shall come on with the battery switch in the "ON" position and shall turn off when the parking brake is released.

CONTRACTOR Complies with Section 3.97: YES

3.98 Fly Section Folding Steps

The fly section on the aerial shall have two (2) sets of folding steps incorporating toe stops with a 2" flange and no-skid surface. The steps shall be installed approximately 42" and 70" below the top rung. When deployed, the stepping surfaces shall be perpendicular to the ladder base section. The steps shall be as large as design shall permit but far enough apart to allow clearance for a charged 3" water hose. The steps shall be easily foot actuated by a firefighter wearing turnout boots.

CONTRACTOR Complies with Section 3.98: YES

3.99 Aerial Tip Floodlights

Two (2) Federal COMLS15K-NH LED floodlights shall be provided, one (1) light to be mounted on the left and right tip of the ladder. Each light shall be provided with a switch and operated independently from the turntable. Provide impact guards whenever lights are susceptible to damage from roof operations.

CONTRACTOR Complies with Section 3.99: YES

3.100 Heavy Duty Ladder Travel Support

A heavy-duty ladder rest shall be provided for support of the ladder in the travel position. The travel support shall be fabricated from heavy duty steel tubing. The travel support shall be designed to be easily removable to allow for ease of maintenance and repair when necessary. The base section of the ladder shall contain stainless steel scuff plates shall where the ladder comes into contact with the ladder support. An indicator light shall be provided on the turntable to indicate when the ladder is aligned with the travel support and may be lowered into it. The ladder rest shall be attached to the torque box for added stability. The ladder rest shall be illuminated for night time operation. The illumination light shall automatically turn on with the aerial master switch.

CONTRACTOR Complies with Section 3.100: YES

3.101 Bed Zone Indicators

There shall be fixed bed zone indicators mounted on the deck and the turntable.

CONTRACTOR Complies with Section 3.101: YES

3.102 Ladder Hold-Down Mechanism

There shall be a hold-down mechanism install on each side of the ladder travel support that shall keep the aerial structure from bouncing and banging due to road hammer. The system shall be designed in such a manner as to automatically unlatch the hold-downs when the aerial hydraulic system is activated. The hold-downs shall automatically lock in the road position when the hydraulic system is shut down.

CONTRACTOR Complies with Section 3.102: YES

3.103 Elevation System

- 3.103.1 Two (2) double acting lift cylinders shall be utilized to provide smooth precise elevation from 5 degrees below horizontal to 75+ degrees above horizontal. The lift cylinders shall have a 6" internal diameter (bore) and a 2.5" solid cylinder rod. The lift cylinders shall be equipped with integral holding valves located on the cylinder to prevent the unit from lowering should the charged lines be severed at any point within the hydraulic system.
- 3.103.2 The lowering of the ladder shall be controlled by a pressure limiting valve so as to limit the downward pull of the ladder when it is bedded. Both raising and lowering functions shall be influenced by flow compensation which shall maintain ladder tip speed within the design speed regardless of load, angle, or extension. Ladder tip speed shall be decelerated above 65 degrees in order to reduce "tip-lash". Ladder lowering shall be controlled on the down motion to prevent the cylinders from completely retracting, thus allowing a cushion of oil for continuous ladder load readout.
- 3.103.3 Elevation cylinder upper and lower pivot pins shall be installed with a means provided to keep the pins in place. The design shall not inhibit the pins from being removed by a trained mechanic.

CONTRACTOR Complies with Section 3.103: YES**3.104 Extension/Retraction System**

- 3.104.1 A full hydraulic powered extension and retraction system shall be provided using two sets of siamese hydraulic cylinders and cables. Each set shall be capable of operating the ladder in the event of a failure of the other. The extension cylinders shall each have a 3.5" internal diameter (bore) and a 1.5" diameter solid rod. Extension and retraction of the telescopic sections shall be internally limited within the cylinders, eliminating excess strain on the cables, sheaves, and ladder structure. Each of the cylinder, cable, and sheave assemblies shall be completely independent of the other, so as provide a safety factor wherein a failure of one assembly will not affect the function and operation of the other. The extension cylinders shall be equipped with counter balance holding valves to synchronize the cylinders for smoother operation and prevent the unit from retracting should the charged lines be severed at any point within the hydraulic system.
- 3.104.2 The reeling of the cable shall be such as to provide synchronized, simultaneous movement of all sections from full extension to full retraction. All pulleys and sheaves shall be enclosed as an added safety feature as well as to prevent personnel on the ladder from becoming entangled in them.

CONTRACTOR Complies with Section 3.104: NO**3.105 Certified Cable Swaged Shackles**

All swaged shackles ends shall have a certification test from the manufacturer of the assembly.

CONTRACTOR Complies with Section 3.105: YES**3.106 Wear Pads/Bearing Surfaces**

- 3.106.1 Nylon wear pads impregnated with molybdenum disulfide and high in molecular weight shall be used between the telescoping sections for maximum weight distribution, strength, and smoothness of operation. This impregnation shall provide a lubricating function. Stainless steel adjustment screws shall be provided on the wear pads to permit proper side tension.
- 3.106.2 Stainless steel adjustment screws shall be provided on the wear pads to permit proper side tension. Plates shall be installed on the side(s) of the slide pads where adjustment screws come into contact with them. No Exceptions shall be allowed to this requirement to keep the adjustment screws from embedding themselves into the pads which may cause the pad to crack and fail. The manufacturer shall provide one (1) set of replacement wear pads.

CONTRACTOR Complies with Section 3.106: YES

3.107 Retraction Safety System

An integral part of the extension/retraction system shall be a safety system to prevent injury to personnel on the end of the fly section while the ladder is being retracted. This system shall be designed in such a manner as to prevent retraction of the aerial device any time the folding steps at the end of the fly section are in overlap with the rungs of another section. When the steps are in an overlap condition, retraction shall only be accomplished by an operator at the primary control station depressing and holding a momentary switch while the retraction control is operated.

CONTRACTOR Complies with Section 3.107: NO

3.108 Rotation Bearing

- 3.108.1 A 44-inch diameter external tooth, swing circle bearing shall be used for the rotation system. The bearing shall provide 360-degree continuous rotation. The bearing shall be designed specifically for the aerial device in lieu of the aerial device being designed to accommodate a particular bearing.
- 3.108.2 The turntable shall be bolted to the bearing using forty (40), SAE grade 8, .625" diameter bolts. The bearing shall be bolted to the base support structure with sixty (60), Grade 8, .625" diameter bolts. Welding on the bearing in any manner shall not be acceptable.
- 3.108.3 The turntable base and the torque box bearing plate surfaces that contact the bearing shall be machined to prevent loading the bearing when the attaching bolts are brought to full torque. Machining of the surfaces shall be done after all welding to assure no further distortion of the material.
- 3.108.4 Shims shall not be acceptable as they shall reduce the surface contact area significantly thereby causing a concentration of forces at the shims.

CONTRACTOR Complies with Section 3.108: NO

3.109 Bolt Torquing From Top Side

All rotation bearing bolts shall be able to be torqued from the top side of the turntable without the bolt or nut being held under the turntable by a person. This shall require a design that shall stop all chance of the bolt "spinning" while torque is being applied to the fastener. Application of Loctite or a similar compound alone, without any other means provided to hold the fastener; shall not be acceptable. Additionally, this design feature shall not incorporate drilling, bending, welding on, or in any way; modifying the structural fastener, nut, or washers.

CONTRACTOR Complies with Section 3.109: YES

3.110 Rotation Gear Reduction Box

- 3.110.1 A hydraulically driven planetary gear box with a drive speed reducer shall be used to provide infinite and minute rotation control throughout the entire rotational travel. The Rotation gear reduction box shall be installed on the top side of the turntable so that it is easily accessible, yet it shall be installed so that it does not provide an obstruction or tripping hazard to persons on the turntable. Specifically, it shall be installed toward the front of the turntable, under the aerial ladder base section. Under no circumstance shall the gear box present any interference with the aerial device, even at low elevations.
- 3.110.2 A spring applied, hydraulically released disc type swing brake shall be furnished to provide positive braking of the turntable assembly.
- 3.110.3 Provisions shall be made for manual operation of the rotation system should complete loss of hydraulic power occur. These provisions shall include a hand crank supplied with the unit.
- 3.110.4 The hydraulic system shall be equipped with pressure relief valves which shall limit the rotational torque to a nondestructive power. All moving parts of the rotation gear reduction box shall be enclosed or under the turntable decking so that no safety hazards are present.

CONTRACTOR Complies with Section 3.110: YES

3.111 Rotation Interlocking System

- 3.111.1 The aerial device shall be equipped with a rotation interlock system to prevent the ladder from being rotated to any side where the stabilizers are not sufficiently extended to provide for the full tip load rating.
- 3.111.2 The system shall monitor the stabilizers for extension. When a stabilizer is not sufficiently extended (short jacked) to provide full tip load rating, the system shall prevent the aerial from being rotated more than 12 degrees past the front or rear centerline into the short-jacked side of the apparatus.
- 3.111.3 Once activated, the system shall prevent the aerial from being rotated past the front or rear corner of the apparatus where a stabilizer is not properly deployed.
- 3.111.4 A slowdown feature shall be built into the rotation interlock system. When the aerial is operating in a short-jacked mode, the rotational speed shall be automatically reduced, by approximately 50%, when the aerial is rotated to within approximately 10 degrees of the front or rear centerline of the apparatus. The rotational speed shall remain reduced throughout an arc of approximately 20-degrees over the front or rear of the apparatus, regardless of the direction of the rotation movement.
- 3.111.5 The rotation function shall automatically stop when the aerial approaches the front or rear corner area of the short-jacked side of the apparatus.
- 3.111.6 The rotation interlock system shall allow for normal operation on the side of the apparatus where the stabilizers are sufficiently extended for full tip load rating.
- 3.111.7 Whenever the manual override is activated and aerial is rotated into the short-jack side of the apparatus, the rotation speed shall be automatically reduced by approximately 50%. All secondary controls, other than those on the main pedestal, shall be locked out and become inoperative when the rotation interlock override is activated.

CONTRACTOR Complies with Section 3.111: YES**3.112 Apparatus Body Damage Control Interlock System**

- 3.112.1 A safety feature shall be included in the aerial operational system that minimizes the possibility of damage to the apparatus body at all angles for all standard (non-override) operational modes.
- 3.112.2 The system shall automatically stop the downward movement of the aerial at a preset angle of elevation unless the aerial has been rotated left or right, from the center of the ladder support. Once this rotation point is reached, full range downward movement (to minus 8 degrees) shall be allowed.
- 3.112.3 The aerial manufacturer shall determine and set the angle of elevation where downward aerial movement is stopped. The highest point of an apparatus, in relation to the distance from the turntable, shall be used to determine the preset elevation angle stopping point.
- 3.112.4 The system shall also minimize the possibility of accidental damage to the apparatus body from aerial rotation whenever the aerial elevation is below the preset elevation angle stopping point.
- 3.112.5 Rotational speed shall be reduced by approximately 50% when the aerial is rotated to within a minimum of 10 degrees of a body avoidance stopping point. Aerial rotation shall automatically stop before the aerial contacts the body of the apparatus.
- 3.112.6 The body damage interlock system shall have no effect on aerial operation when the aerial is raised above the preset downward movement stopping point.

CONTRACTOR Complies with Section 3.112: YES**3.113 Aerial Stow Operation Interlock System**

A safety feature shall be included in the aerial operational system that limits the possibility of damage to the apparatus when stowing the aerial. The stow-zone shall be approximately 2-degrees of rotation to the left and right side of the center of the aerial bed support. Once this stow-zone envelope is attained and aerial is fully retracted, downward movement of the aerial shall be allowed for proper positioning into the bed-support. An indicator light shall be located at the turntable control station to inform the aerial operator when the stow-zone envelope is attained.

CONTRACTOR Complies with Section 3.113: YES

3.114 Torque Box

A "torsion box" sub-frame shall be installed on the tiller trailer frame rails, integral with the stabilizers. The torque box shall be constructed of .375" steel plate with the exception of the turntable area which shall be .50" steel plate. The standard dimensions of the torque box shall be 43" wide x 26" high x 248" long, these dimensions may vary. The torque box sub-frame assembly shall be capable of withstanding all torsional and horizontal loads when the unit is on the stabilizers. The torque box shall be bolted in place to the chassis frame rails using twenty-four (24) .62" SAE grade 8 bolts with nuts. The torque box shall have a section modulus of 516.9 In³ and a resistance to bending moment of 18,611,273 inch pounds.

CONTRACTOR Complies with Section 3.114: YES

3.115 Front Stabilizers, Tiller

- 3.115.1 One (1) set of stabilizers shall be installed for stability. The set of stabilizers shall have a minimum of 16' spread and shall be of an Extending Box Beam "H" Style.
- 3.115.2 The stabilizers shall be located in the forward section of the tiller trailer. The stabilizers shall be an integral part of the torque box. A heavy-duty undersling assembly shall attach the stabilizers to the front portion of the torque box. The undersling assembly shall be constructed of 6" x 10" x 1/2" square tubing, 1/4" & 3/8" steel gussets and 1/2" mounting plates. The overlap of the undersling and the torque box shall be a minimum of 24". The bottom side of the tubes shall contain a truss assembly that shall maximize the torsional strength of the undersling assembly.
- 3.115.3 The stabilizers and torque box shall be attached to the trailer frame in six (6) separate locations, three (3) each side of the apparatus, utilizing 1/2" steel plate. The mounting plates shall be located directly under the front stabilizers utilizing eight (8) grade 8 .625" size bolts per side and under the front torque box area utilizing six (6) grade 8 .625" bolts per side.
- 3.115.4 The stabilizers shall be of the double box tube design with jack cylinders that have a 5" internal diameter (bore) and a 2.5" diameter solid cylinder rod. The jack cylinders shall be equipped with integral holding valves which shall hold the cylinders either in the stowed or the working position should a charged line be severed at any point within the hydraulic system.
- 3.115.5 Vertical jack cylinder rods shall be fully enclosed by a telescoping inner box to protect the cylinder rods, seal glands and pistons against damage from nicks, abrasion, and chrome damage. All vertical stabilizer cylinders shall be removable through the top of the box tube. Vertical stabilizers that require cylinders to be removed from the bottom shall not be acceptable. The inner double box system shall be further designed to stabilize the column load imparted upon the cylinder rod, thereby also protecting against damage which may occur from lateral loading which may be caused by side slopes, shifting or sliding of the apparatus on icy or unstable surfaces, sudden sinking of one or more jack pads, or on scene collision while the aerial device is deployed.
- 3.115.6 The stabilizers shall be connected to the hazard light circuit to warn the driver if they are not stowed when the parking brake is released.

CONTRACTOR Complies with Section 3.115: YES

3.116 Stabilizer Stroke

The stroke of the stabilizers shall be a minimum of 25". The stabilizer pad shall be maintained at a stored height of approximately 12" to 15" (dependent on required ground clearance and angle of departure) resulting in a minimum ground penetration of 10" or greater.

CONTRACTOR Complies with Section 3.116: YES

3.117 Hot Dip Galvanizing

The extending front stabilizer beams, inner jack tubes, and stabilizer pads shall be wheel-a-braided to remove any mill scale, or contamination prior to galvanizing. Following this preparation, the individual components shall be hot dip galvanized. The galvanizing process shall require that the entire assembly be completely submerged. Following the galvanizing process, the surface shall be ground smooth to remove dross. This preparation shall

provide maximum protection for these critical components. No exceptions shall be allowed to this requirement due to stabilizers being exposed to salt spray and road debris.

CONTRACTOR Complies with Section 3.117: NO

3.118 Stabilizer Extension System

Extension of the stabilizer horizontal beams shall be activated by dual extension cylinders which shall each have a 2" internal diameter (bore) and a 1.25" diameter cylinder rod. The extension cylinders shall be totally enclosed within the extension beams to prevent damage to the rod and hoses. The extension beams shall be 6.00" x 8.00" x .375" wall steel tubing with a .62" steel plate welded to the top and bottom of each beam.

CONTRACTOR Complies with Section 3.118: YES

3.119 Wear Pads/Bearing Surfaces

- 3.119.1 Nylon wear pads impregnated with molybdenum disulfide and high in molecular weight shall be used between the stabilizer housing assembly and the extension tube for maximum smoothness of operation.
- 3.119.2 Two (2) Nylatron wear pads shall be installed in each stabilizer extension system. There shall be one wear pad located on the top back portion of the extension tube assembly that shall glide on the inner wall of the top housing tube wall. There shall be an additional pad located on the inner wall of the bottom housing tube wall that shall separate the bottom side of the extension tube and the bottom wall of the housing tube. The pads shall be installed in such a manner as to reduce friction for ease of operation and to reduce the amount of metal to metal contact.
- 3.119.3 Each stabilizer down-jack housing tube shall contain four wear pads, one (1) on each side of the tubes.

CONTRACTOR Complies with Section 3.119: YES

3.120 Mechanical Stabilizer Locks

- 3.120.1 Each vertical jack cylinder shall be equipped with a mechanical pin lock to hold it in the working position. The pin shall be zinc plated and shall have a yellow dipped vinyl handle for increased visibility. The locking system shall be incorporated with the protective tubing used to prevent damage to the jack cylinder rod. The inner and outer jack tubes shall be double thickness in the pinning area for additional strength.
- 3.120.2 Safety is of the utmost concern. It is the intent of the fire department to purchase an apparatus that utilizes mechanical stabilizer locks in addition to the hydraulic holding valves integral to the stabilizer jacks. Should a mechanical failure occur with the stabilizer system or hydraulic seepage cause a stabilizer to drift, the mechanical locks shall keep the desired "stabilizer set-up" intact without compromising aerial capabilities or safety. There shall be no exception allowed to this requirement.

CONTRACTOR Complies with Section 3.120: YES

3.121 Stabilizer Lights

3.121.1 Stabilizer Work Lights

Federal Signal Commander 750-SQ LED flood lights shall be provided at each stabilizer location to illuminate the surrounding area. The lights shall be activated by the aerial master switch.

3.121.2 Stabilizer Arm Warning Lights

Two (2) Federal Signal Micropulse LED red flashing lights shall be mounted below each stabilizer beam, facing front and rear. These warning lights shall be activated by the aerial master switch.

3.121.3 Stabilizer Cover Warning Lights

There shall be one (1) Whelen M6 Liner Super-LED Surface mount, Part # M6RC LED flashing light installed on each extending stabilizer cover panel. These lights shall be red in color with a clear lens and activated by the aerial master switch.

CONTRACTOR Complies with Section 3.121: YES

3.122 Manual Angle Level System, Tiller

The fire truck leveling system shall consist of two manual angle level gauges located at each stabilizer control station. One of the gauges shall measure the side to side angle of the apparatus and the other shall measure the fore to aft angle of the apparatus. The gauges shall have a sight bubble that shall measure the angle in two degree increments.

CONTRACTOR Complies with Section 3.122: YES

3.123 Auxiliary Stabilizer Pads

An auxiliary pad for additional load distribution on soft surfaces shall be supplied for each stabilizer. The stabilizer pads shall have an aluminum "U" shaped slot installed on the pad to allow pad to be placed on the stabilizer prior to ground engagement to aid in positioning the stabilizer pad.

CONTRACTOR Complies with Section 3.123: YES

3.124 Cradle Interlock System

A cradle interlock system shall be provided to prevent the lifting of the ladder from the nested position until the operator has positioned all of the stabilizers in a load supporting configuration. A switch shall be installed at the cradle to prevent operation of the stabilizers once the aerial has been elevated from the nested position. There shall be a manual override switch that allows the ladder to be lifted from the cradle when the aerial is set up in the "Short-Jacked" configuration.

CONTRACTOR Complies with Section 3.124: YES

3.125 Ground Control Station

3.125.1 A control station shall be located in close proximity to the stabilizer controls, on each side of the tiller body, in an easily accessible area. The control panel shall be illuminated for night time operation. The following items shall be furnished at the control console, clearly identified and located for ease of operation and viewing:

- a. Individual stabilizer down indicator lights
- b. Aerial PTO engaged indicator light
- c. High idle switch with indicator light
- d. Emergency hydraulic pump control with indicator light
- e. Fifth wheel interlock light

A weather proof compartment shall be furnished behind the control panel and shall contain the aerial circuit breakers, interlock components and control circuit distribution terminals.

3.125.2 Hydraulic Stabilizer Controls

- a. The controls shall be designed to allow the stabilizers to be operated independently so that the vehicle may be set up in a restricted area or uneven terrain. No Exceptions.
- b. An automatic diverter valve shall be provided in conjunction with the stabilizer controls as a safety device. The diverter valve shall allow the hydraulic fluid to flow either to the stabilizer circuit or the turntable and ladder circuit, but not both simultaneously.
- c. A stabilizer deployment warning alarm shall be provided at each stabilizer to warn personnel. The warning alarm shall deactivate only when all stabilizers are in the load supporting configuration.
- d. There shall be a manual override switch that allows the ladder to be lifted from the cradle when the aerial is set up in the "Short-Jacked" configuration.

CONTRACTOR Complies with Section 3.125: YES

3.126 Diverter Valve

There shall be an automatic electric over hydraulic three (3) position diverter valve located at the left side of the apparatus. This diverter valve will divert hydraulic fluid to either the aerial ladder controls or the outrigger controls.

- a. To prevent accidental operation of the ladder prior to the outrigger being set properly, the diverter valve will only allow hydraulic fluid to the outrigger controls until the outriggers are set properly.

- b. To prevent accidental operation of the outrigger system during the aerial ladder operation, the diverter valve will only allow hydraulic fluid to the ladder controls when the aerial device is raised from the aerial travel support. In the event of electrical failure, the operator will be able to move the diverter valve to the ladder or outrigger position for continuous uninterrupted operation.

CONTRACTOR Complies with Section 3.126: YES

3.127 Turntable Control Console

- 3.127.1 The turntable control console shall be located on the left-hand side of the turntable (driver's side of the apparatus). The console shall be illuminated for night time operation and shall have a hinged cover that hinges to the right side. Pressurized gas filled cylinder shall be furnished on cover to hold it in the open position. The gas filled cylinder shall assist in closing the cover automatically when it is positioned over center.
- 3.127.2 The console surface shall be angled toward the operator so controls may be viewed and operated ergonomically. Rubber bumpers shall be provided so that when the control console lid is closed, the lid and the control panel will be protected from each other (no metal to metal contact).
- 3.127.3 Three (3) handles for the ladder hydraulic functions (elevation, rotation, and extension) shall be installed at the control console. The controls shall be manual for safety and durability reasons. A cast alloy plate with openings cast into it for the ladder hydraulic function levers to extend through, shall be provided to encircle the aerial ladder hydraulic function levers. The function of each control lever shall be cast into the plate under the appropriate lever.
- 3.127.4 The controls shall be capable of being operated independently or simultaneously with a gloved hand. The speed of movement caused by moving any control shall be minimally affected when multiple controls are moved.
- 3.127.5 A systems engagement control shall be installed at the control pedestal. The control shall energize the hydraulic system for ladder function and provide flow of hydraulic fluid to the master valve bank.
- 3.127.6 A dead man foot pedal control at the pedestal control shall be connected to the Hobs hour meter when depressed.
- 3.127.7 Each item provided on the console not labeled from the manufacturer, shall be provided with a permanent cast alloy label. The information on the label shall be stamped or professionally engraved for lasting durability.
- 3.127.8 A hinged door shall be provided on the front of the control console. This door shall be provided with a lift and tum latch. Opening of this door shall allow access to the inner components for inspection purposes. A recessed work light shall be provided in the access door.
- 3.127.9 There shall be a hinged access door provided on the outboard side of the control panel. The door shall be provided with a spring loaded, slotted head latch. The opening shall allow access to the electrical components for service purposes.
- 3.127.10 The following items shall be furnished at the console, clearly identified and located for ease of operation and viewing:
- a. Elevation, Extension and Rotation Controls
 - b. Lighted Push/Pull Button to Deactivate Hydraulic & Electrical System
 - c. Fast Idle Button
 - d. Panel Light Mounted in Cover (LED)
 - e. Rung Alignment light (LED)
 - f. Ladder light Switches (LED)
 - g. Ladder Overload Warning Horn
 - h. System Pressure Gauge (LED)
 - i. LoadMinder
 - j. Emergency Pump Unit Switch and Light (LED)
 - k. Sigtronics jack with push to talk button and weather proof speaker for Kenwood radio.
 - l. Intercom with Controls
 - m. Operators Load Chart

- n. Warning Signs
- o. Auto Ignition Control / Remote Start

CONTRACTOR Complies with Section 3.127: YES

3.128 Hour Meter

There shall be an hour meter installed at the turntable control station, connected to the system engagement control for the aerial. The meter shall register the total hours of aerial use for scheduling periodic maintenance. Hour meter shall only run when dead man pedal is depressed. The hour meter shall be installed through the side of the turntable control console so it can be read without opening the console door.

CONTRACTOR Complies with Section 3.128: YES

3.129 Power Take-Off

The apparatus shall be equipped with a power takeoff (PTO) driven by the chassis transmission and actuated by an electric shift, located inside the cab. The PTO which drives the hydraulic pump shall meet all the requirements for the aerial unit operations. An amber light shall be installed on the cab instrument panel to notify the operator that the PTO is engaged.

CONTRACTOR Complies with Section 3.129: YES

3.130 "Thru-Drive" Hydraulic Pump

3.130.1 The hydraulic system shall be supplied by a pressure compensated, load sensing, variable gallonage type pump. The pump shall provide adequate fluid volume to allow all ladder functions to operate simultaneously, without noticeable loss of speed. The pump shall supply oil only when the ladder is in motion, thereby preventing overheating of the hydraulic oil.

3.130.2 The pump shall be a "Thru-Drive" design. This design shall be provided for applications that require a power source for additional hydraulically operated accessories or tools.

3.130.3 An interlock shall be provided that shall allow operation of the aerial device PTO shift only after the chassis spring brake has been set and the chassis transmission has either been placed in the neutral position or the drive position if the driveline has been disengaged from the rear axle.

CONTRACTOR Complies with Section 3.130: YES

3.131 Hot Shift PTO Generator

The PTO shall be capable of being operated while in "Drive". All generator powered lighting shall turn off when the transmission is put into Drive. The auxiliary A/C units shall continue to work off the generator while in drive.

CONTRACTOR Complies with Section 3.131: YES

3.132 Hydraulic System

3.132.1 The tubing and hoses used in the hydraulic system shall have a high-pressure rating, with the tubing having a minimum burst pressure of 9,600 to 17,400 PSI and the hoses being a minimum of 8,000 to 13,000 PSI.

3.132.2 The hydraulic oil tank shall have:

- a. 50-gallon capacity (approximate) and a dipstick to check the oil level.
- b. The oil fill shall be furnished with a cap that shall act as a ventilator provide clean fresh air into the oil tank and a 40 micron filter to provide positive protection from contaminants.
- c. A magnetic drain plug shall be provided in a low point of the oil tank.
- d. An easily accessible 10 micron replaceable oil filter shall be installed on the hydraulic oil tank.
- e. The hydraulic oil tank shall be furnished with two pick-up tubes, one tube being used for normal operation and the other for emergency operation.
- f. The emergency pick-up tube shall extend further down into the oil tank to provide for some reserve oil in case a hydraulic line is broken.
- g. A sight tube shall also be located adjacent to the hydraulic tank to indicate the fluid level.
- h. An electronic hydraulic fluid level indicator shall be mounted near the pedestal controls.

- 3.132.3 The hydraulic system shall be protected from possible hydraulic pump malfunctions by a relief valve which shall route the excess oil into the oil tank when the pressure in the hydraulic system exceeds 3,500 PSI. The hydraulic control valves shall also be protected by being plumbed to a pressure relief valve to protect them from high pressure.

CONTRACTOR Complies with Section 3.132: YES

3.133 Hydraulic Oil Level Gauge (Electronic)

There shall be an electronic hydraulic oil level gauge supplied and installed on the hydraulic oil system of the aerial. The Gauge shall consist of a sending unit located in the hydraulic oil tank and a four-light gauge display. the gauge shall read:

- a. Level 4 "Acceptable"
- b. Level 3 "Full"
- c. Level 2 "ADD"
- d. Level 1 "Stop Operation"

CONTRACTOR Complies with Section 3.133: YES

3.134 Hydraulic Pressure Gauge

There shall be a pressure gauge at the ground level control station to monitor the hydraulic system pressure. The gauge shall be liquid filled to prevent gauge shock when the hydraulic system is energized. The liquid shall not be vulnerable to freezing in subzero temperatures. Shall be located in L-2.

CONTRACTOR Complies with Section 3.134: YES

3.135 Reservoir Isolation Kit

There shall be 1/4 turn ball valves installed on the hydraulic reservoir to isolate it from the hydraulic system. This shall minimize hydraulic fluid loss when changing filter elements during routine maintenance.

CONTRACTOR Complies with Section 3.135: YES

3.136 Aerial LoadMinder System

3.136.1 There shall be a LoadMinder at the operator's pedestal that indicates the load(s) on the aerial device. The display shall be in the form of an LED illuminated bar graph. The instrument shall be readable in day and night conditions. The display shall be a "real time" display, thereby giving immediate readings to the operator. Additionally, a color-coded bar shall be above and below the actual LED bar graph, to surround the actual reading given to the operator; thereby making the display easier and faster to read. The color-coded bars shall progress from Green to Yellow, and finally to Red. When the LED bar graph illuminates, representing a load on the aerial ladder, the operator need only glance at the display to determine the load applied to the aerial device - in relation to 100% rated aerial device capacity.

3.136.2 The readout given by the display shall be continuous, shall be relative to the NFPA compliant aerial device rated capacity as stated in these specifications, and shall including (but not be limited to) the following items:

- a. Accumulated equipment on any and all ladder sections, or at the tip including manufacturer installed items or customer installed items.
- b. Accumulated personnel on any and all ladder sections or at the tip.
- c. Accumulated ice buildup on any and all ladder sections or at the tip.
- d. The total load suspended from any load lifting I rappelling eye installed by the manufacturer.
- e. Any load reaction from dynamic loads placed on or realized by the aerial structure.
- f. Any water weight or reactionary force realized by the aerial structure.
- g. Any combination of the above items.

3.136.3 The LoadMinder as described shall be designed in such a manner that the operator will not have to refer to an angle indicator, extension tape, or load chart; or be required to guess at, or try to calculate the loads or forces applied to, or interacting with the aerial device at any given time, and in any situation.

This shall be in compliance with NFPA 1901 newest revision. Systems that require the use of a load chart, angle indicator or extension tape shall not be acceptable for safety reasons.

- 3.136.4 The LoadMinder shall be connected to a 100-dba alarm at the operator's control station that shall sound when the ladder load is above the rated capacity. This alarm system shall also be connected to two (2) strobe lights on the end of the base section, one on each side, to provide further notice to the operator of an unsafe condition.

CONTRACTOR Complies with Section 3.136: YES

3.137 Aerial Ladder Load Chart

There shall be a load chart installed at the turntable control console of the aerial ladder. The load chart shall cover the full operating range of the ladder.

CONTRACTOR Complies with Section 3.137: YES

3.138 Emergency Pump

- 3.138.1 The apparatus shall be equipped with one (1) emergency hydraulic pump electrically driven from the chassis battery system. The emergency pump shall be capable of providing adequate ladder functions to stow the unit in case of main hydraulic pump failure.
- 3.138.2 Two (2) control switches for this emergency pump shall be provided. One switch shall be installed at each one of the following two (2) control stations; The Turntable Control Console and the Stabilizer Control Station.
- 3.138.3 Each control shall be a spring loaded momentary switch. A red indicator light shall be mounted adjacent to each switch to indicate activation of the emergency pump.

CONTRACTOR Complies with Section 3.138: YES

3.139 Hydraulic Swivel

The aerial device shall be equipped with a hydraulic swivel which shall connect the hydraulic lines from the hydraulic pump and reservoir to the aerial control bank at the turntable, above the point of rotation. The hydraulic swivel shall allow for 360 degrees of continuous rotation of the aerial device with no loss of speed or capacity in functions.

CONTRACTOR Complies with Section 3.139: YES

3.140 Electrical Swivel

The ladder shall be equipped with an electrical swivel to allow for 360 degrees of continuous rotation of the aerial while connecting all electrical circuits through the rotation point. A minimum of thirty-two (32) collector rings shall be provided.

CONTRACTOR Complies with Section 3.140: YES

3.141 Two Station Aerial Communication System

- 3.141.1 There shall be a two (2) station FRC Always Clear Talking (ACT) or equal digital Intercom Annunciator system installed. The system shall have two (2) remote control panels, an automatically triggered annunciator and two (2) 115 db speakers. The annunciator/speakers shall be mounted in a protected environment. The main control station, located in the operators pedestal control console, shall normally monitor the aerial ladder tip and shall be provided with push to talk capabilities. The station at the ladder tip shall only have provisions for hands free operation.
- 3.141.2 Provide a separate double shielded aerial ladder communications cable for the Intercom/Annunciator system to minimize noise. The communication and lighting cables shall be routed through the ladder section to the fly tip or secured along the main and fly ladder sections, suspended between the ladder trusses between the top of the main section and bottom of the fly section. The cables shall be provided with a take-up feature to eliminate cable slack. The cables shall be provided with adequate number and size conductors to operate all communications and lighting equipment, etc.

CONTRACTOR Complies with Section 3.141: YES**3.142 Monitor Safety Interlock**

The monitor safety interlock shall prevent the monitor or nozzle from coming into contact with the tiller operator's cab windshield, roof, etc. The safety interlock shall automatically stop the operator from lowering the aerial into the cradle until the monitor has been completely removed, to prevent damage. In addition, the blue bed zone indicator shall not illuminate until the ladder is aligned with the cradle and the monitor has been completely removed.

CONTRACTOR Complies with Section 3.142: NO

3.143 Akron 1494 Ladder Pipe

There shall be one (1) 1000gpm Akron Model 1494 ladder pipe and ladder pipe storage bracket provided and mounted with the apparatus. Exact mounting location shall be determined at pre-construction.

CONTRACTOR Complies with Section 3.143: YES

3.144 Angle Indicator (Lighted)

There shall be a liquid filled angle indicator mounted on the base section of the aerial ladder. The indicator shall give accurate elevation in degrees from -20 to +80 degrees in relation to level. The liquid shall be of proper viscosity and composition to stay in liquid form even when exposed to below zero temperatures. Reading of the indicator shall be accomplished by observing the position of a suspended ball in relation to the degrees of elevation as marked on the indicator housing. The indicator shall be lighted for nighttime operations.

CONTRACTOR Complies with Section 3.144: YES

3.145 Extension Indicator

3.145.1 There shall be numerals affixed to the inside of the handrail of the base section, opposite the turntable control console. The numerals shall be at appropriate intervals, indicating total aerial extension in 5 foot increments. A band on the first fly section shall align with these marks at the appropriate extension distance.

3.145.2 The extension indicator color shall be black reflective. This shall make the length of aerial extension easily readable by the operator by merely glancing at the indicators. Numerals indicating length of extension shall be placed adjacent to indicating bands.

CONTRACTOR Complies with Section 3.145: YES

3.146 Aerial Mounted Folding Attic Ladder Bracket

There shall be one (1) mounting bracket on the fly section for a 10' folding attic ladder.

CONTRACTOR Complies with Section 3.146: YES

3.147 Roof Ladder Mounting Brackets Base Section, Behind Ladder Sign

Roof ladder brackets shall be provided on the outside of the base section for a roof ladder. The brackets shall be installed between the aerial base section and the ladder signs. The brackets shall be formed using break and bend techniques for added strength and an outstanding appearance. To enhance durability, the brackets shall be coated with Line-X or equal.

- a. Where the ladder rack is bolted to the aerial section or ladder sign, stainless steel fasteners shall be employed.
- b. When installed in the brackets, the roof ladder shall be retained so that it will not come out of the brackets unexpectedly.
- c. There shall be a total of two roof ladder brackets, one on the right side and one on the left side of the aerial.
- d. Two (2) 14' roof ladder, Duo Safety 775DR (Special Width) shall be provided.

CONTRACTOR Complies with Section 3.147: YES

3.148 Aerial Special Labels

Legible, permanent signs shall be installed in positions readily visible to the operator to provide operational directions, warnings, and cautions. The signs shall describe the function of each control and provide operating instructions. Warning and caution signs shall indicate hazards inherent in the operation of the aerial device. These hazards shall include, but shall not be limited to:

- a. Electrical hazards involved where the aerial device does not provide protection to the personnel from contact with, or near proximity to, an electrically charged conductor.
- b. Electrical hazards involved where the aerial device does not provide protection to ground personnel who might contact the vehicle when in contact with energized electrically charged conductors.
- c. Hazards from stabilizer motion.
- d. Hazards that can result from failure to follow the manufacturer's operating instructions.

CONTRACTOR Complies with Section 3.148: YES

3.149 Aerial Device Specification Placard

A permanent label shall disclose the following information relative to the aerial device:

- a. Make
- b. Model
- c. Insulated or non-insulated
- d. Serial number
- e. Date of manufacture
- f. Rated capacity (s)
- g. Rated vertical height
- h. Rated horizontal reach
- i. Maximum hydraulic system pressure
- j. Hydraulic oil type and capacity

All other appropriate labels to ensure safe operation of the aerial device shall be permanently affixed in conspicuous locations.

CONTRACTOR Complies with Section 3.149: YES

3.150 Aerial Ladder Signs

There shall be two (2) signs measuring 16" tall x 133" long installed on the base section of the aerial ladder, one on each side. The signs shall be fabricated of 1/8" aluminum plate and shall be painted to match the aerial. The signs shall be large enough to accept a maximum lettering size of 12" high.

CONTRACTOR Complies with Section 3.150: YES

3.151 Wireless Aerial Camera

A Fire Research inView™ TrueSight™ model BCA211-A00 kit shall include: (1) one 130° wireless camera with 9 infrared illuminators and (1) one 7" InCab Wireless Monitor. The Monitor and Camera shall connect wirelessly through the built-in Wireless Transmitters. The Wireless Transmitter shall have up to 70 feet of transmission. The camera and monitor shall have the capability of being paired inside of the cab through the Auto Pair function. The 130° Camera shall include the following features: 1/4" Sharp Color CCD Sensor, 250,000 pixels for Picture Elements and Gamma Correction with R=0.45 to 1.0. The Image Sensor shall provide 540 TV Lines PAL: 752(H) *582(V), NTSC: 769(H) x 494(V). The 2.1MM Lens shall have a 130° Viewing Angle. The Waterproof rating shall be IP68K. The kit shall include an Internal Synchronization Sync System. The Infrared Distance shall be 50 Ft. (9 Infrared IR). The Usable Illumination shall be 0 Lux (with IR ON). The Power Source shall be DC 12V/3A (+/-10%). Signal-to-Noise ratio (S/N Ratio) shall be rated for higher than 48DB. The Electronic Iris rating shall be 1/50, 1/60-1/100,000 seconds. Video Output rating shall be 1VP.P 75 Ω. The IR Switch Control shall have ACDS Automatic Control. Vibration and Impact Rating shall be 20G/100G. The Operating Temperature rating shall be -22°F ~ +176°F / RH 95% Max. The Storage Temperature rating shall be -22°F ~ +140°F / RH 95% Max.

The model BCA211-A00 kit also shall include (1) one 7" Wireless InCab Digital Color TFT LCD Monitor. The specifications shall be as follows for the monitor:

- Dot Resolution: 800 x 3 (RGB) x 480
- Display Format/Contrast: 16:9 / 500:1
- Display Brightness: 400 CD/m2
- Viewing Angle: U:50° D:60° L/R:70°
- 2 Channel Video Input (for dual screen/mirror image capabilities)
- Distance Grid Lines
- 1 VP-P, 75Ω
- Power Supply: DC 12V-24V (+/-10%)
- Power Consumption: 5W
- Operating Temperature: -22°F ~ +176°F
- Video System: Auto NTSC/PAL
- Overall Dimensions: 7" (L) x 5" (H) x 1" (D)
- Weight: 400G
- Vibration Rating: 5G
- Dot Pitch: 0.192 (H) x 0.1805 (V)
- Internal Sync System

Location of the 130° wireless camera with 9 infrared illuminators shall be installed on the tip of the aerial and the 7" InCab wireless monitor shall be located on the turn table next to the aerial controls. The exact location of the camera and monitor shall be determined at the pre-construction meeting.

CONTRACTOR Complies with Section 3.151: YES

End of Section III – Aerial Body & Trailer

EXHIBIT A -ATTACHMENT # 1 SECTION IV

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4.26	Marker and ICC Lights
4.27	Headlight and Marker Light Activation
4.28	Auxiliary Marker/Turn Lights
4.29	Ground Lights
4.30	Lower Cab Step Lights
4.31	Intermediate Step Lights
4.32	Engine Compartment Lights
4.33	Tiller Cab Interior Lights
4.34	Tiller Guide Lights
4.35	Emergency Lighting Activation
4.36	Side Scene Lights
4.37	Brow Lights
4.38	Side Scene Light Location
4.39	Side Scene Light Activation
4.40	Interior Overhead Lights
4.41	Master Warning Switch
4.42	Map Lights
4.43	Do Not Move Apparatus Lights
4.44	Inboard Front Warning Lights

- 4.45 Intersection Warning Lights (Lower Zone A)
- 4.46 Side Warning Lights
- 4.47 Interior Door Open Warning Lights
- 4.48 Rear Work Light Switch
- 4.49 Midship Turn Signal (LED)
- 4.50 Midship Turn Signal, Tiller
- 4.51 LED Clearance Lights
- 4.52 Ground Lighting – LED
- 4.53 Walkaway Lights
- 4.54 Scene Lights, Rear Facing, Tiller Cab
- 4.55 Scene Lights Forward Facing, Tiller Cab
- 4.56 AMDOR Compartment Lighting, Freedom Package
- 4.57 Tail Lights
- 4.58 12 Volt Accessory Outlet in the Cab
- 4.59 Streamlight Rechargeable Lights
- 4.60 Tiller Driving Lights
- 4.61 Tiller Turning Lights
- 4.62 Go-Light Remote Control Search Light
- 4.63 Pedestal Mount LED Light
- 4.64 Visual Warning
- 4.65 Federal “LED” Traffic Advisor
- 4.66 Aerial Spotlight
- 4.67 Ladder Tip LED Lights
- 4.68 Aerial Mounted 120 Volt Receptacle
- 4.69 Blue LED Rung Illumination Lighting
- 4.70 Onan Hydraulic Generator Set
- 4.71 Generator Warranty Period
- 4.72 Frog Display
- 4.73 GFI Load Center
- 4.74 Branch Circuit Overcurrent Protection
- 4.75 Electric Cord Reels
- 4.76 Cord Reel Junction Box
- 4.77 Receptacle Junction Box, Duplex NEMA L5-15R
- 4.78 Volt Twist Lock, Single Receptacle
- 4.79 Kenwood Radio System
- 4.80 Intercom, Sigtronics, US-12S (Up To 12 Positions)
- 4.81 Intercom Headset
- 4.82 PSEC Radio System
- 4.83 Radio Equipment Mounting
- 4.84 Mobile Data Computer (MDC)

SECTION IV – ELECTRICAL**4.1 Battery**

The single start electrical system shall include six (6) Harris BCI 31 925 CCA batteries with a 210-minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541.

CONTRACTOR Complies with Section 4.1: YES

4.2 Battery Tray

The batteries shall be installed within two (2) steel battery housings with integrated slide-out trays located on the left side and right side of the chassis, securely bolted to the frame rails. The battery trays shall be coated with the same material as the frame. The battery trays shall include drain holes in the bottom for sufficient drainage of water. A durable, non-conducting, interlocking mat made by Dri-Dek shall be installed in the bottom of the trays to allow for air flow and help prevent moisture build up. The batteries shall be held in place by non-conducting phenolic resin hold down boards. The design for the slide-out feature shall include remote terminal studs for the battery cables to improve ease of maintenance.

CONTRACTOR Complies with Section 4.2: NO

4.3 Battery Box Cover

Each battery box shall include a steel cover which protects the top of the batteries. Each cover shall include flush latches which shall keep the cover secure as well as a black powder coated handle for convenience when opening.

CONTRACTOR Complies with Section 4.3: YES

4.4 Battery Cable

The starting system shall include cables which shall be protected by 275-degree F. minimum high temperature flame retardant loom, sealed at the ends with heat shrink and sealant.

CONTRACTOR Complies with Section 4.4: YES

4.5 Battery Jumper Stud

The starting system shall include battery jumper studs. These studs shall be located in the forward most portion of the driver's side lower step. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

CONTRACTOR Complies with Section 4.5: YES

4.6 Alternator

The charging system shall include a 320 amp Delco Remy 40SI 12-volt alternator. The alternator shall include a self-exciting integral regulator.

CONTRACTOR Complies with Section 4.6: YES

4.7 Battery Conditioner

A Kussmaul 35/10 battery conditioner shall be supplied. The battery conditioner shall provide a 35-amp output for the chassis batteries and a 10-amp battery saver output. The battery conditioner shall be mounted in the cab in the LH rear facing outer seating position.

CONTRACTOR Complies with Section 4.7: YES

4.8 Battery Conditioner

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted in the cab, viewable through the cab mid side window behind the left front door.

CONTRACTOR Complies with Section 4.8: YES

4.9 Electrical Inlet

4.9.1 A Kussmaul 20-amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed. A single item or an addition of multiple items must not exceed the rating of the electric inlet that it's connected to.

4.9.2 Amp Draw Reference List:

- a. Kussmaul 1000 Charger - 3.5 Amps
- b. Kussmaul 1200 Charger - 10 Amps
- c. Kussmaul 35/10 Charger - 10 Amps
- d. 1000W Engine Heater - 8.33 Amps
- e. 1500W Engine Heater - 12.5 Amps
- f. 120V Air Compressor - 4.2 Amps

4.9.3 Electrical Inlet Connection

The electrical inlet shall be connected to the battery conditioner.

4.9.4 Electrical Inlet Color

The electrical inlet connection shall include a red cover.

CONTRACTOR Complies with Section 4.9: YES

4.10 Auxiliary Electrical Inlet

4.10.1 An auxiliary Kussmaul 20-amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed. A single item or an addition of multiple items must not exceed the rating of the electric inlet that it's connected to.

4.10.2 Amp Draw Reference List:

- a. Kussmaul 1000 Charger - 3.5 Amps
- b. Kussmaul 1200 Charger - 10 Amps
- c. Kussmaul 35/10 Charger - 10 Amps
- d. 1000W Engine Heater - 8.33 Amps
- e. 1500W Engine Heater - 12.5 Amps
- f. 120V Air Compressor - 4.2 Amps

4.10.3 Auxiliary Electrical Inlet Location

An auxiliary electrical inlet shall be installed on the left-hand side of the cab ahead of the front door.

4.10.4 Auxiliary Electrical Inlet Connection

The auxiliary electrical inlet shall be connected to the 110V A/C unit.

4.10.5 Auxiliary Electrical Inlet Color

The auxiliary electrical inlet connection shall include a blue cover

CONTRACTOR Complies with Section 4.10: YES

4.11 Siren Control Head

A Federal PA300, 200-watt siren control head shall be provided and installed in the dash panel. The siren shall feature 200-watt output, wail, yelp, air horn, PA and radio broadcast. The siren shall include a noise cancelling microphone.

CONTRACTOR Complies with Section 4.11: YES

4.12 Mechanical Siren

A Federal Signal Q2B mechanical siren shall be installed on the front bumper. The siren shall be controlled by a foot pedal on the left-hand side for the driver. The siren shall also be controlled by a push button on the right-hand side for the officer. The siren brake shall have a push button located next to the officer side siren control.

CONTRACTOR Complies with Section 4.12: YES

4.13 Horn Button Selector Switch

A rocker switch shall be installed in the switch panel between the driver and officer to allow control of either the electric horn or the electronic siren from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in either position to meet FMCSA requirements.

CONTRACTOR Complies with Section 4.13: YES

4.14 Air Horn Activation

The air horn activation shall be accomplished by one (1) Linemaster model SP491-S81 foot switches located on the left-hand side for the driver. On the right-hand side for the officer will be a push button. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

CONTRACTOR Complies with Section 4.14: YES

4.15 Electronic Siren Auxiliary Activation

The electronic siren shall include activation by the steering wheel horn button.

CONTRACTOR Complies with Section 4.15: YES

4.16 Back-up Alarm

An ECCO model 575 backup alarm shall be installed at the rear of the chassis with an output level of 107 db. The alarm shall automatically activate when the transmission is placed in reverse. A virtual button shall be provided on the Vista display and control screen to disable the backup alarm.

CONTRACTOR Complies with Section 4.16: YES

4.17 Wiring Harnesses

4.17.1 Wiring harnesses shall be the automotive type, engineered specifically for the builder's apparatus, and shall meet the following criteria. Under no circumstances shall diodes, resistors, or fusible links be located within the wiring harness. All such components shall be located in an easy to access wiring junction box or the main circuit breaker area. All wire shall meet white book, baseline advanced design transit coach specification and Society of Automotive Engineers recommended practices. It shall be stranded copper wire core with cross linked polyethylene insulation complying with SAE specification J 1128. Each wire shall be hot stamp function coded every three inches starting one inch from the end and continuing throughout the entire harness. In addition to function coding, each wire shall be number and color coded.

4.17.2 All terminals on the ends of the wiring harness shall be soldered unless a crimping tool or machine is used that gives an even and precise pressure for the terminal being used. All terminals shall be pull tested to insure their integrity.

CONTRACTOR Complies with Section 4.17: YES

4.18 V-Mux Electrical Management System

4.18.1 The apparatus shall be equipped with a V-MUX Multiplex System, no substitutes accepted. The Manufacture of the Multiplex system shall provide at a minimum three cities of reference that have at least 10 trucks operational for over a one year period. The Multiplex system hardware that is being put into the apparatus of this bid shall be field proven for a minimum of two years. Any multiplex system that has less than 200 systems in vehicles with less than two years' field time on the identical hardware that shall be put into the apparatus shall be excluded from this bid process. Any Multiplex system with a warranty higher than 1% over the past 2 years shall be excluded. There are several key benefits to multiplexing, one is to reduce the number of connections in a vehicles electrical system, because of this it is important to limit the number of modules that control certain functions of the vehicle, therefore wherever it is stated that an "add-on" module will not be acceptable, there shall be No Exceptions.

4.18.2 Outputs: The outputs shall perform all the following items without added modules to perform any of the tasks.

- 4.18.2.1 **Load Shedding:** The System shall have the capability to Load Shed with 8 levels any output. This means you can specify which outputs (barring NFPA restrictions) you would like Load Shed. Level 1 12.9v, Level 2 12.5V, Level 3- 12.1V, Level 4- 11.7V, Level 5 11.3V, Level 6 10.9V, Level 7 10.5, Level 8 10.1. Unlike conventional load shedding devices, you can assign a level to any or all outputs. No add-on modules shall be acceptable; the module with the outputs must perform this function.
- 4.18.2.2 **Load Sequencing:** The System shall be able to sequence from 0 8 levels any output. With 0 being no delay and 1 being a 1 second delay, 2 being a 2 second delay and so on. Sequencing reduces the amount of voltage spikes and drops on your vehicle, and can help limit damage to your charging system. No add-on modules shall be acceptable; the module with the outputs must perform this function.
- 4.18.2.3 **Output Device:** The System shall have solid-state output devices. Each solid-state output shall be a MOS-FET (Metal Oxide Semiconductor- Field Effect Transistors); MOS-FETs are solid-state devices with no moving parts to wear out. A typical relay when loaded to spec has a life of 100,000 cycles. The life of a FET is more than 100 times that of a relay. No add-on modules shall be acceptable; the module with the outputs must perform this function.
- 4.18.2.4 **Flashing Outputs:** The System shall be able to flash any output in either A or B phase, and logic is used to shut down needed outputs in park, or any one of several combined interlocks. The flash rate can be selected at either 80, or 160 FPM. This means any light can be specified with a multiplex truck with no need to add flashers. Flashing outputs can also be used to warn of problems or other unique idea you may come up with. No add-on modules shall be acceptable; the module with the outputs must perform this function.
- 4.18.2.5 **PWM:** The modules shall have the ability to PWM at some outputs so that a Headlight PWM module is not needed. No add-on modules shall be acceptable; the module with the outputs must perform this function.
- 4.18.2.6 **Diagnostics:** An output shall be able to detect either a short or open circuit. The System shall be able report in "real time" a text based message that points the maintenance person to a specific output.
Inputs:
a. The inputs shall have the ability to switch by a ground or battery signal.
b. The inputs shall be filtered for noise suppression via hardware and software so that RF or dirty power will not trick an input into changing its status.
- 4.18.2.7 **Auto-Throttle:** The Multiplex system shall be able to perform automatic high idle via a network gateway or by using an existing output on a module to provide the proper signals to an OEM Engine ECU. This task shall be handled with existing inputs and outputs. No add-on modules shall be acceptable; the module with the outputs must perform this function.
- 4.18.2.8 **Displays:** There shall be a total of two Vista screen displays, one on the driver side dash, facing the driver and one on the officer side dash, facing the officer. Displays shall provide real time information regarding Load Shedding and System Status, such as network traffic/errors or shorts and open circuits.
- 4.18.2.9 **System Network:** The Multiplex system shall contain a Peer-to-Peer network. A Master Slave Type network is not suitable for the Fire/Rescue industry. A Peer-to-Peer network means that all the modules are equal on the network; a Master is not needed to tell other nodes when to talk.
- 4.18.2.10 **System Reliability:** The Multiplex system shall be able to perform in extreme temperature conditions, from 40° to +85° C (-40° to +185° F.) The system shall be sealed against the environment, moisture, humidity, salt or fluids such as diesel fuel, motor oil or brake fluid. The enclosures shall be rugged to withstand being mounted in various locations or compartments around the vehicle. The modules shall be protected from over voltage and reverse polarity.

- 4.18.2.11 **Warranty Information:** The Multiplex (V-Mux) system of Weldon, when installed correctly is warranted against mechanical, electrical and physical defects for the period defined in the table below per module. The period is defined as the date of manufacture from Weldon: each V-Mux carries its own date of manufacture.

<u>Part Numbers</u>	<u>Parts Period</u>	<u>Weldon Repair Parts Labor Period</u>
6000-0000-02 or -03 Hercules	4 years	4 years
6010-0000-00 Mini 4x12	4 years	4 years
6020-0000-00 Mini 16	4 years	4 years
6201-XXXX-XX Vista I Display Nodes		
Internal Displays	1 year	1 year
Internal Electronics	4 years	4 years
6231-XXXX-XX Vista Ill Display Nodes	1 year	1 year
6300-XXXX-XX Switch Panels		
6400-0000-00 Gateway Node	4 years	4 years
ORB0-0614-00 Shunt interface Module	1 year	1 year
OU10-0715-00 VFD 2 Line Display		
OR13-0614-00 Temp sensor	30 days	30 days
611X-0000-00 Transceiver Serial or USB	1 year	1 year
613X-0000-00 Diag Kit, Serial or USB	1 year	1 year
Cables or other accessories	30 days	30 days

Nodes need to be installed in the ceiling of the body compartments for improved access for maintenance, or in a location that would be easy to access. Engineering to determine best location.

CONTRACTOR Complies with Section 4.18: YES

4.19 Weatherproof Door Switches

- 4.19.1 Due the harsh environment and susceptibility to moisture on the fire ground, the fire apparatus compartment doors shall utilize weatherproof switches. Two different types of switches shall be used. Weatherproof proximity switches shall be utilized where space permits. In tight locations, mechanical weatherproof switches shall be used. No Exceptions.
- 4.19.2 The switches shall be used for activation of the compartment lights and shall provide a signal to the door open circuit in the cab.

CONTRACTOR Complies with Section 4.19: YES

4.20 Volt System Schematic

A complete electrical schematic for the apparatus shall be provided. This schematic shall be specifically prepared for this individual unit rather than a generic schematic designed to accommodate all apparatus.

CONTRACTOR Complies with Section 4.20: YES

4.21 Volt System Test

After completion of the unit, the 12-volt electrical system shall undergo a battery of tests as listed in the latest addition of NFPA Pamphlet 1901. These tests shall include, but not be limited to: a reserve capacity test,

alternator performance test at idle, alternator performance test at full load, and a low voltage alarm test Certification of the results shall be supplied with the apparatus at the time of delivery.

CONTRACTOR Complies with Section 4.21: YES

4.22 Headlights

The headlights shall be clear LED, rectangular style, mounted on the face of the cab, in dual-headlight housings. The headlights shall be mounted in a chrome bezel.

CONTRACTOR Complies with Section 4.22: YES

4.23 Front Turn Signals

There shall be Federal Model QL64Z-ARROW amber LED, and arrow-pattern turn-signals mounted above the headlights in a separate chrome bezel, outboard of the front warning lights; one on each side.

CONTRACTOR Complies with Section 4.23: YES

4.24 Headlight Location

The headlights shall be located on the front fascia of the cab directly below the front warning lights.

CONTRACTOR Complies with Section 4.24: YES

4.25 Side Turn/Marker Lights

The sides of the cab shall include two (2) LED round side marker lights which shall be provided just behind the front cab radius corners.

CONTRACTOR Complies with Section 4.25: YES

4.26 Marker and ICC Lights

In accordance with FMVSS, there shall be five (5) LED cab marker lamps designating identification, center and clearance provided. These lights shall be installed on the face of the cab within full view of other vehicles from ground level.

CONTRACTOR Complies with Section 4.26: YES

4.27 Headlight and Marker Light Activation

The headlights and marker lights shall be controlled through the Vista screens. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights to 80% brilliance when the battery master switch is in the "On" position and the parking brake is released. The Vista screen control shall feature "On", "Marker Lights" and "Off".

CONTRACTOR Complies with Section 4.27: YES

4.28 Auxiliary Marker/Turn Lights

The cab shall include two (2) Truck-Lite model 10075Y round LED lamps which shall include an amber cover. The lights shall operate as a side clearance marker and turn signal. The lights shall be mounted one (1) on each side of the cab just above the wheel well.

CONTRACTOR Complies with Section 4.28: YES

4.29 Ground Lights

Each door shall include a Federal Model 607141-05 LED ground light mounted to the underside of the cab step below each door. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted for extended life. The ground lighting shall be activated by the respective door as well as in the Vista screen.

CONTRACTOR Complies with Section 4.29: YES

4.30 Lower Cab Step Lights

The middle step located at each door shall include a recess mounted Federal Model 607141-05 LED light which shall activate with the opening of the respective door.

CONTRACTOR Complies with Section 4.30: YES

4.31 Intermediate Step Lights

The intermediate step well area at each door shall include an LED light within chrome housing. The Egress step lights shall provide visibility to the step well area for the first step exiting the vehicle. The Egress step lights shall activate with Entry step lighting.

CONTRACTOR Complies with Section 4.31: YES

4.32 Engine Compartment Lights

There shall be an LED NFPA compliant light mounted under the engine tunnel for area work lighting on the engine. The light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. The light shall activate automatically when the cab is tilted.

CONTRACTOR Complies with Section 4.32: YES

4.33 Tiller Cab Interior Lights

There shall be a Weldon style 8080, item 8080-8000-13, interior/dome series LED light provided. The lens shall be clear on one side and red on the other. The interior clear light shall be activated by the door opening or by a push button on/off switch located on the light. The red dome light shall be activated by a push button on/off switch located on the light. The light shall be located on the tiller cab ceiling above the tiller operator.

CONTRACTOR Complies with Section 4.33: YES

4.34 Tiller Guide Lights

There shall be a Perko model 0455002CHR round navigation light mounted to the roof of the cab. The light shall be 12.00-inch vertical height allowing all around visibility for use as a center guide by the tiller operator.

CONTRACTOR Complies with Section 4.34: YES

4.35 Emergency Lighting Activation

All emergency warning lights shall be controlled by the E-Master button on the Vista display.

CONTRACTOR Complies with Section 4.35: YES

4.36 Side Scene Lights

There shall be two (2) each Federal Model QL97LEDSCENE cab scene lights installed; one on each side between the cab doors. The lights shall activate when the cab doors are opened from the same type of switchgear as the side-body scene lights and shall also be controlled by the Vista screen.

CONTRACTOR Complies with Section 4.36: YES

4.37 Brow Lights

There shall be a total of two (2) Federal Signal Contour Mount COMLS15K800-03-11 scene lights brow area lights mounted to the front of the apparatus. One (1) shall be mounted directly above the windshield on the driver side, centered. One (1) shall be mounted directly above the windshield on the passenger side, centered. The lights shall be installed in a contour brow mount.

CONTRACTOR Complies with Section 4.37: YES

4.38 Side Scene Light Location

The scene lighting shall be located on the left and right sides of the cab

CONTRACTOR Complies with Section 4.38: YES

4.39 Side Scene Light Activation

The scene lights shall be activated by the Vista screen.

CONTRACTOR Complies with Section 4.39: YES

4.40 Interior Overhead Lights

4.40.1 The cab shall include a two-section, red and clear Weldon LED dome lamp located over each door. The dome lamps shall be rectangular and shall measure approximately 7.00 inches in length X 3.00 inches in width with a black colored bezel. The clear portion of each lamp shall be activated by opening the respective door and both the red and clear portion can be activated by individual push lenses on each lamp.

4.40.2 An additional incandescent three (3) light module with dual map lights shall be located over the engine tunnel which can be activated by individual switches on the lamp.

CONTRACTOR Complies with Section 4.40: YES

4.41 Master Warning Switch

A master switch shall be included, as a virtual button on the Vista display and control screen which shall be labeled "E Master" for identification. The button shall feature control over all devices wired through it. Any warning device switches left in the "ON" position when the master switch is activated shall automatically power up.

CONTRACTOR Complies with Section 4.41: YES

4.42 Map Lights

Two (2) Sunnex swivel map lights with red lens and control switch on the base mounted on the overhead HVAC cover, one (1) on each side.

CONTRACTOR Complies with Section 4.42: YES

4.43 Do Not Move Apparatus Lights

The front headliner of the cab shall include a flashing red Whelen Ion LED light clearly labeled "Do Not Move Apparatus". In addition to the flashing red light, an audible alarm shall be included which shall sound while the light is activated. The flashing red light shall be located centered left to right for greatest visibility. The light and alarm shall be interlocked for activation when either a cab door is not firmly closed or an apparatus compartment door is not closed. The light and alarm shall be disabled when the parking brake is set.

CONTRACTOR Complies with Section 4.43: YES

4.44 Inboard Front Warning Lights

The cab front fascia shall include two (2) Whelen M6 Linear Super-LED Surface mount, Part # M6RC front warning lights in the left and right inboard positions. The lights shall be mounted to the front fascia of the cab within a chrome bezel. The lights shall flash alternating red/red when. The lights shall activate through the E-Master switch.

4.44.1 **Inboard Front Warning Lights Color:** The warning lights mounted on the cab front fascia in the inboard positions shall be red.

CONTRACTOR Complies with Section 4.44: YES

4.45 Intersection Warning Lights (Lower Zone A)

The chassis shall include two (2) Whelen M6 Linear Super-LED Surface mount, Part # M6RC intersection warning lights, one (1) each side. The lights shall flash red until the parking brake is released, in which the lights will flash alternating red/clear.

4.45.1 **Intersection Warning Light Location:** The intersection lights shall be mounted on the side of the bumper in the rearward position.

CONTRACTOR Complies with Section 4.45: YES

4.46 Side Warning Lights

The cab sides shall include two (2) Whelen M6 Linear Super-LED Surface mount, Part # M6RC warning lights, one (1) on each side. The lights shall feature advanced Solaris technology and include a built-in flasher capable of multiple flash patterns. The lights shall be mounted to the sides of the cab within a chrome bezel. The lights shall flash red until the parking brake is released, in which the lights will flash alternating red/clear.

4.46.1 **Side Warning Light Location:** The warning lights on the side of the cab shall be mounted over the front wheel well directly over the center of the front axle.

CONTRACTOR Complies with Section 4.46: YES

4.47 Interior Door Open Warning Lights

The interior of each door shall include one (1) red 4.00-inch diameter Truck-Lite LED warning light located on the door panel. Each light shall activate with a flashing pattern when the door is in the open position to serve as a warning to oncoming traffic.

CONTRACTOR Complies with Section 4.47: YES

4.48 Rear Work Light Switch

A switch shall be installed above the tail light bezel on the left side. The switch shall be wired to the backup lights to provide additional work lighting. The rear work light circuit shall be deactivated when the park brake is disengaged. In addition to the lights being activated by the above switch, the lights shall also come on when the transmission is placed in reverse.

CONTRACTOR Complies with Section 4.48: YES

4.49 Midship Turn Signal (LED)

There shall be Two (2) Truck-Lite model 21LED midship auxiliary / turn signal lights installed in the rub rail, on each side of the body.

CONTRACTOR Complies with Section 4.49: YES

4.50 Midship Turn Signal, Tiller

There shall be one (1) Whelen model 700 LED turn signal lights, part number 70AOOTAR with chrome flange, installed above the rear wheel well area, on each side of the tiller trailer.

CONTRACTOR Complies with Section 4.50: YES

4.51 LED Clearance Lights

Truck-Lite model 30 LED clearance lights shall be installed on the rear of the body as necessary to be in full compliance with applicable ICC and DOT codes and regulations.

4.51.1 Additional LED Clearance Lights

Six (6) Truck-Lite model 30 LED amber clearance lights shall be installed on the body in addition to applicable ICC and DOT codes and regulations. Three (3) on the left side of the body and three (3) on the right side of the body.

4.51.2 LED Clearance Lights (Side Marker)

There shall be four (4) truck-Lite model 35075R LED clearance lights with aluminum bracket installed on the apparatus. Four (4) side marker lights, two (2) on each rear corner shall be a Truck-Lite model 35075R Red LED with mounting bracket.

CONTRACTOR Complies with Section 4.51: YES

4.52 Ground Lighting – LED

4.52.1 Federal Model 607141-05 LED lights shall be installed beneath the apparatus in areas where personnel may be expected to climb on and off the apparatus. The lights shall illuminate the ground within 30" of the apparatus to provide visibility of any obstructions or hazards. These areas shall include, but not be limited to, cab doors, side running boards, and the rear step area.

4.52.2 Additional Ground Lighting – LED

Additional Federal Model 607141-05 LED lights shall be installed beneath the apparatus. The lights shall illuminate the ground within 30" of the apparatus to provide visibility of any obstructions or hazards. in the following areas:

- a. Two (2) below the body compartments left - One (1) below L5/ L7, One (1) below L2/ L3
- b. Two (2) below the body compartments right - One (1) below R5/ R7, One (1) below R2/ R3

CONTRACTOR Complies with Section 4.52: YES

4.53 Walkaway Lights

Lights shall be mounted in a manner that illuminates all walkways and steps for safe operation of the apparatus. These lights shall become illuminated when the parking brake is engaged. Walkway lights to be Federal Signal Micro Pulse Wide Angle LED. The color shall be clear.

CONTRACTOR Complies with Section 4.53: YES

4.54 Scene Lights, Rear Facing, Tiller Cab

There shall be two rear facing Whelen M7 Linear Super-LED Surface mount, Part # M7ZC 12-volt scene lights installed in a bezel and located at the top rear corner of the tiller cab.

4.54.1 Rear Facing Tiller Scene Light Switch in Cab

The rear facing scene lights shall be controlled by a switch located in the tiller cab within reach of the driver. The switch shall have an indicator which shall illuminate when the switch is in the "ON" position. The switch shall be labeled " REAR SCENE."

4.54.2 Rear Scene Light Switch Location

The rear scene lights shall be controlled by a switch located in the chassis within reach of the driver. The switch shall have an indicator which shall illuminate when the switch is in the "ON" position. One switch shall control all rear scene lights if multiple scene lights are selected. The switch shall be labeled "REAR SCENE." In addition to the switch located in the cab, the rear scene lights shall be activated by the rear work light switch, and when the apparatus is placed in reverse.

CONTRACTOR Complies with Section 4.54: YES

4.55 Scene Lights Forward Facing, Tiller Cab

There shall be two forward facing Whelen M7 Linear Super-LED Surface mount, Part # M7ZC 12-volt scene lights installed in a bezel and located at the top front corner of the tiller cab. The color shall be CLEAR.

4.55.1 Forward Facing Tiller Scene Light Switch in Cab

The forward-facing scene lights shall be controlled by a switch located in the tiller cab within reach of the driver. The switch shall have an indicator which shall illuminate when the switch is in the "ON" position. The switch shall be labeled "FRONT SCENE".

CONTRACTOR Complies with Section 4.55: YES

4.56 AMDOR Compartment Lighting, Freedom Package

4.56.1 All side compartments of the apparatus shall be equipped with AMDOR Luma Bar, LED compartment lighting. The Luma Bar shall have wide angle 120° surface mount LED installed on a printed circuit board for shock and vibration resistance. The lighting shall be enclosed in a high impact poly carbonate enclosure. Current draw shall not exceed 130mA per foot or 20mA per LED.

4.56.2 Lighting shall be installed in the left and right side compartments of the tiller tractor and the tiller trailer. The configuration of some small compartments may not allow for LED lighting, in those cases an appropriate substitute shall be used.

4.56.3 An automatic door switch shall activate the compartment lights. In the case of transverse compartments lights on both sides shall be activated by opening either door.

4.56.4 The compartment lights shall be located as follows:

- a. LO and RO shall have one horizontal light bar installed at the top of the compartment.
- b. L1 and R1 shall have one horizontal light bar installed at the top of the compartment.

- c. L2 and R2 shall have one vertical light bar installed along the side of the door.
- d. L3 and R3 shall have one vertical light bar installed on each side of the door.
- e. L4 and R4 shall have one vertical light bar installed on each side of the door.
- f. L5 and R5 shall have one vertical light bar installed on each side of the door.
- g. L6 and R6 shall have one vertical light bar installed on each side of the door.
- h. L7 and R7 shall have one vertical light bar installed along the side of the door.
- i. L8 and R8 shall have one vertical light bar installed along the side of the door.
- j. L9 and R9 shall have one horizontal light bar installed at the top of the compartment.
- k. C1 shall have one horizontal light bar installed at the top, back of the compartment.
- l. CL1 and CR1 shall have one horizontal light bar installed at the top of the compartment.
- m. CL2 and CR2 shall have one vertical light bar installed along the side of the door.
- n. CL3 and CR3 shall have one vertical light bar installed along the side of the door.

CONTRACTOR Complies with Section 4.56: YES

4.57 Tail Lights

The tail lights shall have two (2) Whelen M Series Brake/Turn/Tail/Flashing Part # M6BTT. LED tail light assemblies. This assembly shall include one (1) red LED stop/tail light, one (1) amber LED turn light, one (1) clear LED back-up lights and one (1) red LED flashing light. The brake lights shall be activated by the brake pedal application and upon the secondary (Jake) brake application.

CONTRACTOR Complies with Section 4.57: YES

4.58 12 Volt Accessory Outlet in the Cab

There shall be four (4) 12-volt accessory outlets with USB provided in the cab. One (1) mounted on the driver side engine tunnel; One (1) mounted on the officer side engine tunnel; Two (2) mounted in the rear cab area. The exact mounting location shall be determined at pre-con.

CONTRACTOR Complies with Section 4.58: YES

4.59 Streamlight Rechargeable Lights

Five (5) Streamlight Fire Vulcan LED flash lights, orange in color with 12volt vehicle charger mounts. The lights shall be wired direct to the chassis batteries.

CONTRACTOR Complies with Section 4.59: YES

4.60 Tiller Driving Lights

There shall be a Zico model ZQL-SS-H7614 tiller driving light installed forward of the tiller trailer fender wells, one on each side of the apparatus. The lights shall be controlled by the dimmer switch located on the tiller operators steering wheel. The light shall be angled toward the front of the apparatus.

CONTRACTOR Complies with Section 4.60: NO

4.61 Tiller Turning Lights

There shall be a Zico model ZQL-SS-H7614 tiller turning light installed behind the tiller trailer fender wells, one on each side of the apparatus. The lights shall be controlled by the turn indicator switch located on the tiller operators steering wheel. The light shall be directed outward from the sides of the apparatus.

CONTRACTOR Complies with Section 4.61: NO

4.62 Go-Light Remote Control Search Light

There shall be two (2) LED GOLIGHT Model GL-30204 remote control searchlights mounted to the top of the cab towards the front corners rear of the lightbar. Go-lights shall be mounted on an angled pedestal to allow for clearance above the roof mounted lightbar. Each light shall be equipped with two (2) hard wired remote controls located in the chassis cab.

CONTRACTOR Complies with Section 4.62: YES**4.63 Pedestal Mount LED Light**

There shall be four (4) Federal Signal COM120 scene top mount fixed pedestal light(s) installed on the apparatus. The pedestal shall allow the lamp head to rotate 450 degrees and have a self-adjusting friction brake to prevent arbitrary rotation. The pedestal shall have a round mounting base. Wiring shall extend from the pedestal bottom. Lamp head and brackets shall be powder coated white. The non-telescopic lights shall be installed:

- a. One (1) Above L3
- b. One (1) Above L6
- c. One (1) Above R3
- d. One (1) Above R6

The above 120-volt light shall be controlled with the circuit breaker.

CONTRACTOR Complies with Section 4.63: YES**4.64 Visual Warning**

4.64.1 **Upper Zone A Visual Warning:** A Federal Signal 87" Navigator light bar system, Part #: 1532275834 shall be supplied and permanently mounted on the cab roof, as far forward as possible.

- a. The light bar shall be equipped with two (5) forward facing linear "Red" LED's, one to be STEADY RED, two (2) RED rotating lights on each end, and two (2) mid mounted RED/CLEAR rotating lights.
- b. The light bars shall be equipped with clear lenses. All clear LED's in the light bar shall be deactivated in the Blocking Right of Way mode.
- c. Opticom Emitter, 3M Installed: There shall be an infrared Opticom Emitter installed in the Federal Navigator Series Light bar.

4.64.2 **Upper Zone C Visual Warning:** Two (2) Federal SLR LED rotating beacons installed high at the rear of the apparatus. One rotator shall have an amber lens and one rotator shall have a red lens.

4.64.3 **Lower Zone B Visual Warning:** Three (3) Whelen M6 Linear Super-LED Surface mount, Part # M6C LED lights with chrome bezel shall be surface mounted in the lower warning zone. The lights shall have clear lenses. The clear flashing LED light shall be disabled when the parking brake is set.

4.64.4 **Lower Zone C Visual Warning:** Two (2) Whelen M6 Linear Super-LED Surface mount, Part # M6R red LED lights with chrome bezel shall be surface mounted in the lower warning zone. The lights shall have a red lens.

4.64.5 **Lower Zone D Visual Warning:** Three (3) Whelen M6 Linear Super-LED Surface mount, Part # M6RC red LED lights with chrome bezel shall be surface mounted in the lower warning zone. The lights shall have clear lenses. The clear flashing LED light shall be disabled when the parking brake is set.

CONTRACTOR Complies with Section 4.64: YES**4.65 Federal "LED" Traffic Advisor**

There shall be a Federal Model 320810-42 42" signal master mounted on the rear of the apparatus. There shall be a third brake light built into this traffic advisor. The traffic advisor shall be recess mounted on the rear of the body above the rear compartment. The traffic advisor shall be controlled through the Vista screen.

CONTRACTOR Complies with Section 4.65: YES**4.66 Aerial Spotlight**

4.66.1 Two (2) Federal Signal Commander 1220-SQ shall be installed. The "tracking" lights shall be mounted under the base section of the ladder. The lights shall be switched by a switch on each light head, and from the operator control station at the base of the ladder.

4.66.2 Two (2) Federal Signal Commander 1220-SQ shall be installed. The "tip" lights shall be mounted on the fly section of the ladder. The lights shall be mounted below the handrails so as not to increase the overall

height of the unit. The lights shall be switched by a switch on each light head, and from the operator's control station at the base of the ladder.

CONTRACTOR Complies with Section 4.66: YES

4.67 Ladder Tip LED Lights

There shall be two (2) Federal Signal COMLS15K-NH LED scene lights mounted at the tip of the fly section. The lights shall be connected to the 12-volt system on the apparatus. The lights shall have weather proof on/off switches located at each light head and at the pedestal controls.

CONTRACTOR Complies with Section 4.67: YES

4.68 Aerial Mounted 120 Volt Receptacle

There shall be one (1) 120 Volt receptacle mounted on the end of the fly section. The receptacle shall be wired through the electrical swivel, and shall be controlled from the breaker box located in the body. The receptacle shall be a Twist Lock Type NEMA L5-15, 120 Volt 15 Ampere with a spring-loaded weather resistant cover.

CONTRACTOR Complies with Section 4.68: YES

4.69 Blue LED Rung Illumination Lighting

4.69.1 The aerial ladder sections shall be equipped with permanently installed blue LED rung illumination lights. The lights shall be mounted on the inside of the ladder sections, facing inward; on each aerial section in a "staggered" configuration. The blue colored lens shall serve to illuminate climbing rungs without inducing any glare, which would hinder safety.

4.69.2 The lights shall be energized by a switch on the Turntable Control Station. Each light shall be equipped with an integral guard to protect it from damage. The light itself shall be positioned such that all light shall be directed inward toward the rungs of the aerial sections, maximizing safety for all climbers during night operations. The lights shall also aid the operator in locating aerial ladder section in conditions of reduced visibility.

4.69.3 Tape type products will not be acceptable for blue rung lighting. NO EXCEPTION.

CONTRACTOR Complies with Section 4.69: YES

4.70 Onan Hydraulic Generator Set

4.70.1 An Onan model CMHG 10000, hydraulic driven generator set shall be installed on the apparatus. The generator shall be rated at 10,000 watts at 120/240 volts. Current frequency shall be stable at 60 hertz.

4.70.2 The power generating unit shall be modular unit, housed in stainless steel with an acoustical material added for maximum sound dampening. The module shall consist of the hydraulic motor, generator, blower, cooler, and all other necessary components.

4.70.3 The generator shall be located in the open storage area above the body. The generator activation switch shall be located in the chassis cab.

4.70.4 For ease of maintenance, the only part of the system that shall require accessibility shall be the oil reservoir which shall be located to facilitate periodic checks and the adding of hydraulic fluids.

CONTRACTOR Complies with Section 4.70: YES

4.71 Generator Warranty Period

Generator shall be free from defects in material and workmanship for a period of five (5) years or one thousand (1,000) hours, whichever comes first, from the date of delivery to the County. Generator warranty shall include all parts and labor, including diagnostic labor, to repair the generator. Repair or replacement parts shall be warranted for ninety (90) days from date of purchase. Any part repaired or replaced during the warranty period assumes the remainder of the warranty or ninety (90) days, whichever is greater.

CONTRACTOR Complies with Section 4.71: YES

4.72 Frog Display

There shall be a FROG D provided with the generator. The FROG D shall automatically sense a generator signal and begin displaying information. The digital meter display shall constantly monitor and display Voltage, Frequency (accurate to within 1 decimal point), and Current Draw on two separate lines. The display shall be capable of displaying total accumulated run time hours when the MODE button is pressed. This information shall be stored in a non-erasable memory. The frog display shall be located next to the load center.

CONTRACTOR Complies with Section 4.72: YES

4.73 GFI Load Center

4.73.1 The entire 120/240-volt electrical system shall be installed in strict compliance with NFPA Pamphlet 1901, newest edition. This shall include all testing, labeling, wiring methodology, and dimensional requirements. Certification of compliance shall accompany the apparatus at the time of delivery.

4.73.2 There shall be a 120/240-volt load center incorporated into the 120/240-volt wiring system. The load center shall include adequate circuit breakers to protect the loads specified on this apparatus.

4.73.3 All 120/240 volt A.C. Wiring shall be done in accordance with NFPA Pamphlet 1901 as well as nationally accepted electrical codes.

4.73.4 The GFI load center shall be located all in one compartment, L-3.

CONTRACTOR Complies with Section 4.73: YES

4.74 Branch Circuit Overcurrent Protection

Over current protection devices shall be provided for circuits in accordance with NFPA 1901 newest version. The load center shall be equipped with a non-GFI two pole main breaker when the six or more individual branch circuits are present. Over current protection devices shall be marked with labels to identify the function of the circuit they protect. The load center shall be located forward bulkhead of L2.

CONTRACTOR Complies with Section 4.74: YES

4.75 Electric Cord Reels

There shall be two (2) Hannay 120-volt electric rewind cord reel(s) model ECR1616-17-18 installed on the apparatus with a push button labeled REEL REWIND installed for 12-volt rewinding of each cord reel. The reel shall be equipped with 200' of yellow STW Seoprene 105 degree Celsius 10/3 wire installed with a cable stop to prevent damage to cable fittings. Rollers shall be supplied to prevent damage to the electrical cable if pulled in any direction. The cord reel shall be located One (1) CL1, One (1) CR1 on the tiller chassis body.

CONTRACTOR Complies with Section 4.75: YES

4.76 Cord Reel Junction Box

There shall be two (2) Circle-D model PF51G-3 electrical junction box, equipped with four (4) electrical receptacles, provided and hard wired to the cord reel. The receptacles shall be enclosed in a UL listed, NEMA Type 3R cast aluminum box with aluminum finish and NFPA required indicator light.

CONTRACTOR Complies with Section 4.76: YES

4.77 Receptacle Junction Box, Duplex NEMA L5-15R

There shall be eight (8) Circle-D, NEMA L5-15R DPLX, duplex twist lock type receptacle(s) installed in the junction box. The receptacle shall be rated at 15 amps and 120 volts. Receptacles shall be installed in the following locations of the junction box: 1,2,3,4.

CONTRACTOR Complies with Section 4.77: YES

4.78 Volt Twist Lock, Single Receptacle

There shall be two (2), single outlet box(es). The box shall contain one (1) NEMA L5-15, 120 Volt 15 ampere rating Twist Lock type receptacle wired to the generator. The receptacle(s) shall have spring loaded weather resistant covers. The receptacle(s) shall be located on the rear of the tiller body one left one right.

CONTRACTOR Complies with Section 4.78: YES

4.79 Kenwood Radio System

- 4.79.1 A VHF radio shall be supplied by the COUNTY and Installed by the CONTRACTOR.
- 4.79.2 The radio transceiver shall be mounted within the rear radio compartment and connected to battery switched power as provided in the radio compartment and fused with a 15A ATC fuse.
- 4.79.3 The Kenwood radio shall have a Kenwood Part # KLF-2 DC line filter installed.
- 4.79.4 The Kenwood full feature control head shall be mounted on the dash board with location finalized at pre-construction.
- 4.79.5 The Kenwood radio shall include one KMC-28 DTMF microphone.
- 4.79.6 Two Kenwood KES-5 mobile radio speakers shall be contractor supplied and installed with the location finalized at pre-construction.
- 4.79.7 A PCTEL part# MWB-1320 antenna tuned to 157 MHz shall be contractor supplied and roof mounted with a Larsen NMOKHFUDMPL antenna cable kit labeled "VHF" on the cable end and terminated to the Kenwood transceiver in the radio compartment.
- 4.79.8 A Comtronix Communications BKRA-1RVC radio intercom adaptor shall be contractor supplied and interfaced between the Kenwood radio and Sigtronics headset system.
- 4.79.9 A water proof amplified radio speaker with volume control shall be contractor supplied and installed at the pedestal control box. The speaker shall be connected to the BKRA-1RVC "siren radio rebroadcast" output for fixed audio to the pedestal speaker.

CONTRACTOR Complies with Section 4.79: YES

4.80 Intercom, Sigtronics, US-12S (Up To 12 Positions)

There shall be a Sigtronics model US-12S intercom system supplied and installed on the apparatus. The intercom system shall interface with the apparatus mobile radio to allow for radio transmit from designated PTT (push to talk) locations. The System shall have the following capabilities:

- a. Driver: Intercom/PTT
- b. Officer: Intercom/PTT
- c. Tiller Cab Intercom/PTT
- d. Tiller Cab (Training Seat) Intercom Only
- e. Turn Table Intercom/PTT
- f. Four (4) Rear Crew Intercom Only

CONTRACTOR Complies with Section 4.80: YES

4.81 Intercom Headset

There shall be five (5) Sigtronics model SE-8-RVC intercom headsets included with the intercom system. The headsets shall have a soft head strap designed to be worn under a helmet, a flex microphone boom that rotates 180 degrees for use on either side, and an easy grab volume adjustment knob. The microphone shall be noise canceling with a wind screen and shall be voice activated.

- 4.81.1 **Headset Jack, Interior Mount** - There shall be a Sigtronics headset plug-in jack, part number 800120, provided. The headset jack shall be designed for interior mounting and shall be compatible with Sigtronics headsets
- 4.81.2 **Headset Jack with Splash Cover** - There shall be a Sigtronics headset plug-in jack, part number 800121, with a spring-loaded cover provided. The headset jack shall allow for exterior mounting and shall be compatible with Sigtronics headsets

- 4.81.3 **Intercom Push to Talk Switch** - There shall be a Sigtronics push to talk switch, part number 800122, provided. The switch shall allow for mobile radio transmission through the Sigtronics intercom system with the use of a Sigtronics headset.

CONTRACTOR Complies with Section 4.81: YES

4.82 PSEC Radio System

- 4.82.1 Two Larsen NMOKHFUDMPL antenna cable kits shall be installed in the roof and routed to the Radio Compartment with “N” type RF connectors terminated. The first cable shall be labeled “700 MHz” on the cable end and a Larsen part# NMOQW700 antenna installed on the roof. The second cable shall be labeled PSEC on the cable end. Antenna locations shall be finalized at pre-construction.
- 4.82.2 A lighted rocker switch shall be installed in the cab console and labeled “PSEC”. The switch shall be powered by the cab console battery “hot all the time” circuit and fused with a 3A ATC fuse. The output of the switch shall be routed to the radio compartment unterminated with a 2’ pigtail. 16-gauge orange stranded wire shall be used and the cable end labeled “PSEC”.

CONTRACTOR Complies with Section 4.82 YES

4.83 Radio Equipment Mounting

- 4.83.1 An aluminum base mounting plate with minimum mounting dimensions of 20” W X 32”H for communications equipment mounting shall be installed in the cab.
- 4.83.2 Two 12 VDC circuits shall be provided for communications use and terminated on the mounting plate. One circuit shall be battery “hot all the time” and one circuit shall be switched on with the master battery switch. Each circuit shall be 6-gauge red stranded wire, terminated with ¼-20 stud type junction blocks, and each circuit protected with 40 Amp circuit breakers. In addition, one 6-gauge black chassis ground shall be supplied and terminated with a ¼-20 stud type junction block.

CONTRACTOR Complies with Section 4.83: YES

4.84 Mobile Data Computer (MDC)

- 4.84.1 A Gamber Johnson MDC mount and docking station shall be contractor supplied, assembled and installed to the cab console as follows:
- 1 each. Part# DS- UPPER-M Gamber Johnson - Standard-Adjustable Upper Pole
 - 1 each. Part# 7160-0049 Gamber Johnson - Screen Support Vehicle mounting kit
 - 1 each. Part# 7160-0750 Gamber Johnson - VESA 75mm Clevis
 - 1 each. Part# 7160-0264-02 Gamber Johnson – Docking Station
 - 1 each. Part# BR305-USB2 US Global Sat – USB Cable Set
 - 1 each. Part# WXR-1850-TN Laird – 2.4 GHz Antenna
- 4.84.2 A US Global Sat GPS antenna Part# MR-350P shall be contractor supplied and roof mounted. The antenna location shall be determined at pre-construction. The GPS antenna cable shall be connected to the Gamber Johnson MDC docking station.
- 4.84.3 Two (2) 12 VDC circuits shall be provided for MDC and communications use and terminated in the cab console. One circuit shall be battery “hot all the time” and one circuit shall be switched on with the master battery switch. Each circuit shall be 8-gauge red stranded wire, terminated with ¼-20 stud type junction blocks, and each circuit protected with 25 Amp circuit breakers. In

addition, one 8-gauge black chassis ground shall be supplied and terminated with a ¼-20 stud type junction block.

- 4.84.4 Lind Electronics Part# PA1555-968 shall be installed with Lind Electronics Part# ASMTL-00332 power supply mounting rail within the cab console.
- 4.84.5 The power supply input shall be connected to the above mentioned 12VDC battery “hot all the time” circuit and fused with a 10A ATC fuse.
- 4.84.6 A lighted rocker switch shall be in line with the power supply input circuit and be mounted in the cab console and labeled “MDC”. The output of the power supply shall be connected to the Gamber Johnson docking station.

CONTRACTOR Complies with Section 4.84: YES

End of Section IV – Electrical

EXHIBIT A – ATTACHMENT # 1, SECTION V

TABLE OF CONTENT

Section V – Equipment

5.1 Equipment

SECTION V – EQUIPMENT

5.1 Equipment

5.1.1 The following equipment will be provided by the builder and shipped with the apparatus upon delivery. The equipment listed is also mentioned in the previous sections.

5.1.2 **Ladders:**

- a. One (1) 8' Werner NXT1A08 Type IA fiberglass single sided step ladder
- b. Two (2) 14' roof ladder, Duo Safety 775DR (Special Width)
- c. Three (3) 10' folding attic ladders, Duo Safety 585A
- d. Two (2) 16' roof ladders, Duo Safety 875A
- e. One (1) 18' roof ladder, Duo Safety 875A
- f. One (1) 20' roof ladder, Duo Safety 875A
- g. Two (2) 28' two section extension ladders, Duo Safety 1200A
- h. Two (2) 35' two section extension ladders, Duo Safety 1200A

5.1.3 **Fire Equipment:**

- a. Three (3) 6' Aluminum D-Handle Fiberglass Rubbish Hook, Nupla RH-6DA
- b. Two (2) 4' Aluminum D-Handle Fiberglass Ceiling & Wall Hook, Nupla CWH-4YDA
- c. One (1) 4' 6' Aluminum D-Handle Fiberglass Rubbish Hook, Nupla RH-4DA
- d. Two (2) 10' Fiberglass Pike Pole(s), Nupla YPD-10
- e. One (1) 12' Fiberglass Pike Pole(s), Nupla YPD-12
- f. One (1) 18' Fiberglass Pike Pole(s), Nupla YPD-18
- g. Two (2) 6' New York Roof Hook, Fire Hooks Unlimited
- h. Two (2) 4' New York Roof Hook, Fire Hooks Unlimited
- i. One (1) An Akron Brass Style 1494 all-electric ladder pipe rated for 1000gpm, constructed of lightweight Pyrolite and a weight not to exceed 35lbs shall be provided. The monitor shall be 36" in length and have a vertical rotation of 135° with three adjustable stops. The monitor shall have a fully enclosed motor and gears with manual over-ride for the vertical rotation. The control box shall be totally encapsulated to prevent moisture intrusion and use locking IP 67 rated electrical connectors for all motor control outputs and control inputs. The control system shall have one environmentally sealed USB port to facilitate control system updates. The control system shall have a built in wireless transceiver (900 MHz) to facilitate operation from wireless remote control devices. The ladder pipe shall have mounting clamps that are adjustable to fit up to 16" rung spacing. Configuration shall be:
 1. Inlet: 2.5" NH
 2. Outlet: 2.5" NH
 3. Voltage: 12 Volt
- j. Five (5) Streamlight Fire Vulcan LED flash lights, orange in color with 12-volt vehicle charger mounts.
- k. Two (2) 130' Section Continuous 3" Angus Hose with 2 ½" couplings
- l. One (1) 4 inch female to 4 inch male Task Force Tips Jumbo Gate Valve - PN: AG5NP-NP-01

CONTRACTOR Complies with Section 5.1: YES

End of Section V – Equipment

EXHIBIT A - ATTACHMENT # 2
CONTRACTOR EXCEPTIONS TO COUNTY SPECIFICATIONS

The CONTRACTOR's bid exceptions have been reviewed and accepted by the COUNTY. The exceptions made to the contract specifications and alternatives proposed in this attachment have been determined by the COUNTY to meet the form, fit, function, quality and performance characteristics originally specified.



**KME FIRE APPARATUS
101' AERIALCAT™ TRACTOR DRAWN AERIAL LADDER
CLARIFICATIONS**

GENERAL:

KME is very pleased to propose our 101' Aerialcat Tractor Drawn Aerial ladder to meet the intent of the Riverside County bid specifications. The proposed unit will be tested and certified by Underwriter's Laboratories (UL) to meet NFPA-1901, 2016 edition. Due to the bid specifications indicating a Spartan/Smeal design, the proposed unit is priced and will be built to the KME proposal specifications to meet the intent of the bid specifications. All system designs, dimensions and performances will be as stated in the KME proposal specifications.

Section 1

Section 1.21 Finish Sub Sections 1.21.4

KME is proposing the use of Skikkens brand paint, to meet the intent of the specification. A paint sample will be provided to match and ensure fleet continuity.

Section 2

Section 2.10 Cab Style

KME is proposing the use of our top of the line cab the Predator, some material thickness and alloy type differ. Please refer to the KME proposal specification for exact dimensions and material standards.

Section 2.12 Front Grille

KME is proposing a fixed grill with access to the fluid fills and checks located inside of the cab through a rear crew doghouse access door.

Section 2.16, 2.17 & 2.18 Cab Paint Manufacturer and Color

KME is proposing the use of Skikkens brand paint, to meet the intent of the specification. A paint sample will be provided to match and ensure fleet continuity.

Section 2.22 Cab Entry Doors

KME is proposing the use of an exposed cab door hinge.

Section 2.43 Electronic Engine Oil Level Indicator

KME does not offer fluid level monitoring for Engine Oil.

Section 2.44 Fluid Fills

KME is proposing the fluid fills and checks be located inside of the cab through a rear crew doghouse access door.

Section 2.54 Coolant Hoses

KME is proposing the use of Continental Blue Extreme hose to meet the intent of the specifications.

Section 2.56 Air Intake Protection

A skid plate for the air intake is not required on our chassis due to the intake is located above the frame rails of the chassis.

Section 2.58 Diesel Exhaust Fluid Tank

KME is proposing the DEF tank location be in the crew cab step area with a hinged access door.

Section 2.78 Fuel Lines

KME is proposing the use of Aeroquip fiber reinforced hoses for the fuel lines.

Section 2.82 Fuel Tank Material and Finish

KME is proposing the use of a hot rolled, pickled and oiled steel fuel tank.

Section 2.88 Front Shock Absorbers

KME is proposing the use of Koni shocks to meet the intent of the specification.

Section 2.89 Front Suspension

KME is proposing the use of our standard front suspension leaf spring pack. The exact dimensions are listed in the KME proposal specification.

Section 2.92 Electronic Power Steering Fluid Level Indicator

KME does not offer fluid level monitoring for power steering fluid.

Section 2.93 Power Steering Pump

KME is proposing the use of a dual gear Shepard system to meet the intent of the specification.

Section 2.94 Tiller Steering Provision

KME is proposing the use of a Parker gear pump which will be piggybacked of the main aerial hydraulic pump. The steering pump will share the fluid from the aerial hydraulic reservoir.

Section 2.96 Power Steering Gear

KME is proposing the use of a dual gear Shepard system to meet the intent of the specification.

Section 2.104 Rear Drive Tire

KME is proposing the use of a Continental Coach HA3 highway tread tire to meet the intent of the specification.

Section 2.118 Park Brake Control

Due to the dual Weldon V-mux screen design two separate park brake controls will be supplied one for the driver and one for the officer for use in emergency situations.

Section 2.128 Wheelbase

KME is proposing a tractor wheelbase of 150 inches due to our set cab dimensions.

Section 2.130 Frame

KME is proposing a dual full length frame rail design.

Section 2.141 Glass Front Door

KME does not offer a cozy glass ahead of the main cab door glass.

Section 2.148.5 thru 2.148.6 Cab Center Dash

KME is proposing a one piece Line-x painted ABS dash assembly to meet the intent of the specification.

Section 2.149 Engine Tunnel Trim

KME is proposing a Line-x painted ABS engine tunnel overlay to meet the intent of the specification.

Section 2.152 Step Trim

KME is proposing a two-step cab entry design.

Section 2.171 & 2.172 Cab Switching

All switching for emergency lighting and scene lighting will be controlled through the multiplexing system.

Section 2.176 Windshield Wiper System

KME is proposing the use of individual wiper motors.

Section 2.177 Electronic Windshield Fluid Level Indicator

KME does not offer fluid level monitoring for the Windshield washer fluid.

Section 2.185 Cab Fender

KME does not offer an ABS inner fender liner; KME is proposing the use of an aluminum liner to meet the intent of the specification.

Section 2.187 & 2.189 Backlighting Color

KME is proposing the cab dash gauges be backlight in Blue LEDs to meet the intent of the specification.

Section 2.203 Overall Lengths

KME is proposing a 683 inch overall length due to our cab and aerial component differences.

Section 2.204 Chassis Wheelbase

KME is proposing a tractor wheelbase of 150 inches due to our set cab dimensions

Section 2.206 Angle of Approach

KME is proposing a 12 degree angle of approach due to our cab and chassis design.

Section 2.207 Angle of Departure

KME is proposing a 10 degree angle of departure due to our body design.

Section 3

Section 3.1 Trailer Structure and Components

KME is proposing our tiller trailer design, KME's exact RBM and dimensions are listed in the KME specification.

Section 3.1.10 Trailer Structure and Components

KME is proposing the use of a Parker gear pump which will be piggybacked of the main aerial hydraulic pump. The steering pump will share the fluid from the aerial hydraulic reservoir. This is due to the new engine designs from Cummins does not offer a secondary power steering port.

Section 3.2.4 & 3.2.5 Tiller Cab Structure and Components

KME is proposing a low back USSC seat with a lap belt to meet the intent of the specification. KME does offer a higher height tiller cab, which would allow the use of an ABTS seat.

Section 3.20 Body Sub Frame

KME is proposing an aluminum body sub frame integral into the body weldments.

Section 3.22.10 Compartments Left Side

KME is proposing compartment L9 will only be 14 inches deep to it reaches the ground ladder storage module.

Section 3.23.10 Compartments Right Side

KME is proposing compartment R9 will only be 14 inches deep to it reaches the ground ladder storage module.

Section 3.60 Paint Process

KME is proposing the use of Skikkens brand paint, to meet the intent of the specification. A paint sample will be provided to match and ensure fleet continuity.

Section 3.62 Aerial Component Protection/Paint

KME does not offer hot dip galvanizing of any of our aerial weldment components. KME is proposing all items will be sand blasted and cleaned, primed and painted to protect against corrosion.

Section 3.63 through 3.66 Aerial Paint

KME is proposing the use of Skikkens brand paint, to meet the intent of the specification. A paint sample will be provided to match and ensure fleet continuity.

Section 3.81 Manual Rotation Drive Tool

KME does not offer a manual rotation drive tool, KME is proposing in the event of a power loss the turntable can be rotated using the emergency override pump. The controls will be located inside the turntable console.

Section 3.88 Tiller Aerial Construction Standards

KME is proposing our 101' aerial ladder measured at 80 degrees of elevation to meet the intent of the specification.

Section 3.89 Operational Envelope/Reach

KME is proposing our 101' aerial ladder with a range of -7 to 80 degrees of operation. KME is also proposing a 94' horizontal reach and a 101' vertical reach.

Section 3.92 Primary Dimensions

KME is proposing our 101' aerial ladder to meet the intent of the specification, the aerial section dimensions are listed in the KME proposal.

Section 3.93 Rung Coverings

KME is proposing the use of aggressive rung covers bonded to the rung.

Section 3.91.2 Bolt on Egress

KME is proposing our egress design which remains on the same plane as the ladder fly section.

Section 3.104 Extension/Retraction System

KME is proposing our ladder design, and the extension cylinders are sized to the KME ladder design, the dimensions are listed in the KME proposal specification.

Section 3.107 Retraction Safety System

KME does not offer a retraction safety system, when our fly section steps are deployed a toe guard is built into the design. This does not allow the foot to come in range of operation to create an unsafe working condition.

Section 3.108 Rotation Bearing

KME is proposing our ladder design, and the rotation bearing is sized to the KME ladder design, the dimensions are listed in the KME proposal specification.

Section 3.117 Hot Dip Galvanizing

KME does not offer hot dip galvanizing of any of our aerial weldment components. KME is proposing all items will be sand blasted and cleaned, primed and painted to protect against corrosion.

Section 3.142 Monitor Safety Lock

This will not be provided since the monitor requested is a standalone clamp on gun design that will not be stored on the end of the fly section.

Section 4

Section 4.2 Battery Tray

KME is proposing a fixed battery tray, access for routine checks will be provided through a drop down hinged door on both sides of the cab in the crew step area.

Section 4.60 and 4.61 Tiller Driving Lights

KME is proposing the use of Tecniq LED driving lights to ensure fit in the fender well with all other options selected.

ATTACHMENT # 3
CONTRACTOR'S TECHNICAL PROPOSAL CLARIFICATIONS



November 7, 2018

KME Response November 9, 2018

Mr. Brandon Gomez KME Apparatus Sales 4725 Troy Ct.
Riverside, CA 92509

Dear Mr. Gomez,

Subject: Clarification to KME Initial Proposal Response RFP # FPARC-327 - Tractor Drawn Aerial Fire Apparatus

This is a formal Request for Clarification of the Technical Proposal submitted by Kovatch Mobile Equipment Corp (KME) dated October 31, 2018 in response to RFP # FPARC-327. At this time, the County has not made a decision as to whether KME's proposal is responsive to the RFP.

Clarifications are required to determine whether KME's proposal is responsive to the RFP and if it will be considered for further evaluation. The matters requiring clarification are specified below with citations to the sections in KME's Specification and KME's response to the RFP Specification (Tab E, Section I - V and Addendum # 1).

Please provide clarification to the following areas which conflict with KME Specification / Drawings and KME's response to the RFP Specification:

1. Page 26. Exact Blueprint with Bid. The drawings provided with KME's proposal are inadequate.

KME Response: Drawing was revised to the requirements of the Riverside County Specification.

2. Page 28, Critical Overall Height/Length Requirement. KME states "No"; however, the County specification at Sections 2.202 and 2.203 stipulate the exact overall height and length.

KME Response: Specification translation error within the sales tool, height and length dimensions will be included into the specification.

3. Page 33, Aluminum Tread Plate Overlay on Cab Roof. The County specification at Section 2.19 stipulates the County requires white Line-X non-slip material over the entire flat surface of the roof (not visible from the ground) in place of the aluminum tread plate.

KME Response: Cab roof will be provided with Line-X coating as specified by Riverside County Specification and will not include an aluminum tread plate overlay.

4. Page 38, Mirror Control in Multiplex Control Screen. Please refer to Section 2.182. KME TDA Dash Drawing conflicts with KME's response to this section.

KME Response: Specification translation error, mirror controls will be controlled with switches on the dash as specified by the Riverside County Specification.

5. Page 40, Driver Operator Seats. Please refer to Section 2.173.3, and 2.173.5.

KME Response: USSC Valor seats will be provided as specified in the Riverside County Specification. KME proposal price will reflect a **Credit of \$405.00** for this change.

6. Page 41, Forward Facing Seat Position - No Back (Outboard). Please refer to Section 2.173.11

KME Response: Rear outboard forward facing seats will include a rear back pad as required by the Riverside County Specification.

7. Page 43, The location of the antenna roof rail is not identified in the Drawings. Please update drawing to match the County's specification.

KME Response: Antenna roof rail was added to the revised general arrangement drawing.

8. Page 43, Customer Supplied Mobile Radios. Please see response to Question # 15 in Addendum #1.

KME Response: Will provide as specified in Riverside County Specification Addendum#1.

9. Page 45, Cab Tilt Secondary Safety Lock. Please refer to Section 2.137 for the required specification and location.

KME Response: Cab tilt system in the specification is unique design to Spartan Motors, KME design will meet the intent and safety requirements of the Riverside County Specification.

10. Page 46, Two (2) Painted Tow Hooks, Recessed Through Bumper. Please refer to Section 2.134.3.

KME Response: Specification proposal translation error, KME will provide chrome tow eyes as requested by Riverside County Specification.

11. Page 51, Second Parking Brake Control Near Officer. Please refer to Section 2.118.

KME Response: A single park brake control located in the center of cab will be provided. Based on cab dimensional differences the location will differ from the current Spartan Motors location. Final location can be reviewed during the pre-construction conference if awarded to KME.

12. Page 54, Silicone Heater and Coolant Hose. Please refer to Section 2.54. KME responded "YES", please explain.

KME Response: Continental blue hose offered by KME meets or exceeds the Riverside County Specification. Additional product information and samples are available upon request.

13. Page 56, 10 gallon DEF Tank. The language in this paragraph refers to tailpipe construction. Please refer to Addendum # 1, Section 2.58A.

KME Response: Sales tool error, KME will provide a 10 gallon DEF tank at the location identified on Addendum# 1.

14. Page 65, Instrument Panel, 100" Predator - Wide ABS. Please refer to Section 2.187 regarding the hinged access panel.

KME Response: This specification verbiage is specific to Spartan Motors chassis, KME chassis will include a fully removable access cover.

15. Page 65, Ametek "Officer's Speedometer", Located Near Officer. Please refer to Section 2.190.

KME Response: KME will comply with the Riverside County Specification.

16. Page 68, Standard #MATM Radio Antenna Installed. Please refer to Section 2.27 and 4.79 the install location and antenna type are not correct.

KME Response: KME will comply with the Riverside County Specification.

17. Page 68, Larsen Radio Antenna Installed. Please refer to Section 2.27.

KME Response: KME will comply with the Riverside County Specification.

18. Page 68, Fast Idle on Dash for All Electronic Engines. Please refer to Section 2.39.

KME Response: Fast Idle switch will be located within the Vista screen as specified.

19. Page 72, Light Package Actuation/Controls. Please refer to Section 4.35.

KME Response: Warning lights will be activated through Vista Screen E-Master button.

20. Page 72, A-Upper Federal LED NVG87-NFPA1 Navigator 87" Bar. Please refer to Section 4.64 for required model.

KME Response: Will provide the part number as specified in Riverside County Specification.

21. Page 73, Federal 42" VPX LED "Signal Master" Light at Rear. Please refer to Section 4.65.

KME Response: Will provide the part number as specified in Riverside County Specification.

22. Page 79, Federal Signal LED Third Brake Light. Please refer to Section 4.65.

KME Response: Will provide the part number as specified in Riverside County Specification.

23. Page 81, Federal Signal 12V LED (2 Above Windshield). The Part# reference in not correct. Please refer to section 4.37.

KME Response: Will provide the part number as specified in Riverside County Specification.

24. Page 82, Cord Reel Location Ceiling Mount Driver Front Compartment. Please confirm size and location as per the specifications of Section 2.210.1 & 2.210.4.

KME Response: Will provide as specified in Riverside County Specification.

25. Page 82, 200' of 12/3 Yellow Cable for One (1) 120 Volt Reel. Please refer to Section 4.75.

KME Response: Hannay ECR 1616-17-18 reel maximum capacity is 150' of 10-3 cable or 200' of 12-3 cable. KME meet the length requirement, but can provide a shorter length than specified with the 10-3 cable.

26. Page 83, Air Horn Control- Dash Button for Officer & Steering. Please refer to Section 4.14.

KME Response: Will provide a foot switch as specified in the Riverside County Specification.

27. Page 83, Siren Control - Floor Switch Driver and Officer. KME Specification refers to console mounted switches. Please refer to Section 4.12.

KME Response: Will provide control switches as specified in the Riverside County Specification.

28. Page 85, Standard Fender - No Storage (Custom). Please refer to 3.53.

KME Response: Sales tool description error and was corrected to coincide with the Riverside County Specification.

29. Page 86, Four (4) SCBA Bottle Storage Compartments, Tillers. Please refer to Section 3.53.

KME Response: Will provide as specified in Riverside County Specification.

30. Page 87, Compartmentation, 101 -Til Style # 1H. Please provide clarification and details regarding the specifications in Section 3.22 and 3.33 and what is being proposed. (Example: D7 and 07 are listed twice with different dimensions etc...)

KME Response: KME Proposal Specification for the body compartmentation was updated to clarify what was originally proposed. Riverside County Specification requires compartment R9/L9 to be transverse. The ladders on the KME trailer design will extend into this area preventing this compartment from being transverse. KME can provide a non-transverse compartment in lieu of the transverse compartment.

31. Page 89, Hose Storage Tray. Please refer to Section 2.209 and confirm compliance with this section.

KME Response: Will provide as specified in Riverside County Specification.

32. Page 90, Winch Receiver Point - Each Side of Body. Please refer to Section 3.47, no 12V electrical connection requested or needed.

KME Response: Proposal specification error and the 12-Volt power connection points will not be provided.

33. Page 91, Hinged Painted Aluminum Door, Ladder Storage, RM Only. The drawing shows vertically hinged doors. Please confirm KME is providing a horizontally hinged door and update the drawing accordingly.

KME Response: Doors will be horizontally hinged as specified in the Riverside County Specification.

34. Page 92, 8' Aluminum Step Ladder. Please confirm the ladder provided will be fiberglass as specified Section 5.1.

KME Response: The ladder provided will be fiberglass as required by Riverside County Specification.

35. Page 95, Pike Pole Tubes Aerials. Drawings do not reflect location in the tiller ladder storage bay. Please confirm adequate storage for RVC compliment of pike poles and "D" handled tools identified in RVC Section 3.55.

KME Response: Will provide as specified in Riverside County Specification and drawing was updated to reflect this item.

36. Page 97, Tiller Cab Interior Paint. Please refer to Section 3.2.3 for correct color (Gray Line- X).

KME Response: Tiller cab interior paint will be Gray Line-X as specified by the Riverside County Specification.

37. Page 97, Tiller Cab Seat, USSC. Please confirm that the low back bucket seat has a G2A (air ride) base and is ABTS compliant as specified in Section 3.2.3

KME Response: Our intent is to provide as specified in Riverside County Specification. However additional time is needed for KME engineering and Valor Seats to address NFPA H-Point requirements.

38. Page 99, 100, Tiller Cab Park Brake Interlock Warning / Safety Start System. Please refer to Section 3.8.

KME Response: Tiller cab park brake will be provided as specified by the Riverside County Specification.

39. Page 101, Ladder, Tiller Gen, Intent & Design Standards. The County did not specify or require a pre-piped aerial waterway. Please update KME spec and price proposal accordingly.

KME Response: Proposal Specification error – KME Tractor Drawn Aerial family includes two models; 100' ladder without a waterway with a shorter body and wheelbase or 101' ladder with a waterway and increased body compartmentation with a longer trailer. After reviewing the Riverside County Specification, to comply with the compartmentation requirements, KME had to provide the 101' ladder and longer body without the waterway. The proposal specification was scrubbed to remove the waterway plumbing and associated components. Included with 101' ladder general specification verbiage indicates the ladder is capable of packaging a waterway, but the specification doesn't include the verbiage or pricing for the actual waterway or components.

40. Page 106, Tractor Drawn Ladder, "IQAN" Motion Control System. This was not specified by the County, please provide clarification as to why this was included in KME spec.

KME Response: IQAN is a safety feature with the KME ladder and is required to meet the intent of ***Section 3.122 Apparatus Body Damage Control Interlock System*** of the Riverside County Specification.

41. Page 111, Driver Start Override. Please confirm and update this paragraph as necessary to reflect a transmission selector safety switch override. Please refer to Section 3.8

KME Response: Will be provided as specified per the Riverside County Specification.

42. Page 116, Rescue Eyelet on Last Rung of Ladder Tip. Please refer to Section 3.91.

KME Response: Will provide two (2) lifting eyes as specified in Riverside County Specification.

43. Page 118, Two (2) Federal Signal Commander. The County requirement is for LED. Please refer to Section 4.67.

KME Response: Specification requires two (2) 12-volt LED tip lights, based on the electrical draw of the lights on the ladder tip will reduce the lights output and performance. Therefore, KME is recommending to provide one (1) 120-volt light and one (1) 12-volt light or Two (2) 120-volt lights.

44. Page 120, Akron # 1494 Ladder Clamp-On Monitor. This section references hose storage, please refer to Section 2.209.

KME Response: Sales tool error, specification will be revised to meet of the Riverside County Specification.

45. Page 133, Additional Items Shipped with Vehicle. Please provide clarification on aerial override keys. The County does not require keyed overrides.

KME Response: The key override feature is included with the IQAN System option Item #40.

Please provide clarifications to the above questions and e-mail your response to John Miller at john.miller@fire.ca.gov by Thursday, November 8th at 3:00pm. Please include as an attachment with your clarifications an updated KME Specification / Drawings which match KME's bid response, to include, updated pricing.

EXHIBIT A - ATTACHMENT # 4
PRE-CONSTRUCTION CHANGES



January 29, 2019

Riverside County Purchasing and Fleet Services.
2980 Washington Street
Riverside, CA 92504
Attn: John Miller

REF: Riverside County Pre-Construction Letter Revised 4/9/2019

Mr. Miller,

I'd like to take this opportunity to thank you and the members of your committee for meeting with us to review this project. It was a pleasure meeting and working with all of you. The following is a list of changes, additions, and clarifications discussed during the pre-construction meeting held at the Embassy Suites, Temecula, CA, on January 14-16, 2019

Please carefully review this list and return a signed copy of this letter as soon as possible. Following the approval of this pre-construction letter, the specification will be revised to include all of these items as discussed and this will then, generate the final specification, in which KME will use for engineering, production, inspection and acceptance of the apparatus.

The list is as follows:

ITEM	PAGE	SPEC PARAGRAPH	DESCRIPTION	COST
1	26-27	17	KME to provide two (2) paper copies and USB copies of each electrical wiring and air system schematics at the time of apparatus delivery.	
2	26-27	17	KME will provide parts lists, part numbers and location of all parts on the apparatus. This list shall allow for reference of all parts on the apparatus at the time of apparatus delivery.	

3	55	156	Add an engraved tag to instruct Department on proper tire inflation pressure for all tires on the apparatus. Provide documentation to support tire inflation pressure. Tag will be located in the same general area of the vehicle fluid plate and within view of the driver. This tag will be provided after the apparatus is delivered and the Department has fully outfitted the apparatus with all operational equipment. The Department will be required to weigh the vehicle (all wheels separately, each axle separately and total vehicle weight) and provide this information to KME within 3 months of the apparatus being placed in service. KME will consult with the tire manufacture and provide a recommended tire inflation pressure. This recommended tire inflation pressure shall take into consideration all NFPA, FAMA, FMVSS and any/all Local, State and Federal standards.	
4	36	47	The Line-X on top of the cab shall not be visible from the ground from a standing position. The Line-X material shall stop at the inside of the drip rail on each side. The Line-X shall be applied from a point just to the rear of the cab roof light bar and will continue to the rear cab wall. The color of the Line-X shall be light gray with UV stabilizer. Note: The antenna rail shall be painted job color apparatus red.	
5	37	56	A total of four cab door keys will be provided with each apparatus. The cab door keys will be Tri-Mark #2004.	
6	38	N/A	Delete 1" white reflective material from each outer edge door frame.	-\$105.00
7	40	67	The front cab exterior handrail handle material shall be aluminum ILO stainless steel. The handrail shall match the side handrails, but without LED lighting and reflective material. The mounting stanchions shall be offset in an upward direction. The handrail shall be made to be the widest available without creating any clearance issues.	
8	40	68	The interior grab handles within the Predator cab have been changed from black powder coating to natural "wheelabrated" aluminum.	-\$25.00
9	40	68	The driver's side "A" post grab handle shall be relocated to the drivers inner door panel, mounted on an angle as near as possible to the door hinge.	
10	40	70	Clarification; the front cab grille will be a 3-D formed polished stainless steel grille assembly.	
11	40	71	The mesh bug screen located between the cab grille and the chassis radiator will have an American flag design.	
12	41	N/A	The specified polished stainless steel cab corner scuff plates have been deleted as they were deemed unnecessary.	-\$245.00

13	43	89	The entire top of the engine enclosure (Dog house) will be overlaid with an aluminum mounting panel. The panel will be spaced 1" above the top of the dog house. The panel will be a split design with two equal sized panels.	
14	43	89	~~The mounting panel mentioned in item #13 can be deleted for a credit.~~	~~-\$178.00~~
15	82	270	The currently specified USB charging ports for the driver, officer and rear of cab have been deleted. A Blue Sea model 4365 accessory panel will be provided. The accessory panel shall include (1) 12-volt power port, (2) dual USB charging ports, along with a circuit breaker switch. The accessory panel will be surface mounted to the rear of the center auxiliary dash panel.	\$173.00
16	87	309	The Federal "Signal Master" controller shall be located within the center overhead dash panel, located toward the driver's side.	
17	94-95	347	A dash mounted switch will be provided within the tractor to activate the PTO generator.	
18	44	92	Clarification; The cab overhead dash will be a fabricated "Vista" design and will feature an angled center portion for added driver and officer convenience.	
19	45, 150	97, 664	The officer's seat will not have SCBA storage. *An additional ZICO spring type SCBA bracket will be provided and mounted within the CR-1 compartment. *Mounting location will be determined during the final inspection of the apparatus.	-\$384.00
20	N/A	N/A	The two-way radio head will not be dash mounted. The remote radio head will be mounted on top of the center dash extension, using a swivel which will allow for both front seat occupants to control and view. A new revised dash drawing will be provided. *Disregard item #21 of this letter.	
21	N/A	N/A	A dash layout has been approved. A copy will be sent to you for reference. **Please see item #20 of this letter.	
22	46	107	The number of SCBA parade covers has been reduced from 3 to 2.	-\$69.00
23	47-48	115	The side openings of the EMS compartment will be covered with a black nylon webbing type door. The nylon webbing will be 2" wide. The top of the EMS compartment will have 1" square holes punched out for proper circulation of air from the AC unit mounted just above the compartment. The three door openings on the EMS compartment will be maximized for efficiency.	\$388.00

24	N/A	N/A	The EMS compartment is specified to be 40" wide. At this width there would be a total of 27" available on each side between the compartment and the side wall of the cab. The mounting location for all two way radio components will be inside of the EMS compartment, on the rear wall, as close to the compartment ceiling as practical. *The antenna array will be a single 3" wide channel running across the back of the cab roof 72" in width. All antenna coax cables will terminate in the upper portion of the EMS compartment. *The GPS antenna will terminate at the MDC provision above the Officers globe box. A wire chase will be provided from the EMS compartment to the center dash for additional wiring needs and the two-way radio remote head.	
25	50	126	The HVAC controls will be the manual type, not through the multi-plex system. The controls will be located within the driver's overhead dash panel.	\$305.00
26	50, 118	127,502	The Bergstrom auxiliary AC system has been changed to a 12 volt system ILO 24 volt. A voltage converter to convert 110 volt power to 12 volt power for the aux AC system will be provided. The system shall be powered through the blue shoreline power auto eject. The system shall be managed through the load manager to shut down auxiliary AC system in the event that the battery power drops below recommended levels. This electrical system shall feed both the cab mounted and the tiller cab mounted auxiliary AC systems.	
27	51	130	The auxiliary cab lift control shall be located in the Officers side lower step area CR-3. The tether control for the cab tilt shall be hard wired and shall also be located within the CR-3 compartment.	
28	51	133	The cab lift eye system shall be much like the LA County units except with a removable swiveling hoist ring provided for each of the two (2) lift points. The mounting locations for the swivel hoist rings shall have a cap to prevent water/dirt intrusion. Each of the mounting locations for the swivel hoist rings mounting locations shall have a stainless steel backing plate. The swivel hoist rings shall be shipped loose.	

29	52, 99	136-137, 378	The front bumper extension shall be 10" inches ILO of 6" inches. The Federal Q2B siren shall be fully recessed into the bumper on the driver's side. The originally specified chrome plated tow eyes shall be replaced with the KME lift and tow provision. The lift and tow option shall be painted frame/chassis color (red).	\$692.00
30	52-53	138	The currently specified Meritor front axle will be upgraded to the Hendrickson "Steertek" NXT axle/suspension system. *The Hendrickson "Steertek" axle system will have a GVW rating of #22,000. EX-225 disc brakes along with oil seals will be provided as standard equipment.	
31	55	155	A total of 8 LED tire pressure caps will be provided.	
32	59	171,172	A total of two (2) parking brake controllers will be provided. The primary controller shall be located in the dash on the driver's side and the emergency/auxiliary controller shall be located in the officer's side dash. See dash layout drawing for exact component location.	
33	59-60	174	The currently specified Kussmaul compressor will be upgraded to a Blue Sea model 7920, 12-volt compressor. This compressor will only operate when the truck is plugged into a shoreline plug.	-\$76.00
34	63	185	A complete list of coolant hoses and filter manufactures along with part numbers will be provided at time of apparatus delivery.	
35	65	196	KME will provide you with a performance scan showing performance using different gear ratios.	
36	68	215	Clarification; 4' of additional fuel hose will be provided and coiled on top of the fuel tank in order that in the event that the tank needs to be serviced or removed, preventing the removal of the fuel hose.	
37	102	387	The tractor fenders will match those which were installed on the Nashville TDA. GSO #10615 	

38	73	231	During the meeting we discussed in depth the REV Axis, vehicle monitoring system. Two questions were asked. • <i>What will be the cost for the data after the 5-year initial startup program expires?</i> Presently, the monthly costs range from \$25-\$30. • <i>Define who owns the data stored in the cloud?</i> The data is stored in a cloud, accessible by the OEM, the dealer and the customer.	
39	72	228	During the meeting the question was asked, “Can the V-Mux screen be programmed to show if there is trouble within one of the multi-plex modules”? Answer; The screen cannot be programmed to automatically show when there is a module fault, however, a secondary screen is available which will scan the modules and indicate any faults.	
40	75	235	Upgrade the 320-amp Delco-Remy alternator to a 430-amp alternator. (Same brand)	\$369.00
41	75-76	238	The battery box covers will be fabricated from non-skid aluminum tread-plate.	
42	76	240-241	The currently specified Kussmaul “auto-ejects” will be changed to Blue-Sea “Sure-Eject” A Red cover will be for the charging the electrical system and batteries. A Blue cover will be for the auxiliary AC system.	\$98.00
43	76-77	245	The currently specified Kussmaul battery charger will be changed to a Blue-Sea model 7532 charger. This charger is rated at 12-volt DC 40-amps.	-\$180.00
44	N/A	N/A	The ignition “on” light specified for the front face of the cab has been deleted.	-\$134.00
45	N/A	N/A	The specified Mobile Vision multi use power ports listed in the spec have been deleted.	-\$103.00
46	N/A	N/A	The 12-volt power ports specified for the driver and officer’s dash panel have been deleted.	-\$155.00
47	N/A	N/A	The 12-volt power outlet specified for the rear of the cab has been deleted. (Credit included in Line# 15)	
48	N/A	N/A	The USB ports specified for the rear crew area have been deleted.	-\$236.00
49	N/A	N/A	The 12-volt power and ground studs specified for the top of the dog house have been deleted.	-\$249.00

50	N/A	N/A	A total of three 12-volt power and ground studs will be provided within the EMS compartment, located near the top rear center of the compartment. The studs will be 3/8" and will be fused at the batteries. The studs will be as follows: • Stud #1, 40-amps, constant hot, battery direct • Stud #2, 40-amps, switched with mastery battery • Stud #3, direct ground to negative terminal of chassis batteries	
51	84	283	There will be a total of four (4) Tecniq E96 LED docking lights ILO of two (2) lights. Lights will be activated by the turn signal switch on the Tillerman's steering column. Left turn activation will activate the drivers side lights, right turn activation will activate the officers side lights. All four (4) lights will activate when the transmission is placed in reverse. A high beam activation from the Tillerman will also activate all four (4) lights.	\$537.00
52	N/A	N/A	The specified Federal Signal model COMLS15K-800 front brow lights and all related components have been deleted. A Fire Tech HiViz 80" wide, model FT-B-80-W (County does not want marker lights in the brow light, the part number provided is a special order through Firetech) will be provided. Although there are three separate circuits within the HiViz bar, a single switch within the KME cab switch panel will control all three circuits. The brow lights shall be controlled through the V-Mux multi-plex screen.	\$305.00
53	86	295	The Federal Signal cab roof light bar shall have a feature, which will allow for forward facing scene lights. These lights will be controlled thru the V-Mux multi-plex screen. *Please verify the model number of the Federal bar light. Federal Signal 87" Navigator light bar system, Part #: 1532275834 (Part # is custom for Riverside County Fire) A lightbar layout shall be provided to Riverside County Fire for approval prior to ordering.	
54	87-88	305-307,311	Clarification; All of the side facing warning lights, including those on each of the outrigger panels will be Whelen M6 Linear Super-Led surface mounted warning lights. The lens will be clear, ½ of the light shall have red led, and ½ of the light shall have clear leds. These light will flash alternating between red and clear until the park brake is set, at that time all flashing white lights must be shed.	

55	87,93	309,342	The Federal Signal Master will be changed to a 6 light unit. A separate Federal Signal red 3 rd brake light will be provided. The brake light shall be located below the Signal Master on the rear facing surface of the tiller cab.	
56	88	313	The scene lights mounted on the tiller cab will be controlled from within the tiller cab. There shall be a switch to control the front facing lights and a separate switch to control the rear facing lights. The scene lights mounted on both the front and rear of the tiller cab will be Whelen M7 scene lights with a clear lens.	
57	94-95	347	The generator will be changed from the originally specified Onan 10K to Harrison 10K model MAS-16R. *The Harrison generator will package much more efficiently. The measurements for the Harrison generator are 31" long x 21" wide x 18" tall. I will provide you with all available specification/repair/warranty information.	
58	96-97	355-356	The Federal Signal pedestal mounted LED scene lights to be mounted above the L/R-3 and L/R-6 for a total of 4 lights (2 each side). These lights shall be switched at the electrical breaker only.	
59	97	358	The 120-volt receptacles listed for the rear of the body as well as on each of the junction boxes will be: L5-15 15-amp twist-lock	
60	98-99	374	The air horns shall be controlled by a foot mounted switch on the Driver's side and a dash mounted switch on the Officers side.	
61	98	373	The center horn button on the driver's steering wheel shall have a two (2) way switch to allow the selection of either the DOT horn or the electronic siren.	
62	98	371	Grover air horns shall comply with section 2.135 of the customer's specification (One horn will be 15 inches while the second horn will be 24 inches in length, both with a 6 inch flare).	
63	101-102	385-386,389-390	Trailer wheel well storage shall be designed and configured to hold the following items: There shall be storage space within the wheel wells both forward and rearward of the trailer wheel on each side of the trailer. Each space will have a latching door that is painted job color (red). The driver's side will accommodate up to four (4) 60 minute 4500 Scott SCBA cylinders and one 20 pound Ansul cartridge dry chemical extinguisher. *The number of SCBA cylinders is reduced from 5 to 4 due to the cartridge type extinguisher. The Officers side will accommodate five (5) 60 minute Scott SCBA cylinders and one (1) 2 ½ gallon pressurized water extinguishers.	

64	102	391	L/R-8 Compartment will be located forward of the tiller cab access ladder directly adjacent to the trailer wheel well. The compartment dimensions will be approx. 41 inches wide x 31 inches high x 28 inches deep. There shall be a minimally sized bump out within the compartment back wall to accommodate the trailer steering gear.	
65	91-92	328	All door open/close indicator switches shall be of the magnetic design ILO of plunger style. FDNY standard.	
66	102-103, 110	391,451	The T-4 compartment (located at the rear of the body) shall be designed to be as deep as possible. A 250 pound rated floor mounted roll out tray with locking slides (no pneumatic struts) shall be provided. *this tray to be used by firefighters as a work station for rebuilding chain saws.	\$775.00
67	92	333	Two (2) Tecniq model E07; Recessed LED lights will be provided and located within the interior door of the T-1 compartment door. Lighting intent is to provide a well-lit working area for the pull out surface in the T-4 compartment.	\$538.00
68	102-103	391	The compartment doors of the T-2 and the T-3 compartment will be hinged outboard.	
69	102-103	391	There shall be a T-5 compartment located below the T-1 compartment at the rear of the body. The T-5 compartment shall have a latching door that is hinged at the bottom. This compartment will be designed to hold four "D" handled Rubbish hooks (three 6 foot and one 4 foot) and two "D" handled ceiling/wall hook (Nupla CWH-4YDA).	
70	98, 103	365,392	The CL/R-1 compartments shall be sized to accommodate the electric cord reels along with the electric junction boxes. Each cable reel shall be sized accordingly to accommodate 200' of 12/3 electric cable.	
71	98	366-368	The electrical cord reel junction box shall be stored attached to the cord reel. A secure mounting location shall be provided within the CL/R-1 compartment. *Note, the junction boxes will not be hard wired to the end of the cable reel. Each box shall have a 6" pigtail. The cable reel shall terminate with the appropriate receptacle, as chosen in item #59 of this letter.	
72	108	425	A 6' fiberglass ladder shall be provided ILO the originally specified 8' ladder. (Warner #6206)	- \$57.00
73	104	395	The body doors for the tractor and trailer side body compartments will be the beveled overlapping design. The doors on the rear of the trailer will be the flat overlapping design, this is to allow for proper installation of the chevron striping material.	
74	105	400	All compartment door locks shall utilize a #1250 key. A total of 4 keys will be provided with each apparatus.	

75	105	405	The winch receiver points shall be located under the L/R-7 compartment towards the seam of the L/R-6 and L/R-7 compartments. Receiver shall be rated at a minimum of a Class 4 (10,000 lbs.).	
76	108	424	Clarification; A total of (2) two folding attic ladders will be provided. Credit (1) one ladder.	-\$215.00
77	110	452	The 500 lb. rated slide out trays shall be Slide Master brand. Each tray shall be held open and closed with a manual ¼ turn release (turn lock).	
78	109-111	433-457	Compartment shelf's and pull out trays shall be as follows: *Note; Each of the trailer side body compartments will have Uni-strut channels provided for future installation of compartment accessories. *All adjustable shelves to have 2" lips front and back, unless otherwise noted. CL-2 One adjustable shelf with a 1 inch lip on the outer edge. L-1 Nothing planned for this compartment at this time. (Two adjustable shelves have been deleted.) L-2 A total of two (2) adjustable shelves The upper with a 1 inch outer lip L-3 No shelf. Unistrut only. L-4 Three (3) adjustable shelves L-5 Two (2) adjustable shelves L-6 Two (2) adjustable shelves Both with 1 in lip L-7 One adjustable shelf with a 2 inch lip and One floor mounted pull out tray, 250 lbs. rated, 2 inch lip/edge. L-8 No shelf. Unistrut only. CR-2 One adjustable shelf with a 1 inch outer lip. R-2 One adjustable shelf with a 1 inch outer lip. R-3 An upper located 60 inch deep pull out tray, 500 lbs. rated with 6 inch high lips.	-\$110.00

			One (1) adjustable shelf with a 1 inch lip. Mid mounted. A floor mounted 70 inch deep pull out tray, 500 lbs. rated with 4 inch high lips. R-4 A top mounted 70 inch deep pull out tray, 500 lbs. rated with 2 inch high lips. One (1) adjustable shelf with a 1 inch lip. Mid mounted. A floor mounted 70 inch deep pull out tray, 500 lbs. rated with 4 inch high lips. R-5 One (1) adjustable shelf with a 2 inch lip. Top mounted. Three (3) adjustable shelves with a 1 inch lip. Mid mounted. A floor mounted 70 inch deep pull out tray, 500 lbs. rated with 4 inch high lips. R-6 One (1) adjustable shelf with a 2 inch lip. Top mounted. Two (2) adjustable shelves with a 1 inch lip. Mid A floor mounted pull out tray, 500 lbs. rated that is located under the frame with 6 inch high edges (right, rear, left), but no lip on the front/Officers side. Gas shock. Accessed from the Officers side only. *Tray approx. 36" x 36". R-7 One (1) adjustable shelf with a 1 inch lip. R-8 A floor mounted pull out tray, 500 lbs. rated with 2 Inch high edges.	
79	55,112	148,152, 467	All of the wheels will be Alcoa brand polished aluminum. The originally specified Dura-Bright wheels are not available in the sizes required for this application, thus all wheels will be polished aluminum.	-\$606.00
80	112	468	A compartment shall be provided to the rear of the chassis locker compartments as large as possible with a vertically hinged swing out door. This compartment shall also act as a step to access the ladder turntable. This compartment shall be identified as CL/R-3.	
81	106	411	The side panels on the trailer, outboard of the ladder storage area will be smooth aluminum, painted job color red.	

82	114	479	Tiller driver's seat shall be non-air ride with adjustable fore/aft seat base. USSC seat, I back ABTS with Ready Reach seat belt holder.	-\$309.00
83	116	490,491	All of the tiller cab mirrors, both interior and those to be mounted on the body will be located and mounted during the final inspection.	
84	116	489	The hand rails on the exterior of the tiller cab will match those on the exterior of the tractor. White LED lighted with red reflective strips.	
85	117	496	Delete the "boat" style light on top of the cab roof. Provide an amber surface mounted light located at the center rear of the antenna array/rear or the roof mounted HVAC. Must be visible to the rear for the Tillerman to use for alignment.	
86	117	498	The tiller cab buzzer shall be activated through the Tillerman's steering wheel center horn push button activator.	
87	117	497	The tiller safety shift system shall incorporate a linemaster switch, floor mounted on the Officers side of the tiller cab floor. The system shall reset with park brake activation. *Note; this system will allow for the tractor driver to start the engine, but the transmission will not shift out of neutral until the tiller driver is depressing the floor mounted switch.	
88	117	499	The "jack knife" alarm will be silenced whenever the park brake is set.	
89	117-118	501	There will only be a total of (2) two circulation fans within the tiller cab. Both fans will be located near the front windshield. *Credit 2 specified fans.	-\$134.85
90	118	502	Auxiliary AC tiller cab system to be 12 volt Bergstrom system	
91	123	518	Clarification; The manual handles for the outriggers and 5 th wheel will be oriented as follows, working from left to right Drivers side beam Officers side beam Drivers side jack Officers side jack 5 th wheel lock. *This configuration matches your current KME TDAs.	
92	N/A	N/A	The currently specified "creeper" or ladder tip controls have been deleted.	-\$2,850.00
93	130	550	The outrigger foot pads will be the larger "California" style.	\$380.00
94	N/A	N/A	The auxiliary ground pads have been deleted as they are not required when the California foot pads are provided.	-\$180.00
95	N/A	N/A	Clarification; The hydraulic system on the KME TDA does not require manual pins for the outrigger jacks.	

96	128	542	A guarded momentary toggle switch will be provided for the outrigger/aerial manual over-ride system. A keyed system will not be acceptable.	
97	87-88	311	The Whelen M6 Linear Super-Led surface mounted warning lights mounted to the outside of the outrigger panels will be red/clear to match the remaining warning lights in zones B/D lower.	
98	132	560	The Man-saver bars at the openings on the turntable will not have a padded covering.	
99	134-135	571	Clarification; A folding attic ladder will be mounted within the aerial fly section. The ladder will be mounted to the driver's side of the ladder, as viewed when the aerial ladder is resting in the cradle.	
100	135	575	The 14' roof ladders (Two (2) will be provided) will be Duo-Safety model 775DR-14 and shall have folding hooks on each end of the ladder.	
101	135	574	Clarification; The folding steps within the fly section will have a cut out to allow for the 3" hose to be used in conjunction with the clamp-on monitor.	
102	135	574	The bolt-on egress will have an electro-polished finish. It will not be painted.	-\$236.00
103	137	586	The 120-volt lights located at the tip of the aerial ladder will have a "cutoff" switch located on the turntable pedestal. One switch will control both lights. Note; Each light will have its own individual switch mounted on the light head.	
N/A	N/A		The Class-1 "load-minder" has been deleted along with the amber warning lights which are specified to be mounted on the tip of the base section. Note; A load-minder is provided as standard within the KME IQAN system. A visual and audible warning will be provided at the turntable console to alert when a ladder overload situation occurs.	-\$525.00
104	N/A	N/A	During the meeting we discussed the camera system for the tip of the aerial. I have reached out to Fire Research Corp and they have advised me that wireless camera system has been tested and in an unobstructed situation, the range is at least 300 hundred feet. They are also looking into the availability of a hard wired system.	
105	N/A		The specified aerial camera system will be provided.	

106	104	393	The hose storage compartment located at the rear of the tractor cab, in between the locker compartments shall have a storage capacity for 150 feet of 3 inch hose. A latching tread-plate cover shall be provided and designed to be utilized as a walking surface. The hinge shall be towards the tractor. The lid and rear vertical surface to hinge upward to allow for hose deployment. A gas shock strut system to hold the door in the open position shall be provided.	
107	140	607	A mount shall be provided for the Akron ladder pipe to securely be carried/stored. Final mounting location shall be made at the final inspection.	
108	146	624	The interior of both the tractor cab and the tillerman's cab will be sprayed with black Line-X	
109	145-148	621,626,635, 639	The chassis, torque box, trailer frame along with the underside of both the tractor and trailer compartments will be painted job color red.	
110	146	627-629	The body compartment interiors along with the fender storage compartment interiors will be sprayed with dark gray Line-X.	
111	N/A	N/A	The Tuff-Coat undercoating listed within the KME proposal has been deleted.	-\$880.00
112	148	648	The customer will supply two (2) county and two (2) city logos for each unit.	
113	148	649	An American flag, non-waving, decal will be provided and installed on each aerial sign panel, located toward the tip of the aerial device.	
114	149	660	The sign panels for the four trucks will be lettered as follows; City of Temecula City of Moreno Valley Cove Communities City of Menifee	
115	N/A	N/A	The 1" reflective striping listed within the KME proposal to border each compartment door has been deleted.	-\$986.00
116	149	655	The rear trailer vertical surface of the body shall be 100% reflective chevron covered. Rear surface of the tiller cab is not to be covered. The reflective material shall be Ora-lite, red/lime green.	
117	150	662	Clarification; The 3" hose for the clamp-on monitor will have 2 ½" National Standard Threads (NST)	
118	150	663	The part number for the TFT Jumbo Gate valve is #AN4P7P02 The valve shall be painted silver as per TFT standard.	

119	150	664	A total of three (3) Zico SCBA bottle brackets shall be provided. The mounting location shall be determined at the final inspection. The Zico part # is UH-6-30-2-SF	
120	150	665	A total of five (5) Fire Vulcan hand lights shall be provided ILO seven (7). The lights shall be mounted in the following compartments: Two (2) in the rear doghouse area of the cab, adjacent to each rear facing seat. (1) within the CL-2 compartment (1) within the CR-2 compartment (1) within the L-8 compartment *Exact mounting locations within these compartments will be determined during an in-process or final inspection.	-\$246.00
121	48	119	KME will provide and install an engine access storage module. This storage module will provide storage for up to 6 map books along with a center storage tray for small equipment or personal belongings. Four individual cup holders will be provided. The exact mounting locations to be determined during an in-process inspection.	\$1,240.00
122	150	667	Exact in-service date language will be agreed upon at time of contract signing.	
123	93	341	The front turn signals, along with the rear, tail, turn, and back-up lights will be changed from Federal Signal to Whelen M6. The rear Zone-C lower warning lights will be included within the Whelen quad light bezels located each side of the rear of the trailer.	
124	86	296-300	The inboard warning lights within the lower Zone-A headlight bezels will be Whelen M6, part #M6RC, red leds with a clear lens.	
125			**The changes to upgrade the currently specified Federal lights listed within this letter in red, to Whelen M-Series has resulted in a price increase of \$3,000.00 per truck.	\$3,000.00
126	73	230	The Officers side V-Mux screen will be mounted in the area directly forward of the officer's seat. A fabricated box will be provided and mounted to the dash in this area. The Officers side dash wing panel will remain open as this area will be utilized by the customer for mounting the MDC and keyboard. *A revised dash layout will be provided for your approval.	\$475.00

If all of the above changes are accepted the Credit per each apparatus would be **(\$20.85)**. Should you decide not to do an individual item, the credit would be changed accordingly.

Thank you again and if there are any questions please do not hesitate to contact me at 570-669-5224 or mboyle@kmefire.com. We look forward to working with you and your department.

Respectfully,

Mark Boyle

Mark Boyle
Contract Administrator

Fire Department / Municipality Authorization

Signature: _____

Print Name: _____

Title: _____

Date: _____

EXHIBIT A – ATTACHMENT # 5
DRAWINGS

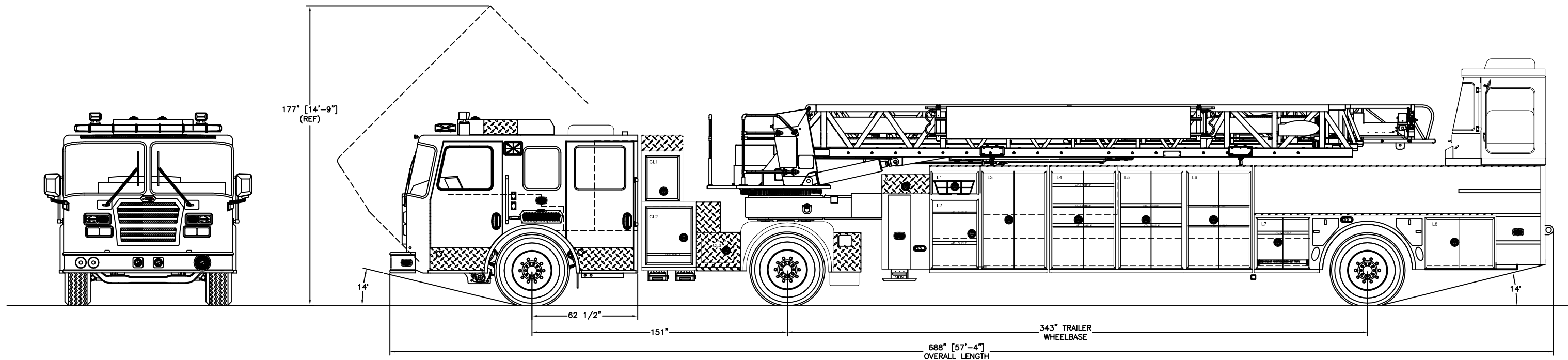
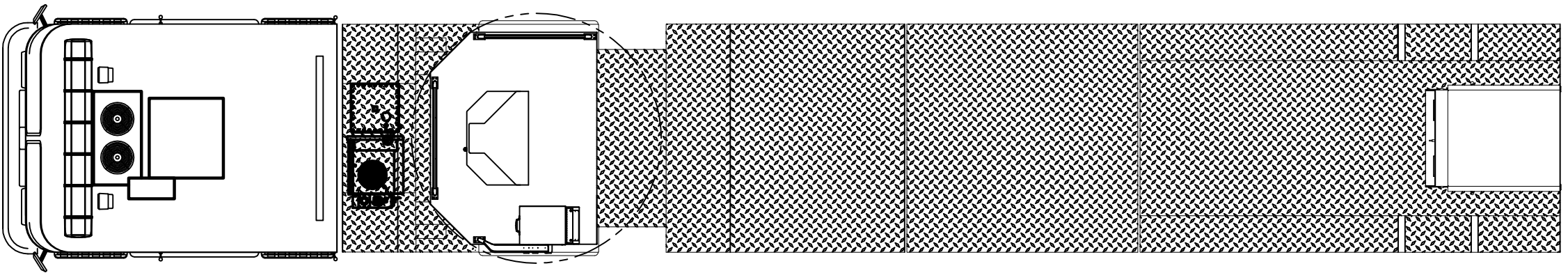
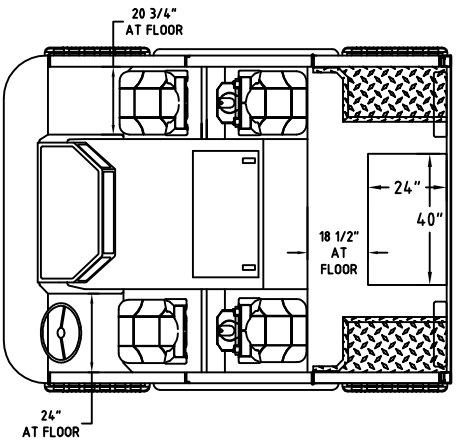
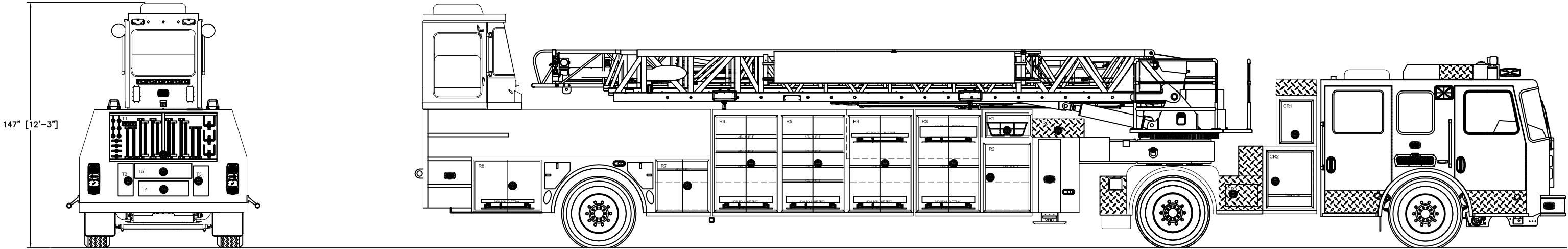


Exhibit A - Attachment # 5
Drawing # 1

CAB: PREDATOR MFD FLAT ROOF
ENGINE & TRANS. CUMMINS X15 600 /ALLISON 4500 EVS
AXLES: 21,500# FRONT/31,000# REAR/ 23,000# TILLER
PUMP: N/A
WATER TANK: N/A

THIS DRAWING IS A GENERAL
CONFIGURATION AND MAY NOT
NECESSARILY REFLECT ALL
CONTRACTUAL REQUIREMENTS.
CONTRACT SPECIFICATIONS SHALL
PREVAIL OVER DRAWING.

CUSTOMER APPROVAL:

NAME: _____

TITLE: _____

DATE: _____

D	3/12/2019	UPDATED TO SHOW WHELEN LOWER LEVEL LIGHTS	MB
C	02/21/2019	AS PER PRE-CONSTRUCTION LETTER	MB
B	09NOV18	CLARIFICATION LETTER DATED 07NOV18	JB
A	9/25/18	DRAWING FOR BID PROPOSAL	ZCZ
SYM	DATE	REVISION DESCRIPTION	APP'D
SALES ENGINEER :		MARK BOYLE	

DIMENSIONS ARE APPROXIMATE & MAY VARY DUE TO BUILD ADJUSTMENTS			
SCALE	DWG SIZE	DRAWN BY	DATE
NONE	B	Z.ZSCHUNKE	10/16/18
		APPROVED BY	P.HOHERCHAK
101' TRACTOR DRAWN AERIAL LADDER			
RIVERSIDE COUNTY, CA			
PROPOSAL DRAWING			



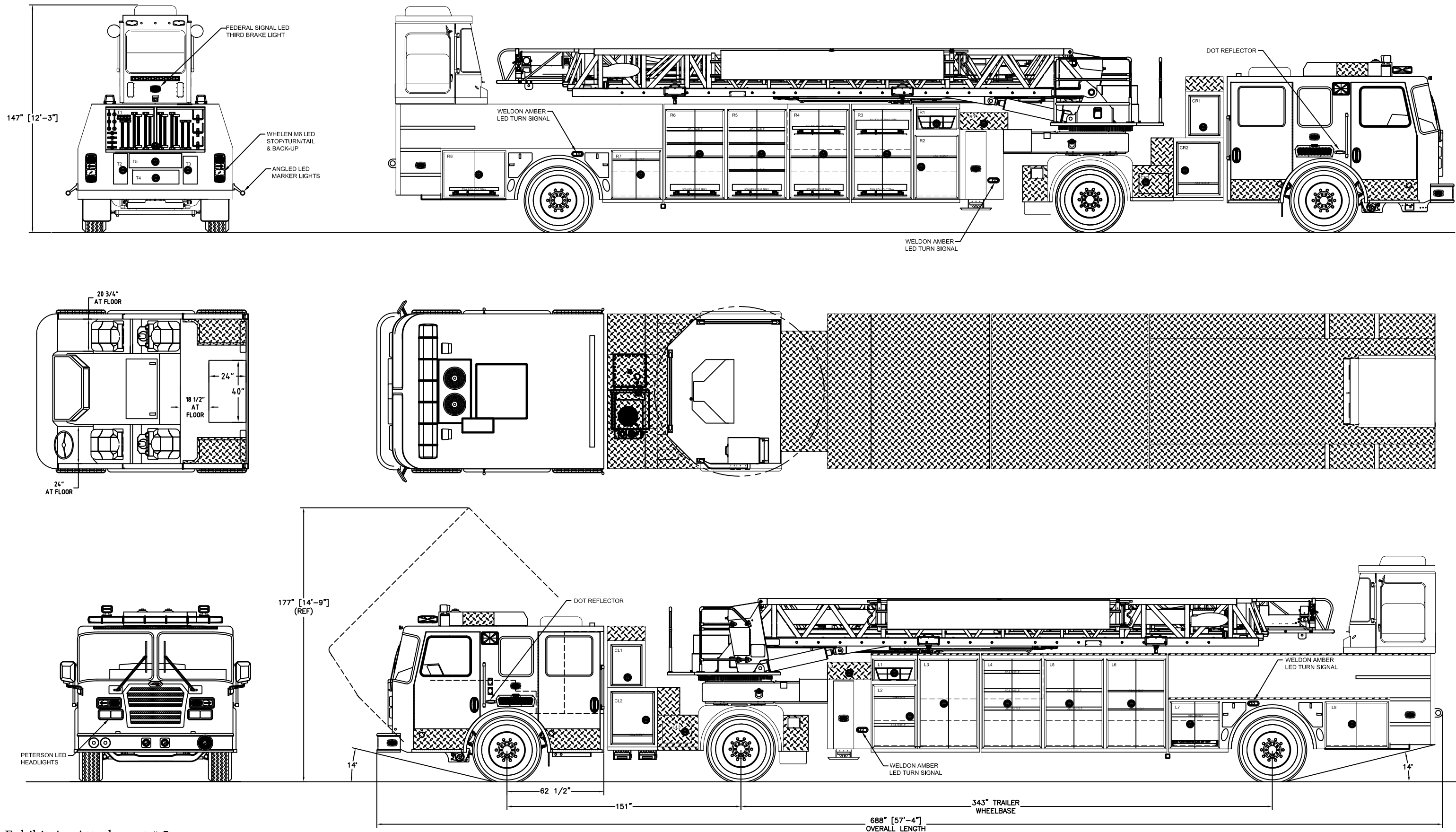


Exhibit A - Attachment # 5
Drawing # 2

CAB: PREDATOR MFD FLAT ROOF ENGINE & TRANS. CUMMINS X15 600 /ALLISON 4500 EVS AXLES: 21,500# FRONT/31,000# REAR/ 23,000# TILLER PUMP: N/A WATER TANK: N/A	THIS DRAWING IS A GENERAL CONFIGURATION AND MAY NOT NECESSARILY REFLECT ALL CONTRACTUAL REQUIREMENTS. CONTRACT SPECIFICATIONS SHALL PREVAIL OVER DRAWING.	CUSTOMER APPROVAL:				DIMENSIONS ARE APPROXIMATE & MAY VARY DUE TO BUILD ADJUSTMENTS				 KME ONE INDUSTRIAL COMPLEX - NESQUEHONING, PA 18240				
		NAME: _____				SCALE		DWG SIZE			DRAWN BY		DATE	
		TITLE: _____				NONE		B			Z.ZSCHUNKE		10/16/18	
		DATE: _____				APPROVED BY		P.HOHERCHAK						
		SYM				DATE		REVISION DESCRIPTION			APP'D			
		SALES ENGINEER :				MARK BOYLE								
						</								

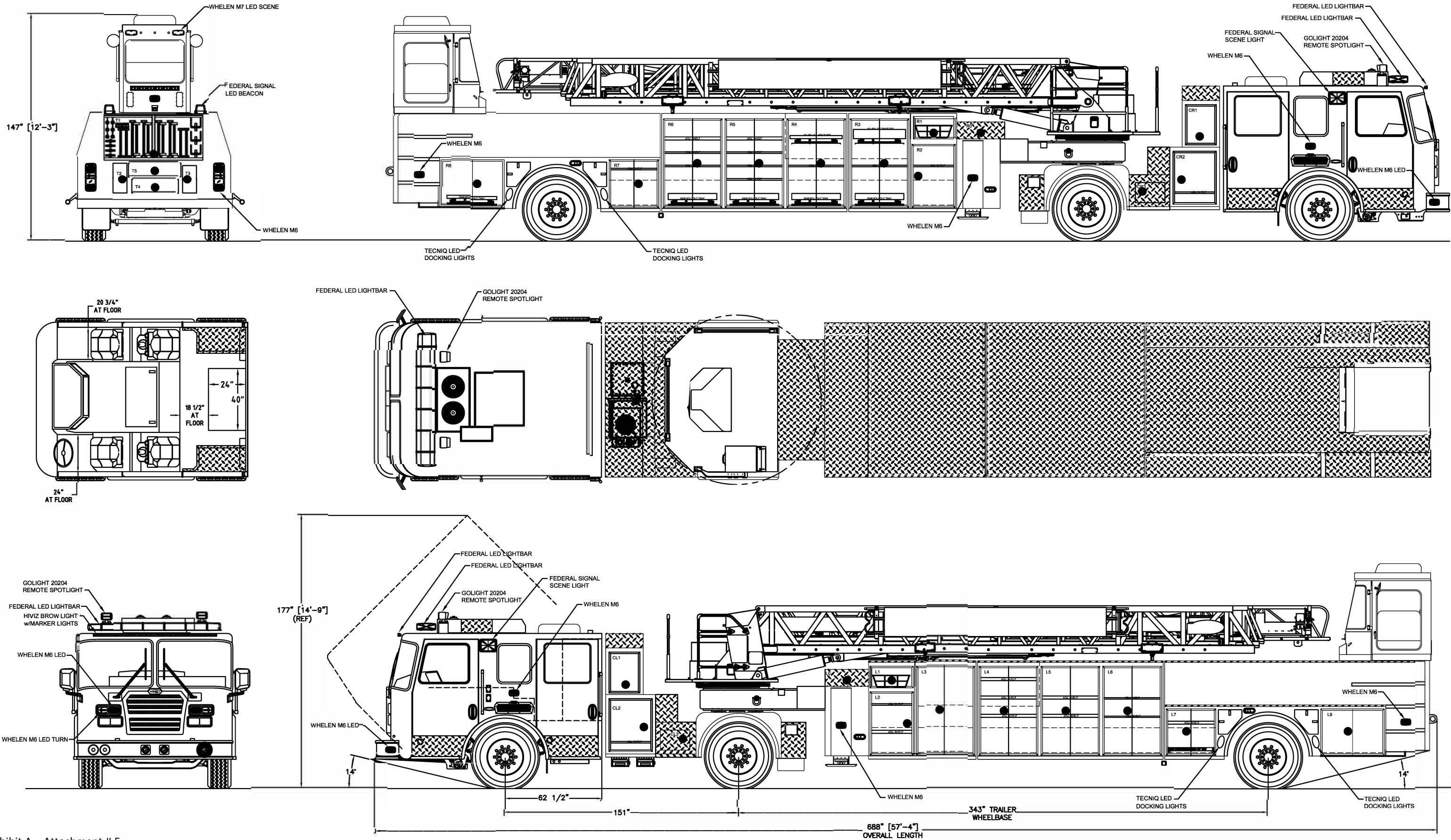


Exhibit A – Attachment # 5
Drawing # 3

CAB: PREDATOR MFD FLAT ROOF
ENGINE & TRANS. CUMMINS X15 600 /ALLISON 4500 EVS
AXLES: 21,500# FRONT/31,000# REAR/ 23,000# TILLER
PUMP: N/A
WATER TANK: N/A

THIS DRAWING IS A GENERAL
CONFIGURATION AND MAY NOT
NECESSARILY REFLECT ALL
CONTRACTUAL REQUIREMENTS.
CONTRACT SPECIFICATIONS SHALL
PREVAIL OVER DRAWING.

CUSTOMER APPROVAL:

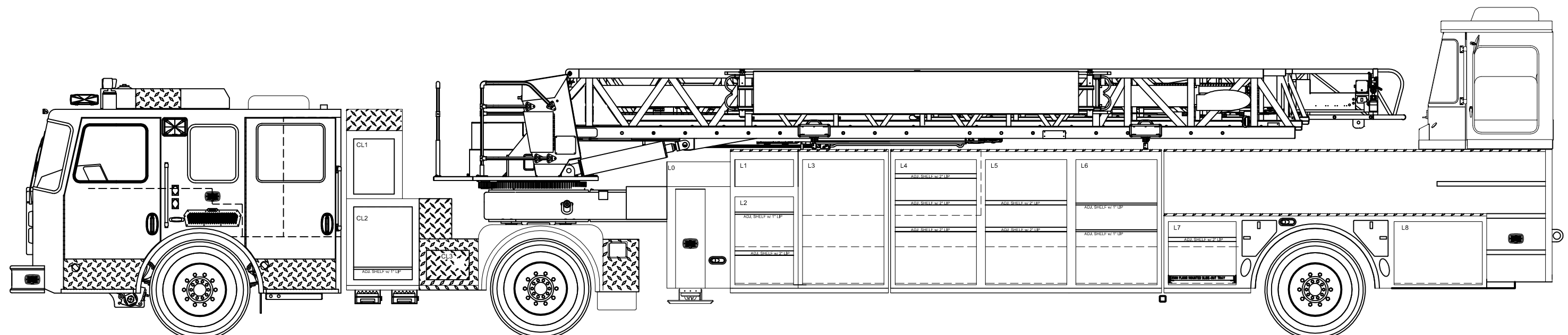
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TITLE: _____
DATE: _____

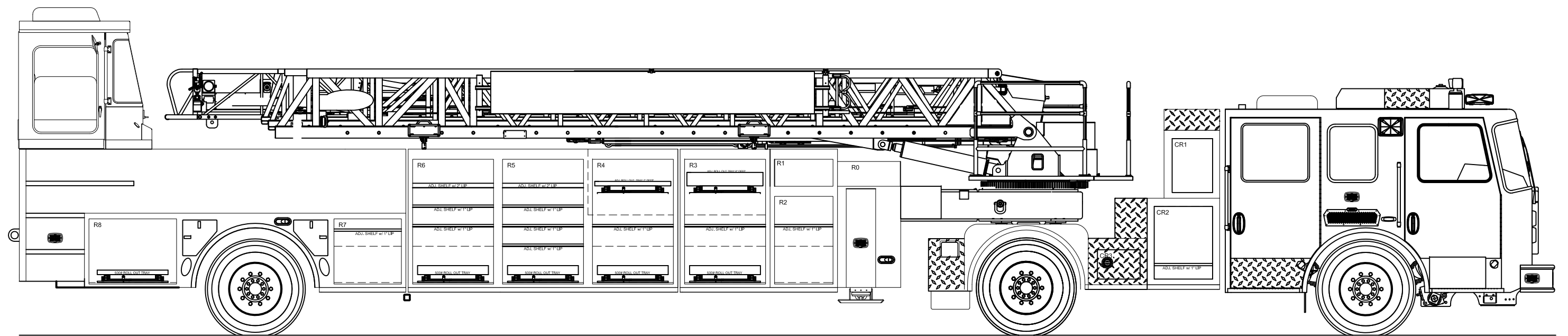
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C	02/21/2019	AS PER PRE-CONSTRUCTION LETTER	MB
B	09NOV18	CLARIFICATION LETTER DATED 07NOV18	JJB
A	9/25/18	DRAWING FOR BID PROPOSAL	ZCZ
SYM	DATE	REVISION DESCRIPTION	APP'D
SALES ENGINEER : MARK BOYLE			

DIMENSIONS ARE APPROXIMATE & MAY VARY DUE TO BUILD ADJUSTMENTS			
SCALE	DWG SIZE	DRAWN BY	DATE
NONE	B	Z.ZSCHUNKE	10/16/18
APPROVED BY P.HOHERCHAK			
101' TRACTOR DRAWN AERIAL LADDER			
RIVERSIDE COUNTY, CA			
PROPOSAL DRAWING			



KME
ONE INDUSTRIAL COMPLEX - NESQUEHONING, PA 18240





RIVERSIDE, CA
OFFICERS SIDE VIEW
COMPARTMENT ACCESSORY LAYOUT

Exhibit A – Attachment # 5
Drawing # 5

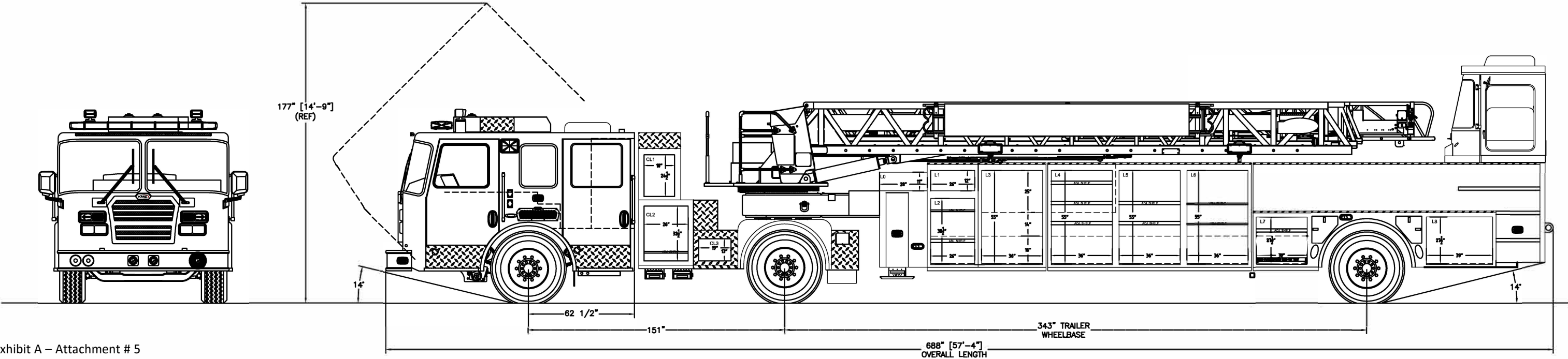
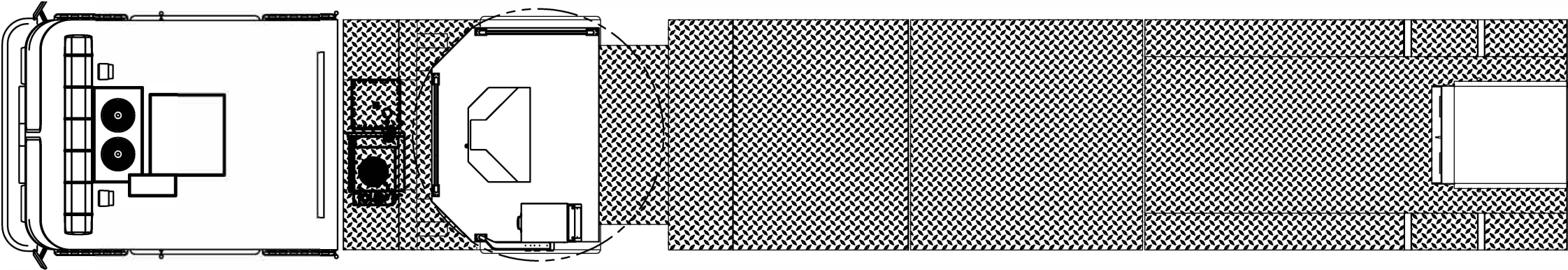
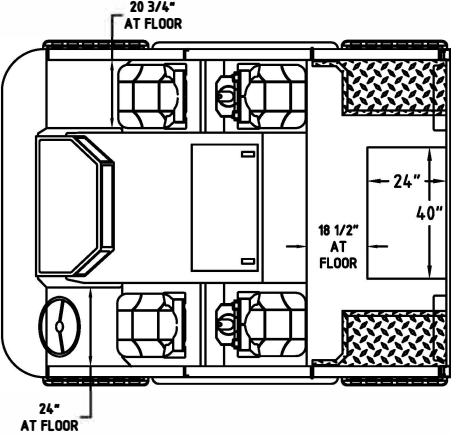
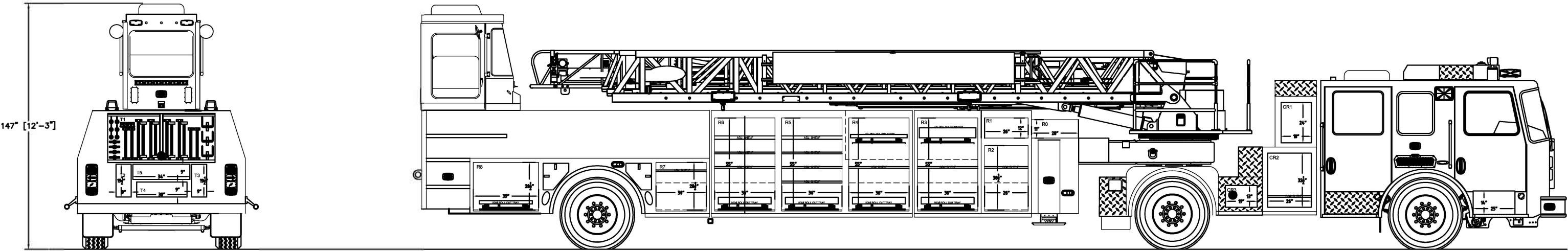


Exhibit A – Attachment # 5
Drawing # 6

CAB: PREDATOR MFD FLAT ROOF
ENGINE & TRANS. CUMMINS X15 600 /ALLISON 4500 EVS
AXLES: 21,500# FRONT/31,000# REAR/ 23,000# TILLER
PUMP: N/A
WATER TANK: N/A

THIS DRAWING IS A GENERAL
CONFIGURATION AND MAY NOT
NECESSARILY REFLECT ALL
CONTRACTUAL REQUIREMENTS.
CONTRACT SPECIFICATIONS SHALL
PREVAIL OVER DRAWING.

CUSTOMER APPROVAL:

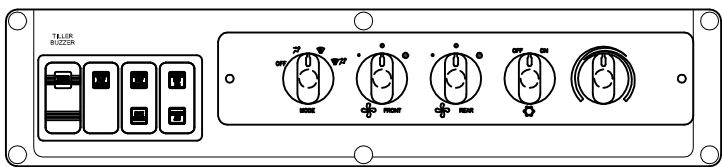
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DATE: _____

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D	3/12/2019	UPDATED TO SHOW WHEELS LOWER LEVEL LIGHTS	MB
C	02/21/2019	AS PER PRE-CONSTRUCTION LETTER	MB
B	09NOV18	CLARIFICATION LETTER DATED 07NOV18	JJB
A	9/25/18	DRAWING FOR BID PROPOSAL	ZCZ
SYM	DATE	REVISION DESCRIPTION	APP'D
SALES ENGINEER :		MARK BOYLE	

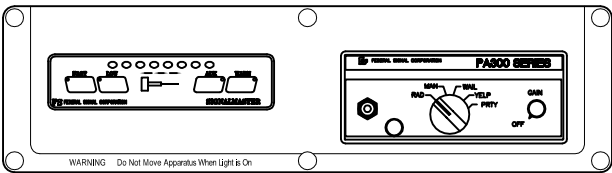
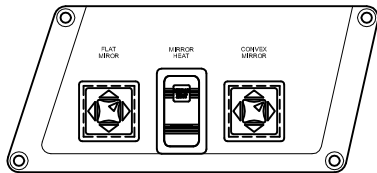
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APPROVED BY P.HOHERCHAK			
101' TRACTOR DRAWN AERIAL LADDER			
RIVERSIDE COUNTY, CA			
PROPOSAL DRAWING			



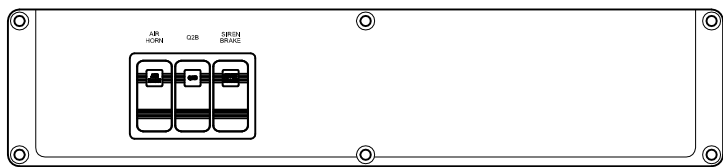
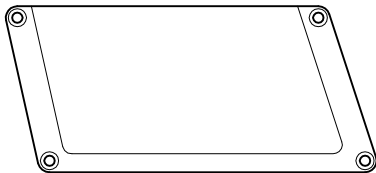
KME
ONE INDUSTRIAL COMPLEX - NESQUEHONING, PA 18240



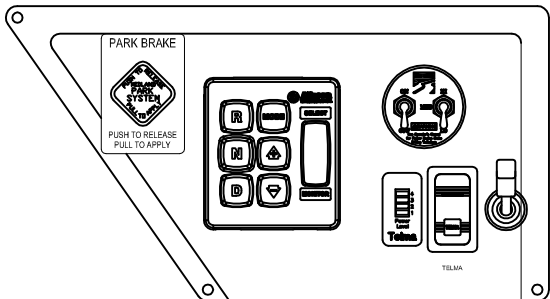
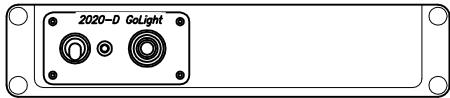
DRIVER FRONT OVERHEAD PANEL
MAX DEPTH 2"



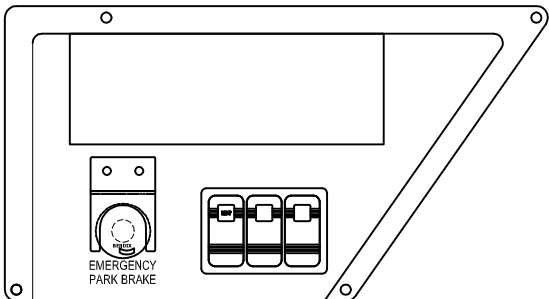
CENTER OVERHEAD CONSOLE PANEL



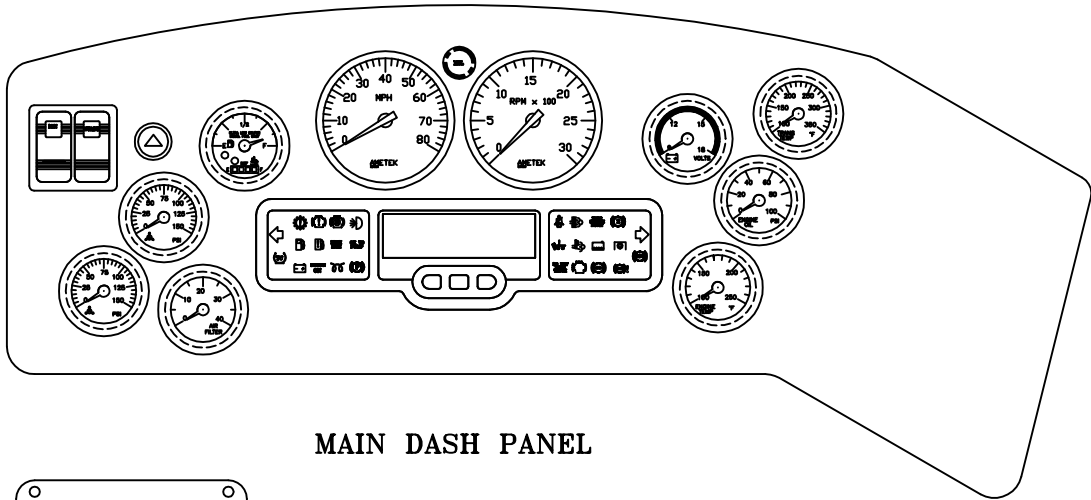
OFFICER FRONT OVERHEAD PANEL
MAX DEPTH 2"



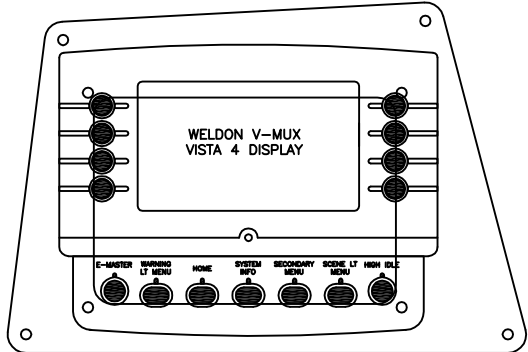
(L.H.) DRIVER AUX. CONSOLE PANEL



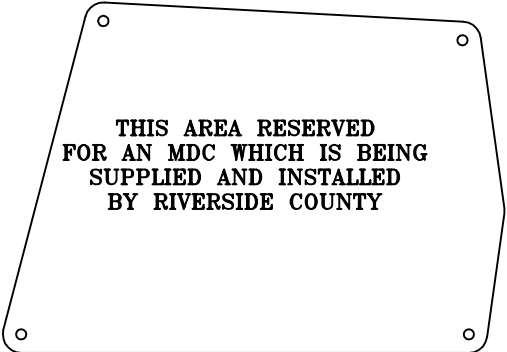
(R.H.) OFFICER AUX. CONSOLE PANEL



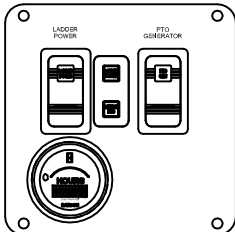
MAIN DASH PANEL



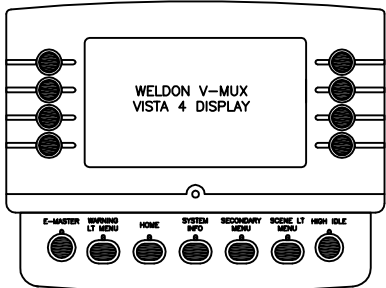
CENTER L.H. DASH PANEL
MAX DEPTH 4"



CENTER R.H. DASH PANEL
MAX DEPTH 4"



LOWER L.H. PANEL



OFFICERS V-MUX SCREEN TO BE
MOUNTED FORWARD OF OFFICERS SEAT

NOTE: THE STEERING COLUMN WILL CONTAIN THE FOLLOWING CONTROLS

- WINDSHIELD WIPERS / WASHER
- HEADLIGHT HIGH / LOW BEAM
- TURN SIGNALS
- TILT / TELESCOPE

Exhibit A – Attachment # 5
Drawing # 7

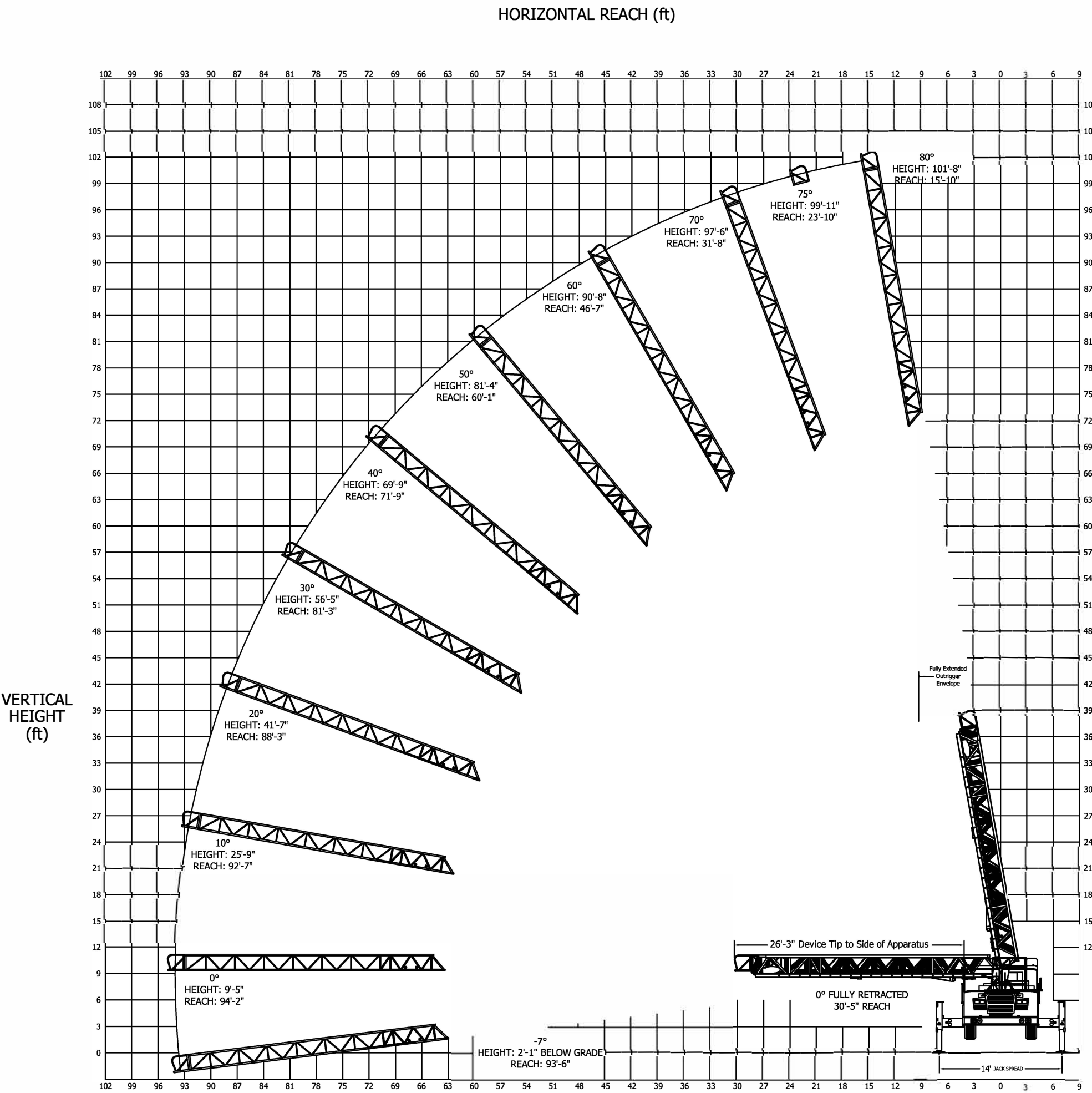
NOTE: DASH RENDERING HAS BEEN CONFIGURED TO MEET CUSTOMER SPECIFICATIONS. ANY CHANGES MUST BE SUBMITTED TO ELECTRICAL ENGINEERING FOR APPROVAL. DO NOT CHANGE MANUALLY.

UNLESS OTHERWISE SPECIFIED ALL DIMS ARE IN INCHES. DO NOT CHANGE DRAWINGS MANUALLY. TOLERANCES: ONE PLACE DECIMAL: ± 0.1 TWO PLACE DECIMAL: ± 0.06 THREE PLACE DECIMAL: ± 0.031 ANGULAR: ± 1°		DESIGNED BY B. Shanfelt	CHECKED BY	TITLE XXXXXXXXXX XXXXXXXXX - Contract Administrator
DATE DESIGNED 10/23/2018	REVISION	DRAWING NUMBER Riverside County, CA (TDA)	SHEET	

KME GROUP
ONE INDUSTRIAL COMPLEX • NESQUEHONING, PA 15240

EXHIBIT A – ATTACHMENT # 6
AERIAL REACH CHART

AERIALCAT REACH CHART: 101' TRACTOR DRAWN AERIAL



Attachment # 6
Aerial Reach Chart

#500 UNRESTRICTED TIP RATING AT ANY ANGLE DRY OR FLOWING WATER
*Tip capacity is reduced to #250 when flowing water above the waterway centerline.

* DRAWN AT 138" TRAVEL HEIGHT, WITH OUTRIGGERS FULLY DEPLOYED

VERTICAL HEIGHT: Measured vertically with the ladder at maximum elevation and extension, from the outermost rung of the outermost fly section to the ground (per NFPA 1901 code).

HORIZONTAL REACH: Measured in a horizontal plane from the centerline of the turntable rotation to the outermost rung on the outermost fly section with the ladder extended to it's maximum horizontal reach (per NFPA 1901 code).

EXHIBIT A – ATTACHMENT # 7
AMPS REPORT



AMPS REPORT

Quote # QUO0000002203 (Rev 1)

ERP Number:

Date: April 8, 2019

Prepared For:

Riverside County Purchasing & Fleet Services
2980 Washington Street
Riverside, CA 92504-4647
Phone: 951-634-3090
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Presented By:

KME
One Industrial Complex
Nesquehoning, PA 18240
Phone: 1-800-235-3928
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Option	Description	QTY	RESP	SCENE	IT
GENERAL INFORMATION					
CAB DOORS					
PO00001654	ELECTRIC WINDOWS, FOUR (4) DOORS, MFD, X-MFD, LFD CAB	1	0	0	2.5
MIRRORS					
PO00001734	RAMCO - RADIUS MOUNTED MIRROR - 6001 SERIES - TOP ADD ON CONVEX	1	0	0	1
FRONT SEATING					
PO00001781	DRIVERS SEAT, USSC ELECTRIC BASE - ABTS	1	0	0	4
VEHICLE SAFETY SYSTEM					
PO00002019	AKRON/WELDON SEAT BELT WARNING SYSTEM - UP TO 12 SEATS - VMUX DISP	1	2	2	0
PO00002031	AKRON/WELDON VEHICLE DATA RECORDER - MULTIPLEX	1	2	2	0
EMS COMPARTMENTS					
PO00022558	CAB EMS COMPARTMENT LIGHTING, ROM V4 TRACK, LED	1	0	1.4	0
MISC INTERIOR CAB OPTIONS					
HVAC					
SP00002013	HEATER/DEFROSTER & ACCESS, PREDATOR 100" - 10" RAISED ROOF	1	39	39	39
PO00011479	HVAC CONTROL SYSTEM - CONTROLS ABOVE DRIVER	1	0	0	0
SP00006133	BERGSTROM AUXILIARY A/C	1	0	0	65
CAB TILT SYSTEM					
PO00010681	CAB TILT SYSTEM	1	0	0	150
BRAKE & AIR SYSTEM					
PO00010546	ABS BRAKING FOR SINGLE REAR AXLE CHASSIS	1	2	0	0
PO00002444	TELMA DRIVELINE RETARDER SINGLE REAR AXLE - FOCAL MOUNT	1	0	0	215

PO00002463	MERITOR/WABCO SYSTEM SAVER #1200, AIR DRYER HEATED	1	0	0	7.6
SP00006035	BLUE SEA 12VDC, 125PSI, AIR COMPRESSOR	1			11
ENGINE					
PO00002656	CUMMINS X15 600 HP @ 1800 RPM TQ 1850 LB-FT @ 1200 - PREDATOR WIDE	1	5	5	0
PO00002712	SECONDARY BRAKING - ENGINE COMPRESSION BRAKE	1	0	0	0.5
TRANSMISSION					
PO00002723	ALLISON 4500EVS, WIDE RATIO TRANSMISSION - COMPRESSION BRAKE	1	2	2	0
FUEL SYSTEM					
SP00002024	RACOR S328 SERIES HEATED FUEL-WATER SEPARATOR WITH ALARM	1	0	0	6
PO00009879	WELDON V-MUX MULTI-PLEXED ELECTRICAL SYSTEM	1	5	5	0
PO00002778	WELDON V-MUX DISPLAY - VISTA IV - TOUCH WITH BUTTONS	1	0.7	0.7	0
PO00002781	ADDITIONAL WELDON V-MUX VISTA IV TOUCH DISPLAY, OS OF CAB	1	1.4	1.4	0
PO00024143	AXIS SMART TRUCK VEHICLE MONITORING SYSTEM	1	5	5	0
CAB INSTRUMENT PANEL & CONTROLS					
PO00011682	INSTRUMENT PANEL, 100" PREDATOR - WIDE ABS	1	1	1	0
SP00005727	AMETEK "OFFICER'S SPEEDOMETER"	1	0.25	0.25	
PO00012460	"POWER ON" LIGHT ON FRONT FACE OF CAB	1	0	0	0.5
CAB INTERIOR LIGHTING					
PO00002896	WELDON #8080-8001-13 WHITE/RED LED INTERIOR LIGHTS (4)	1	4	4	4
PO00002906	INNER CAB DOOR FLASHERS (LED), TRUCK-LITE MODEL SUPER 44	1	0	0	4
SP00002019	SUNNEX MODEL #HS762, MAP LIGHT	1	2	2	2
PO00011819	ENGINE COMPARTMENT WORK LIGHTS - TECNIQ LED	1	0	0	1.2
CAB INTERIOR 12-VOLT POWER ACCESSORIES					
PO00022868	EMS COMPARTMENT POWER POINT	1	0	0	13
PO00010730	POWER AND GROUND STUD FOR ACCESSORIES IN DASH	1	0	0	20
SP00007176	12 VOLT POWER AND GROUND CIRCUIT, EMS COMPARTMENT	1			13
PO00012534	BLUE SEA FUSE BLOCK - 12 CIRCUIT IN CREW AREA	1	0	0	30
SP00005524	MULTI - USE POWER POINT ON CENTER DASH EXTENSION	1			5
PO00010732	IGNITION STUD - REAR CREW AREA	1	0	0	20
CAB DOT MARKER & STEP LIGHTING					
PO00010733	CUST PUMP/TANK/RES CHASSIS LED MARKER LIGHTS	1	0	0	2.5
PO00002988	OPTRONICS LED MARKER LIGHTS @ FRONT ROOF EDGE OF CAB	1	0	0	2.5
PO00003068	CAB STEP LIGHTS, TECNIQ EON 3 LED, ALL DEVICES	4	0	2	2
HEADLIGHT & FRONT DIRECTIONAL LIGHTING					
PO00024548	M6 LED TURN ABOVE HEADLIGHTS W/WHELEN M6 LED	1	4.5	4.5	0
SP00008141	M6 LED TURN ABOVE HEADLIGHTS W/WHELEN M6 LED	1			

PO00004477	DUAL HEADLIGHTS LED PETERSON	1	4.5	4.5	0
PO00010729	DAYTIME RUNNING LIGHTS	1	2	2	2
CAB EXTERIOR 12-VOLT LIGHTING					
PO00022381	GOLIGHT #20204 REMOTE LED SPOT LIGHT, DS SIDE CAB	1	0	0	2.8
PO00022382	GOLIGHT CAB RISER FOR DS SIDE LIGHT	1	0	0	0
PO00022384	GOLIGHT #20204 REMOTE LED SPOT LIGHT, OS SIDE CAB	1	0	0	2.8
PO00022385	GOLIGHT CAB RISER FOR OS SIDE LIGHT	1	0	0	0
SP00005608	TECNIQ #E96 LED DOCKING LIGHTS IN REAR WHEELWELL PANELS	1	0	0	1.3
SP00007157	HIVIZ FIRETECH 80" BROW LIGHT W/ IML, 305W12V LED, (1) ABOVE WINDSHIELD	1	0	0	26.11
WARNING LIGHT SYSTEMS					
PO00010755	NFPA COMPLIANT WARNING LIGHT PACKAGE	1	40	40	40
LOWER WARNING LIGHT PACKAGE					
PO00012072	A-LOWER FRONT MOUNTING, CUSTOM CHASSIS	1	0	0	0
PO00003872	A-LOWER FRONT, WHELEN M6 SUPER LEDS	1	4.5	4.5	0
SP00008142	A-LOWER FRONT, WHELEN M6 SUPER LEDS	1	4.5	4.5	0
PO00003883	C-LOWER REAR, WHELEN M6 SUPER LEDS	1	4.5	4.5	0
ADDITIONAL WARNING LIGHTS					
SP00005618	FEDERAL 31", VPX LED "SIGNAL MASTER" LIGHT AT REAR OF BODY	1			12
PO00004193	TRAFFIC ADVISOR - MOUNTING ON THE REAR SHEET	1	0	0	0
OUTRIGGER WARNING LIGHTS					
SP00007580	WHELEN M6, SUPER LED LIGHTS ON (2) OUTRIGGER PANELS	1	0	0	2
VEHICLE GROUND LIGHTING					
SP00007584	WHELEN 3X7 LED SCENE LIGHTS	1	0	0	3
SP00001973	NFPA (4) FEDERAL WARNING LED GROUND LIGHTS, BELOW CAB DOORS	1	0	0	2.6
SP00002008	GROUND LIGHTS, 2 LED BELOW LOCKER COMPARTMENT	1	0	0	2.6
SP00001980	GROUND LIGHTS, 2 LED BELOW MID-SHIP COMPARTMENT	1	0	0	2.6
SP00001993	GROUND LIGHTS, 2 LED BELOW FRONT BODY CORNERS	1	0	0	2.6
SP00002010	GROUND LIGHTS, 2 LED AT REAR BODY CORNERS -	1	0		2.6
COMPARTMENT LIGHTS					
SP00006092	DOOR OPEN INDICATOR W/ AUDIBLE ALARM	1	0	0	0.75
SP00002026	WALKWAY LIGHTING	1	0	0	2
SP00002029	BODY TURN SIGNALS	1	0	0	2.3
PO00003422	COMPARTMENT LIGHTS, AMDOR LUMA BAR LED LIGHTING - DUAL	24	0	0	16.8
SP00006093		1			
BODY DOT MARKER & STEP LIGHTING					
PO00002998	OPTRONICS MARKER LIGHTS FORWARD OF FRONT CAB DOOR	1	0	0	2.5
PO00002999	OPTRONICS MARKER/TURN LIGHTS @ EA SIDE OF BODY	1	0	0	2.5
PO00003003	OPTRONICS MARKER LIGHTS @ REAR OF BODY	1	0	0	2.5

PO00010767	TECNIQ #L10 LED LICENSE PLATE LIGHT @ DS REAR OF BODY	1	0	0	1
PO00003028	WHELEN #M6 LED BRAKE, REVERSE, & TURN W/ QUAD HOUSING	1	0	0	10
SP00005620	FEDERAL SIGNAL LED THIRD BRAKE LIGHT	1	0	0	2.3
PO00003075	BODY STEP LIGHTS, TECNIQ EON 3 LED, ALL DEVICES	2	0	4	4
BODY SCENE LIGHTING 12-VOLT					
PO00003190	FEDERAL 9X7 LED SCENE LIGHTS BEHIND FRONT CAB DOORS	1	0	0	8
AUDIBLE DOT					
PO00011814	CHASSIS SINGLE ELECTRIC (DOT) HORN	1	0	4	0
PO00004197	ECCO #575, BACK-UP ALARM - 107 DBA	1	0	0	0.9
ELECTRONIC SIREN & SPEAKER					
PO00004220	SIREN, FEDERAL PA300MSC, 200W	1	20	0	0
PO00004244	TWO (2) FEDERAL, #ES100C SPEAKERS	1	0	0	0
MECHANICAL SIREN					
PO00012247	FEDERAL Q2B SIREN @ CAB FRONT	1	100	0	0
PO00012270	ADDITIONAL SIREN BRAKE BUTTON NEAR OFFICER	1	0	0	1.5
AERIAL HYDRAULIC SYSTEM					
PO00013003	ELECTRONIC LEVEL GAUGE FOR HYDRAULIC RESERVOIR	1	0	1	0
PO00013081	100' & 101' LADDER, TILLER. EMERG HYD. PUMP, EPU	1	0	0	200
AERIAL MOTION CONTROL SYSTEM					
PO00013049	TRACTOR DRAWN LADDER, "IQAN" MOTION CONTROL SYSTEM - MANUAL CONTROLS @ TURNTABLE	1	0	5	0
AERIAL OUTRIGGER WARNING LIGHTS					
SP00002079	LED OUTRIGGER GROUND LIGHTS	1	0	0	7.5
SP00002080	FEDERAL SIGNAL LED LOLLIPOP LIGHTS, 2-OUTRIGGERS	1	0	0	1
AERIAL LADDER 12-VOLT LIGHTING					
PO00013559	CRADLE ILLUMINATION LIGHTS - GROTE WHITELIGHT LED	1	0	0	3.2
PO00013783	HEEL PIN STEP LIGHTS - TECNIQ EON 3 LED LIGHTS	1	0	2	0
PO00013789	TURNTABLE CONTROL CONSOLE LIGHTING - LUMA BAR LED	1	0	2	0
PO00013791	TURNTABLE CONSOLE STEP LIGHT - TECNIQ EON 3 LED	1	0	2	0
SP00002077	TWO (2) FEDERAL SIGNAL LED LIGHTS @ LADDER BASE	1	0	0	2
SP00002027	TWO (2) FEDERAL SIGNAL LED FLOOD LIGHTS @ LADDER TIP	1	0	0	2
SP00002545	LADDER WALKWAY ILLUMINATION LIGHTS, 4-SECT LADDER	1	0	0	14.7
AERIAL COMMUNICATIONS					
PO00014268	LADDER, FRC ACT -2 WAY COMMUNICATION SYSTEM - LOWER CONTROLS	1	0	0.5	0
PO00014269	LADDER, FRC ACT 2-WAY COMMUNICATION SYSTEM - UPPER SPEAKER/MIC	1	0	0.5	0
AERIAL LADDER MONITOR & OPTIONS					
SP00005717	AKRON #1494 LADDER CLAMP-ON MONITOR	1	0	0	14
Totals:			255.9	158.25	1027.76

EXHIBIT B
PRICE SCHEDULE

- 1 The following contract pricing is firm-fixed-price and incorporates all costs; including, delivery and travel expenses per Exhibit A – Attachment # 1, Section 1.16. Pricing shall remain fixed for each one-year (12-month) period.
- 2 The COUNTY will issue a Purchase Order for each order placed against this contract. The Purchase Order shall serve as the CONTRACTOR's official notice to proceed and that funds are available for the purchase. The delivery date on the purchase order shall be the official delivery date and shall be the date used to assess liquidated damages should they be imposed.
- 3 All changes shall be made via a written amendment to this Agreement followed by a Change Order to the Purchase Order, if applicable. CONTRACTOR's invoice shall match the contract unit price at the time the order was placed (or as amended), not at the unit price (adjusted for PPI escalation) when the apparatus is delivered.

Price Schedule # 1 – Initial Order with Quantity Discount and Pre-Payment Discount:		
<u>Line #</u>	<u>Description</u>	<u>Price</u>
1	101' TDA Apparatus per Contract Specifications	\$1,228,083.40
2	Multiple Unit Discount	(\$14,244.10)
3	\$1,000,000 Pre-Payment Discount	(\$22,917.00)
4	Subtotal	\$1,190,922.30
5	7.75% CA Sales Tax	\$92,296.48
6	Performance Bond	<u>\$4,872.00</u>
Total Price:		\$1,288,090.78
Price Schedule # 2 – Initial Order with Quantity Discount only:		
<u>Line #</u>	<u>Description</u>	<u>Price</u>
1	101' TDA Apparatus per Contract Specifications	\$1,228,083.40
2	Multiple Unit Discount	(\$14,244.10)
3	Subtotal	\$1,213,839.30
4	7.75% CA Sales Tax	\$94,072.55
Total Price:		\$1,307,911.85
Price Schedule # 3 – Base Order (single unit) Price:		
<u>Line #</u>	<u>Description</u>	<u>Price</u>
1	101' TDA Apparatus per Contract Specifications	\$1,230,000.00
2	7.75% CA Sales Tax	\$95,325.00
Total Price:		\$1,325,325.00

Price Schedule # 4 – Option Pricing:

<u>Line #</u>	<u>Description</u>	<u>Price</u>
1	Optional travel cost for additional personnel not included in Exhibit A – Attachment # 1, Section 1.16.4, 1.16.5 and 1.16.6.	\$1,500.00
2	Optional Performance Bond	\$4,872.00

EXHIBIT B
PAYMENT PROVISIONS

1. Price increases shall take place at the conclusion of each contract year based on the most current Producer Price Index published by the U.S. Bureau of Labor Statistics. Annual price increases shall be calculated using Commodity Code 1413-027 – Buses and firefighting vehicles, complete, produced on purchased chassis. The baseline index to be used for price escalation shall be 121.2 (published March 2019). Price increases shall remain fixed for each given contract year.
2. The price of such apparatus shall be the unit price plus any adjustments in PPI for option years: two (2), three (3), four (4), and five (5). The price of any apparatus ordered by the COUNTY after the first twelve (12) month period shall be the Base Order Price per Exhibit B - Price Schedule # 3 plus any escalation which shall be calculated based on the following formula:

FORMULA EXAMPLE:

Index Point Change

PPI Index: Future PPI (start of option year):	141.1
Less PPI Index: Base PPI (start of contract):	137.6
Equals Index Point Change:	3.5

Index Percent Change

Index Point Change	3.5
Divided by PPI Index: Base PPI:	137.6
Equals	.0254
Results Multiplied by 100	.0254 x 100
Equals Percent Change	2.54%

Base Order Price	\$1,000.00
Plus Percent Change (2.54% x \$1,000)	\$25.40
Revised Price for Option Year	\$1,025.40

Price increases shall remain fixed for each contract year.

3. CONTRACTOR shall provide to the COUNTY parts credit equal to 0.25% for all orders placed against this contract, with the exception of the initial order. CONTRACTOR shall report to the COUNTY in December of each year all “piggyback” orders CONTRACTOR has received from this contract. CONTRACTOR shall issue a parts credit memo at the time the annual report is submitted to the COUNTY. All “piggyback” assignments against this contract shall be approved by the COUNTY per Paragraph 13 – Use by Other Political Entities (page 9) of this Agreement.

EXHIBIT C

CONTRACTOR'S BUILD SPECIFICATION



KME FIRE APPARATUS

Riverside County Purchasing & Fleet Services

Quote # QUO0000002203 (Rev 1)

April 5, 2019

ERP Number:

Prepared For:

Riverside County Purchasing & Fleet Services

2980 Washington Street

Riverside, CA 92504-4647

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1. PROPOSED BY - KME FIRE APPARATUS - CALIFORNIA

QTY: 1

KME Fire Apparatus is pleased to offer the proposed vehicle to meet the intent of the fire department specifications. KME Fire Apparatus is a leading manufacturer in custom and commercial fire fighting vehicles.

Questions or concerns pertaining to this proposal can be answered by contacting the following KME personnel:

KME Fire Apparatus

4725 Troy Court

Jurupa Valley, CA 92509

Contact: Brandon Gomez

Phone: (800) 328-1033 / (909) 917-4339

Fax: (909) 937-1762

E-mail: bgomez@kmeffire.com

2. COMPLETION INFORMATION

QTY: 1

The contractor shall supply, at the time of delivery, at least one (1) copy of the following documents.

The manufacturer's record of apparatus construction details, including the following information:

- Owners name and address
- Apparatus manufacturer, model and serial number
- Chassis make, model and serial number
- Front tire size and total rated capacity in pounds
- Rear tire size and total rated capacity in pounds
- Chassis weight distribution in pounds with water and manufacturer mounted equipment, front and rear
- Engine make, model, serial number, rated horsepower, rated speed and governed speed
- Type of fuels and fuel tank capacity
- Electrical system voltage and alternator output in amps.
- Battery make, model and total capacity in cold crank amps (CCA)
- Transmission make, model, and serial number. If so equipped chassis transmission PTO(s) make, model and gear ratio
- Pump make, model, rated capacity in gallons per minute (liters per minute where applicable) and serial number
- Pump transmission make, model, serial number and gear ratio
- Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable) and serial number
- Water tank certified capacity in gallons or liters
- Paint manufacturer and paint number(s)
- Company name and signature of responsible company representative
- Certification of slip resistance of all stepping, standing and walking surfaces.

If the apparatus has a fire pump or an industrial supply pump, the pump manufacturer's certification of suction capability.

If the apparatus has a fire pump or an industrial supply pump, a copy of the apparatus manufacturer's approval for stationary pumping applications.

If the apparatus has a fire pump or an industrial supply pump, the engine manufacturers certified brake horsepower curve for the engine furnished, showing the maximum governed speed.

If the apparatus has a fire pump or an industrial supply pump, the pump manufacturer's certification of hydrostatic test.

If the apparatus has a fire pump or an industrial supply pump, the Underwriters Laboratory certification of inspection and test for the fire pump (if applicable).

If the apparatus has an aerial device the Underwriters Laboratory certification of inspection and test for the aerial device.

If the apparatus has an aerial device, all the technical information required for inspections to comply with NFPA 1911, Standards for Testing Fire Department Aerial Devices.

If the apparatus has a fixed line voltage power source, the certification of the test for the fixed power source (if applicable).

If the apparatus is equipped with an air system, test results of the air quality, the SCBA fill station, and the air system installation.

Weight documents from certified scale - showing actual loading on the front axle, rear axle(s) and overall vehicle (with the water tank full but without personnel, equipment and hose) shall be supplied with the complete vehicle to determine compliance with NFPA-1901.

Written load analysis and results of electrical performance tests.

If the apparatus is equipped with a water tank, the certification of water tank capacity by the tank manufacturer.

3. FMVSS REQUIREMENT SECTION 1.4 & 2.2

QTY: 1

The chassis shall be certified by the apparatus manufacturer as conforming to all applicable Federal Motor Vehicle Safety Standards in effect at the date of contract.

This shall be attested to by the attachment of a FMVSS certification label on the vehicle by the contractor who shall be recognized as the responsible final manufacturer.

4. RECORDS

QTY: 1

The successful bidder shall be responsible for preparing and maintaining a record file of parts and assemblies used to manufacture the apparatus.

These records shall be maintained in the factory of the bidder for a minimum of twenty (20) years.

File shall contain copies of any and all reported deficiencies, all replacement parts required to maintain the apparatus, and original purchase documents including specifications, contract, invoices, incomplete chassis certificates, quality control reports and final delivery acceptance documents.

The {Company} shall have access to any and all documents contained in this file upon official written request.

5. GENERAL CONSTRUCTION SECTION 1.4

QTY: 1

The complete apparatus, assemblies, subassemblies, component parts, etc., shall be designed and constructed with the due consideration to the nature and distribution of the load to be sustained and to the general character of the service to which the apparatus is to be subject.

All parts of the apparatus shall be designed with a factor of safety, which is equal to or greater than that which is considered standard and acceptable for this class of equipment in firefighting service.

All parts of the apparatus shall be strong enough to withstand general service under full load.

The apparatus shall be so designed that the various parts and readily accessible for lubrication, inspection, adjustment and repair.

Bidder's specifications must meet minimum requirements of N.F.P.A. Pamphlet #1901; Underwriters Laboratories, Inc.; and all State and Federal Department of Transportation vehicle regulations at time of sale of unit.

The apparatus shall be designed and constructed, and the equipment so mounted, with due consideration to distribution of the load between front and rear axles that all specified equipment, including a full complement of specified ground ladders, full water tank, loose equipment, and firefighters shall be carried without overloading or injuring the apparatus.

6. SINGLE LINE RESPONSIBILITY

QTY: 1

KME is a true "sole source" manufacturer.

KME engineers, designs, manufactures, builds and paints our own fire apparatus cab, chassis, body, aerial devices and electrical systems.

All work is done in KME owned and operated manufacturing facilities by KME direct employees.

This capability provides consistent design and manufacturing procedures that will reduce warranty issues and provide ease in parts replacement.

7. PRODUCT LIABILITY

QTY: 1

Each bidder shall supply proof of product liability and facility insurance equal to or exceeding \$30,000,000.00.

This shall be provided as part of the proposal. There will be no exceptions.

8. CODE & CONFORMANCE - AERIAL SECTION 1.4

QTY: 1

The aerial ladder shall be designed to conform to the intent of NFPA 1901 Standard for Automotive Fire Apparatus.

The following additional design criteria shall be applicable to this specification to the extent specified herein:

- American Society for Testing and Materials (ASTM) A-36 Specification for Structural Steel
- Society of Automotive Engineers, Inc. (SAE) SAE Hand-book American Welding Society (AWS)
- AWS014.4-77 Classification and Application of Welded Joints for Machinery and Equipment
- American Society of Non-Destructive Testing (ASNT) ASNT Guidelines; Procedure SNT-TC-1 A.

The aerial device shall be designed, fabricated, and tested in accordance with these codes and specifications.

9. PAINT CERTIFICATION SECTION 1.22, 2.16, 2.17

QTY: 1

The finish paint shall be certified by the apparatus manufacturer as conforming to all applicable Commercial Vehicle Paint Standards in effect at the date of contract.

This shall be attested to by the attachment of a Sikkens certification.

10. PROPOSED SERVICE BY - KME FIRE APPARATUS – CALIFORNIA SECTION 1.9, 1.11, 1.13, 1.17

QTY: 1

SERVICE CENTER AND PARTS DEPOT**KME Fire Apparatus****FACTORY BRANCH - CALIFORNIA****KME APPARATUS SERVICE STATEMENT**

The proposed KME Fire Apparatus vehicle is offered with complete single-source service performed by the regional KME factory service center.

Service is provided by:

KME Fire Apparatus**4725 Troy Court****Jurupa Valley, CA****Phone: (800) 328-1033 / (909) 937-3326****Fax: (909) 937-1762****Email: kmeca@kovatch.com****Jerry Hennessy - Service Manager****Service Center Capabilities:**

- KME Fire Apparatus in Jurupa Valley, CA. celebrates fourteen (14) years of operation and employs twenty (20) people. The factory owned operation employs nine (9) full-time service mechanics two (2) certified paint and body technicians and two (2) fabrication technicians to handle any service-related issues or operational improvements that you may desire.
- KME Fire Apparatus employees EVTCC and ASE certified technicians, along with PPG and DuPont certified body shop technicians.
- KME Fire Apparatus operates five (5) mobile service trucks that offer In-Station Service repairs to your apparatus when needed. We also have towing available should your unit need to travel to our service facility.
- KME Fire Apparatus offers a twenty-four (24) hour service plan in which assigned service personnel carry pagers; one (1) man is always on call to handle any truck that is down and out of service.

KME Fire Apparatus offers:

- Sheet metal repair and fabrication
- Pump and electrical repair
- Aerial ladder service and repair
- Booster tank repair and replacement
- Minor or major refurbishment capabilities
- Mobile pump testing at your facility

KME Fire Apparatus offers factory authorized service and repairs to all makes of fire apparatus equipped with Hale, Waterous and Darley Pumps.

KME Fire Apparatus has the largest inventory of apparatus parts in Southern California and offers quick turn-around parts delivery when your unit is down. We also offer a large loose goods line and apparel to service the fire industry.

KME Fire Apparatus contact information, of proud service professionals.

Service Contacts - (909) 937-3326
Jerry Hennessey - Branch Manager
Hector Gallo - Service Manager
Victor Canhoto - Sales / Special Product
Parts and Loose Goods Sales - (909) 937-3326
Mike Gallardo - Parts Specialist
Bob Rooker - Parts and Loose Goods
Ruben Gonzales - Inventory Control Specialist
KME Fire Apparatus employees are protected by Workman's Compensation Insurance.
A 1 Million Dollar Garage Keepers Liability Insurance Coverage and a 25 Million Dollar Product Liability Insurance Policy protect your fire department and your fire department equipment.

11. PRICES & PAYMENTS SECTION 1.3

QTY: 1

The bid price will be F.O.B. Destination, on a delivered and accepted basis at the Fire Department. Total price on KME's proposal sheet will include all items listed in these specifications. KME has computed pricing less federal and state taxes. It is understood that any applicable taxes will be added to the proposed prices, unless the purchaser furnishes appropriate tax-exempt forms.

12. DELIVERY TIME SECTION 1.7

QTY: 1

Each bidder shall state the completed apparatus delivery time based on the number of calendar days, starting from the date the sales contract is signed and accepted by the apparatus manufacturer. Delivery Time: 360-390 Calendar days for the first unit and 30-45 days for each consecutive unit.

13. FAIR ETHICAL & LEGAL COMPETITION

QTY: 1

In order to ensure fair, ethical, and legal competition, neither original equipment manufacturer (OEM) nor parent company of the OEM shall have ever been fined or convicted of price fixing, bid rigging, or collusion in any domestic or international fire apparatus market.

There will be no exceptions.

14. MATERIAL & WORKMANSHIP SECTION 1.4

QTY: 1

All equipment furnished shall be guaranteed to be new and of current manufacture, to meet all requirements of these specifications.

All workmanship shall be of high quality and accomplished in a professional manner so as to insure a functional apparatus with a pleasing, aesthetic appearance.

15. CONTRACT ADMINISTRATOR SECTION 1.9

QTY: 1

The successful bidder shall designate a contract administrator to provide a single point interface between the purchaser and the contractor on all matters concerning the contract.

16. APPROVAL DRAWING SECTION 1.6

QTY: 1

A detailed drawing of the apparatus shall be provided to the purchaser for approval before construction begins. A copy of this drawing shall also be provided to the manufacturer's representative. Upon purchaser's approval, the finalized drawing shall become a part of the total contract.

The drawing shall show, but is not limited to, such items as the chassis make and model, major components, location of lights, sirens, all compartment locations and dimensions, special suction, discharges, etc. The drawing shall be a visual interpretation of the apparatus as it is to be supplied.

17. INSTRUCTION MANUALS - CUSTOM CHASSIS - TWO (2) SETS – PAPER SECTION 1.8, 3.79
QTY: 1

In accordance with standard commercial practices, applicable to each vehicle (including body and special equipment) furnished under the contract, the following listed manuals and schematics, in the quantity specified, shall be provided at time of delivery of each vehicle.

The contractor shall supply at time of delivery, two (2) sets, paper copies and two (2) USB copies of a complete operation and service manual covering the complete apparatus as delivered and accepted.

The manual shall contain the following:

- Descriptions, specifications, and ratings of chassis, pump (if applicable), and aerial device.
- Wiring diagrams.
- Lubrication charts.
- Operating instructions for the chassis, any major components such as a pump and any auxiliary systems.
- Instructions regarding the frequency and procedures recommended for maintenance.
- Parts replacement information.
- Operation manuals for all components and accessories.
- Service manuals for engine, transmission, and other major components.
- Bill of materials or factory work order showing part numbers of all components on vehicle.
- Engineering drawings as built.
- Chassis drawing as built.
- Color coded chassis air brake system drawing as built.
- Color coded electrical system schematic (12-Volt) as built, large and easy to read.
- Color coded chart sheet showing all points of lubrication and type/amount of lubrication.
- Color coded aerial diagram to include hydraulic and electrical schematics.
- Color coded engine charts.
- Color coded transmission charts.
- Color coded regeneration operation charts.
- UL inspection and test records.
- FMVSS compliance certification label.
- Weight certificate. The weight certificate shall show the total apparatus weight, the front axle weight, the rear axle weight, the right front tire weight, the left front tire weight, the right rear tire weight, and the left rear tire weight.
- Documents required for transferring ownership to County.
- Aerial testing and certification per NFPA standards.
- Performance test reports.
- Operating instructions for the aerial and components.
- Operating instructions for the chassis and any major components.
- Precautions related to multiple configurations of aerial devices, if applicable.
- Instructions regarding the frequency and procedure for recommended maintenance.
- Parts list for replacement.

- Operations and maintenance documents for components and equipment of the apparatus.

18. AS-BUILT WIRING SCHEMATICS SECTION 1.8

QTY: 1

In accordance with standard commercial practices, the manufacturer shall supply two (2) copies of "AS BUILT" wiring schematics/diagrams for the entire vehicle at the time of delivery.

19. AS-BUILT AIR SYSTEM SCHEMATICS SECTION 1.8

QTY: 1

In accordance with standard commercial practices, KME will supply two (2) copies of "AS BUILT" air schematics/diagrams for the air system at the time of delivery.

20. VEHICLE FLUID PLATE SECTION 1.4

QTY: 1

As required by NFPA-1901, the contractor shall affix a permanent plate in the driver's compartment specifying the quantity and type of the following fluids used in the vehicle:

A permanent plate in the driving compartment shall specify the quantity and type of the following fluids used in the vehicle:

- Engine oil
- Engine coolant
- Chassis transmission fluid
- Pump transmission lubrication fluid
- Pump primer fluid
- Drive axle(s) lubrication fluid
- Air-conditioning refrigerant
- Air-conditioning lubrication oil
- Power steering fluid
- Cab tilt mechanism
- Transfer case fluid
- Equipment rack fluid
- Air compressor system lubricant
- Generator system lubricant
- Aerial systems

21. PRE-DELIVERY SERVICE SECTION 1.17

QTY: 1

After transportation from the factory and immediately prior to delivery to the fire department, the apparatus shall receive a pre-delivery service consisting of: engine oil & filter change, transmission filter change, check differential fluid and change if needed, check coolant level, chassis lubrication, fuel filter(s) changed, adjustment of engine to manufacturers specifications, fill diesel and def tank, complete inspection including all electrical and mechanical devices, for proper operation and correction of leaks or obvious problems, check to ensure final inspection items were addressed. Also a complete detail of the apparatus will be performed before delivery.

22. UNIT BUILT AT HEADQUARTERS

QTY: 1

In order to insure top quality construction, maximum assembly line and engineering communication and the highest level of manufacturing supervision the entire apparatus shall be built at the bidders' primary (headquarters) manufacturing facility.

Apparatus constructed at satellite plants will not be considered.

23. EXACT BLUEPRINT WITH BID SECTION 1.6

QTY: 1

A scale drawing of the specific apparatus being proposed shall be submitted WITH THE BID.

Drawings of similar units or demo units shall not be permitted.

Bidders should be clear that this provision is requiring a SCALE drawing of the truck which is actually being bid.

The drawing shall be done at the manufacturer's facility by the manufacturer's engineering department in order to guarantee the accuracy of the drawing.

Failure to comply with this requirement shall be grounds for rejection of the bid!

24. FAMA MEMBERSHIP

QTY: 1

The apparatus manufacturer must be a current member of the Fire Apparatus Manufacturer's Association (FAMA).

25. MANUFACTURED IN UNITED STATES SECTION 1.3

QTY: 1

The entire apparatus shall be assembled within the borders of the Continental United States to insure more readily available parts (without added costs and delays caused by tariffs and customs) and service.

26. ISO REQUIREMENT

QTY: 1

The manufacturer shall operate a Quality Management System that is certified to ISO 9001 by an organization that is accredited by the ANSI-ASQ National Accreditation Board (ANAB).

This type of business management system shall allow the manufacturer to monitor processes to ensure they are effective; keep adequate records; check output for defects, with appropriate and corrective action where necessary; regularly review individual processes and the quality system itself for effectiveness; and facilitate continual improvement.

A copy of the registration certificate must be included in the proposal, NO EXCEPTIONS.

27. AMP DRAW REPORT SECTION 4.21

QTY: 1

The bidder shall provide with their bid proposal and at the time of delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.

A written load analysis, which shall include the following:

- The rating of the alternator.
- The minimum continuous load of each component that is specified per: Applicable NFPA-1901.
- Additional loads that, when added to the minimum continuous load, determine the total connected load.
- Each individual intermittent load.

All of the above listed items shall be provided by the bidder per the applicable NFPA-1901.

28. PHOTO REQUIREMENT SECTION 1.5

QTY: 1

KME will provide, on a weekly or as requested basis, from the time the chassis arrives/begins and construction of the body compartments begins, "digital" color photos of each phase of construction.

The above specified digital photos shall include, but not be limited to: bare chassis (as it arrives from chassis factory), modifications to the chassis, installation of the fire pump and its related valves and piping (prior to being enclosed inside the fire pump cavity), water tank and foam tank (prior to their installation inside the apparatus body), fabricated apparatus body components (prior to their being assembled), assembly of the pump compartment fabrications, assembly of the compartmented body fabrications, installation of the water and foam tanks, interior compartment shelving arrangement, hose bed arrangement, and assembly of the fire pump control panel.

In addition to the specified photo shots, the purchaser shall have the right to request certain views of other features and accessories, during their manufacture and installation. Photo shots, the purchaser shall have the right to request certain views of other features.

29. COOPERATIVE PURCHASING

QTY: 1

The Manufacturer shall be pleased to allow other public agencies to use the purchase agreement resulting from this invitation to bid unless the bidder expressly notes on the proposal form that prices are not available for tag-on.

The condition of such use by other agencies shall be that any such agency must make and pursue contact, purchase order/contract, and all contractual remedies with the successful bidder.

Such tag-ons shall be done so that the original purchasing agency has no responsibility for performance by either the manufacturer or the agency using the contract.

30. VEHICLE DATA PLATE DESCRIPTION SECTION 1.4

QTY: 1

The following safety signs shall be provided in the cab:

- A label displaying the maximum number of personnel the vehicle is designed to carry shall be visible to the driver.
- "Occupants will be seated and belted when apparatus is in motion" signs shall be visible from each seat.
- "Do Not Move Apparatus When Light Is On" sign adjacent to the warning light indicating a hazard if the apparatus is moved (as described in subsequent section).
- A label displaying the height, length, and GVWR of the vehicle shall be visible to driver.
- This label shall indicate that the fire department will revise the dimension if vehicle height changes while vehicle is in service.

The following information shall be on labels affixed to the vehicle:

Fluid Data

- Engine Oil
- Engine Coolant
- Chassis Transmission Fluid
- Pump Transmission Lubrication Fluid
- Pump Primer Fluid (if applicable)
- Drive Axle(s) Lubrication Fluid
- Air Conditioning Refrigerant

- Air Conditioning Lubrication Oil
- Power Steering Fluid
- Cab Tilt Mechanism Fluid
- Transfer Case Fluid (if applicable)
- Equipment Rack Fluid (if applicable)
- Air Compressor System Lubricant
- Generator System Lubricant (if applicable)
- Front Tire Cold Pressure
- Rear Tire Cold Pressure
- Aerial Hydraulic Fluid (if applicable)
- Maximum Tire Speed Rating

Chassis Data

- Chassis Manufacturer
- Production Number
- Year Built
- Month Manufactured
- Vehicle Identification Number

Manufacturers weight certification:

- Gross Vehicle (or Combination) Weight Rating (GVWR or GCWR)
- Gross Axle Weight Rating, Front
- Gross Axle Weight Rating, Rear

31. !!! CRITICAL OVERALL HEIGHT REQUIREMENT !!! - "NO" SECTION 2.202

QTY: 1

32. !!! CRITICAL OVERALL LENGTH REQUIREMENT !!! - "NO" SECTION 2.03

QTY: 1

33. NFPA CERTIFICATION SECTION 3.78

QTY: 1

The proposed apparatus will be constructed to withstand the severe and continuous use encountered during emergency firefighting services.

The apparatus will be of the latest type, carefully designed and constructed with due consideration to the nature and distribution of the load to be sustained.

This proposal details the general design criteria of cab and chassis components, aerial device (if applicable), fire pump and related components (if applicable), water tank (if applicable), fire body, electrical components, painting, and equipment.

All items of these proposal specifications will conform to the fullest extent possible with the National Fire Protection Association Pamphlet No. 1901, latest edition, except as noted in the Statement-of-Exceptions.

KME will furnish satisfactory evidence of our ability to construct, supply service parts and technical assistance for the apparatus specified.

34. GENERAL INFORMATION - NFPA 1901 SECTION 3.78

QTY: 1

The proposed apparatus will be constructed to withstand the severe and continuous use encountered during emergency firefighting services. The apparatus will be of the latest type, carefully designed and constructed with due consideration to the nature and distribution of the load to be sustained.

This proposal details the general design criteria of cab and chassis components, aerial device (if applicable), fire pump and related components (if applicable), water tank (if applicable), fire body, electrical components, painting, and equipment.

All items of these proposal specifications will conform to the fullest extent possible with the National Fire Protection Association Pamphlet No. 1901, latest edition, except as noted in the Statement-of-Exceptions.

KME will furnish satisfactory evidence of our ability to construct, supply service parts and technical assistance for the apparatus specified.

35. NFPA TREADPLATE CERTIFICATION SECTION 3.41

QTY: 1

All stepping, standing, and walking surfaces on the body shall meet NFPA #1901 anti-slip standards.

Aluminum tread plate utilized for stepping, standing, and walking surfaces shall be Alcoa No-Slip type.

This material shall be a minimum 3/16 (0.1875") in thickness.

Upon request by the purchaser, the manufacturer shall supply proof of compliance with this requirement.

All vertical surfaces on the body, which incorporate aluminum tread plate material, will utilize the same material pattern to provide a consistent overall appearance.

36. NFPA-AERIAL APPARATUS SECTION 3.78

QTY: 1

The unit shall be designed to conform fully to the "Aerial Fire Apparatus" requirements as stated in the NFPA 1901 Standard (2016 Revision), which shall include the following required chapters as stated in this revision:

- Chapter 1 Administration
- Chapter 2 Referenced Publications
- Chapter 3 Definitions
- Chapter 4 General Requirements
- Chapter 8 Aerial Fire Apparatus
- Chapter 12 Chassis and Vehicle Components
- Chapter 13 Low Voltage Electrical Systems and Warning Devices
- Chapter 14 Driving and Crew Areas
- Chapter 15 Body, Compartments and Equipment Mounting
- Chapter 19 Aerial Devices

37. 120/240 VOLT ELECTRICAL SYSTEM TESTING

QTY: 1

All line voltage wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900 volts for one minute. The test shall be conducted between live parts and the neutral conductor and between live parts and the vehicle frame with any switches in the circuits closed. The test shall be conducted after all bodywork has been completed. The dielectric tester shall have a minimum 500 VA transformer with a sinusoidal output voltage that can be verified.

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

The apparatus manufacturer shall perform the following operation test and shall certify that the power source and any devices that are attached to the line voltage electrical system are properly connected and in working order.

The generator shall be started from a cold start condition and the line voltage electrical system shall be loaded to 100 percent of the nameplate voltage rating.

The following items shall be monitored and documented every 15 minutes:

- The cranking time until the generator starts and runs.
- The voltage, frequency, and amperes at continuous full rated load.
- The generator oil pressure, water temperature, transmission temperature, hydraulic temperature, and the battery rate charge, as applicable.
- The ambient temperature and altitude.

The generator shall operate at 100 percent of its nameplate wattage for a minimum of two (2) hours.

38. UL LINE VOLTAGE TESTING SECTION 4.21

QTY: 1

When the unit successfully meets all the requirements outlined in NFPA 1901, 2016 Edition, UL shall issue a Certificate of Automotive Fire Apparatus Examination and Test stating the unit's compliance with the required line voltage section of NFPA.

39. UL TESTING-AERIAL SECTION 3.76, 3.77, 3.78

QTY: 1

The proposed unit will be tested and certified for KME Fire Apparatus by Underwriters Laboratories Inc. (UL) Underwriters Laboratories Inc.

(UL) is recognized worldwide as a leading third party product safety certification organization for over 100 years.

UL has served on National Fire Protection Association (NFPA) technical committees for over thirty years.

UL is a nationally recognized testing laboratory recognized by OSHA.

UL complies with the American Society for Testing and Materials (ASTM) Standard ASTM E543 "Determining the Qualifications for Nondestructive Testing Agencies."

UL has more than 40 years of automotive fire apparatus safety testing experience and 16 years of factory aerial device testing and Certification experience.

UL has more than 100 years of experience developing and implementing product safety standards.

UL does not represent, is not associated with, nor is in the manufacture or repair of automotive fire apparatus.

All test work for fire pumps outlined in NFPA 1901, Edition will be conducted.

UL has included a list of all factory aerial device manufacturers for whom testing is currently being conducted on a regular basis.

UL carries ten million dollars in excess liability insurance for bodily injury and property damage combined.

All work outlined in NFPA 1911, current Edition, including nondestructive testing, will be conducted at the manufacturer's facility. In addition, the following test work outlined in Section 19, Certification Tests, of NFPA 1901 will be conducted:

1-1/2 Times Rated Capacity on Level Ground Stability Test: A load of 1-1/2 times rated capacity (as specified by the manufacturer) will be suspended from the tip of the aerial ladder, or the platform of the elevating platform, when it is in the position of least stability. If the manufacturer specifies a rated capacity while flowing water, then one times the water load and the worst case nozzle reaction will be added to the stability test weights. The apparatus will show no signs of instability. For a water tower, the stability test includes 1-1/2 times the weight of the water in the system and 1-1/2 times the maximum nozzle reaction force when it is in the position of least stability.

1-1/3 Times Rated Capacity on a 5 degree Slope Stability Test: A load of 1-1/3 times rated capacity will be suspended from the tip of the aerial ladder, the platform of the elevating platform, or the tip of the water tower when it is in the position of least stability. The apparatus will show no signs of instability.

Aerial Device Water System Tests: A friction loss test will be conducted for an aerial device equipped with a permanent water system and has a rated vertical height of 110 ft. or less. The standard model flow test results will be provided to the manufacturer. If the water system has been modified from the standard model configuration, a new flow test will be conducted to determine that the friction loss in the water system between the base of the swivel and the monitor outlet does not exceed 100 psi with 1000 gpm flowing and the water system at full extension.

A maximum vertical height flow test will be conducted to determine that the water system is capable of flowing 1000 gpm at 100 psi nozzle pressure with the aerial device at full elevation and extension.

If the apparatus is equipped with a fire pump designed to supply the water system, the test will be conducted using the onboard fire pump.

The intake pressure to the fire pump will not exceed 20 psi.

UL provides the manufacturer a complete written Examination and Test Report for each aerial device inspection performed at the manufacturer's facility.

This Report specifies the points of inspection and results of such examinations and tests.

The test report, as required by NFPA 1911, will include the following test results:

Torque verification of all mounting bolts including bolt size, grade, and torque specification.

The following NDT methods and results will be recorded:

All ferrous welds will be magnetic particle inspected for defects.

All nonferrous welds will be visually inspected, and if questionable defects are identified, a penetrating dye will be used to further evaluate the quality of the weld.

All bolts and pins will be ultrasonically inspected for internal flaws.

The following measurements will be taken and recorded in the examination and test record:

Bearing clearance and backlash, elevation cylinder drift, engine speed operating rpm, relief pressure, stabilizer extension cylinder drift, ladder section twist, hardness readings, base rail thickness, winch drift, extension brake drift, and extension cylinder drift.

The UL inspectors performing the test work on the units are certified to Level II in the required NDT methods, under the requirements outlined in ASNT document CP-189.

The actual person(s) performing the inspection will present for review proof of Level II Certification in the required NDT methods.

KME will designate, in writing, who is qualified to witness and certify these test results.

Prior to submittal to the automotive fire apparatus manufacturer, the final Report will be reviewed by the Supervisor of Fire Equipment Services and a Registered Professional Engineer, both of whom are directly involved with the aerial device certification program at UL.

When the unit successfully meets all the requirements outlined in NFPA 1901, 2016 Edition, UL will issue a Certificate of Automotive Fire Apparatus Examination and Test stating the units compliance with NFPA-1901.

40. PREDATOR CAB - BASE, 100" SECTION 2.1, 2.10

QTY: 1

The cab shall be a custom tilt style, built specifically for fire service.

The cab shall be a cab over engine design, with integral tilt mechanism and engine access from inside the cab.

Cab shall be designed, fabricated, assembled in its entirety, and installed on the frame rails in the manufacturer's factory.

This requirement will eliminate any split responsibility in warranty and service.

The cab interior shall be the "Open-Space" design with no wall, window or vertical support posts between the front and rear crew areas to allow direct communication, better visibility and air circulation in the cab.

41. PREDATOR CAB - BASE -ALUMINUM CONSTRUCTION SECTION 2.10

QTY: 1

The cab shall be fabricated from 5052-H 32 aluminum alloy, utilizing the minimum material thickness as follows:

- Cab side panels 0.125 thick (1/8")
- Cab roof 0.125 thick (1/8")
- Forward cab front sheet 0.125 thick (1/8")
- 42. INTERIOR CAB PANELS 0.125 THICK (1/8")**
- Other panels 0.125 thick (1/8")
- Cab doors 0.1875 thick (3/16")
- Engine enclosure side panels 0.250 thick (1/4")

Cab, sub-frame shall be a welded assembly, fabricated of 6063 structural aluminum alloy. This frame shall extend the full length and width of the cab and be secured to the chassis frame through two (2) rear, urethane, self-centering load cushions, two (2) forward pivot brackets, and two (2) cab locks. The cab shall be of entirely welded construction.

The front cab wall shall be of double wall type construction, featuring an inner and outer panel. {No Exceptions}

43. PREDATOR 100" - CRASH TESTING SECTION 2.26

QTY: 1

To ensure the safety of the cab occupants and cab integrity, proof of third party testing shall be provided.

The cab shall be certified for SAEJ2422 side impact, SAEJ2420 with ECER29 cab front impact, and ECER29 cab roof strength.

Furthermore, proof of testing and certification shall be provided that the cab, in accordance to SAE J2420 was front impact tested at 2.1 times the standard energy required in SAE J2420, thus exceeding the NFPA requirement.

This test shall be performed with no support immediately behind the cab, thus providing an authentic test result.

44. PREDATOR 100" - 120,000# ROOF & SIDE TESTING SECTION 2.26

QTY: 1

The cab design will include additional third party testing to ensure the safety of the cab occupants and cab integrity, proof of third party testing shall be provided.

The cab shall be certified for SAEJ2422 side impact, SAEJ2420 with ECER29 cab front impact, and ECER29 cab roof strength.

The manufacturer shall provide proof that third party testing has been conducted to prove a static roof and a static side-load test has been completed.

In these tests, a 120,000 pound static load was first applied to the roof.

This test was followed by applying the same 120,000 pound static load to the side of the cab.

These tests will be conducted per the SAE J2422, Cab Roof Strength Evaluation, protocol and the ECE R29,

Uniform provisions concerning the approval of vehicles with regard to the protection of occupants of the cab of a commercial vehicle, protocol.

During both tests, the cab will withstand these loads without encroachment into the occupant survivable space and all doors remained closed during the test.

The tests will be documented with photographs and real-time video in a report provided to the manufacturer.

45. PREDATOR 100" - MFD CAB LENGTH (DIM - 62-1/2") SECTION 2.10, 2.11

QTY: 1

The cab shall be fully enclosed, capable of comfortably seating six (6) fire fighters in full firefighting turnout gear, cab over engine design with integral tilt mechanism, and engine access on top of doghouse. Minimum Cab Dimensions:

- Overall width 100"
- Inside width across ceiling 92"
- Front area floor to ceiling 63"
- Crew seat area width 92"
- Outer crew seat risers to rear wall 42"
- Centerline front axle to back of cab 62-1/2"
- Centerline axle to front of cab 74

46. FLAT ROOF SECTION 2.10, 2.22

QTY: 1

Cab Entry Door Width Dimensions

Forward door opening 40" wide
Rear door opening 37" wide
Cab Entry Step Dimensions
Forward door recessed step 32" wide x 9" deep
Rear door recessed step 32" wide x 9" deep
Cab Entry Door Height Dimensions
Forward door opening 76-1/4" high
Rear door opening 75-1/4" high
CAB ROOF

The roof will be of a FLAT ROOF design with radius edges for an aesthetic, streamline appearance. The roof {will/shall} be constructed the same material as the main structure and {will/shall} be internally reinforced using framing which {will/shall} span the entire width and length of the cab for maximum structural integrity. This {will/shall} allow the roof to support personnel and roof mounted equipment without the need for additional reinforcement.

The cab roof over the rear crew area {will/shall} be FLAT, NO HIGHER than the front driver and officer area.

Approximate dimensions:
Crew area floor to ceiling 54"
Top of crew seat to ceiling 36" (depending upon seat type)

47. CAB ROOF LINE-X

QTY: 1

The cab roof shall be painted with LINE-X. The Line-X on top of the cab shall not be visible from the ground from a standing position. The Line-X material shall stop at the inside of the drip rail on each side. The Line-X shall be applied from a point just to the rear of the cab roof light bar and will continue to the rear cab wall. **The color of the Line-X shall be light gray with UV stabilizer.** All Line-X color, over-painting and/or treatment information/coding shall be provided to the Department. Note: The antenna rail shall be painted job color apparatus red.

48. CAB ROOF DRIP RAIL 100" PREDATOR/PANTHER SECTION 2.14

QTY: 1

For enhanced protection from inclement weather, an integral drip rail shall be furnished on each side of the cab roof.

The drip rail shall extend the full length of the cab roof.

49. CAST ANTI-SLIP ENTRY STEPS FOR REDUCED LENGTH DOOR SECTION 2.152

QTY: 1

The front entrance steps {will/shall} be a minimum of 9" deep. Each step {will/shall} be an open grate Stainless Steel style step fabricated by Bustin. with a polished stainless steel outer surface. The cab step risers {will/shall} be overlaid with .063" polished aluminum tread plate.

The rear entrance steps {will/shall} be a minimum of 9" deep. Each step {will/shall} be an open grate Stainless Steel style step fabricated by Bustin. with a polished stainless steel outer surface. The cab step risers {will/shall} be overlaid with .063" polished aluminum tread plate.

50. BATTERY ACCESS DOORS - REAR STEP WELLS, EACH SIDE SECTION 4.2

QTY: 1

The battery access door(s) shall be 1/8" aluminum tread plate, drop down doors with thumb latches at each side rear cab step well.

51. BARRIER HEIGHT CAB DOORS, 100" PREDATOR "MFD, LFD & X-LFD" SECTION 2.23

QTY: 1

Four (4) side-opening doors shall be provided. The cab doors shall be shortened to the floorboard level thus leaving an exposed step well area at each cab entrance. The cab doors shall be totally constructed of aluminum with an extruded aluminum frame and an aluminum outer door skin. The forward cab door opening shall be a minimum of 40" wide and the rear cab door opening shall be a minimum of 37" wide. The rearward cab doors shall have a radius cutout allowing the door opening to protrude forward over the cab wheel well, while providing full access to the rear crew area. There shall be a heavy duty piano type stainless steel hinge on each door of a minimum pin diameter of 5/16". Hinges shall be slotted for ease of horizontal and vertical adjustment. There shall be a cab door seal and the doors shall close flush with the side of the cab. A heavy-duty 6" wide belting material shall be utilized to prevent the cab doors from opening greater than 90 degrees.

52. CAB DOOR INSULATION - PREDATOR/SEVERE SERVICE SECTION 2.24

QTY: 1

A 1/4" insulation panel shall be installed in each cab door. This insulation panel shall provide an additional acoustical barrier as well as help with heating/cooling properties of the apparatus.

53. CAB DOORS -BOLT ON WEATHER STRIP SECTION 2.22

QTY: 1

The cab doors shall be equipped with a weather strip seal track on the lower portion of the door. Bolt-on tracks shall be provided to allow for a snap-on replaceable weather stripping to be changed easily and shall be fastened in place with nutserts to ensure longevity.

**54. PREDATOR DOOR LATCHES, HD LOOP STYLE LATCH -BARRIER HEIGHT
DOORS SECTION 2.178**

QTY: 1

A semi-recessed chrome plated pull handle, capable of operating with a gloved hand, shall be provided on the exterior of each cab door.

Heavy-duty, bright finish cast paddle latches shall be provided on the interior of each cab door.

Door latch mechanisms which utilize spring steel clamps shall not be considered due to their tendency to both rust and break.

The interior door latch cables are to be designed to reduce adjustment or possible wear at the adjustment turnbuckles.

55. LOCKING CAB DOOR , OUT + IN, LOOP STYLE LATCH SECTION 2.179

QTY: 1

Each exterior cab door shall be equipped with keyed locks. The cab doors shall be capable of being locked from the outside with a key and from the inside with a control in each interior paddle latch.

56. TRI-MARK KEY MODEL #2004 SECTION 2.179

QTY: 1

The specified door lock cylinder/s shall be equipped with Tri-Mark #2004 key/s. **FOR CLARIFICATION: A total of (4) four cab door keys will be provided with each apparatus.**

57. ELECTRIC WINDOWS, FOUR (4) DOORS, MFD, X-MFD, LFD CAB SECTION 2.141, 2.142, 2.143

QTY: 1

Each side cab door shall have a tinted retractable window,

The window track shall be designed into the door frame extrusion, which shall be extruded with a track groove to house a window track and seal.

The window shall be capable of being removed from an access slot designed in the bottom of the door frame.

All side cab doors shall be equipped with electrically operated windows.

Power window controls shall be provided either on the door panel or dash panel depending on the cab and interior trim configuration.

The control for each rear door shall be a rocker type, automotive style switch located on the inside door panel within easy reach.

58. DOOR WINDOW TRIM EXTRUSION, 4 DOOR

QTY: 1

Each side cab door window shall be designed with a custom extruded trim plate, which shall conform to the perimeter of the window opening in each door.

The trim plate shall extend from the edge of the door skin to the window and shall have a silver anodized finish.

59. FULL HEIGHT INTERIOR DOOR PANELS - LINE-X, 4 DOOR

QTY: 1

The cab door interior panels shall be covered with an aluminum panel at full height.

The panel shall be 1/8" aluminum and painted with Line-X and shall be designed to allow easy access to the inner door.

60. INNER DOOR PANEL TO BE THREE (3) PIECE DESIGN FOR ACCESS

QTY: 1

The inner door panel shall be designed as a three (3) piece panel to allow easy access to the door latching mechanism, electrical components or the window mechanism without disassembling the entire door.

61. DOOR WARNING – CHEVRON

QTY: 1

Chevron reflective striping matching the rear Chevron shall be installed on each inner cab door panel.

62. WINDSHIELD, 100" CAB

QTY: 1

A two piece, symmetrical, safety glass windshield shall be provided on the cab for the driver and officer providing a clear viewing area.

The windshields shall be full width to the center of the front cab support for each side and provide the occupants with a panoramic view.

To provide enhanced peripheral vision on each side of the cab, the windshield and cab structure shall be designed with radius corners, which provide a minimum of 8" of glass area, measured from the glass face to the side edge near the door post.

The windshield shall consist of three (3) layers; the outer light, the middle safety laminate and the inner light.

The thick outer light layer shall provide superior chip resistance, the middle safety laminate layer shall prevent the windshield glass pieces from detaching in the event of breakage and the inner light shall provide yet another chip resistant layer.

The windshield will be a contour design with 3422 sq. in. of area for improved visibility and style.

The windshield glass shall be designed so it can be used on either the driver or officer side.

Single piece windshields that utilize epoxy or that are bonded to the cab structure shall not be acceptable.

63. WINDSHIELD WIPERS & WASHERS - 100"

QTY: 1

Dual, electric operated, pantographic type windshield wipers shall be provided.

One (1) electric drive motor shall be provided for each wiper.

Wipers shall have "HI/LO" and "INTERMITTENT" operating speeds. "HI/LO" speeds shall be controlled by a steering column control, within the turn signal control stem.

"INTERMITTENT" operation shall be controlled by a twist switch within the control on the steering column.

The wipers shall be of the self-parking type.

Windshield washers shall be electric operated wet-arm type with a 3/4 gallon washer fluid reservoir, mounted inside the engine enclosure and readily accessible through the engine hatch at the rear of the engine enclosure.

The washer control shall be integral with the intermittent wiper control switch.

There shall be individual removable panels on the front face of the cab for access to the wiper motor assemblies.

Windshield wipers shall survive testing in excess of 3 million cycles in accordance with section 6.2 of SAE J198 "Windshield Wiper Systems – Trucks, Buses and Multipurpose Vehicles".

The bidder shall certify that the wiper system design has been "Third party tested" and that the wiper system has met this criteria.

64. SIDE VIEWING WINDOWS NON-SLIDING

QTY: 1

A fixed, tinted window with 620 sq. in of glass area shall be provided on each side of the cab behind the forward cab doors.

This window will be the same height as the window in the rear cab door for maximum visibility.

65. DARK TINT WINDOWS, SIDE VIEWING, REAR DOORS & REAR WALL

QTY: 1

The windshield and the forward cab door glass shall be provided with standard DOT, green automotive tint.

The side cab windows to the rear of the front doors, the rear cab door windows, and any rear viewing windows shall be equipped with a dark, automotive tint.

66. GRAB RAILS EXTERIOR, HANSEN KNURLED ALUMINUM LIGHTED - RED INSERT

QTY: 1

Four (4) Hansen 1-1/4" diameter x 28" long, knurled, bright anodized aluminum handrails shall be provided.

There will be one (1) at each cab door entrance.

Each grab rail shall have white LED lights that shall be wired to the DOT marker lights and interlocked to illuminate when the parking brake is applied.

In addition to the LED lights, each handrail shall have two (2) red reflexive, reflective strips for enhanced visibility.

Grab rail stanchions shall be chrome plated and offset when necessary to prevent "hand-pinching" when opening or closing the doors.

Formed rubber gaskets shall be provided between each stanchion base and the cab surface.

67. ONE (1) KNURLED ALUMINUM HANDRAIL FRONT OF CAB BELOW WINDSHIELD

QTY: 1

One (1) Hansen 1-1/4" diameter x 14" long, knurled aluminum, grab rail shall be provided on the front of the cab, below the windshield. **The handrail shall match the side handrails, but without LED lighting and reflective material. The mounting stanchions shall be offset in an upward direction. The handrail shall be made to be the widest available without creating any clearance issues.** Formed rubber gaskets shall be provided between each stanchion base and the cab surface.

68. PREDATOR INTERIOR GRAB HANDLES – WHEELABRATED

QTY: 1

Grab rails shall be provided to assist in entry and exiting of the cab. Each grab rail shall be a cast aluminum "D" style handle that shall have a wheelabrated finish and shall be located in the following locations:

- Three (3) 12" long, vertically mounted with one (1) on the officers side of the cab interior A post and one (1) on each side of the cab interior on the C post in the crew area
- One (1) 11" long, horizontally mounted on each front cab door on the interior door panel
- One (1) 11" long, horizontally mounted on each rear cab door on the interior door panel
- One (1) 30" long, horizontally mounted on each rear cab door, located approximately 8" above the bottom of the window opening.

69. DRIVER GRAB RAIL

QTY: 1

One (1) 12" long, vertically mounted, one (1) on the driver's inner door panel, mounted on an angle as near as possible to the door hinge. The grab handle shall have a wheelabrated finish to match the other interior mounted grab handles.

70. FRONT CAB GRILLE - SHAPED POLISHED STAINLESS STEEL

QTY: 1

A shaped mirror finished stainless steel grille shall be installed to allow for maximum air flow to the charge air cooler and the radiator. **Clarification; the front cab grille will be a 3-D formed polished stainless steel grille assembly.**

A four (4) inch wide solid band shall extend across the middle of the grill for lettering or lighting purposes.

71. FRONT CAB GRILLE SCREEN - AMERICAN FLAG

QTY: 1

An American flag mesh bug screen shall be provided behind the front grill assembly to protect the radiator from bugs and other debris.

The screen shall be secured to the front of the cab by button snaps, behind the main grill.

72. SIDE CAB GRILLES -SHAPED POLISHED STAINLESS STEEL

QTY: 1

Two (2) shaped, mirror finished stainless steel air inlets/outlets shall be provided horizontally above the wheel well opening, one on each side of the cab.

The grilles shall be equipped with a mesh screen to serve as a secondary ember separator.

The design shall permit proper ducting of air through the engine compartment and cooling system.

The left side inlet, used for the air intake to the air cleaner, shall be equipped with dual ember separators for separating burning embers from the air intake system.

This system shall be such that particles larger than .039 inches (1 mm) in diameter cannot reach the air filter element.

No part of the air intake system for the engine shall be lower than the top of the frame rails to ensure the vehicle can navigate pooled water without any part of the air intake system being exposed to water when the vehicle is stopped or in motion.

Chassis designs, which the engine air intake system is lower than the frame rails shall not be acceptable!

73. ALUMINUM TREAD PLATE OVERLAY, EXTERIOR REAR WALL

QTY: 1

A bright finish aluminum tread plate overlay shall be provided over the entire exterior rear cab wall.

The tread plate overlay shall be sealed with caulking around the edges to prevent moisture from getting between the cab and the overlay.

74. OFFICER CAB STEP WELL COMPARTMENT

QTY: 1

A watertight removable storage compartment shall be provided in the officer's side cab step well. The compartment shall be designed with minimum dimensions of 25" wide x 14" deep x 14" high. A drop down door shall have a stainless steel recessed large "D" handle with twist-type single point cam locks, easily operable with a gloved hand. A horizontally hinged, 1/8" aluminum tread plate door shall be provided with a full length, heavy-duty, stainless steel, piano-type hinge and stainless steel pin. The hinge pin shall be secured to prevent creeping. The compartment shall not be louvered for ventilation.

75. ALUMINUM CAB WHEEL LINERS

QTY: 1

The front cab, wheel wells shall be equipped with fully removable bolt-in aluminum inner wheel well liners.

The liners shall extend full depth into the truck frame.

The completely washable wheel well liners shall be designed to protect the cab substructure, inner panels, and other miscellaneous installed components from road salts, debris, dirt accumulation and corrosion.

76. STAINLESS STEEL CAB FENDERETTES

QTY: 1

The cab wheel well openings shall be trimmed with replaceable, bolt-in, polished stainless steel fenderettes.

The fenderettes shall be secured to the cab with stainless steel threaded fasteners along the internal perimeter of the wheel well.

Dissimilar metal tape and black vinyl trim molding shall be used where the cab and fender meet.

77. FRONT MUD FLAPS

QTY: 1

Heavy duty, black rubber type mud flaps shall be provided behind the front wheels.

78. RAMCO - RADIUS MOUNTED MIRROR - 6001 SERIES - TOP ADD ON CONVEX

QTY: 1

Two, (2) Ramco model 6001 FFHR-750HR polished aluminum, full face, heated, remote operated, 13 inches high X 9 3/4 wide mirrors, with a 750 top add-on heated/remote convex mirror, on a standard arm length of 15 inches shall be provided and installed.

The flat glass and top mirror head shall be remote operated.

The mirror head shall be attached to a polished, aluminum arm, mounted on the cab radius panel.

79. MIRROR CONTROL - SWITCHES ON DASH

QTY: 1

The mirrors will be controlled by switches on the cab dash.

80. PREDATOR 100" - DIMENSIONS FRONT SEATING & ENGINE ENCLOSURE – WIDE

QTY: 1

Top of front seat to ceiling 44" (depending upon seat type)
Seat back to steering wheel 22" (depending upon seat type)
Inside width (door to engine enclosure) 24" (driver's side, at floor)
Inside width (door to engine enclosure) 20-1/2" (officer's side, at floor)
Floor to top of engine enclosure 29.5"
Centerline axle to front of cab 74"

Glass Area Dimensions:

- Windshield (Contour) 3,422 sq. in.
- Front door window, retractable 743 sq. in. each
- Rear door window, retractable 875 sq. in. each
- Fixed side windows 620 sq. in. each

81. INTERIOR TRIM, 100" PREDATOR

QTY: 1

The cab interior shall be constructed to create an ergonomically designed interior to be user friendly and functional for the driver and officer. The forward overhead panel shall be covered with a three (3) piece custom formed ABS vinyl overlay, which shall have integrated windshield defroster/heat vents and four (4) comfort vents. All ABS formed material panels, as well as all of the interior upholstery panels shall be painted with Black Line-x. The upholstered cab overhead and side wall portions shall utilize black vinyl upholstery with padding underneath to provide additional insulation.

82. INTERIOR CAB WALL BLACK VINYL UPHOLSTERY

QTY: 1

The interior rear wall of the cab shall be covered with black vinyl for durability and shall match the other upholstered areas of the cab.

83. TREAD PLATE KICK PLATE ON LOWER INTERIOR REAR WALL

QTY: 1

A twelve (12) inch high, bright finish, aluminum, tread plate, scuff plate shall be provided on the lower portion of the rear interior cab wall.

84. BARYFOL FLOORING

QTY: 1

The floor of the driver's compartment and the floor of the crew area shall be lined with Baryfol vinyl composite flooring to comply with NFPA noise and heat requirements.

85. 1" ACOUSTICAL INSULATION

QTY: 1

One (1) inch thick acoustical insulation shall be provided on the cab roof and rear and side walls of the cab.

This material shall be fitted between the cab structural members and secured with adhesive to provide an insulation barrier for noise and heat.

86. ENGINE ENCLOSURE 100" PREDATOR (ABS W/ LINE-X)

QTY: 1

The forward portion of the engine enclosure shall be covered with a custom formed ABS overlay that shall be coated with Line-X to match the balance of the cab interior. To allow maximum "elbow room" for the driver and officer, the forward portion of the engine enclosure shall feature a contour shape. The engine enclosure shall not significantly obstruct the driver's vision in any direction. The enclosure shall be an integral part of the cab structure, which shall be constructed from material providing adequate strength to support radio, map boxes, etc. The engine enclosure shall be insulated to protect from heat and sound. The noise insulation shall keep the DBA level within the limits stated in the current NFPA series 1900 pamphlet.

A, hinged access door shall be provided in the top rearward portion of the engine enclosure. The door shall allow access to the engine oil, transmission fluid, power steering fluid level dipsticks and the windshield washer fluid reservoir. The access door shall be provided with two (2) flush mounted latches and gas shock holders. There shall be an ABS cover, that shall be coated with Line-X, over the access door to give a cleaner look to the top of the engine enclosure and doghouse area.

87. HD SOUNDPROOFING/ INSULATION PACKAGE UNDER ENGINE ENCLOSURE

QTY: 1

Premium soundproofing/insulation material, Barymat BTRLAX3-14BY shall be installed in the engine enclosure.

To ensure a clean, smooth surface, this material shall be retained by flat aluminum panels fastened to studs that are welded to cab as needed.

These panels shall be removable.

Any gaps in this insulation barrier shall be sealed with 3M #425 aluminized high temperature tape.

88. HD SOUNDPROOFING/INSULATION BETWEEN UPHOLSTERY & ENGINE ENCL

QTY: 1

To further reduce the noise and heat levels inside the cab, 1/4" foam upholstery material shall be installed on all interior surfaces of the engine enclosure, below the upholstery material.

89. ENGINE ENCLOSURE MOUNTING PANEL

QTY: 1

The entire top of the engine enclosure (Dog house) will be overlaid with an aluminum mounting panel. The panel will be spaced 1" above the top of the dog house. The panel will be a split design with two equal sized panels.

90. SUN VISORS, 100" PREDATOR CAB, PADDED VINYL

QTY: 1

To provide maximum protection for the driver and officer, two (2) padded vinyl sun visors shall be mounted in the cab overhead on each side.

91. DASH & CENTER CONSOLE - 100" PREDATOR (ABS W/ LINE-X)

QTY: 1

The driver and officer side dash, along with the center dash, shall be covered with a custom formed ABS overlay that shall be coated with Line-X.

The Line-X color shall match the interior color of the cab to create an ergonomically designed interior to be user friendly and functional for the driver and officer.

The dash gauge panel shall be a custom formed ABS pewter gray wrap-around design for improved visibility.

A full complement of gauges shall be provided in custom formed bezels.

The starter and ignition switches shall also be integrated into the upper left portion of the gauge panel for easier access.

All warning lights and indicators shall be located in either the gauge itself or in the warning light cluster located in the lower center portion of the dash.

Each gauge shall be equipped with an international symbol that is easily recognizable, denoting the system being monitored.

Instrumentation shall be backlit for easy identification.

The transmission gear selector and the spring brake control valve shall be located on an angled section of the center dash assembly toward the driver for easy access.

There shall be provisions for mounting a switch panel in the center of the dash between the driver and officer.

The top center of the dash assembly shall contain one (1) removable panel to access the main chassis wiring circuits and breaker panels.

92. OVERHEAD PANEL, FABRICATED CENTER THREE WING PANEL

QTY: 1

An overhead console with a center three piece removable panel assembly shall be provided on the cab roof between the driver and officer to permit installation of the multiplex smaller sized control screens and other components as space allows.

The overhead console shall be painted to match the interior of the cab.

The overhead console shall not obstruct the driver's vision through the officer's side window.

93. CAB DOOR STEP TRIM

QTY: 1

Cast aluminum wheel-a-brated cab step trim shall be included in the area of the cab where the floor meets the step transition area.

94. SEAT AND SEAT BELT ANCHOR TESTING

QTY: 1

Each seat belt anchor shall be tested to withstand 3,000lbs of pull on both the lap and shoulder belt in accordance with FMVSS 210 section 4.2.

Each seat mounting position shall be tested to withstand 20G's of force in accordance with FMVSS 207 section 4.2(c).

Both tests shall be performed and verified at a third party testing and evaluation center.

95. STORAGE COMPARTMENTS UNDER FRONT SEATS

QTY: 1

There shall be a compartment provided under each front seat with a latched access door.

96. DRIVERS SEAT, USSC ELECTRIC BASE – ABTS

QTY: 1

The driver's seat shall be a USSC Valor, 8 way electric, ABTS LH bucket seat.

The seat shall have a contoured and padded seat cushion with adjustable, lumbar support.

The seat shall have a horizontal slide adjustment, a vertical height adjustment, and tilt adjustment.

All seat movements shall be electrically controlled from panel on the forward, lower edge of the seat.

The seat shall be equipped with a red, integrated, 3-point shoulder harness with lap belt, and a dual retractor belt configuration with ready reach built into the seat assembly.

97. OFFICERS SEAT, USSC - FIXED BASE, BUCKET, ABTS

QTY: 1

The officer's seat shall be a USSC ABTS RH, fixed base bucket seat.

The seat shall have a tapered and padded seat cushion.

The seat shall be equipped with a red, integrated, 3-point shoulder harness with lap belt, and a dual retractor belt configuration with ready reach built into the seat assembly.

98. USSC - HORIZONTAL SLIDE ADJUSTMENT - OFFICERS SEAT

QTY: 1

The officer's seat shall be equipped with a horizontal slide adjustment six (6) inches on center.

99. USSC SCBA ABTS REAR FACING, OUTBOARD, DRIVER SIDE

QTY: 1

The driver's side, outboard, rear facing crew seat shall be a USSC Valor ABTS RH series fixed base SCBA seat.

The seat shall have a contoured and padded seat cushion with a dynamic, SCBA back frame that adjusts rearward with each occupant to properly seat them against the bolster and headrest.

The seat shall be equipped with magnetic, SCBA strap holders which secure the SCBA straps.

Limiting straps shall be provided as a standard feature to allow the adjustment of the dynamic back.

The seat shall be equipped with a red, integrated, 3-point shoulder harness with lap belt, and a dual retractor belt configuration with ready reach built into the seat assembly.

100. IMMI - SMARTDOCK- SCBA BOTTLE BRACKET - OUTBOARD DRIVER SIDE

QTY: 1

The seat shall include a SmartDock GenII bottle bracket.

101. USSC SCBA ABTS REAR FACING, OUTBOARD, OFFICER SIDE

QTY: 1

The officer's side, outboard, rear facing crew seat shall be a USSC Valor ABTS LH series, fixed base SCBA seat.

The seat shall have a contoured and padded seat cushion with a dynamic, SCBA back frame that adjusts rearward with each occupant to properly seat them against the bolster and headrest.

The seat shall be equipped with magnetic, SCBA strap holders which secure the SCBA straps.

The seat shall be equipped with a red, integrated, 3-point shoulder harness with lap belt, and a dual retractor belt configuration with ready reach built into the seat assembly.

102. IMMI - SMARTDOCK- SCBA BOTTLE BRACKET - OUTBOARD OFFICER SIDE - SEATS INC

QTY: 1

The seat shall include a SmartDock GenII bottle bracket.

103. FORWARD FACING SEAT POSITION -WITH BACK, OUTBOARD, DRIVER SIDE

QTY: 1

The driver's side outboard forward facing crew seat position shall be provided.

The rear cab wall will include a back pad that will serve for back support.

The seating position shall be equipped with a red, 3-point shoulder harness with lap belt.

104. FLIP UP SEAT, FORWARD FACING, OUTBOARD, DRIVER SIDE

QTY: 1

The driver's side outboard, forward facing, crew seat position shall have a flip-up style seat.

105. FORWARD FACING SEAT POSITION -WITH BACK, OUTBOARD, OFFICER SIDE

QTY: 1

The officer's side outboard, forward facing, crew seat position shall be provided.

The rear cab wall will include a back pad that will serve for back support.

The seating position shall be equipped with a red, 3-point, and shoulder harness with lap belt.

106. FLIP UP SEAT, FORWARD FACING, OUTBOARD, OFFICER SIDE

QTY: 1

The officer's side outboard, forward facing, crew seat shall have a flip-up style seat.

107. USSC PARADE PACKAGE PADDED SCBA COVERS

QTY: 2

A removable padded covers shall be provided for the SCBA seat openings.

108. SEAT ADJUSTMENT NOTICE

QTY: 1

If equipped, adjustable seats may be limited by outside factors such as optional installed equipment (ie. ems compartments, battery chargers, SCBA cylinder brackets) and seat placement.

109. USSC SEATING MATERIAL - BLACK CORDURA

QTY: 1

The seats shall be upholstered with Black Cordura material with red top stitching as provided by USSC.

All seating shall have "quick removal" covers.

110. DELETE - 4FRONT - FRONTAL AIR BAG PROTECTION SYSTEM

QTY: 1

111. AKRON/WELDON SEAT BELT WARNING SYSTEM - UP TO 12 SEATS - VMUX DISP

SECTION 2.31

QTY: 1

The apparatus shall be equipped with an Akron/Weldon seat belt warning system.

The system shall consist of a Seat Belt module and shall display the seating positions through the main, V-MUX screen.

112. SEVEN (7) SEATING POSITIONS

QTY: 1

Seat belt and seat cushion sensors shall be provided on the seven (7) specified seating positions.

113. AKRON/WELDON VEHICLE DATA RECORDER - MULTIPLEX

QTY: 1

An Akron/Weldon Vehicle Data Recorder (VDR) system shall be provided.

The system shall include an NFPA compliant "Black Box", with reporting software that shall be capable of data storage to coincide with the NFPA requirements.

Data storage capabilities shall include interfaces with the following systems:

- Display module (Master Optical Warning Device)
- VDR, date & time stamp
- Max Vehicle speed (MPH)
- Vehicle acceleration / deceleration (MPH/Sec.)
- Engine Speed (RPM)
- ABS event
- Data password protected
- Data sampled once per second, in 48-hour loop
- Data sampled min by min for 100 engine hours
- Throttle position (% of Throttle)
- Data software
- PC / Mac Compatible
- Data summary reports

114. AKRON/WELDON VEHICLE DATA RECORDER DOWNLOAD HARNESS

QTY: 1

A Weldon model #0L40-2597-00, VDR download harness shall be supplied with the system to allow the data to be downloaded to a computer.

115. PAINTED CAB DS REARWALL EMS COMPT 53"H X 40"W X 24"D SECTION 2.162

QTY: 1

A storage compartment shall be mounted against the rear wall of the cab crew area. The compartment shall be approximately 24" deep x 53" high (depending on roof height) x 40" wide. The door opening shall be approximately 38" high x 30" wide. There will access points on the side for the lower 20 inches of the compartment. These opening will be secured with a black nylon webbing type door. The nylon webbing will be 2" wide. The compartment shall be constructed of smooth aluminum. The top of the EMS compartment will have 1" square holes punched out for proper circulation of air from the AC unit mounted just above the compartment. The EMS compartment shall be equipped with a roll-up door. The compartment shall be painted with textured paint, matching the interior color of the cab. **FOR CLARIFICATION: The three door openings on the EMS compartment will be maximized for efficiency.**

- The mounting location for all two way radio components will be inside of the EMS compartment, on the rear wall, as close to the compartment ceiling as practical.

- All antenna coax cables will terminate in the upper portion of the EMS compartment.

- A wire chase will be provided from the EMS compartment to the center dash for additional wiring needs and the two-way radio remote head.

NOTE: The EMS compartment is currently specified to be 40" wide. At this width there would be a total of 27" available on each side between the compartment and the side wall of the cab. We will need the customer to determine what is an acceptable width for maintaining comfort for a firefighter sitting in either of the parade seats. When the customer advises us as to that width we will adjust the width of the EMS compartment to maximize storage space.

116. ADJUSTABLE SHELVE(S) FOR EMS STORAGE COMPARTMENT SECTION 2.162

QTY: 3

An adjustable shelf shall be provided in the EMS compartment. The shelf shall be constructed from 3/16" brush aluminum mounted to uni-strut tracking material.

117. CAB EMS COMPARTMENT LIGHTING, ROM V4 TRACK, LED SECTION 2.162

QTY: 1

The EMS compartment shall be equipped with the noted quantity ROM V4 brand LED interior track light(s). The lighting shall be wired to automatically activate when the compartment door is open and the master battery switch is in the "on" position.

118. CAB INTERIOR FULL TREAD PLATE FLOOR OVERLAY SECTION 2.148

QTY: 1

The floor of the driver's, officer's area and the floor of the crew area shall be covered with bright finish aluminum tread plate over the standard floor covering.

119. ENGINE ENCLOSURE STORAGE MODULE

QTY: 1

A storage module shall be installed on the center of the engine access door between the rear facing seats.

The module shall be constructed of 1/8" aluminum and shall be coated with scuff resistant paint to match the cab interior.

This storage module will provide storage for up to six (6) map books along with a center storage tray for small equipment or personal belongings. Four (4) individual cup holders shall also be provided. The exact mounting location to be determined during an in-process inspection.

120. JOHNSON EQUIPMENT PROVIDED AND INSTALLED ITEMS SECTION 4.84

QTY: 1

The Gambler Johnson Mobile Data Computer setup as listed in Section 4.84 and the Sigtronics Intercom system as listed in section 4.80 will be provided and installed by Johnson Emergency Company. KME will only be responsible to provide the 12 volt power and ground connection points and the lighted rocker switch for the MDC power supply. The GPS antenna will terminate at the MDC provision above the Officers glove box.

121. CUSTOMER SUPPLIED MOBILE RADIO

QTY: 1

The Customer Supplied Mobile radio and control boxes will be mounted by KME radio vendor.

Note: KME will comply with Addendum#1 of the Riverside County Specification.

The two-way radio head will not be dash mounted. The remote radio head will be mounted on top of the center dash extension, using a swivel which will allow for both front seat occupants to control and view. A new revised dash drawing will be provided.

122. OFFICER FOLD DOWN FOOT REST ON FIREWALL SECTION 2.159

QTY: 1

A fold down foot rest shall be provided on the firewall electrical access panel, in front of the officer's seating position.

The foot rest shall be designed with a 14" wide x 3" deep foot rest plate.

123. ANTENNA ROOF RAIL SECTION 2.27

QTY: 1

A 72 inch wide antenna mounting rail will be welded to the cab roof three inches forward of the rear wall edge of the cab, as per the drawing. The antenna mounting rail shall be constructed of three (3) inch aluminum tubing welded to the cab roof, sealed on both ends and painted job color. Four (4) equally spaced exterior access openings shall be provided in the mounting rail on the forward surface, to allow for antenna mounting and cable routing. The access openings shall include an access panel with rubber gasket and nutserts to secure the access panels. Access holes shall be drilled through the tubing into the cab roof to provide access to the communications area located within the upper portion of the EMS compartment.

Design, layout and attachment must be approved by the District.

124. FLAT DASH IN FRONT OF OFFICER (ABS)

QTY: 1

There shall be a flat surface area in front of the officer for use with such items as a lap top computer.

125. HEATER/DEFROSTER & ACCESS, PREDATOR 100" - 10" RAISED ROOF SECTION 2.146

QTY: 1

CLIMATE CONTROL SYSTEM

A climate-control system shall be provided for total cab environmental comfort. This system shall provide heat, cooling and defrost capabilities to various areas in the cab. The system shall consist of a single evaporator unit, mounted in the center overhead of the cab.

The ceiling mounted evaporator/heater unit shall include the following:

Heavy-duty, high output blower.

High efficiency coil that includes "rifled" tubing and oversized header tubes for maximum refrigerant distribution.

Four (4) 3" diameter, adjustable louvers; two (2) each side of the cab overhead, facing the driver and officer seat positions.

Two (2) larger louvers located in the center of the overhead assembly, facing the windshield.

A large center mounted multi-vent defroster louver positioned above the windshield to provide adequate airflow for windshield defrost.

Four (4) integral 3" diameter louvers, one (1) below the driver and officer seat positions and one (1) under each outboard rear facing crew seat.

Damper controls shall be pneumatically operated to provide air discharge to the windshield, front overhead air discharge louvers or the seat riser/floor outlets as required.

An adjustable electric water valve to control the amount of heat.

Housing shall be fully insulated and enclosed.

BTU: 71,000 A/C

BTU: 85,000 Heat

CFM: 680 Heat as mounted in the cab

CFM: 680 A/C as mounted in the cab

The ceiling mounted evaporator unit shall be designed to include a deep well condensate collection pan, which shall include an automatic air vacuum pump to ensure proper drainage.

The ceiling mounted evaporator unit shall be enclosed with an ergonomically designed, custom padded ABS panel to provide maximum headroom and a pleasing appearance.

A serviceable foam intake filter shall be installed on the rear of the evaporator.

The controls panel shall actuate the air-distribution system with air cylinders, which are to be separated from the brake system by an 85-90 psi pressure protection valve.

All defrost/heating systems will be plumbed with one (1) seasonal shut-off valve mounted near the engine.

ROOF MOUNT CONDENSER

A 12-volt roof top dual condenser shall be strategically positioned on the cab roof so as not to interfere with any emergency lighting systems. The condenser shall be designed with high performance, long life fan assemblies. The fan motors are to be equipped with sealed housings and shaft. The condenser and coil design shall include rifled tubing for maximum efficiency. Each coil shall be painted black. The condenser unit must include a receiver drier with a high and low pressure switch. The wire harness shall include necessary wiring for the clutch circuit as well as a separate power relay circuit. Mounting design shall enable easy servicing of all components and unit replacement if necessary.

126. HVAC CONTROL SYSTEM - CONTROLS ABOVE DRIVER SECTION 2.146

QTY: 1

The driver's overhead panel shall contain all controls for the cab HVAC system.

The following controls shall be provided: mode selector switch, front fan speed switch, rear fan speed switch, air conditioning on/off switch, and temperature control dial.

All controls shall be clearly labeled, adequately backlit, and installed in an easily removable panel.

127. BERGSTROM AUXILIARY A/C SECTION 2.146

QTY: 1

A Bergstrom Model # BSP00029AC12 12-volt. The system shall consist of one (1) air conditioning roof mounted unit which shall be located above the crew area and offset left of center on the cab roof above the crew area. The cover of the air conditioning unit shall be painted red (job/body color). An IOTA #DLS-75-X converter to convert 110 volt power to 12 volt power for the aux AC system will be provided. The system shall be powered through the blue shoreline power auto eject. The system shall be managed through the load manager to shut down auxiliary AC system in the event that the battery power drops below recommended levels. Note: This electrical system shall feed both the cab mounted and the tiller cab mounted auxiliary AC systems. (Note: The tiller cab mounted AC unit is located in the tiller cab area of the specification.

128. CAB TILT SYSTEM SECTION 2.137

QTY: 1

A hydraulic cab lift system shall be provided, consisting of an electric-powered hydraulic pump, fluid reservoir, dual lift cylinders, remote cab lift controls and all necessary hoses and valves.

The cab tilt mechanism shall be custom designed for ease of maintenance and consist of two (2) hydraulic cylinders.

Hydraulic lines shall be rated at 20,000 PSI burst pressure.

The hydraulic cylinders shall be equipped with a velocity fuse that protects the cab from accidentally descending when the cab is in the tilt position.

Hydraulic cylinders shall be detachable to allow removal of the engine for major service.

A remote cable operated mechanical cylinder stay bar and release shall be provided to insure a positive lock in the tilted position.

The two (2) rear outboard cab latches shall be of the hydraulic pressure release, automatic re-latching type, and provide an automatic positive lock when the cab is lowered.

The latch shall not disengage or experience any damage when subjected to a pull apart tensile load of 6,000 lbs. The hydraulic pressure required to unlock the latch shall not exceed 550 PSI. The latch shall withstand 5,000 PSI without leaks or damage and withstand 1,000 continuous cycles of operation under a load of 1,000 lbs. at liftoff. The tilt pump shall be electric over hydraulic type, with a pressure rating of not

less than 4,000 PSI. Additionally, the cab tilt device shall be both electrically and hydraulically interlocked to prevent inadvertent activation of the cab tilt system.

- A "CAB NOT LATCHED" indicator shall be provided in the cab dash-warning cluster.
- A dual switch control system shall be provided for the cab tilt, located on the passenger side of the vehicle or on the optional tether control. System shall consist of a three (3) position toggle switch along with a rubber covered push button switch.

129. AUXILIARY - MANUAL CAB LIFT BACKUP SYSTEM SECTION 2.138

QTY: 1

An auxiliary, manual cab, lift backup system shall be furnished inside the passenger side of the pump enclosure or front compartment for use in the event of total electrical shutdown.

130. TETHER CONTROL FOR CAB TILT , W/COMPARTMENT FOR CONTROL SECTION 2.139

QTY: 1

A 12' tether control shall be provided to control the cab movement.

This arrangement will provide the operator with a full view of the cab.

The control shall include a two (2) switch control, one (1) three (3) position toggle switch, and one (1) push button type switch.

Both controls must be depressed for activation of the system.

The auxiliary cab lift control shall be located in the Officers side lower step area CR-3. The tether control for the cab tilt shall be hard wired and shall also be located within the CR-3 compartment.

131. PARKING BRAKE/CAB TILT INTERLOCK SECTION 2.137

QTY: 1

The cab tilt control shall be equipped with an interlock.

This shall disable the cab tilt system in the event the parking brake is not applied.

132. CAB TILT SECONDARY SAFETY LOCK SECTION 2.137

QTY: 1

A secondary, swing down, safety bar shall be applied to the driver side cab tilt cylinder with a manual lock to engage the lock, as required for extended service operations.

133. REAR CAB LIFTING EYELETS SECTION 2.214

QTY: 1

The cab shall be capable of tilting to a 90-degree angle, with the assistance of an overhead hoist, to facilitate unobstructed removal of the engine and/or radiator.

The manufacturer shall provide attachment points to safely facilitate, tilting the cab to a 90-degree angle.

The rear cab, lifting eyelets shall be located at the upper portion of the rear cab sheet metal and attached to the upper cab, cross brace.

The cab lift eye system shall be much like the LA County units except with a removable swiveling hoist ring provided for each of the two (2) lift points. The mounting locations for the swivel hoist rings shall have a cap to prevent water/dirt intrusion. Each of the mounting locations for the swivel hoist rings mounting locations shall have a stainless steel backing plate. The swivel hoist rings shall be shipped loose.

134. 110,000 PSI FRAME: STD MAIN RAIL WITH FULL LENGTH LINER SECTION 2.130, 2.133

QTY: 1

The chassis frame shall be fabricated in its entirety at the manufacturer's facility. This will prevent any split responsibility in warranty or service.

The frame shall consist of two (2) channels fastened together by cross members. All structural fasteners

used in the frame shall be Grade 8 hardware. Hardened steel washers shall be used under all bolt heads and nuts to avoid stress concentrations. Top flange shall be free of bolt heads. All spring hangers shall be machined steel castings. Frame assemblies that are welded or assembled with "Huck" type fasteners are not acceptable.

Each main frame rail shall be 10-1/4" x 4" x 3/8", fabricated from Domex™ 110,000 PSI minimum yield steel, with a minimum section modulus of 18.396 cu in and a resisting bending moment (RBM) of 2,023,560 inch pounds. The frame rails shall be drilled "together" (back to back) on a frame drilling machine with an internally cooled drill bit in order to minimize the deviation in hole diameter or location. Frames are built for the specific apparatus under construction so that no unnecessary holes or modifications are made to the frame assembly.

A full length inner frame liner 9.44" X 3.63" X 3/8" shall be installed. Total section modulus of each rail, with liner, shall be 33.56 cu in and the total resisting bending moment (RBM) shall be a minimum of 3,691,050 in-lbs., per rail.

The chassis frame assembly, consisting of frame rails, cross members, axles and steering gear(s), shall be finish painted before installation of any electrical wiring, fuel system components, or air system components. All components or brackets fastened to the frame rails shall be cleaned, primed and painted prior to being attached to the frame rails.

135. BUMPER 12" STAINLESS STEEL CONTOUR - ALL CABS SECTION 2.134

QTY: 1

A 12" high, 101" wide, two (2) ribbed, bright finish, stainless steel, front bumper shall be provided.

The bumper shall be a wrapped design to match the contour of the front cab sheet.

136. 10" FRONT BUMPER EXTENSION WITH TREAD PLATE GRAVEL SHIELD SECTION 2.134

QTY: 1

The bumper shall be extended 10" with a polished aluminum, tread plate, gravel shield enclosing the top and ends.

137. TOW FORK - TOW EYE PROVISION SECTION 2.134

QTY: 1

Two (2) heavy duty, tubular, steel, towing forks shall be bolted to the underside of the frame drop at the front of the chassis.

They are incorporated into forks which shall have two (2) painted steel tow eyes.

The forks shall be shaped like an upside down "U" to act as a designated hookup point to accept a tow bar from a service vehicle.

The robust design shall allow a disabled vehicle to be lifted and towed without doing damage to the bumper or bumper mounted options.

FOR CLARIFICATION: The lift and tow option shall be painted frame/chassis color (red).

138. 22,000# FRONT AXLE STEERTEK, DISC BRAKES SECTION 2.6

QTY: 1

The Steertek NXT front axle beam shall be rated to carry 22,000 lbs. and consist of a fabricated box cross section construction with 100ksi plate and a continuous beam architecture to minimize stress points for added durability.

The axle shall incorporate a removable kingpin feature for ease of kingpin serviceability. The knuckles shall allow for compatibility with disc brakes mounted at the 12 o'clock position and with drum brakes, and allow for wheel cut up to 45 degrees. They shall also utilize premium kingpin bushings and seals to provide enhanced protection from the elements to improve bushing life. Oil seals with viewing window shall be provided.

The suspension shall consist of multi-leaf parabolic springs rated at 22,000 lbs. with double wrapped front eye that are packaged within an integrated clamp group that allows for ease of OEM assembly on to the axle beam and reduced part count. The clamp group bolts are tightened on the top of the clamp group opposed to the traditional U-bolt on the bottom making it easier to access with a torque wrench for servicing. The spring shall also include a lower shock attachment with an upturned eye. The springs will contain threaded pin bushings to allow simplification of spring alignment as well as long service life and improved ride quality. The suspension and spring geometry will be optimized to provide improved bump steer and Ackermann. Two ZF Sachs twin-tube shocks shall be provided with the front suspension assembly. The shocks shall be specially developed for parabolic leaf springs with a digressive characteristic curve using a patented piston system. The shocks shall feature multi-stage piston and base valves. The combination of valves shall achieve the desired damping characteristics that are ideal for the application.

Meritor EX-225 H, 17" disc brakes shall be provided for the front axle.

The front brakes shall be full air actuated with automatic, slack adjustment.

139. OIL SEALS, NON DRIVE AXLES ONLY SECTION 2.6, 2.87

QTY: 1

Premium Stemco oil seals with viewer glass shall be provided on the front axle.

140. STEERING - DUAL SHEPPARD POWER STEERING GEARS SECTION 2.93, 2.96

QTY: 1

A dual power steering system shall be provided utilizing a Sheppard model #M110 main steering gear on the driver side of the chassis and a Sheppard model #M90 steering gear on the officer side of the chassis.

The power steering gear on the officer side of the chassis shall increase performance in turning the officer side wheel assembly, reducing loads and forces on the main gear and components.

The steering system shall be designed to maximize the turning capabilities of the front axle no matter the rating and tire size.

The use of a power assist cylinder on the officer side of the chassis is NOT ACCEPTABLE on front axles of this capacity.

The system shall be designed utilizing an engine driven hydraulic pump, with a maximum operating pressure of 2000 PSI.

Steering design shall permit a maximum of 5.6 turns from stop to stop.

Steering system components shall be mounted in accordance with the steering gear manufacturer's instructions.

141. STEERING COLUMN - BASE "NARROW" SECTION 2.91

QTY: 1

The steering column shall be a "Douglas Autotech" tilt and telescope column.

A lever mounted on the side of the column shall control the tilt and telescope features.

The steering shaft from the column to the miter box shall have a rubber boot to cover the shaft slip and a second rubber boot to seal the passage hole in the floor.

There shall be a self-canceling lever that shall control the following functions:

- Left and right turn signals

- High beam activation
- Two speed with intermittent windshield wiper control
- Windshield washer control

142. 18" STEERING WHEEL SECTION 2.91

QTY: 1

The steering wheel shall be a two (2) spoke, vinyl padded, minimum 18" diameter, with a center hub mounted horn button.

143. POWER STEERING FLUID - COOLING SYSTEM SECTION 2.93

QTY: 1

A power steering fluid cooling system shall be provided.

The heat exchanger shall be a tube and fin type and shall be a separate unit.

The cooler shall be mounted forward of the radiator and plumbed to the power steering fluid return line.

144. 31,000# REAR AXLE MERITOR RS-30-185 SECTION 2.6

QTY: 1

Rear axle shall be a single, Meritor RS-30-185 with a capacity of 31,000 lbs.

(Minimum). Axle shall be a single reduction axle with hypoid gearing and oil-lubricated wheel bearings.

Oil seals shall be provided as standard equipment.

145. 16.5" X 8.6" S-CAM BRAKES - MERITOR REAR AXLE, W/ AUTO SLACK ADJUSTERS SECTION 2.116, 2.119

QTY: 1

Brakes shall be "S" Cam, 16-1/2" x 8 5/8" size, and shall be full air actuated with automatic, slack adjusters.

146. VEHICLE TOP SPEED NFPA STATEMENT SECTION 2.100

QTY: 1

The rear axle/s (will/shall) be geared for a vehicle top speed in accordance with NFPA sections 4.15.2 and 4.15.3.

Units with GVWR over 26,000 pounds (will/shall) be limited to 68 mph. If the combined tank capacity is over 1250 gallons of foam and water or the GVWR is over 50,000 pounds, the vehicle top speed (will/shall) be limited to 60 mph or the fire service rating of the tires, whichever is lower.

147. NEWAY SUSPENSION AD-130,AIR RIDE- SA 31,000# SECTION 2.101

QTY: 1

The drive axle, air-ride suspension shall be a heavy-duty, severe fire service rated, 31,000 lb. capacity Neway model AD-130 with heavy-duty, air springs and heaviest duty, available hardware and urethane bushings.

Dual air leveling valves shall be provided for side to side leveling of air suspension.

The suspension shall be self-leveling from front to back and side to side and shall have restricted inlet and outlet ports to control sudden air loss.

The suspension shall be provided with quick-change type air bags and spring loaded snubbers.

The Neway rear suspension warranty will be three (3) years.

148. FRONT WHEELS, POLISHED ALUMINUM, 22.5 X 12.25, 24,000# SECTION 2.108

QTY: 1

The front wheels shall be 22.5" x 12.25" ten stud, hub piloted, polished aluminum disc type.

149. FRONT WHEELS, LUG AND HUB TRIM (ALUMINUM WHEELS) SECTION 2.111

QTY: 1

The front wheels shall be provided with bright, nut covers and hub caps.

150. FRONT, CONTINENTAL 425/65R22.5 L 24,400# HTR2 HIGHWAY - 68MPH SECTION 2.103

QTY: 1

The front tires shall be Continental 425/65R22.5, "20 Ply", tubeless, radial, HTR2, wide base highway tread.

The tires shall be fire service rated up to 24,400 lbs. and shall have a top speed of 68 mph when inflated to 120 psi.

151. FRONT AXLE - COUNTERACT BALANCING BEADS SECTION 2.110

QTY: 1

Each front tire shall be equipped with Counteract Balancing Beads.

152. REAR WHEELS, POLISHED ALUMINUM, 22.5 X 9, SA SECTION 2.109

QTY: 1

The single rear axle wheels shall be 22.5" x 9" ten stud, hub piloted polished aluminum disc type.

153. REAR WHEELS, LUG AND HUB TRIM, SA (ALUMINUM) SECTION 2.111

QTY: 1

The single, rear axle aluminum disc wheels shall be provided with bright, nut covers and hub caps.

154. REAR, CONTINENTAL 315/80R22.5 L 36,360# COACH HA3 HWY - 75MPH, SINGLE AXLE SECTION 2.104

QTY: 1

The rear tires shall be Continental 315/80R22.5, "20 Ply", tubeless, radial, Conti Coach HA3, highway tread.

The tires shall be fire service rated up to 36,360 lbs. and shall have a top speed of 75 mph when inflated to 130 psi.

155. TIRE PRESSURE MONITORING - LED VALVE STEM CAPS - EIGHT TIRES SECTION 2.107

QTY: 1

Each tire shall be equipped with an LED, tire alert, pressure management system (Vecsafe equal) that shall monitor tire pressure.

A chrome plated, brass sensor shall be provided on the valve stem of each tire.

The sensor shall calibrate to the tire pressure, when installed on the valve stem for pressures between 10 and 200 psi.

The sensor shall activate an integral, battery operated, LED when the pressure of that tire drops 8 psi.

156. ENGRAVED TIRE INFLATION TAG

QTY: 1

KME will add an engraved tag to instruct Department on proper tire inflation pressure for all tires on the apparatus. Provide documentation to support tire inflation pressure. Tag will be located in the same general area of the vehicle fluid plate and within view of the driver.

This tag will be provided after the apparatus is delivered and the Department has fully outfitted the apparatus with all operational equipment. The Department will be required to weigh the vehicle (all wheels separately, each axle separately and total vehicle weight) and provide this information to KME within 3 months of the apparatus being placed in service. KME will consult with the tire manufacture and provide a recommended tire inflation pressure. This recommended tire inflation pressure shall take into consideration all NFPA, FAMA, FMVSS and any/all Local, State and Federal standards.

157. REAR AXLE - COUNTERACT BALANCING BEADS - SINGLE AXLE SECTION 2.110

QTY: 1

Each rear tire shall be equipped with Counteract Balancing Beads.

158. REAR WHEEL SPACERS, SA SECTION 2.112

QTY: 1

The rear wheels shall be equipped with wheel spacers that shall protect against dissimilar metals coming in contact with one another.

159. CROSSFIRE TIRE EQUALIZATION SYSTEM FOR SINGLE REAR SECTION 2.106

QTY: 1

A Crossfire dual tire equalization system shall be provided for the single rear axle of the chassis.

160. BRAKE SYSTEM, SINGLE AXLE CHASSIS SECTION 2.114

QTY: 1

A dual circuit, air operated braking system, meeting the design and performance requirements of FMVSS -121 and the operating test requirements of NFPA 1901 current edition shall be installed.

It shall be direct air type with dual air treadle in the cab.

The system shall be powered by an engine mounted, gear driven air compressor protected by a heated air dryer.

The air system shall be plumbed with reinforced, air brake tubing/hose in conformance to SAE J 844-94, Type B and U.S.D.O.T. standards.

The compressor discharge shall be plumbed with stainless steel braided hose lines with a Teflon lining.

Eaton Synflex Eclipse Air Brake tubing shall be run along the inside frame rails and connected with push to connect type fittings that meet or exceed all industry standards.

All Synflex tubing shall be secured with non-conductive, corrosion resistant strapping mounted with standoff fasteners.

Cord reinforced rubber hose lines with brass fittings shall be installed from the frame rails to axle mounted air connections.

The air system shall provide a rapid air build-up feature and low-pressure protection valve with light and buzzer, designed to meet the requirements of NFPA 1901, current edition.

161. ABS BRAKING FOR SINGLE REAR AXLE CHASSIS

QTY: 1

An Anti-Skid Braking System (ABS) shall be provided to improve braking control and reduce stopping distance. This braking system shall be fitted to all of the axles. All electrical connections shall be environmentally sealed, water, weatherproof, and vibration resistant.

The system shall constantly monitor wheel behavior during braking. Sensors on each wheel shall transmit wheel speed data to an electronic processor which shall sense approaching wheel lock causing instant brake pressure modulation up to 5 times per second in order to prevent wheel lockup. Each wheel shall be individually controlled.

To improve service trouble shooting, provisions in the system for an optional diagnostic tester shall be provided. The system shall test itself each time the vehicle is started. A dash-mounted light shall go out once the vehicle has attained 4 mph after successful ABS start-up. To improve field performance; the system shall be equipped with a dual circuit design. The system circuits shall be configured in a diagonal pattern. Should a malfunction occur, the defective circuit shall revert to normal braking action. A warning light shall signal malfunction to the operator. The system shall consist of a wheel mounted toothed ring, sensor, sensor clip, electronic control unit and solenoid control valve.

The sensor clip shall hold the sensor in close proximity to the toothed ring. An inductive sensor consisting of a permanent magnet with a round pole pin and coil shall produce an alternating current with a frequency proportional to wheel speed. The unit shall be sealed, corrosion resistant and protected from electromagnetic interference. The electronic control unit shall monitor the speed of each wheel. A deviation shall be corrected by cyclical brake application and release. If a malfunction occurs, the defective circuit shall signal the operator and the malfunctioning portion of the system shall shut down. The system shall be installed in a diagonal pattern for side-to-side control. The system shall insure that each wheel is braking to optimum efficiency up to 5 times a second.

The system shall also control application of the auxiliary engine exhaust or drive line brakes to prevent wheel lock.

This system shall have a three (3) year or 300,000 mile parts and labor warranty as provided by Meritor Wabco Vehicle Control Systems.

162. TELMA DRIVELINE RETARDER SINGLE REAR AXLE - FOCAL MOUNT SECTION 2.75

QTY: 1

A Telma electromagnetic, air cooled, drive line retarder shall be furnished and focal mounted to the rear axle.

The retarder shall be sized to the maximum G.V.W.R. of the vehicle.

The system shall have an on/off switch and an indicator light on the dash.

The retarder shall automatically disengage when the vehicle is not in motion.

Activation of the retarder shall illuminate the vehicle brakes lights.

The Telma retarder shall be equipped with an electronic interface, to de-activate the retarder anytime the ABS system is activated.

163. TELMA RETARDER OPERATION W/BRAKE PEDAL PROGRESSIVE STAGES 1, 2, 3, & 4 SECTION 2.76

QTY: 1

The magnetic, retarder control shall be controlled with an on/off switch on the dash and shall be activated in conjunction with the brake pedal.

The application shall be in progressive stages, (1/4, 1/2, 3/4 & full).

164. TELMA RETARDER APPLICATION JOYSTICK - FOUR STAGE SECTION 2.76

QTY: 1

The magnetic, retarder control shall be controlled with a five (5) position joystick control, mounted on the dash panel.

This joystick will allow for manual activation of the retarder when the throttle is released.

The retarder application shall be in four (4) progressive stages, (1/4, 1/2, 3/4 & full) as the joystick control is moved downward.

**165. AIR RESERVOIRS 4700 CUBIC INCH, SINGLE AXLE, W/1127 CUBIC INCH
ADDITIONAL TANK SECTION 2.124, 2.125**

QTY: 1

There shall be a minimum of three (3) air reservoirs installed in conformance with best automotive practices.

An additional 1127 cu. in. air reservoir shall be provided for the accessory air outlet.

Reservoir capacity total shall be a minimum of 5820 cubic inches.

The air reservoirs shall be color coded to match the air lines for easy identification, maintenance, and troubleshooting.

The reservoirs shall be painted the following colors:

- Wet Tank Black
- Primary Tank Green
- Secondary Tank Blue
- Auxiliary Tank(s) Yellow

166. 1/4 TURN DRAIN VALVES ON ALL AIR TANKS SECTION 2.124, 2.125

QTY: 1

For ease of daily maintenance, each air system reservoir shall be equipped with a brass 1/4 turn drain valve.

The brass, quarter turn, air tank drains shall be remotely mounted to the side of the body on a labeled panel just forward of rear wheel for ease of maintenance.

167. MERITOR/WABCO SYSTEM SAVER #1200, AIR DRYER HEATED SECTION 2.120

QTY: 1

A Meritor/Wabco System Saver 1200, heated air dryer shall be furnished.

An automatic, moisture ejector on the primary shall also be furnished.

168. COLOR CODED SYNPLEX BRAKE LINES W/QUICK RELEASE FITTINGS - SA

QTY: 1

The entire chassis air system {will/shall} be plumbed utilizing reinforced, Synflex air lines, which {will/shall} be equipped with compression type brass fittings... All of the airlines {will/shall} be color coded to correspond with an air system schematic and {will/shall} be adequately protected from heat and chafing.

169. AIR COMPRESSOR -WABCO 18.7 CFM- STD. FOR ALL CUMMINS ENGINES
SECTION 2.122, 2.123

QTY: 1

Air compressor shall be a Wabco brand, minimum of 18.7 cubic feet per minute capacity.

Air brake system shall be the quick build up type.

The air compressor discharge line shall be stainless steel braid reinforced Teflon hose.

A pressure protection valve shall be installed to prevent the use of air horns or other air operated devices should the air system pressure drop below 80 psi (552 kPa).

The chassis air system shall meet NFPA 1901, latest edition for rapid air pressure build-up within sixty (60) seconds from a completely discharged air system.

This system shall provide sufficient air pressure so that the apparatus has no brake drag and is able to stop under the intended operating conditions following the sixty (60) seconds build-up time.

170. BRAKE TREADLE VALVE

QTY: 1

A Bendix dual brake treadle valve shall be mounted on the floor in front of the driver.

The brake control shall be positioned to provide unobstructed access and comfort for the driver.

171. PARKING BRAKE CONTROL - NEAR DRIVER - ALL WHEEL LOCK **SECTION 2.117**

QTY: 1

Parking brake shall be of the spring-actuated type, mounted on the rear axle brake chambers.

The parking brake control shall be mounted on the cab center, instrument panel.

A red, indicator light shall be provided in the driver dash panel that shall illuminate when the parking brake is applied.

The parking brake shall be plumbed to provide all wheel lock-up when applied.

172. SECOND PARKING BRAKE CONTROL NEAR OFFICER **SECTION 2.118**

QTY: 1

A secondary, parking brake control shall be provided and installed on the cab dash in a location convenient to the officer.

173. AUX. AIR INLET IN LH DOOR AREA (TO CHARGE VEHICLE AIR SYSTEM) **SECTION 2.126**

QTY: 1

One (1) air inlet with male 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 cab. A check valve shall be provided to prevent reverse flow of air. The inlet shall discharge into the "wet" tank of the brake system. A mating female coupling shall also be provided with the loose equipment.

This inlet shall allow a purchaser furnished external air supply to be connected to the chassis air system.

174. BLUE SEA 12VDC, 125PSI, AIR COMPRESSOR **SECTION 2.215**

QTY: 1

A Blue Sea 7920 air compressor shall be provided and installed to maintain the air pressure in the chassis air brake system while the vehicle is not in use.

- Automatically turns ON at 95 PSI and OFF at 125 PSI
- Industrial grade compressor provides reliable, long term operation
- Easy installation, no mounting plate required
- Integrated vibration dampening mounts
- Serviceable air filter and water separator filter
- Works in conjunction with engine driven compressor
- Integrated auto drain to protect your air system

The compressor will be powered by shore power only.

175. KUSSMAUL AUTO DRAIN ACHP - 120V

QTY: 1

A Kussmaul # 091-9-090 Auto Drain ACHP shall be installed to protect the Auto Pump from built up moisture.

176. CUMMINS X15 600 HP @ 1800 RPM TQ 1850 LB-FT @ 1200 - PREDATOR WIDE
SECTION 2.35

QTY: 1

Engine shall be a Cummins, Model X15 600, diesel, turbo-charged, per the following specifications:

- Max. Horsepower 600 HP @ 1800 RPM
- Governed Speed 2100 RPM
- Peak Torque 1850 lb. ft. @ 1150 RPM
- Cylinders Six (6)
- Operating Cycles Four (4)
- Bore & Stroke 5.39 x 6.65 in.
- Displacement 912 cu. in.
- Compression Ratio 17.2:1
- Governor Type Limiting Speed
- Drive line Size 1810 Series

Engine oil filters shall be engine manufacturers branded or approved equal.

Engine oil filters shall be accessible for ease of service and replacement. A fuel/water separator shall be provided.

177. ENGINE IQA CERTIFICATION - X15 SECTION 2.35

QTY: 1

The Cummins X15 engine shall be certified by Cummins Power Systems for installation in the manufacturer's custom chassis.

178. SECONDARY BRAKING - ENGINE COMPRESSION BRAKE SECTION 2.41, 2.42

QTY: 1

An engine compression brake shall be furnished for increased braking capabilities.

Controls shall be as provided by the engine manufacturer and shall be activated by releasing the throttle pedal to the idle position.

The engine compression brake shall have dash mounted control switches to turn the brake on or off as well as to control the operational level of the brake.

The engine brake shall be wired in such a manner so as to illuminate the chassis brake lights when the engine brake is engaged and operating.

The engine brake shall be interlocked with the PTO operation and shall automatically disengage any time the apparatus is operating with the PTO active.

179. ENGINE AIR CLEANER SECTION 2.55

QTY: 1

An engine air cleaner shall be provided.

The air cleaner shall include a dry type element and shall be installed in accordance with the engine manufacturer's recommendations.

The air cleaner shall be located to the rear of the engine, with streamline air pipes and hump hose connections from the inlet to the air cleaner and from the air cleaner to the turbo.

The air cleaner shall be easily accessible when the cab is tilted.

The air cleaner shall be plumbed to the air intake system that shall include a self-sealing connection between the cab and air cleaner assembly to allow the cab to be tilted.

To draw fresh clean air, the intake for the air cleaner shall be on the side of the cab on the driver's side.

The inlet shall be a minimum of 41" above the ground to allow the vehicle to navigate through water without any part of the air intake system being below the frame rail, preventing any type of water intake.

There will be no exceptions.

180. EMBER SEPARATOR SECTION 2.55

QTY: 1

An ember separator shall be installed in the chassis air intake system.

This separator shall be mounted behind the intake grille to filter out airborne embers.

The ember separator housing must be easily accessible when the cab is tilted.

181. ACCELERATOR PEDAL - FLOOR MOUNT

QTY: 1

A floor mount accelerator pedal shall be installed on the floor in front of the driver.

The pedal shall be positioned for comfort with ample space for fire boots and adequate clearance from the brake pedal control.

182. REMOTE THROTTLE & INTERLOCK HARNESS

QTY: 1

An apparatus interface wiring harness for the engine shall be supplied with the chassis.

The harness shall include a connector for connection to the chassis harness which shall terminate in the left frame rail behind the cab for reconnection to required throttle control harnesses.

The harness shall contain necessary connectors for a pressure governor and a multiplexed gauge.

Separate circuits shall be included for pump controls, "Pump Engaged" and "OK to Pump" indicator lights, open compartment ground, start signal, park brake ground, ignition signal, master power, customer ignition, air horn solenoid switch, high idle switch and high idle indication light.

An apparatus interface wiring harness shall also be included which shall be wired to the cab harness interface connectors and shall incorporate circuits with relays to control pump functions.

This harness shall control the inputs for the transmission lock up circuits, governor/hand throttle controls and dash display which shall incorporate "Pump Engaged" and "OK to Pump" indicator lights.

The harness shall contain circuits for the apparatus builder to wire in a pump switch.

The engine ECM (Electronic Control Module) discreet wire remote throttle circuit shall be turned off for use with a J1939 based pump controller or when the discreet wire remote throttle controls are not required.

183. CUMMINS INLINE MINI

QTY: 1

A Cummins Inline Mini datalink adaptor will be provided. This is a Bluetooth enable Vehicle Datalink adaptor that allows a mobile device to communicate wirelessly with the on board ECN. Two (2) modules will be delivered with the first unit and one per truck for the remaining life of the contract. Software updates are provided by Cummins via their website and the mobile device app.

184. COOLING/RADIATOR, 100" PREDATOR – WIDE SECTION 2.48, 2.50, 2.51

QTY: 1

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

To provide maximum corrosion resistance and cooling performance, the entire radiator core shall be constructed using long life aluminum alloy.

The core shall be made of aluminum fins, having a serpentine design, brazed to aluminum tubes.

The tubes shall be brazed to aluminum headers. No solder joints or leaded material of any kind shall be acceptable in the core assembly.

The radiator core shall have a height of 35.92" x a width of 37.62".

Supply and return tanks made of glass-reinforced nylon shall be crimped on to the core assembly using header tabs and a compression gasket to complete the radiator core assembly.

The radiator shall be compatible with commercial antifreeze solutions.

There shall be a full steel frame around the entire radiator core assembly.

The radiator core assembly shall be isolated within the steel frame by rubber inserts to enhance cooling system durability and reliability.

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.

The cooling system shall include a surge tank mounted to the top of the radiator framework that shall remove air in the system.

The surge tank shall be equipped with a sight glass to monitor the level of coolant.

The radiator shall be equipped with a dual seal cap that shall allow for expansion and recovery of coolant into a separate integral chamber.

The cooling system shall be designed for a maximum of fifteen (15) PSI operation.

A drain port shall be located at the lowest point of the cooling system and/or the bottom of the radiator to permit complete flushing of the coolant from the system.

Extended life engine coolant shall provide anti-freeze protection to -30° F.

The mixture shall be per the engine manufacture's specifications.

185. ENGINE COOLANT FILTER - CUMMINS L9, X12, X15 SECTION 2.52

QTY: 1

The engine cooling system shall have an inline coolant filter that shall have a shut off valve for ease of maintenance.

A complete list of coolant hoses and filter manufactures along with part numbers will be provided at time of apparatus delivery.

186. COOLING SYSTEM CRITERIA SECTION 1.18

QTY: 1

The engine cooling system shall be certified by the engine manufacturer to meet cooling index requirements for a minimum ambient temperature or 110-degrees Fahrenheit.

187. TRANSMISSION COOLER SECTION 2.68

QTY: 1

A shell and tube transmission oil cooler shall be provided using engine coolant to control the transmission oil temperature.

The cooler shall have an aluminum shell and copper tubes.

The cooler shall be assembled using pressed in rubber tube sheets to mechanically create a reliable seal between the coolant and the oil.

No brazed, soldered, or welded connections shall be used to separate the coolant from the oil.

188. RADIATOR CROSS MEMBER SECTION 2.49

QTY: 1

The radiator installation shall include a radiator cross member for additional strength and durability.

This cross member shall be designed so the angle of approach is not effected.

189. HEAVY DUTY RADIATOR SKID PLATE SECTION 2.49

QTY: 1

The radiator installation shall include a heavy-duty radiator skid plate to protect the radiator from debris or obstructions under the chassis.

The skid plate shall be designed so the angle of approach is not effected.

This skid plate design shall include wire cover wing plates for additional protection to wires and hoses on each side of the radiator assembly.

190. CHARGED AIR COOLER (STACK MOUNT), 100" PREDATOR CAB SECTION 2.48

QTY: 1

The charge air cooler shall be constructed of aluminum with cast aluminum side tanks.

To not restrict air flow to the radiator, the charge air cooler shall designed to be an integral part of the radiator assembly, mounted directly on top of the radiator.

Rubber isolators shall be used at the mounting points to reduce transmission of vibrations.

Where applicable, the charge air cooler pipes shall be constructed of appropriately sized aluminized steel tubing with 0.06" wall thickness and formed hose barbs.

The connections between these pipes, the engine and charged air cooler, shall be made using high temperature silicone hoses rated for use in temperature up to 500°F, and heavy duty constant tension T-Bolt spring hose clamps.

These connections shall adequately allow for movement of the engine relative to the charged air cooler.

Charge air coolers that are located in front of the radiator, that block or restrict air flow into the engine radiator or introduce above ambient temperature air into the radiator in any way shall not be used.

191. COOLANT FAN, W/CLUTCH - CUMMINS X15 SECTION 2.47

QTY: 1

The engine cooling system shall incorporate a heavy duty fan, installed on the engine and include a shroud.

The fan shall be equipped with an air operated clutch fan, which shall activate at a pre-determined temperature range.

Recirculation shields shall be installed to ensure that air which has passed through the radiator is not drawn through it again.

192. SILICONE HEATER AND COOLANT HOSE SECTION 2.54

QTY: 1

All coolant piping shall be constructed of appropriate sized, powder coated, steel tubing with 0.06 wall thickness and formed hose barbs. All connections between coolant pipes and chassis components shall be made using appropriately sized silicone hoses or elbows, rated for use in temperatures ranging from - 60F to +350F. The connections will use appropriately sized, constant torque, hose clamps.

These connections shall be minimal in number to reduce the number potential leak points and shall adequately allow for movement of the engine relative to chassis mounted components.

All integral hoses supplied with the engine shall be as supplied by the engine manufacturer.

Silicone heater hoses shall be furnished for the heater system within the interior structure of the cab. All heater hoses shall be equipped with constant torque type hose clamps. All integral hoses supplied with the engine shall be as supplied by the engine manufacturer.

A complete list of coolant hoses and filter manufactures along with part numbers will be provided at time of apparatus delivery.

193. HEATER AND COOLANT SHUT OFF VALVE

QTY: 1

A mechanical shut off valve shall be installed on the engine to shut down the flow of coolant to the cab heating system.

194. LOW COOLANT LIGHT SECTION 2.187

QTY: 1

A low engine coolant indicator light located in the dash instrument panel shall be provided. An audible alarm shall be provided to warn of the low coolant condition.

195. ALLISON 4500EVS, WIDE RATIO TRANSMISSION - COMPRESSION BRAKE SECTION 2.62, 2.64

QTY: 1

An Allison World Transmission, Model 4500EVS (Wide Ratio), electronically controlled, automatic transmission shall be provided.

Transmission specifications shall be as follows:

- Max. Gross Input Power 600 HP
- Max. Gross Input Torque 1770 lb. ft.
- Input Speed (Range) 1700- 2300 RPM
- Direct Gear (Pumping) 4th (Lock-up)

Transmission installation shall be in accordance with the transmission manufacturer's specification.

The transmission shall be readily and easily removable for repairs or replacement.

One (1) PTO opening shall be provided on both the left and right side of the converter housing (positions one (1) o'clock and eight (8) o'clock).

196. SIX (6) SPEED AUTOMATIC TRANSMISSION - 4500 SERIES SECTION 2.62

QTY: 1

The transmission shall be calibrated for six (6) forward gears and one (1) reverse gear.

Each gear shall have the following ratios:

- First 4.70:1
- Second 2.21:1
- Third 1.53:1
- Fourth 1.00:1
- Fifth 0.76:1
- Sixth 0.67:1
- Reverse -5.55:1

KME will provide a performance scan showing performance using different gear ratios.

197. ALLISON TRANSMISSIONS, ELECTRONIC TOUCH PAD SHIFTER IN CAB SECTION 2.66

QTY: 1

An illuminated, touch-pad type, shift control shall be mounted in the cab, convenient to the driver.

Shift control shall be approved by the transmission manufacturer.

198. MODE BUTTON PROGRAMMED 4TH START-UP/ 5TH-6TH MODE SECTION 2.63

QTY: 1

The transmission, upon startup, shall select four (4) speed operation. By pressing the "mode" switch on the shift pad (mode on) provides access to the remaining forward gears in the transmission.

199. TRANSMISSION OIL LEVEL SENSOR SECTION 2.62

QTY: 1

The transmission shall be equipped with the oil level sensor (OLS); this sensor shall allow the operator to obtain an indication of the fluid level from the shift selector.

The sensor display shall provide the following checks, correct fluid level, low fluid level and high fluid level.

200. ALLISON PARK TO NEUTRAL

QTY: 1

The transmission, upon application of the parking brake, shall automatically shift into neutral.

201. ALLISON PRESELECT PROGRAMMING SECTION 2.67

QTY: 1

The transmission shall have Allison Pre select enabled to automatically downshift when the secondary engine brake is active.

202. PRESELECT PROGRAMMED FOR 2ND GEAR

QTY: 1

The transmission shall be programmed at the factory to automatically downshift to 2nd gear.

This feature shall be enabled/disabled with the main on/off switch for the engine brake.

203. TES 295 SYNTHETIC TRANS FLUID 4000 EVS SECTION 2.62

QTY: 1

TES 295 transmission fluid shall be utilized to fill the 4000 EVS transmission.

204. DRIVE LINES DANA-SPICER #1810 SERIES SECTION 2.74

QTY: 1

Drive lines shall be Dana (Spicer) 1810 heavy duty series or equal, with "glide coat" splines on all slip shafts.

The manufacturer shall utilize an electronic type balancing machine to statically and dynamically balance all drive shafts.

The manufacturer shall provide proof of compliance with all drive shaft manufacturer's standards and specifications. {No Exceptions}

Where applicable, the universal joints shall be the half loop style joints.

205. DIESEL EXHAUST FLUID LEVEL GAUGE SECTION 2.187

QTY: 1

Diesel Exhaust Fluid level (E-1/2-F); low fuel level warning @ 1/8 tank

206. 10 GALLON DEF TANK SECTION 2.58

QTY: 1

A ten (10) gallon diesel exhaust fluid (DEF) tank shall be provided and installed. The tank shall be mounted in the area of the battery box and shall be accessible through a door in the crew area step well.

207. EXHAUST SYSTEM - DPF & SCR SYSTEM - INLINE SYSTEM SECTION 2.57

QTY: 1

The exhaust system shall be installed in accordance with the engine manufacturer's requirements and meet all Environmental Protection Agency and State noise level requirements.

Exhaust system components shall be securely mounted and easily removable.

The diesel particulate filter/muffler shall be fabricated from stainless steel and of a size compatible with the engine exhaust discharge.

Exhaust tubing shall be a minimum of 16 gauge stainless steel from the turbocharger on the engine to the inlet of the diesel particulate filter.

Any flexible exhaust tubing shall be HDT stainless steel type.

To minimize heat build-up, exhaust tubing within the engine compartment shall be wrapped with an insulating material.

Exhaust shall be wrapped from the turbocharger to the entrance of the muffler.

Material shall be held in place with worm gear type clamps.

An exhaust diffuser shall be provided to reduce the temperature of the exhaust as it exits the tailpipe.

If the electrical system is hardwired or V-Mux multiplex, separate "regeneration" enable and prohibit switches shall be provided under the dash board on the driver's side.

Each switch shall be provided with a spring loaded protective cover and shall be clearly marked as to function.

If the electrical system is class-1 es-key, the regeneration switches shall be incorporated into the ultra-view screen.

The vehicle shall be equipped with SCR technology that uses a urea based diesel exhaust fluid (DEF) and a catalytic converter to significantly reduce oxides of nitrogen (NOx) emissions.

The SCR system shall reduce levels of NOx (oxides of nitrogen emitted from engines) by injecting small quantities of diesel exhaust fluid (DEF) into the exhaust upstream of a catalyst, where it vaporizes and decomposes to form ammonia and carbon dioxide.

The ammonia (NH₃), in conjunction to the SCR catalyst, converts the NOx to harmless nitrogen (N₂) and water (H₂O).

208. ALUMINIZED STEEL EXHAUST TAILPIPE/OUTLET OS – DPF SECTION 2.57

QTY: 1

The exhaust tailpipe extending from the SCR catalyst to the side of the vehicle shall be constructed from 16-gauge aluminized steel tubing.

The exhaust discharge shall be on the officer side of the apparatus forward of the rear axle.

209. PLYMOVENT EXHAUST EXTRACTION SYSTEM TAILPIPE ADAPTER SECTION 2.57

QTY: 1

The exhaust outlet shall be a straight pipe, forward of the rear axle. It shall be terminating minimum 6" forward of rear tire, minimum 2.5" below rub rail/body, and flush with outboard of rub rail/body to connect with a Plymovent, ventilation system.

210. FUEL TANK - 70 GALLON, STEEL SECTION 2.81, 2.82

QTY: 1

Fuel tank shall be a minimum of seventy (70) gallon capacity. It shall have a minimum, fuel filler neck of 2" ID and 1/4 turn fill cap. A 1/2" minimum diameter drain plug shall be provided. The tank shall be fabricated from hot rolled, pickled and oiled steel. Provisions for an additional feed line and fuel level float shall be provided for future use. The fuel tank shall be installed behind the rear wheels between the frame rails. The fuel tank shall meet all FHWA 393.67 requirements including a fill capacity of 95% of tank volume. The fuel tank shall be able to withstand a longitudinal acceleration of -23.0g at 0.166 seconds in accordance to SAE J211 standards using a channel frequency class 600 filter. Testing shall be performed at and verified by a third party testing and evaluation center.

211. STAINLESS STEEL FUEL TANK STRAPS SECTION 2.83

QTY: 1

The straps supporting the diesel fuel tank shall be made of Type 304L stainless steel with grade 8, zinc coated steel hardware.

There will be no exceptions.

212. FUEL TANK MOUNTING STRAP ISOLATION MATERIAL

QTY: 1

The fuel tank mounting straps shall utilize dense rubber between the straps and the fuel tank to prevent chaffing.

213. FUEL LINES - FIBER REINFORCED HOSE SECTION 2.78

QTY: 1

Fuel lines shall be an Aeroquip FC332 AQP Series fiber reinforced hose. The lines shall be sized to meet engine manufacture's requirements, and shall be carefully routed and secured along the inside of the frame rails.

214. DUAL FUEL LINE SHUT-OFF VALVES

QTY: 1

A fuel line shut-off valve shall be provided on both the inlet and outlet side of the primary fuel filter to allow for easy removal of the filter.

The valves shall be labeled "Fuel Shut-Off".

No reserve feature shall be included in the tank.

215. FUEL TANK SERVICEABILITY PROVISIONS SECTION 2.85

QTY: 1

An additional eight feet of fuel line shall be provided.

The line shall be coiled and secured above the fuel tank to improve serviceability of the tank.

Clarification; The 4' of additional fuel hose will be provided and coiled on top of the fuel tank in order that in the event that the tank needs to be serviced or removed, preventing the removal of the fuel hose.

216. FUEL COOLER SECTION 2.80

QTY: 1

A fuel cooling system {will/shall} be provided. The heat exchanger {will/shall} be a tube and fin type and {will/shall} be a separate unit. The cooler {will/shall} be mounted forward of the radiator and plumbed to the fuel return line.

217. RACOR S328 SERIES HEATED FUEL-WATER SEPARATOR WITH ALARM SECTION 2.77

QTY: 1

A Racor S328 series, heated, fuel filter/water separator shall be provided in the fuel system. A "water in fuel" indicator shall be provided on the dash.

218. FUEL POCKETS, LEFT & RIGHT SIDE REAR WHEEL WELL PANEL SECTION 2.84

QTY: 1

A fuel fill shall be provided in the left and right side rear wheel well area.

A Cast Products heavy duty cast aluminum spring loaded hinged fill door shall be provided.

A label indicating "Ultra Low Sulfur Diesel Fuel Only" shall be provided adjacent to the fuel fills.

219. CUSTOM CHASSIS ELECTRICAL SYSTEM SECTION 2.28, 2.29

QTY: 1

All electrical wiring in the chassis shall be GXL cross link insulated type. Wiring is to be color coded and include function codes every three (3) inches on both sides. Wiring harnesses shall be routed in protective, heat resistant loom, securely and neatly installed. Two (2) power distribution centers shall be provided in central locations for greater accessibility. The power distribution centers shall contain thermal automatic reset breakers, power control relays, flashers, diode modules, daytime driving light module, and engine and transmission data links. All breakers and relays shall have a capacity substantially greater than the expected load on the related circuit, thus ensuring long component life. Power distribution centers shall be composed of a system of interlocking plastic modules for ease in custom construction.

The power distribution centers are function oriented. The first is to control major truck function. The second shall control center to overhead switching and interior operations. Each module is single function coded and labeled to aid in troubleshooting. The centers will also have accessory breakers and relays for future installations. All harnesses and power distribution centers shall be electrically tested prior to installation to ensure the highest system reliability.

All external harness interfaces shall be of a triple seal type connection to ensure a proper connection. The cab/chassis and the chassis/body connection points shall be mounted in accessible locations. Complete chassis wiring schematics shall be supplied with the apparatus.

220. CUSTOM CHASSIS WIRING INSTALLATION SECTION 2.28

QTY: 1

The wiring harness contained on the chassis shall be designed to utilize wires of stranded copper or copper alloy of a gauge rated to carry 125% of maximum current for which the circuit is protected without exceeding 10% voltage drop across the circuit. Wiring shall be uniquely identified by color code or circuit function code, labeled at a minimum of every three (3) inches. The identification of the wiring shall be referenced on a wiring diagram. All wires conform to SAEJ1127 (Battery Cable), SAEJ1128 (Low Tension Primary Cable), SAEJ1560 (Low Tension Thin Wall Primary Cable).

The covering of harnesses shall be moisture resistant loom with a minimum rating of 289° Fahrenheit and a flammability rating of VW-1 as defined in UL62. The covering of jacketed cable shall have a minimum rating of 289° Fahrenheit.

All circuits shall conform to SAEJ2202. All circuits must be provided with low voltage over current protective devices.

All exposed electrical connections will be coated with "Z-Guard" to prevent corrosion.

221. DIRECT BATTERY GROUNDING STRAP - PREDATOR

QTY: 1

Direct grounding straps shall be mounted to the following areas; frame to cab, frame to body and frame to pump enclosure.

All exposed electrical connections shall be coated with "Z-Guard 8000" to prevent corrosion.

222. EMI/RFI PROTECTION SECTION 2.28

QTY: 1

The apparatus shall incorporate the latest designs in the electrical system with state of the art components to insure that radiated and conducted electromagnetic interference (EMI) and radio frequency interference (RFI) emissions are suppressed at the source.

EMI/RFI susceptibility is controlled by utilizing components that are fully protected and wiring that utilizes shielding and loop back grounds where required. The apparatus shall be bonded through wire braided ground straps. Relays and solenoids that are suspect to generating spurious electromagnetic radiation are diode protected to prevent transient voltage spikes.

In order to fully prevent the radio frequency interference the purchaser may be requested to provide a listing of the type, power output, and frequencies of all radio and bio medical equipment that is proposed to be used on the apparatus.

223. PREDATOR 12 VOLT ELECTRICAL SYSTEM TESTING SECTION 2.28, 4.21

QTY: 1

The apparatus low voltage electrical system shall be tested and certified by the manufacturer. The certification shall be provided with the apparatus. All tests shall be performed with air temperature between 0°F and 100°F.

The following three (3) tests shall be performed in order. Before each test, the batteries shall be fully charged.

TEST #1-RESERVE CAPACITY TEST

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

TEST #2-ALTERNATOR PERFORMANCE TEST AT IDLE

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

TEST #3-ALTERNATOR PERFORMANCE TEST AT FULL LOAD

The total continuous electrical load shall be activated with the engine running up to the engine manufacturers governed speed. The test duration shall be a minimum of 2 hours. Activation of the load management system shall be permitted during this test. However, an alarm sounded due to excessive battery discharge, as detected by the system, or a system voltage of less than 11.7 volts DC for a 12 volt system, for more than 120 seconds, shall be considered a test failure.

Following completion of the preceding tests, the engine shall be shut off. The total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm is activated.

The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of less than 11.7 volts shall be considered a test failure. The battery system shall then be able to restart the engine.

At time of delivery, documentation shall be provided with the following information:

Documentation of the electrical system performance test

A written load analysis of the following:

- Nameplate rating of the alternator
- Alternator rating at idle while meeting the minimum continuous electrical load
- Each component load comprising the minimum continuous electrical load.
- Additional loads that, when added to the minimum continuous load, determine the total connected load.

- Each individual intermittent load.

224. SEQUENCER SECTION 4.18

QTY: 1

A sequencer shall be provided that automatically activates and deactivates vehicle loads in a preset sequence thereby protecting the alternator from power surges. This sequencer operation shall allow a gradual increase or decrease in alternator output, rather than loading or dumping the entire 12 volt load to prolong the life of the alternator.

Emergency light sequencing shall operate in conjunction with the emergency master light switch. When the emergency master switch is activated, the emergency lights shall be activated one by one at half second intervals. Sequenced emergency light switch indicators shall flash while waiting for activation.

When the emergency master switch is deactivated, the sequencer shall deactivate the warning light loads in the reverse order.

Rear of cab Air-Conditioning and Heat shall be load managed.

225. VINYL SCHEMATICS ON ELECTRICAL ACCESS PANEL SECTION 1.8

QTY: 1

An electrical schematic shall be printed on vinyl material and applied to the underside of the cab center dash access panel and inside the body junction compartment access panel.

226. PUMPER BODY ELECTRICAL SYSTEM SECTION 2.28, 2.29

QTY: 1

All electrical lines in the body shall be protected by automatic circuit breakers, conveniently located to permit ease of service.

Flashers, heavy solenoids and other major electrical controls shall be located in a central area near the circuit breakers.

All lines shall be color and function coded every 3", easy to identify, oversized for the intended loads and installed in accordance with a detailed diagram.

A complete wiring diagram shall be supplied with the apparatus.

Wiring shall be carefully protected from weather elements and snagging.

Heavy duty loom shall be used for the entire length.

Grommets shall be utilized where wiring passes through panels.

In order to minimize the risk of heat damage, wires run in the engine compartment area shall be carefully installed and suitably protected by the installation of heat resistant shielded loom.

All electrical equipment shall be installed to conform to the latest federal standards as outlined in NFPA 1901.

227. 12 VOLT ELECTRICAL SYSTEM TESTING - ALL UNITS SECTION 4.21

QTY: 1

The apparatus low voltage electrical system shall be tested and certified by the manufacturer. The certification shall be provided with the apparatus. All tests shall be performed with the air temperature between 0°F and 100°F.

The following three (3) tests shall be performed in order. Before each test, the batteries shall be fully charged.

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

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

The total continuous electrical load shall be activated with the engine running up to the engine manufacturers governed speed. The test duration shall be a minimum of 2 hours. Activation of the load management system shall be permitted during this test. However, an alarm sounded due to excessive battery discharge, as detected by the system, or a system voltage of fewer than 11.7 volts DC for a 12-volt system, for more than 120 seconds, shall be considered a test failure.

Following completion of the preceding tests, the engine shall be shut off. The total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm is activated.

The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of fewer than 11.7 volts shall be considered a test failure. The battery system shall then be able to restart the engine.

At the time of delivery, documentation shall be provided with the following information:

- Documentation of the electrical system performance test
- A written load analysis of the following;
- Nameplate rating of the alternator
- Alternator rating at idle while meeting the minimum continuous electrical load
- Each component load comprising the minimum continuous electrical load.
- Additional loads that, when added to the minimum continuous load, determine the total connected load.
- Each individual intermittent load.

228. WELDON V-MUX MULTI-PLEXED ELECTRICAL SYSTEM SECTION 4.18

QTY: 1

A Weldon style V-MUX Multiplex System shall be provided. The V-MUX shall provide an on-board diagnostics and status, increase reliability and durability, minimize downtime, supply reverse polarity protection and dramatically simplify troubleshooting and repairs for the vehicle. It shall provide short and open circuit detection and notification, on board service information and reduce splices by 80-90%. Each node shall enable discrete load shedding, sequencing, diagnostics and PWM control. All V-MUX hardware shall be rated for -40° to +85° C. A series of Multiplexing Input/output Modules shall be installed. The Input/output modules shall permit the multiplexing system to reduce the amount of wiring and components used as compared to non-multiplexed apparatus. These modules shall vary in I/O configuration, be waterproof allowing installation outside of enclosed areas and shall possess individual output internal circuit protection. The modules shall also have three status indicators visible from a service persons vantage point that shall indicate the status of the module. In the event a load requires more than 7.5 AMPS of operating current, the module shall activate a simple relay circuit integral to any of the 3 pillbox assemblies installed in the cab. V-MUX integration shall be available for: System Voltage Meter Ammeter Emergency Flasher Headlamp Flasher Load Management Load Sequencer Back-Up

Monitor Relays Circuit Breakers Door "Open" System Interlock Modules Engine Monitor Devices Separate Interlock Control Special Waterproof Enclosures.

229. WELDON V-MUX DISPLAY - VISTA IV - TOUCH WITH BUTTONS SECTION 4.18

QTY: 1

The Vista IV, touch screen display node with external buttons shall include the following custom programmed features:

- Outside temperature display.
- A real time clock with display.
- Four (4) programmable video inputs.
- A useable temperature range from -40 degrees to 185 degrees F.
- Eight (8) factory programmed virtual switches
- Seven (7) preset navigation switches
- Selectable font sizes, types, and colors for optimum user efficiency.
- Selectable color buttons and screen backgrounds.

230. ADDITIONAL WELDON V-MUX VISTA IV TOUCH DISPLAY, OS OF CAB SECTION 4.18

QTY: 1

An additional Weldon V-Mux Vista IV touch screen display shall be recessed mounted on the officer side of the cab.

The second display shall have the ability to perform and display all the same functions and information of the main display located on the driver side of the cab.

QTY: 1

The Officers side V-Mux screen will be mounted in the area directly forward of the officer's seat. A fabricated box will be provided and mounted to the dash in this area. The Officers side dash wing panel will remain open as this area will be utilized by the customer for mounting the MDC and keyboard.

231. AXIS SMART TRUCK VEHICLE MONITORING SYSTEM

QTY: 1

The apparatus shall be equipped with a smart truck technology system designed specifically for first responder apparatus. The system shall interconnect major apparatus CAN networks including but not limited to the chassis J1939/OBD2 data, vehicle multiplex system, water pump pressure governor, electric valves and electric actuated deck gun. The system shall securely report real-time vehicle information from these systems via cellular data to a globally supported cloud computing service for storage and real time access via web dashboards. The dashboards shall be accessible by the department's computers, tablets and smartphones.

The smart truck technology installed on the apparatus shall provide real-time notification via text or e-mail when a check engine light is displayed. The notification shall include the fault code and brief explanation for the code to reduce down-time.

The system shall feature a truck down feature on the web-based user interface to allow instant notification of needed apparatus service to both the authorized dealership and OEM via text or e-mail.

The system shall provide remote diagnostics of vehicle subsystems such as VMUX, pressure governors, electric monitors and electric valves.

By use of the web based user interface, the system shall allow for over the air programming updates to various subsystems should the need arise.

The web-based user interface shall also provide the following:

- Fuel and DEF levels
- GPS tracking
- Data logging for apparatus multiplex system
- Easy access to the NFPA VDR data

The smart truck technology shall also feature seamless integration to the HAAS ALERT Safety Cloud providing Responder to Vehicle (R2V) alerts to motorists using navigation apps such as WAZE.

The system shall be designed with an open architecture to incorporate future growth with new technology partners designed to enhance fire ground operations

VEHICLE GATEWAY

The vehicle gateway module shall be rugged in construction using a durable cast aluminum enclosure designed for emergency vehicle applications. The module shall have sealed Deutsch connectors providing four (4) CAN network ports, one (1) RS-485 port, one (1) Ethernet RJ45 port, one (1) USB port, embedded cellular modem, Bluetooth and GPS capability. The Core Vehicle Gateway shall be capable of 2 way vehicle telemetry, supporting both remote diagnostics and remote over-the-air software updates.

ANTENNA

A low profile cellular antennae shall be installed on the cab roof.

DATA PLAN

A 5 year data plan shall be provided with the initial vehicle purchase. At the end of the 5 year period the department shall be given the option to extend service.

232. INTER-LOCK MODULE FOR MULTIPLEX SYSTEM SECTION 4.18

QTY: 1

A Vocation Module, which is the interface between the multiplexing system and the pump system shall be provided.

This module shall serve as the interface between the operator, engine, transmission and pumping system.

The module shall be installed under the driver's side dash, in a sealed enclosure that shall possess green indicating LEDs that shall indicate to service personnel the interlock state of the apparatus.

In the event of a multiplexing error involving pump operation can be activated to ensure reliable pumping operations at ALL times.

In addition to controlling pump function, this vocation module shall be able to provide automatic and/or manual activation of engine "Fast Idle", to maintain adequate alternator output and thus, chassis voltage.

There will be no exceptions.

233. AUTOMATIC FAST IDLE OPTION FOR WELDON VMUX ELECT MANAGER SECTION 4.18

QTY: 1

This feature automatically increases engine rpm and the available alternator output current. Chassis voltage is monitored at all times by the Weldon system and when it drops to or below 12.8VDC for more than 10 seconds, the hi-idle output of the Weldon system is activated. As long as the proper interlocks are

present; transmission in NEUTRAL, park brake SET, and additional drive line assessors (Pump & PTO's) are NOT engaged; the engine rpm's shall increase to a specified set point. At any time, the Weldon system's hi-idle command can be canceled by a loss of any of the specified required interlocks. The Weldon system's automatic hi-idle command shall remain active until the chassis voltage rises above 12.8VDC and remains there for 3 minutes.

When the hi-idle command is requested by the Weldon system due to the lower chassis voltage described, the Weldon dashboard display shall read "Auto Hi-Idle" to clearly indicate to the apparatus operator that the engine is at a, or shall go to, a hi-idle state. When all interlocks are preset and the engine is at a hi-idle state, the red "FAST IDLE" indicator in the dashboard shall illuminate.

234. MULTIPLEX SCREEN LOCATION - CENTER DASH EXTENSION DRIVER SIDE

QTY: 1

235. DELCO REMY 55SI, 430 AMP BRUSHLESS ALTERNATOR SECTION 4.6

QTY: 1

There shall be a Delco Remy Model 55SI, 430 amp brushless, serpentine belt, driven alternator.

The brushless design of the 55SI transfers magnetic fields between the rotor and stator air-gap without brushes.

The alternator installation shall be designed to provide maximum output at engine idle speed, by using Remote Sense in order to meet the minimum continuous electrical load of the apparatus as required.

The alternator shall carry a 3 Year/Unlimited Mile warranty.

236. BATTERIES - SIX (6) HARRIS GROUP 31, 925CCA -31XHD SECTION 4.1

QTY: 1

Six (6) Harris # C31S-HD, sealed maintenance free batteries {will/shall} be provided. Each battery {will/shall} be rated at 1000 CCA @ 0-degrees and 1250 CA @ 32-degrees F. and {will/shall} have a reserve capacity of 200 minutes.

These batteries {will/shall} be supplied as they are the Fire Department's standard.

Wiring for the batteries {will/shall} be 4/0 welding type dual path starting cables for SAEJ541.

237. PREDATOR BATTERY STORAGE, STEEL, MFD, XMFD, LFD, XLFD SECTION 4.2

QTY: 1

Batteries shall be securely mounted in fixed 3/16" GR50 steel trays located on each side of the chassis frame.

Complete access shall be provided when the cab is fully tilted.

Batteries shall be mounted on non-corrosive matting material.

The battery tray shall be able to withstand a longitudinal acceleration of -46.5g at 0.246 seconds in accordance to SAE J211 standards using a channel frequency class 600 filter.

Testing shall be performed at and verified by a third party testing and evaluation center.

238. BATTERY BOX COVER SECTION 4.3

QTY: 1

The battery box shall be overlaid with an "L" shaped, and will be fabricated from non-skid aluminum tread-plate. This cover shall protect the batteries from road spray, snow and road debris. The cover of this box shall be easily removable for inspection, testing and maintenance of the batteries.

239. COLE HERSEE BATTERY JUMPER STUDS, DS SIDE CAB STEP

QTY: 1

A set of Cole Hersee battery jumper studs, model #46210-02 (red) and #46210-03 (black) shall be provided to allow the battery system to be jump started or charged from an external source.

The studs shall be located on the back wall of the drivers step well.

Each stud shall be equipped with both a rubber protector cap and a 2" square non-conductive plate to prevent accidental shorting.

240. 120 VOLT 20 AMP SURE EJECT FOR BATT CHARGER – CUSTOM SECTION 4.9

QTY: 1

One (1) Blue Sea Sure Eject 120 volt, 20 amp shoreline disconnect shall be provided for the on board, 110 volt battery charging systems.

The disconnect shall be equipped with a NEMA 5-20 P male receptacle, which shall automatically eject the shoreline when the vehicle starter is energized.

The mating connector shall be included with the auto eject and shall be provided as loose equipment. A label shall be provided indicating voltage and amperage ratings.

241. AUXILIARY 120 VOLT 20 AMP SURE EJECT FOR AUX AC SECTION 4.9

QTY: 1

One (1) Blue Sea Sure Eject 120 volt, 20 amp shoreline disconnect shall be provided for the auxilliary air conditioning unit only. The disconnect shall be equipped with a NEMA 5-20 P male receptacle, which shall automatically eject the shoreline when the vehicle starter is energized. The mating connector shall be included with the auto eject and shall be provided as loose equipment. A label shall be provided indicating voltage and amperage ratings. This shoreline will only power the supplementary air conditioning unit. The auto eject will have a blue cover.

242. SHORELINE RECEPTACLE LABEL – NFPA SECTION 4.9

QTY: 1

A shoreline power receptacle information plate shall be permanently affixed at or near the power inlet. The plate shall indicate the following:

Type of Line Voltage

Current Rating in Amps Power Inlet Type (DC or AC).

243. BLUE SEA SURE EJECT COVER (RED)

QTY: 1

The Blue Sea Sure Ejects shall be equipped with weatherproof covers.

A Red Cover will be provided for the Sure Eject designated for charging the electrical system and batteries.

A Blue Cover will be provided for the Sure Eject designated for the auxiliary AC system.

244. SHORELINE LOCATION - ADJACENT TO DRIVER'S DOOR

QTY: 1

The shoreline receptacle shall be located in the area directly adjacent to the driver's side cab door in a pre-determined location by KME.

245. BLUE SEA MODEL 7532 BATTERY CHARGER, 12VDC/40 AMP SECTION 4.7, 4.8

QTY: 1

A Blue Sea model #7532 12VDC, 40 AMP battery charger shall be provided and installed for maintaining the vehicle battery system.

A Blue Sea model #7517 battery charger display shall be located near the shoreline connection to monitor the battery status.

The Blue Sea compressor will be powered by shore power only.

246. 120V AUTOMATIC TRANSFER SWITCH

QTY: 1

An automatic power relay shall be installed to allow interior 120 volt accessories to be powered by the 120 volt shoreline or the generator.

The interior accessories to be powered by the shoreline shall be wired through a separate sub-panel breaker box.

This shall allow for a continuous power supply to the interior accessories while the apparatus is parked in the station.

The maximum load for the transfer / relay shall be 20 amps at 120 volts.

247. INSTRUMENT PANEL, 100" PREDATOR - WIDE ABS SECTION 2.148

QTY: 1

The main instrument panel shall be centered in front of the driver and shall be mechanically fastened to the main dash assembly.

The panel shall contain the primary gauges, an instrument warning light cluster and the ignition and engine start switches.

Each gauge shall be designed with an integral red warning light with a pre-programmed warning point.

Gauges monitoring drive-train component status shall be of the direct data bus type capable of displaying information broadcast on the J 1939 data-link.

Each gauge warning indicator shall be capable of activating an audible alarm inside the dashboard.

Additional auxiliary control switches and instruments (if applicable) shall be located within the center or overhead panel located near the driver's position.

The primary gauges shall consist of:

- Vehicle speedometer (0-80 mph)
- Engine tachometer (0-3000 rpm)
- Engine oil pressure (0-100 psi); low oil pressure warning
- Engine coolant temperature (100-250 °F); high engine temp warning (based on engine)
- Transmission oil temperature (100-350 °F); high transmission fluid temp warning
- Vehicle battery voltage (9-18 VDC); low voltage warning at 11.8 amps
- Front air system gauge (0-150 psi); low air pressure warning at 65 psi
- Rear air system gauge (0-150 psi); low air pressure warning at 65 psi
- Fuel level (E-1/2-F); low fuel level warning @ 1/8 tank
- Air cleaner restriction gauge (0 - 40), warning at 25" restriction.

248. AMETEK "OFFICER'S SPEEDOMETER" SECTION 2.190

QTY: 1

Ametek "Officer's Speedometer" will be displayed within the officer side Vista Screen.

249. INDICATOR CLUSTER, 100" PREDATOR SECTION 2.187

QTY: 1

The driver's dashboard panel shall consist of Ametek gauges, an 18 item instrument warning light cluster and a 16 item, dead front type alarm panel.

This display shall contain the system control unit that collects data from the vehicle data bus (J1939), analog sensors, and switches throughout the vehicle.

This data shall be presented using gauges, telltales and the two (2) display panels.

The warning light display shall include a 2 x 20 dot matrix display, 18 telltales and 2 buttons to navigate through the screen menus.

The LCD dot matrix display shall be a 2 line by 20-character display with each character being 7 dot by 5 dot configuration.

FSTN technology shall be used on the display for wide viewing capability.

The module shall be backlit with amber LEDs.

The unit shall also be supplied with a heater to ensure proper operation over the entire 40 to +85 deg. C.

This display contains a series of two (2) screens to provide information about the vehicle.

To control the display of that information, the screens are divided into two (2) menus; one that can be displayed while the vehicle is in motion and one that can only be accessed when the parking brake is set.

On the Road displays include:

- Two (2) configurable displays that can show any of the parameters the unit collects. This includes odometer, trip information, fuel economy information; all gauge data, and virtually any other data available on the vehicle that the display has access to, either through the data bus or via analog inputs.
- Two (2) trip displays for miles and hours that are capable of being reset.
- Two (2) fuel data screens: shall be provided; one for fuel remaining until empty and one for fuel economy. The fuel economy display shall be capable of being reset so that average economy over a predetermined period can be displayed.

The displays that can be accessed when the parking brake is set include:

- Engine hours as maintained by the engine ECU
- Service Alarm screens to report miles to next service or miles past required service. These screens shall allow the operator to choose the length of the service interval and shall have the ability to reset it.
- Message screens with warning messages the display has collected during the current ignition cycle. These screens shall be divided into configured warnings such as "Low Air Pressure" and the data bus faults reported by ECU's on the vehicle. Both lists shall allow the operator to review the last 12 events that occurred on the vehicle for maintenance and troubleshooting purposes.
- Diagnostic screens shall test the instrumentation system to verify it is working correctly.
- Setup screens shall be used to select either English or metric display. They shall also allow the operator to choose the data that shall be displayed by the configurable on-the-road screens.

The system shall be configured with user defined warning messages such as Low Air Pressure or High Coolant Temperature. When these events occur the warning message shall come up on the screen and can be accompanied by a buzzer. The messages shall be prioritized so the most important messages are always displayed. Whether the message can be dismissed by pressing a button shall be configurable. Messages that have been dismissed but are still active shall be retained in the message screens for review until the ignition is turned off. Listed below are the defined telltales and their indicators.

- "Right And Left Directional" arrows (green in color)
- "Hi Beam" indicator (blue in color)
- "Battery ON" indicator (green in color)
- "Parking Brake ON" indicator (red in color)
- "Check Transmission" indicator (amber in color)
- "Cab Not Latched" indicator (red in color)
- "Stop Engine" indicator (red in color)
- "Check Engine" indicator (amber in color)
- "ABS Warning" indicator (red in color)
- "Low Coolant Level" (red in color)
- "Fuel Restriction" indicator (amber in color)
- "Water In Fuel" indicator (amber in color)
- "Fasten Seat Belts" indicator (red in color)
- "Fast Idle" Indicator (amber in color)
- "Do Not Move Truck" indicator (red in color)
- "DPF Regeneration" (amber in color)
- "Exhaust High Temperature" (amber in color)
- "Engine Diagnostic Fault" (amber in color)
- "Retarder On" (green in color)

Listed below are indicators that may be included, depending upon the vehicle configuration:

- "Wait To Start" indicator (amber in color)
- "Exhaust System Fault" (amber in color)
- "Topps System Fault" (amber in color)
- "Lube System Active" (amber in color)
- "Jacks Not Stowed" (red in color)
- "PTO Engaged" (green in color)
- "Inter Axle Lock" (amber in color)
- "Driver Controlled Diff Lock" (green in color)
- "Ok to Pump" (green in color)
- "Auto Traction Control" (amber in color)
- "Retarder Active" (amber in color)
- "Auxiliary Brake Active" (amber in color)

250. DRIVER INDICATOR INDICATOR CLUSTER CHROME GAUGES SECTION 2.187

QTY: 1

Each gauge shall have a raised glass lens with polished chrome trim ring and be backlit by integral blue LEDs.

251. AUXILIARY SWITCH PANEL - LOWER DASH AREA SECTION 2.171

QTY: 1

An auxiliary lower dash panel shall be capable of housing five (5) guarded type rocker switches.

Examples of the switches that shall be installed in this area are automatic chains, fan clutch override, ATC, inter-axle diff lock, electric fuel pump, all-wheel drive, etc.

This panel location shall take the pump shift panel location into consideration for optimum location of both.

252. BATTERY DISCONNECT SWITCH, ALL UNITS SECTION 2.186

QTY: 1

The chassis batteries shall be wired in parallel to a single 12 volt electrical system, controlled through a heavy duty master disconnect switch.

The master disconnect switch shall be located within easy access of the driver upon entering or exiting the cab.

253. "POWER ON" LIGHT ON FRONT FACE OF CAB SECTION 2.186

QTY: 1

A 12-volt "Power On" indicator lamp shall be provided and located on the front face of the cab.

The light shall be wired to the master battery switch to indicate that the batteries are on.

254. CAB DASH PANELS WITH CENTER EXTENSION MODULE – PRE LABELED AND BACKLIT SECTION 2.172

QTY: 1

The apparatus cab shall be outfitted with backlit gradient dash and overhead panels. These gradient panels shall be utilized across the entire front of the cab dash and include the instrument cluster and brow panels. The panels shall be constructed from 3mm aluminum composite panels with second surface screen printed 15 mil Bayfol UV-1 polycarbonate graphic overlays, to provide scratch and UV protection. A carbon-graphite shaded graphic overlay shall be provided. All essential control and/or switch verbiage shall be flush with the panel surface and backlit by LED printed circuit board assemblies mounted to the rear of the panels where necessary and powered by a 12V power source.

255. LARSEN RADIO ANTENNA INSTALLED SECTION 4.82

QTY: 1

Two (2) Larsen model NMOKHFUDMPL antennas will be install on the cab roof and routed to the radio compartment with N type RF connectors at termination. The first cable will be labeled 700 MHz and have a Larsen Model NMOQW700 antenna installed on the roof. The second cable will be labeled PSEC. A lighted rocker switch will be provided on the dash labeled PSEC the switch will be hot at all times.

All antennas will mount to the cab roof antenna rail.

256. ENGINE COMPRESSION BRAKE CONTROLS

QTY: 1

Engine brake controls shall be provided on the dash within easy reach of the driver.

257. FAST IDLE ON DASH FOR ALL ELECTRONIC ENGINES SECTION 4.18

QTY: 1

A fast idle for the electronic controlled engine shall be provided.

The engine fast idle switch will be located within the Vista Screen module.

An electronic interlock system shall prevent the fast idle from operating unless the transmission is in "Neutral" and the parking brake is fully engaged.

If the fast idle control is used in conjunction with a specified engine/transmission driven component or accessory, the fast idle control shall be properly interlocked with the engagement of the specified component or accessory.

258. CONTROL SWITCHING THROUGH MULTIPLEX TCU SECTION 4.18

QTY: 1

Switching for the emergency and auxiliary systems shall be performed through the multiplex control screen.

Switching shall be programmed through various menus that are accessible from the display buttons.

259. CONTROL SWITCH IN CAB FOR LIGHT(S) ABOVE WINDSHIELD

QTY: 1

A switch shall be provided in the cab warning light switch console to turn the light(s) above windshield on and off.

260. CONTROL SWITCHES IN CAB FOR BEHIND FRONT CAB DOOR LIGHTS

QTY: 1

Two (2) switches shall be provided in the cab warning, light switch console to turn the lights at the cab doors on and off.

One (1) switch shall control the driver side light and one (1) switch shall control the officer side light.

261. CONTROL SWITCH IN CAB FOR REAR OF BODY LIGHTS

QTY: 1

A switch shall be provided in the cab warning, light switch console to turn the rear of body lights on and off.

262. WELDON #8080-8001-13 WHITE/RED LED INTERIOR LIGHTS (4) SECTION 4.4

QTY: 1

Four (4) Akron 8080-8001-13 interior LED combination red/white dome lights shall be furnished in the cab, with two (2) in the forward section and two (2) in the rear crew section.

Each dome light shall have an integral selector switch.

Each dome light shall also activate when the respective, adjacent cab door is opened.

263. INNER CAB DOOR FLASHERS (LED), TRUCK-LITE MODEL SUPER 44 SECTION 4.47

QTY: 1

One (1) flush mounted, Truck-Lite Model Super 44 LED flashing lights, with integral flashers shall be provided on the inside door panel of each cab door.

The light shall be recessed into the door's lower scuff plate and shall be activated when the respective door is opened.

Each light shall be furnished with a red lens.

264. SUNNEX MODEL #HS762, MAP LIGHT SECTION 4.42

QTY: 1

Sunnex model # HS762-00, 12 volt-20 watt, halogen light designed for direct connection shall be furnished and located one (1) on the driver and officer side overhead. The lights shall have a rectangular base with an on/off rocker switch and feature a swivel joint with 360 degree, axial rotation and 90 degree angular adjustment.

265. ENGINE COMPARTMENT WORK LIGHTS - TECNIQ LED SECTION 4.32

QTY: 1

Two (2) Tecniq model #E18 LED lights shall be provided inside the engine enclosure that will provide 800 lumens each.

Each light shall have their own independent switch incorporated into the light head.

266. EMS COMPARTMENT POWER POINT SECTION 2.162

QTY: 1

The interior EMS compartment shall be equipped with a Blue Sea 5025 power point capable of 60 amps with power and ground connections conveniently positioned in the upper area inside the compartment, connected directly to the chassis batteries.

267. POWER AND GROUND STUD FOR ACCESSORIES IN DASH SECTION 2.32

QTY: 1

One (1) dedicated circuit; 12 volt, 40 Amp, power and ground on 3/8 stud and fused at battery shall be provided in the cab dash.

The circuit shall be for future installation of radios or accessories.

268. 12 VOLT POWER AND GROUND CIRCUIT, EMS COMPARTMENT SECTION 4.83

QTY: 1

A total of three (3) 12-volt power and ground studs will be provided within the EMS compartment, located near the top rear center of the compartment. The studs will be 3/8" and will be fused at the batteries. The studs will be as follows:

- Stud #1, 40-amps, constant hot, battery direct
- Stud #2, 40-amps, switched with mastery battery
- Stud #3, direct ground to negative terminal of chassis batteries

269. BLUE SEA FUSE BLOCK - 12 CIRCUIT IN CREW AREA SECTION 4.83

QTY: 1

A Blue Sea 5026B, 12 circuit fuse block, shall be installed behind the officer's seat.

This block has a maximum amperage of 60 Amps per block and 30 Amps per circuit.

270. MULTI - USE POWER POINT ON CENTER DASH EXTENSION

QTY: 1

A Blue Sea model 4365 accessory panel will be provided. The accessory panel shall include (1) 12-volt power port, (2) dual USB charging ports, along with a circuit breaker switch. The accessory panel will be surface mounted to the rear of the center auxiliary dash panel.

271. IGNITION STUD - REAR CREW AREA

QTY: 1

An ignition stud shall be installed in the rear crew area for items needing an ignition circuit (i.e. mobile radio).

This stud has a maximum amperage of 20 Amps.

272. CUST PUMP/TANK/RES CHASSIS LED MARKER LIGHTS SECTION 4.25

QTY: 1

DOT MARKER LIGHTS AND REFLECTORS

273. OPTRONICS LED MARKER LIGHTS @ FRONT ROOF EDGE OF CAB SECTION 4.26

QTY: 1

Five (5) amber DOT approved, Optronics MCL13 Light Emitting Diode (LED) cab marker lamps shall be mounted on the front upper edge of the cab, above the windshield.

274. CAB STEP LIGHTS, TECNIQ EON 3 LED, ALL DEVICES SECTION 4.30

QTY: 4

Polished, stainless steel, TecNiq Eon, 3-LED, horizontal surface mounted chassis step lights shall be provided and controlled with marker light actuation.

Step lights shall be located to properly illuminate all chassis access steps and walkway areas and shall include a mounting gasket to provide a watertight seal.

275. M6 LED TURN ABOVE HEADLIGHTS W/WHELEN M6 LED SECTION 4.57

QTY: 1

Two (2) Whelen M6* super LED light heads shall be provided, one (1) in each side dual light module, above the headlights, in matching chrome plated bezels.

Each light head shall be equipped with red LEDs and a colored lens.

The lights noted above shall be provided in addition to the NFPA required, minimum optical warning light package and will be activated by the master warning light control. They will be wired through the load management system to prevent excessive amperage draw.

The NFPA required, Zone "A" lower warning lights shall be incorporated into each side dual light module noted above.

Two (2) Whelen M6T arrow shaped, amber LED turn signals shall be provided in chrome plated housings, mounted one (1) each side between the windshield and the dual light modules.

276. M6 LED TURN ABOVE HEADLIGHTS W/WHELEN M6 LED SECTION 4.57

QTY: 1

Two (2) Whelen M6* super LED light heads shall be provided, one (1) in each side dual light module, above the headlights, in matching chrome plated bezels.

Each light head shall be equipped with red LEDs and a clear lens.

The lights noted above shall be provided in addition to the NFPA required, minimum optical warning light package and will be activated by the master warning light control. They will be wired through the load management system to prevent excessive amperage draw.

The NFPA required, Zone "A" lower warning lights shall be incorporated into each side dual light module noted above.

Two (2) Whelen M6T arrow shaped, amber LED turn signals shall be provided in chrome plated housings, mounted one (1) each side between the windshield and the dual light modules.

277. DUAL HEADLIGHTS LED PETERSON SECTION 4.22

QTY: 1

Two (2) dual, Peterson LED headlight modules with a bright finish bezel shall be furnished, one (1) each side, on the front of the cab.

Each head light module shall incorporate an individual LED low beam and a LED high beam headlight.

High beam actuation shall be controlled on the turn signal lever.

278. DAYTIME RUNNING LIGHTS SECTION 4.27

QTY: 1

The chassis head lights shall have integrated circuitry to actuate the low beam headlights at a maximum of 80 percent of capacity whenever the chassis engine is running.

The daytime running lights shall be interlocked with the parking brake.

279. GOLIGHT #20204 REMOTE LED SPOT LIGHT, DS SIDE CAB SECTION 4.62

QTY: 1

A Golight model #20204 remote controlled spotlight shall be provided and mounted on the driver side of the cab roof. The Golight spotlight shall be equipped with a LED light and shall be controlled from the cab. The remote control shall be mounted within easy reach of the driver and officers or as directed by the fire department.

280. GOLIGHT CAB RISER FOR DS SIDE LIGHT SECTION 4.62

QTY: 1

The driver side Golight shall be mounted on an aluminum riser that shall be painted to match the cab color and mounted on the cab roof.

281. GOLIGHT #20204 REMOTE LED SPOT LIGHT, OS SIDE CAB SECTION 4.62

QTY: 1

A Golight model # 20204 LED remote controlled spotlight shall be provided and mounted on the officer side of the cab roof. The Golight spotlight shall be equipped with a LED light and shall be controlled from the cab. The remote control shall be mounted within easy reach of the driver and officers or as directed by the fire department.

282. GOLIGHT CAB RISER FOR OS SIDE LIGHT SECTION 4.62

QTY: 1

The officer side Golight shall be mounted on an aluminum riser that shall be painted to match the cab color and mounted on the cab roof.

283. TECNIQ #E96 LED DOCKING LIGHTS IN REAR WHEELWELL PANELS

QTY: 1

FOUR (4) Tecniq LED docking lights shall be provided in the rear wheel well panels, TWO (2) each side. The lights shall be surface mounted on the wheel well panel and shall be equipped with a stainless steel housing.

Lights will be activated by the turn signal switch on the Tillerman's steering column. Left turn activation will activate the drivers side lights, right turn activation will activate the officers side lights. All four (4) lights will activate when the transmission is placed in reverse. A high beam activation from the Tillerman will also activate all four (4) lights.

284. HIVIZ FIRETECH 80" BROW LIGHT W/ IML, 305W12V LED, (1) ABOVE WINDSHIELD

QTY: 1

One (1) HiViz LEDs "FireTech" Scene light, model FT-B-80-ML-W shall be provided. This light will also incorporate the required 5 amber ICC marker lights. The light instrument shall be low in profile with a mounting bracket allowing installation at the top edge of the windshield. The housing shall be made of an extruded 6061 aluminum; 82.75" wide and less than 3" tall. Additionally, the bar shall meet CISPR25 EMI requirements. The light shall operate on 12v DC, generate 31,680 lumens and draw 26 amps. Mounting shall be possible in any direction while still meeting NFPA 1901 compliance requirements. The housing color shall be White. **Note: Although there are three separate circuits within the HiViz bar, a single switch within the KME cab switch panel will control all three circuits.**

285. NFPA COMPLIANT WARNING LIGHT PACKAGE SECTION 1.4

QTY: 1

The following warning light package shall include all of the minimum warning light and actuation requirements for the current revision of the NFPA 1901 Fire Apparatus Standard.

The lighting as specified shall meet the requirements for both "Clearing Right of Way" and "Blocking Right of Way" which includes disabling all white warning lights when the apparatus is in "Blocking Right of Way" mode.

286. WARNING LIGHT FLASH PATTERN - NFPA FLASH PATTERN SECTION

QTY: 1

All of the perimeter warning lights shall be set to a default NFPA compliant flash pattern as provided by the light manufacturer.

287. LIGHT PACKAGE ACTUATION/CONTROLS SECTION 4.35, 4.41

QTY: 1

The entire warning light package shall be activated through the 'E-Master' button on the cab Vista Screen. The wiring for the warning light package shall engage all of the lights required for "Clearing Right of Way" mode when the vehicle parking brake is not engaged.

An automatic control system shall be provided to switch the warning lights to the "Blocking Right of Way" mode when the vehicle parking brake is engaged.

288. LIGHT PACKAGE NFPA CERTIFICATION SECTION 1.4

QTY: 1

The warning light system(s) specified above shall not exceed a combined total amperage draw of 45 AMPS with all lights activated in either the "Clearing Right of Way" or the "Blocking Right of Way"

The warning light system(s) shall be certified by the light system manufacturer(s), to meet all of the requirements in the current revision of the NFPA 1901 Fire Apparatus Standard as noted in the General Requirements section of these specifications.

The NFPA required "Certificate of Compliance" shall be provided with the completed apparatus.

Any large truck as defined by NFPA shall have the lower zone warning lights mounted no higher than 62" to the optical center of the warning light from ground level. {No Exceptions}

289. LIGHTBAR RISER FOR SCENE LIGHT CLEARANCE

QTY: 1

290. C-UPPER, FEDERAL IVP SLR RED LED BEACONS W/ RED LENS & LOWER LED SECTION 4.64

QTY: 1

Two (2) Federal Signal VSLR1-R1A02 LED beacons shall be furnished and mounted with one (1) on each side at the rear, upper portion of the apparatus.

In addition to the beacons, a IPX6 shall be integrated into the lower portion of the beacon to provide additional warning to meet NFPA.

Each light shall be equipped with the following:

- Red lens with Red LEDs in the rotator
- Clear Lens with Amber LEDs in the IPX6

291. UPPER ZONE C WARNING LIGHT LENS - RED

QTY: 1

The upper zone C warning lights shall include red LEDs and a red lens if available from the manufacturer. If a red lens is unavailable, a clear lens shall be included.

292. UPPER ZONE C WARNING LIGHT BEZEL - CHROME

QTY: 1

The upper zone C warning lights shall include a chrome bezel if available from the manufacturer. If a chrome bezel is unavailable, a black bezel shall be included.

293. B/D-UPPER FRONT, COVERED BY LIGHTS IN ZONE A-UPPER

QTY: 1

The lighting requirement for this area is covered by the lights noted in Zone "A" - Upper.

294. B/D-UPPER REAR, COVERED BY LIGHTS IN ZONE C-UPPER

QTY: 1

The lighting requirement for this area is covered by the lights noted in Zone "C" - Upper.

295. A-UPPER, FEDERAL LED NVG87-NFPA1 NAVIGATOR 87" BAR SECTION 4.44

QTY: 1

A Federal Signal NVG87-NFPA1 "Navigator", 87" LED cab roof warning light bar Part# 1532275834 shall be furnished and rigidly mounted on top of the cab roof. The light bar shall be equipped with the following:

- * Clear Lenses
- * Four (4) QL73 Red LED Modules
- * One (1) QL73 Red LED Module set to Steady Burn
- * Two (2) QL64 Red LED Module
- * Two (2) QL64 Red/White LED Modules
- * 3M Opticom Emitter
- * No Rear Lighting

A Lightbar layout will be provided to Riverside County Fire before the light bar is ordered for approval. If equipped, the forward facing white lights shall be automatically disabled for the "Blocking Right of Way" mode.

296. A-LOWER FRONT MOUNTING, CUSTOM CHASSIS

QTY: 1

The lower Zone A warning lights shall be mounted in the custom chassis headlight bezels.

297. A-LOWER FRONT, WHELEN M6 SUPER LEDS

QTY: 1

Two (2) Whelen, M6* super LED light heads shall be provided and installed one (1) each side.

298. A-LOWER FRONT, WHELEN M6 SUPER LEDS SECTION 4.44

QTY: 1

Two (2) Whelen, M6* super LED light heads shall be provided and installed one (1) each side. The lights will be red LED's with a clear lens

299. LOWER ZONE A WARNING LIGHT LENS - CLEAR

QTY: 1

The lower zone A warning lights shall include red LEDs and a clear lens if available from the manufacturer. If a clear lens is unavailable, a red lens shall be included.

300. LOWER ZONE A WARNING LIGHT BEZEL - CHROME

QTY: 1

The lower zone A warning lights shall include red leds and a chrome bezel if available from the manufacturer. If a chrome bezel is unavailable, a black bezel shall be included.

301. C-LOWER REAR, WHELEN M6 SUPER LEDS SECTION 4.64

QTY: 1

Two (2) Whelen M6* super LED light heads shall be provided and installed with one (1) on each side directly below the DOT stop, tail, turn and backup lights.

302. LOWER ZONE C WARNING LIGHT LENS - RED

QTY: 1

The lower zone C warning lights shall include red LEDs and a red lens if available from the manufacturer. If a red lens is unavailable, a clear lens shall be included.

303. LOWER ZONE C WARNING LIGHT BEZEL - CHROME

QTY: 1

The lower zone C warning lights shall include a chrome bezel if available from the manufacturer. If a chrome bezel is unavailable, a black bezel shall be included.

304. B/D-LOWER FRONT MOUNTING, CUSTOM CHASSIS

QTY: 1

The lower Zone B & D warning lights shall be mounted on the sides of the custom chassis front bumper.

305. B/D-LOWER FRONT, WHELEN M6 SUPER LEDS [SECTION 4.64](#)

QTY: 1

Two (2) Whelen, M6D split RED/WHITE super LED light heads shall be provided and installed with one (1) on each side. Each light head shall be equipped with a clear lens. The lights shall be installed with a chrome plated mounting flange. **Note: The lights shall flash red until the parking brake is released, in which the lights will flash alternating red/clear.**

306. B/D-LOWER MID, WHELEN M6 SUPER LEDS [SECTION 4.46](#)

QTY: 1

Two (2) Whelen M6D split RED/WHITE super LED light heads shall be provided and installed with one (1) on each side of the cab. Each light head shall be equipped with a clear lens. The lights shall be installed with a chrome plated mounting flange. **Note: The lights shall flash red until the parking brake is released, in which the lights will flash alternating red/clear.**

307. B/D-LOWER SECONDARY MID, WHELEN M6 SUPER LEDS [SECTION 4.46](#)

QTY: 1

Two (2) Whelen, M6D Split RED/WHITE super LED light heads shall be provided and installed with one (1) on each side. Each light head shall be equipped with a clear lens. The lights shall be installed with a chrome plated mounting flange. **Note: The clear flashing LED light shall be disabled when the parking brake is set.**

308. B/D-LOWER REAR, WHELEN M6 SUPER LEDS [SECTION 4.46](#)

QTY: 1

Two (2) Whelen M6D Split RED/WHITE super LED light heads shall be provided and installed with one (1) on each side. Each light head shall be equipped with a clear lens. The lights shall be installed with a chrome plated mounting flange. **Note: The clear flashing LED light shall be disabled when the parking brake is set.**

309. FEDERAL 31", VPX LED "SIGNAL MASTER" LIGHT AT REAR OF BODY [SECTION 4.65](#)

QTY: 1

One (1) Federal VPX LED "Signal Master" model # 320866, 31" rear directional light shall be installed on the vertical rear surface of the body.

The light shall be equipped with six (6) lights.

The light shall be controlled from the cab with a Federal, 331105 deluxe control head.

The controller shall be located within the center overhead dash panel, located toward the driver's side.

The rear directional light shall be wired through the load management system of the unit.

310. TRAFFIC ADVISOR - MOUNTING ON THE REAR SHEET [SECTION 4.65](#)

QTY: 1

The traffic advisor shall be mounted on the rear sheet.

311. WHELEN M6, SUPER LED LIGHTS ON (2) OUTRIGGER PANELS

QTY: 1

One (1) Whelen M6 super split LED light shall be mounted on each of the outrigger cover panels, for a total of two (2).

Each light head shall be equipped with red/white LEDs and a clear lens.
The lights shall be installed with a chrome plated mounting flange.

312. OUTRIGGER WARNING LIGHT ACTIVATION, PRIMARY WARNING

QTY: 1

The outrigger warning lights shall be energized by the ladder power circuit.

The outrigger warning lights shall also be energized by the primary warning light switch.

313. WHELEN 3X7 LED SCENE LIGHTS

QTY: 1

Two (2) Whelen #M7ZC, LED scene lights shall be provided, (1) one on each side of the rear body panel in a chrome plated flange. The scene lights shall be wired through the load management system. These will be labeled as Rear Scene.

Two (2) Whelen #M7ZC, LED scene lights shall be provided, (1) one on each side on the front of the tiller cab in a chrome plated flange. The scene lights shall be wired through the load management system. These will be labeled as Front Scene.

Both Sets of lights will be able to be controlled from the Tiller cab and Tractor.

The scene lights mounted on the tiller cab will be controlled from within the tiller cab. There shall be a switch to control the front facing lights and a separate switch to control the rear facing lights.

314. NFPA (4) FEDERAL WARNING LED GROUND LIGHTS, BELOW CAB DOORS
SECTION 4.29

QTY: 1

One (1) Federal Signal model 607141-05 LED ground light with an aluminum mounting bracket, shall be provided under each side cab door entrance step, four (4) total. The ground lights shall turn on automatically with each respective door jamb switch and also by a master ground light switch in the warning light switch console. Each light shall illuminate an area at a minimum 30" outward from the edge of the vehicle.

315. GROUND LIGHTS, 2 LED BELOW LOCKER COMPARTMENT **SECTION 4.52**

QTY: 1

One (1) Federal Signal LED ground light with an aluminum mounting bracket, shall be provided under each locker compartment, two (2) total. The ground lights shall be activated by a master ground light switch in the cab and shall be wired through the load management system.

316. GROUND LIGHTS, 2 LED BELOW MID-SHIP COMPARTMENT **SECTION 4.52**

QTY: 1

One (1) Federal Signal LED ground light with aluminum mounting bracket, shall be provided under each mid ship compartment, two (2) total. The ground lights shall be activated by a master ground light switch in the cab and shall be wired through the load management system.

317. GROUND LIGHTS, 2 LED BELOW FRONT BODY CORNERS **SECTION 4.52**

QTY: 1

One (1) Federal Signal LED ground light with an aluminum mounting bracket, shall be provided under each front body corner, two (2) total. The ground lights shall be activated by a master ground light switch in the cab and shall be wired through the load management system.

318. GROUND LIGHTS, 2 LED AT REAR BODY CORNERS – **SECTION 4.52**

QTY: 1

One (1) Federal Signal LED ground light with an aluminum mounting bracket, shall be provided under each rear body corner, two (2) total. The ground lights shall be activated by a master ground light switch in the cab and shall be wired through the load management system.

319. CAB AND BODY GROUND LIGHTS ACTIVATE WITH PARKING BRAKE

QTY: 1

The cab and body ground lights shall activate by engaging the parking brake.

320. AERIAL LADDER, LADDER POWER SWITCH IN CAB – TDA SECTION 2.73

QTY: 1

There shall be an aerial device power engagement switch located in the cab switch console. An aerial device PTO/hour meter shall be furnished. See ladder description for details.

321. CHASSIS DIAGNOSTICS SYSTEM

QTY: 1

Diagnostic ports shall be accessible while standing on the ground and located inside the driver's side door left of the steering column. The diagnostic panel shall allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches shall allow engine and ABS systems to provide blink codes should a problem exist.

The diagnostic system shall include the following:

- A single port to monitor the engine, transmission and ABS system and diagnostics of the roll sensor (if applicable)
- Engine diagnostic switch (blink codes)
- ABS diagnostic switch (blink codes)
- Allison Transmission Codes (through touch pad shifter)

322. VOLTAGE MONITORING SYSTEM - 12 VOLT SECTION 4.18

QTY: 1

A voltage monitoring system shall be provided to indicate the status of the battery system connected to the vehicle's electrical load. The system shall provide visual and audible warning when the system voltage is below or above optimum levels.

The alarm shall activate if the system falls below 11.8 volts DC for more than two (2) minutes.

323. INDICATOR LIGHT AND ALARM PROVE-OUT SYSTEM SECTION 4.18

QTY: 1

A system shall be provided which automatically tests basic indicator lights and alarms located on the cab instrument panel.

324. ELECTRICAL HARNESS INSTALLATION - 12 VOLT SECTION 4.17

QTY: 1

To ensure dependability, all 12-volt wiring harnesses installed by the manufacturer shall conform to the following specifications:

- SAE J 1128 - Low tension primary cable
- SAE J 1292 - Automobile, truck, truck-tractor, trailer and motor coach wiring
- SAE J 163 - Low tension wiring and cable terminals and splice clips
- SAE J 2202 - Heavy duty wiring systems for on-highway trucks
- NFPA 1901 - Standard for automotive fire apparatus
- FMVSS 302 - Flammability of interior materials for passenger cars, multipurpose passenger vehicles, trucks and buses
- SAE J 1939 - Serial communications protocol
- SAE J 2030 - Heavy-duty electrical connector performance standard
- SAE J 2223 - Connections for on board vehicle electrical wiring harnesses
- NEC - National Electrical Code
- SAE J 561 - Electrical terminals - Eyelet and spade type

- SAE J 928 - Electrical terminals - Pin and receptacle type A.

For increased reliability and harness integrity, harnesses shall be routed throughout the cab and chassis in a manner which allows the harnessing to be laid into its mounting location. Routing of harnessing which requires pulling of wires through tubes is never allowed at the manufacturer.

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

- All holes made in the roof shall be caulked with silicon. {No Exceptions} Large fender washers, liberally caulked, shall be used when fastening equipment to the underside of the cab roof.
- Any electrical component that is installed in an exposed area shall be mounted in a manner that shall not allow moisture to accumulate in it. Exposed area shall be defined as any location outside of the cab or body.
- For low cost of ownership, electrical components designed to be removed for maintenance shall be quickly accessible. For ease of use, a coil of wire shall be provided behind the appliance to allow them to be pulled away from the mounting area for inspection and service work.
- Corrosion preventative compound shall be applied to non-waterproof electrical connectors located outside of the cab or body. All non-waterproof connections shall require this compound in the plug to prevent corrosion and for easy separation of the plug.
- Any lights containing non-waterproof sockets in a weather-exposed area shall have corrosion preventative compound added to the socket terminal area.
- All electrical terminals in exposed areas shall have protective coating applied completely over the metal portion of the terminal.
- Rubber coated metal clamps shall be used to support wire harnessing and battery cables routed along the chassis frame rails.
- Heat shields shall be used to protect harnessing in areas where high temperatures exist. Harnessing passing near the engine exhaust shall be protected by a heat shield.
- Cab and crew cab harnessing shall not be routed through enclosed metal tubing. Dedicated wire routing channels shall be used to protect harnessing therefore improving the overall integrity of the vehicle electrical system. The design of the cab shall allow for easy routing of additional wiring and easy access to existing wiring.
- All standard wiring entering or exiting the cab shall be routed through sealed bulkhead connectors to protect against water intrusion into the cab.

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

- SAE J 1127 - Battery Cable
- SAE J 561 - Electrical terminals, eyelets and spade type
- SAE J 562 - Nonmetallic loom
- SAE J 836 A - Automotive metallurgical joining
- SAE J 1292 - Automotive truck, truck-tractor, trailer and motor coach wiring
- NFPA 1901 - Standard for automotive fire apparatus.

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

- 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 marked red in color. All negative battery cables shall be black in color.
- For ease of identification, all positive battery cable isolated studs throughout the cab and chassis shall be red 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.
- An operational test shall be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order.

325. AERIAL BODY ELECTRICAL SYSTEM SECTION 4.17

QTY: 1

All electrical lines in the body shall be protected by automatic circuit breakers, conveniently located to permit ease of service.

Flashers, heavy-duty solenoids and other major electrical controls shall be located in a central area near the circuit breakers.

All lines shall be color and function coded every 3", easy to identify, oversized for the intended loads and installed in accordance with a detailed diagram.

A complete wiring diagram shall be supplied with the apparatus.

Wiring shall be carefully protected from weather elements and snagging.

Heavy duty loom shall be used for the entire length.

Grommets shall be utilized where wiring passes through panels.

In order to minimize the risk of heat damage, wires run in the engine compartment area shall be carefully installed and suitably protected by the installation of heat resistant shielded loom.

All electrical equipment shall be installed to conform to the latest federal standards as outlined in NFPA-1901.

326. TILLERS, AERIAL DEVICE ELECTRICAL JUNCTION COMPARTMENT

QTY: 1

An electric junction compartment shall be provided within the aerial body.

This compartment shall provide an easily accessible enclosure to house all of the aerial device wiring junction points, terminal strips, solenoids, etc.

All wiring for the aerial device including outrigger, diverter valve, and swivel circuits shall be in this compartment.

327. BODY ELECTRICAL HARNESS - V-MUX SECTION 4.18

QTY: 1

328. DOOR OPEN INDICATOR W/ AUDIBLE ALARM SECTION 2.188

QTY: 1

A Whelen Ion red LED flashing warning light with an external alarm, shall be functionally located in the cab to signal when an unsafe condition is present such as an open cab door or body compartment door,

an extended ladder rack, a deployed stabilizer, an extended light tower or any other device which is opened, extended or deployed which may cause damage to the apparatus if it is moved. This light shall be activated through the parking brake switch to signal when the parking brake is released. This light shall be labeled "DO NOT MOVE TRUCK".

All door open/close indicator switches shall be of the magnetic design ILO of plunger style. FDNY standard.

329. COMPARTMENT LIGHT ACTIVATION SECTION 4.56

QTY: 1

Compartment lighting shall be switched either from an integral switch as provided by the roll up door manufacturer or a magnetic proximity switch if it is a KME manufactured door.

All door open/close indicator switches shall be of the magnetic design ILO of plunger style. FDNY standard.

330. WALKWAY LIGHTING SECTION 4.53

QTY: 1

On top of the body each side of the ladder will be four (4) Federal Signal Mico Pulse 300 series white LED lights. These lights will come on with park brake and be used to illuminate the walkway on the top of the body.

331. BODY TURN SIGNALS SECTION 4.50

QTY: 1

A Whelen M6 arrow turn signal will be provided on a painted aluminum bracket on each side of the tiller body near the tiller axle. These lights will function with the main turn signals.

332. COMPARTMENT LIGHTS, AMDOR LUMA BAR LED LIGHTING – DUAL SECTION 4.56

QTY: 24

Each individual, equipment storage compartment shall be equipped with the AMDOR, Luma Bar, LED light fixture, mounted on each side of the forward (and rear) vertical door frame.

333. T-1 COMPARTMENT DOOR PAN LIGHTING

QTY: 1

Two (2) Tecniq model E07; Recessed LED lights will be provided and located within the interior door of the T-1 compartment door. Lighting intent is to provide a well-lit working area for the pull out surface in the T-4 compartment.

334. CUST PUMP/TANK/RES BODY LED MARKER LIGHTS

QTY: 1

335. OPTRONICS MARKER LIGHTS FORWARD OF FRONT CAB DOOR SECTION 4.25

QTY: 1

Optronics MCL series amber LED marker lights with reflector shall be provided and mounted forward of the front cab door, one (1) each side.

336. OPTRONICS MARKER/TURN LIGHTS @ EA SIDE OF BODY SECTION 4.49

QTY: 1

Optronics model MCL82RB, red, LED marker lights with integral reflectors shall be provided at the lower side rear, having one (1) on each side.

Optronics Model #STL71AMB, yellow, LED side marker and turn lights shall be provided on the apparatus lower side, forward of rear axle that puts one (1) on each side, if the apparatus is 30' long or longer.

337. OPTRONICS MARKER LIGHTS @ REAR OF BODY SECTION 4.49

QTY: 1

Optronics MCL65, red, LED clearance lights shall be provided on the apparatus rear upper having one (1) on each side at the outermost practical location.

Optronics MCL12, LED, 3-lamp identification bar will be provided on the apparatus rear center.

The lights shall be red in color.

338. TRUCK-LITE DOT AMBER REFLECTORS @ SIDE OF BODY

QTY: 1

Truck-Lite # 98034Y, yellow reflectors shall be provided on the apparatus body lower side, as far forward and low as practical with one (1) on each side if the apparatus is 30' long or longer.

339. TRUCK-LITE DOT RED REFLECTORS @ REAR OF BODY

QTY: 1

Truck-Lite # 98034R, red reflectors shall be provided on the apparatus rear with one (1) on each side at the outermost practical location.

340. TECNIQ #L10 LED LICENSE PLATE LIGHT @ DS REAR OF BODY

QTY: 1

One (1) Tecniq model #L10 LED license plate light shall be provided above the mounting position of the license plate.

The light shall be clear in color and shall have a chrome finish.

341. WHELEN #M6 LED BRAKE, REVERSE, & TURN W/ QUAD HOUSING

QTY: 1

Two (2) Whelen M6 series, 4-5/16" x 6-3/4", LED red combination tail and stop lights, shall be mounted one each side at the rear of the body.

Two (2) Whelen M6 series, 4-5/16" x 6-3/4", LED amber arrow turn signal lights, shall be mounted one each side, on a vertical plane with the tail/stop lights.

Two (2) Whelen M6 series, 4-5/16" x 6-3/4", LED white back-up lights, shall be mounted, one each side on a vertical plane with the turn/tail/stop signals.

These lights shall activate when the transmission is placed in reverse gear.

Two (2) Whelen M6FCV4 mounting flanges, installed one (1) on each side, shall be provided to mount the lights described above in one common mounting flange.

The fourth opening shall be for the lower rear warning lights.

The lights shall be mounted in order, from top to bottom, as described above.

342. FEDERAL SIGNAL LED THIRD BRAKE LIGHT SECTION 4.65

QTY: 1

One (1) Federal QuadraFlare, 4" x 6" size, red LED stop light {will/shall} be mounted centered on the rear of the body as high as practical. The light {will/shall} be mounted with a chrome flange.

The brake light shall be located below the Signal Master on the rear facing surface of the tiller cab.

343. BODY STEP LIGHTS, TECNIQ EON 3 LED, ALL DEVICES SECTION 4.53

QTY: 2

Polished, stainless steel, TecNiq Eon 3-LED, horizontal surface, mounted body step lights shall be provided and controlled with marker light actuation.

Step lights shall be located to properly illuminate all body access steps and walkway areas and shall include a mounting gasket to provide a watertight seal.

344. FEDERAL 9X7 LED SCENE LIGHTS BEHIND FRONT CAB DOORS

QTY: 1

Two (2) Federal #QL97, LED scene lights shall be provided, (1) one on each side of the cab, directly behind the front cab entrance door in a chrome plated flange.

The scene lights shall be wired through the load management system.

345. CAB SCENE LIGHTS TO BE ACTIVATED BY CAB DOORS

QTY: 1

In addition to the cab mounted switch for the cab scene lights, the driver and officer cab doors shall activate the respective light when a cab door is opened.

346. REAR SCENE LIGHTS TO BE ACTIVATED BY REVERSE LIGHTS

QTY: 1

In addition to the cab mounted switch for the rear scene lights, the rear scene lights shall illuminate when the transmission is placed in reverse gear and the apparatus is operating as an emergency vehicle (Primary Warning switch on).

347. HARRISON PTO/HYD GEN, 10.0-MAS SERIES, 10000 WATT SECTION 4.70

QTY: 1

One (1) Harrison Hydraulic Driven Generator model number 10.0MAS-16R rated at 10000 watts, 80/40 amps, 120/240VAC, 60 Hz, 1-phase shall be provided.

The system shall be designed and assembled by a company with no less than 10 years' experience in the manufacture of hydraulic driven generators. The system shall be tested at the full nameplate load prior to shipping and be accompanied with the test report. The test report shall document the generators performance at various loads from no load to full load to ensure reliable power delivery at those loads.

The motor/generator shall be placed in a frame which affords protection to the components and provides a unitized mounting module containing the motor/generator, reservoir, oil cooler, filtration, on/off manifold containing a cross port check valve allowing unit to be started and shut down remotely.

The generator shall be a commercial type with a heavy-duty bearing and of brush less design to ensure low maintenance. No brushes or slip rings shall be allowed. The reservoir shall include an oil level sight gauge, oil temperature gauge; fill cap, oil filter, and a venturi boost unit to provide positive pressure to the pump suction port.

The generator and motor shall be close coupled and aligned using a Morse taper with a through bolt to secure the motor to the generator. No two (2) bearing generators shall be permitted.

The system must be capable of producing the full nameplate power when driven from the vehicle PTO from idle to maximum engine speed.

The generator system must be able to operate on either a Constant Engaged PTO or a Hot Shift PTO. The generator must be able to be used while vehicle is either stationary or in motion.

The hydraulic motor and pump shall be of axial piston design to provide low internal leakage and a high degree of frequency stability. No gear pumps or motors shall be used. The pump shall match the system with the proper orifice, pressure compensator, and load sense settings to provide stable output regardless of engine rpm or electrical load demands.

The system shall be capable of normal operations using a commonly available ISO 46 hydraulic fluid. All fluid service points shall be in close proximity to the reservoir for ease of scheduled maintenance.

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

The generator shall be remotely turned on/off by using a 12 VDC switch mounted on the cab dash.

348. 120 & 240 VOLT WIRING METHODS SECTION 4.74

QTY: 1

Wiring/conduit shall not be attached to any chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components or low voltage wiring.

All wiring shall be installed at a minimum of 12 inches away from any exhaust piping and a minimum of 6 inches from any fuel lines.

All wiring shall be securely clamped within 6 inches of any junction box and at a minimum of every 24 inches of run. All supports shall be of nonmetallic material or corrosion protected metal. All supports shall not cut or abrade conduit or cable and shall be mechanically fastened to the vehicle.

All power supply assembly conductors, including neutral and grounding conductors, shall have an equivalent amperage rating and shall be sized to carry not less than 115% of the main breaker rating.

All Type SO or Type SEO cable not installed in a compartment shall be installed in wire loom. Where Type SO or Type SEO cable penetrates a metal surface, a rubber or plastic grommet or bushing shall be provided.

The installation of all 120/240 wiring shall meet the current NFPA-1901 Standards {No Exceptions}.

120/240 VOLT WIRING IDENTIFICATION

All line voltage conductors located inside the main breaker panel box shall be individually and permanently identified. When pre-wiring for future power wiring installations, the non-terminated ends shall be labeled showing function and wire size.

120/240 VOLT GROUNDING

The neutral conductor of the power source shall be bonded to the vehicle frame only at the power source.

The grounded current carrying conductor (neutral) shall be insulated from the equipment grounding conductors and from the equipment enclosures and other grounded parts. The neutral conductor shall be colored white or gray.

In addition to the bonding required for the lower voltage return current, each body and driving/crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor. The conductor shall have a minimum amperage rating of 115 percent of the name plate current rating of the power source specification label.

120/240 VOLT CIRCUIT BREAKER / RECEPTACLE INSTALLATION

The system shall be installed by highly qualified electrical technicians to assure the required level of safety and protection to the fire apparatus operators. When multiple circuit are required, the circuits shall be wired to the breaker panel in a staggered configuration to minimize electrical loads on each breaker or generator (leg) circuit. The wiring, electrical fixtures and components shall be to the highest industry

quality standards available on the domestic market. The equipment shall be the type as designed for mobile type installations subject to vibration, moisture and severe continuous usage.

349. GEN LOCATION BETWEEN TRACTOR ACCESS LADDER OR COMPART SECTION 4.70

QTY: 1

The generator shall be mounted between the tractor and the access ladder or compartment. Locating the generator greater than 144" from the main breaker panel may require the installation of an additional power disconnecting means.

350. HARRISON HOT SHIFT PTO SECTION 2.71, 2.73

QTY: 1

A hot shift PTO shall be provided on the transmission for the Harrison generator.

The PTO shall be controlled from the cab. The control shall include a PTO engagement switch and a PTO engaged indicator light.

351. DIGITAL QUAD METER FOR HARRISON GENERATORS SECTION 4.72

QTY: 1

A weatherproof digital Quadra meter containing the volt, amp, and frequency shall be installed near the breaker panel.

352. TWELVE (12) SPACE, 125 AMP MAIN LUG LOAD CENTER SECTION 4.73

QTY: 1

The generator output line conductors shall be wired from the generator output connections to a Square D, model #QO112L125G breaker panel.

The breaker panel shall be equipped with a properly sized main breaker, using two (2) of the twelve (12) spaces which leaves a total of ten (10) available spaces.

The generator output conductors shall be sized to 115% of the main breaker rating and shall be installed as indicated in the wiring section.

353. TEN (10) GFI BREAKERS IN LIEU OF STANDARD BREAKERS SECTION 4.73

QTY: 1

Ten (10) appropriately sized, 120 volt, GFI ground fault circuit breakers, shall be installed in place of standard circuit breakers.

354. LOCATE BREAKER PANEL DRIVER SIDE LOCKER COMPARTMENT SECTION 4.73

QTY: 1

The breaker panel shall be located on the front wall of the driver side locker compartment.

355. FEDERAL SIGNAL FIXED LIGHTS, OFFICER SIDE SECTION 4.63

QTY: 1

Two (2) Federal Signal Commander, 20,000 Lumen model #COM120 top mounted, non-telescoping with full 400+ turning ability (which can rotate horizontally 1 1/4 full turns) to eliminate blind spots and positive stop which shall not allow wires to bind. The entire assembly shall be UL listed as Scene light for Fire Service Use. The base shall incorporate a self-adjusting friction brake so the light does not spin in transit and shall be leak proof so as not to allow water to enter the compartment below its installation. The lights shall be mounted one (1) above the R-3 compartment and one (1) above the R-6 compartment on the officer side of the body. Wiring used for the lighting shall be a minimum of 16 gauge three (3) wire cable that is properly supported and protected from damage. These lights shall be switched at the electrical breaker only.

356. FEDERAL SIGNAL FIXED LIGHTS, DRIVER SIDE SECTION 4.63

QTY: 1

Two (2) Federal Signal Commander, 20,000 Lumen model #COM120 top mounted, non-telescoping with full 400+ turning ability (which can rotate horizontally 1 1/4 full turns) to eliminate blind spots and positive stop which shall not allow wires to bind. The entire assembly shall be UL listed as Scene light for Fire Service Use. The base shall incorporate a self-adjusting friction brake so the light does not spin in transit and shall be leak proof so as not to allow water to enter the compartment below its installation. The lights shall be mounted one (1) above the L-3 compartment and one (1) above the L-6 compartment on the driver side of the body. Wiring used for the lighting shall be a minimum of 16 gauge three (3) wire cable that is properly supported and protected from damage. These lights shall be switched at the electrical breaker only.

357. NEMA L5-15 DUPLEX RECEPTACLES REAR BODY PANEL

QTY: 1

One (1) 120 volt, NEMA L5-15, 15 amp, duplex twist-lock receptacle with a grey thermoplastic, corrosion resistant, weatherproof cover shall be installed.

This receptacle shall require one (1) 15 amp, 120 volt circuit breaker to be installed in the load center.

358. NEMA L5-15 DUPLEX RECEPTACLES REAR BODY PANEL AC OUTLET 2 SECTION 4.78

QTY: 1

One (1) 120 volt, NEMA L5-15, 15 amp, duplex twist-lock receptacle with a grey thermoplastic, corrosion resistant, weatherproof cover shall be installed at the rear body panel.

This receptacle shall require one (1) 15 amp, 120 volt circuit breaker to be installed in the load center.

359. ONE (1) HANNAY #ECR-1616-17-18, 120 VOLT ELECTRIC CORD REEL

QTY: 2

One (1) Hannay Model #ECR-1616-17-18, 120 volt, electric rewind cord reel shall be provided and wired to the breaker panel.

The reel shall be securely mounted and equipped with a rewind control adjacent to the reel.

360. CORD REEL LOCATION CEILING MOUNT DRIVER FRONT COMPARTMENT SECTION 4.75

QTY: 1

The cord reels shall be ceiling mounted in the CL/R 1 compartments.

361. CIRCUIT BREAKER REQUIREMENTS FOR CORD REELS

QTY: 2

The circuit breaker used to protect any device attached to the cord reel shall be sized to the smallest electrical connection used.

362. REWIND SWITCH - ON COMPARTMENT WALL SECTION 4.75

QTY: 2

A reel rewind switch(s) shall be provided on the compartment wall

363. STAINLESS STEEL, 4 WAY ROLLER ASSEMBLY SECTION 4.75

QTY: 2

A Hannay 4-way stainless steel roller assembly shall be provided. The roller assembly opening shall be the full width of the reel drum.

364. BALL STOP ON END OF CABLE SECTION 4.75

QTY: 2

A cable ball stop(s) shall be installed on the cable to keep the end from passing through the roller assembly.

365. 200' OF 12/3 YELLOW CABLE FOR ONE (1) 120 VOLT REEL SECTION 4.75

QTY: 2

Two hundred (200) feet of Type SO yellow 12/3 heavy duty electric cable shall be provided on the reel.

366. ALUMINUM TREAD PLATE JUNCTION BOX HOLDER, PER EACH

QTY: 2

A holder(s) constructed from 1/8" aluminum tread plate shall be provided for each cord reel(s) junction box. The location of the holder shall be adjacent to the cord reel roller assembly or as directed by the fire department.

367. NEMA L5-15, 120 VOLT 15 AMP TWIST LOCK RECEPTACLE ON CABLE SECTION 4.76

QTY: 2

One (1) NEMA L5-15R, 15 amp, three prong twist-lock receptacle shall be provided on the end of the cable.

368. CIRCLE-D (15 TWIST) PF51G-3P J-BOX W/ PIGTAIL SECTION 4.76

QTY: 2

A Circle-D Model #PF51G-3P, four (4) outlet junction box(es) with four (4) NEMA L5-15R twist-lock receptacles with a 12" pigtail with a NEMA L5-15P twist-lock plug shall be provided.

369. CHASSIS SINGLE ELECTRIC (DOT) HORN

QTY: 1

A single electric horn activated by the steering wheel horn button shall be furnished.

370. ECCO #575, BACK-UP ALARM - 107 DBA SECTION 4.16

QTY: 1

An Ecco, model #575, 107dBA back-up alarm, shall be provided and installed at the rear of the apparatus under the tailboard.

The back-up alarm shall activate automatically when the transmission is placed in reverse gear and the ignition is "on".

371. DUAL CHROME AIR HORNS – GROVER SECTION 2.135

QTY: 1

Two (2) chrome plated Grover air horns shall be at the front of the vehicle. The air horns shall be mounted in full compliance with NFPA-1901. The supply lines shall be dual 1/4" lines with equal distance from each horn. **CLARIFICATION: The air horns shall comply with section 2.135 of the customer's specification (One horn will be 15 inches while the second horn will be 24 inches in length, both with a 6 inch flare).**

372. DUAL AIR HORNS RECESSED IN OFFICER SIDE OF FRONT BUMPER SECTION 2.135

QTY: 1

Both air horns shall be recessed in the officer side of the front bumper.

373. HORN BUTTON - TWO WAY SWITCH SECTION 4.13

QTY: 1

A two (2) position rocker switch shall be installed on the cab dash to activate from the steering wheel horn button one of the following:

- DOT horn
- Electronic/mechanical siren.

374. AIR HORN CTRL - DASH BUTTON FOR OFFICER & FLOOR SECTION 4.14

QTY: 1

The air horn(s) shall be controlled by a push button, located on the dash on the officer's side, as well as a foot mounted switch on the driver's side.

375. SIREN, FEDERAL PA300MSC, 200W SECTION 4.11

QTY: 1

One (1) Federal Model # PA300-MSC 200 watt electronic siren shall be provided featuring: wail, yelp and hi-lo siren tones along with public address, radio rebroadcast, TAP II and air horn with siren override.

A hardwired microphone shall provided for the public address feature.

The electronic siren and speaker shall meet the NFPA required SAE certification to ensure compatibility between the siren and speaker.

376. TWO (2) FEDERAL, #ES100C SPEAKERS

QTY: 1

Two (2) Federal, model # ES100C siren speakers shall be provided, recessed in the front bumper and wired to the electronic siren.

377. FEDERAL Q2B SIREN @ CAB FRONT SECTION 4.12

QTY: 1

One (1) Federal Model #Q2B mechanical siren shall be provided to provide audible warning.

378. Q2B MOUNT - FULLY-RECESSED INTO DRIVER'S SIDE OF BUMPER SECTION 4.12

QTY: 1

The Q2B siren shall be fully-recessed into the bumper on the driver's side.

The siren shall be recessed so the front grille portion of the siren is flush with the front of the bumper.

379. SIREN CONTROL - FLOOR SWITCH, DRIVER AND OFFICER SECTION 4.12

QTY: 1

Two (2) floor mounted foot switches shall be provided, one (1) for the officer and one (1) for the driver.

A siren brake button shall be provided near the driver's position.

380. ADDITIONAL SIREN BRAKE BUTTON NEAR OFFICER SECTION 4.12

QTY: 1

A second push button siren brake switch shall be provided on the cab dash near the officers seating position.

381. BODY AND COMPARTMENT HEADER

QTY: 1

382. GENERAL ALUMINUM BODY DESCRIPTION FOR 100' TILLER AERIALS SECTION 3.1, 3.19, 3.20, 3.40

QTY: 1

The general body construction shall be a modular body consisting of independent body modules or subassemblies with an independent heavy duty support framework. These specifications outline the minimum standards of construction.

To ensure the customer of soul source manufacturing, the body must be built by the same manufacturer of the entire chassis and aerial device. {No Exceptions}

COMPARTMENT FABRICATION

Compartment panels and body side sheets shall be a minimum of 1/8" aluminum 5052 alloy. Each side compartment assembly shall be both plug welded and stitch welded to ensure proper weld penetration on

all panels while avoiding the distortion caused by a full seam weld. The side compartments shall be welded on a fixture to ensure true door and body dimensions. All compartments shall have a sweep-out style floor.

The floors of each compartment shall be adequately braced to provide maximum loading without undue deflection. All seams shall be caulked prior to finish paint to ensure proper compartment seal.

Compartments that are transverse below the trailer frame rails shall be designed with a bolt-in center section. This design shall provide removable access to the center section of the trailer frame rails for maintenance and aerial testing.

The referenced compartment sizes approximate the extreme outside compartment dimensions without deductions for material thicknesses, flanges, door pans/hardware, or ladder storage compartment headers.

BODY SUBFRAME

The body sub-frame shall be an all-welded configuration utilizing aluminum tubing, channel, and angle. This structure shall be designed to totally support the full length and width of the body and shall be welded to the body side compartments by use of reinforcement plates to incorporate the compartments into an integral part of the body weldment. The super structure shall be bolted to the sides of the chassis frame at a minimum of four (4) points.

FLEX JOINTS

Due to the trailer flexing associated with tractor drawn aerial bodies, the tiller body shall be segregated into separate modules. Each module shall be spaced apart by a flex joint to allow movement between each body module when the vehicle is in road travel or aerial operations.

COATED FASTENERS

All exterior fasteners shall be coated stainless steel screws. Screw threads shall be coated with reusable, self-locking, sealing material to provide vibration resistance. Screw heads shall be coated with a sealing element to prevent galvanic corrosion between dissimilar metals. Non-coated screws shall only be provided as part of vendor supplied component installations.

383. GENERAL COMPARTMENT SECTION 3.39, 3.41, 3.42

QTY: 1

COMPARTMENT TOPS

Compartment tops shall be covered with polished aluminum tread plate. **The side body panels on the trailer, outboard of the ladder storage area will be smooth aluminum, painted job color red.** The aluminum tread plate shall have a flange downward, over the top of compartments to serve as a drip rail above the compartment doors.

ACCESS PANELS

Removable access panels shall be provided in the lower running board compartments to access hydraulic components, electrical harnesses, and the rear body mounts.

All access panels shall be equipped with the same finish as the compartment interiors.

COMPARTMENT VENTILATION

Ventilation between compartments to atmosphere shall be provided and located in a position that avoids water entry into compartments.

COMPARTMENT DRIP MOLDING

Compartment tops overall side compartments shall be equipped with a flanged edge to provide protection against water run-off. A secondary polished extruded aluminum drip molding shall be provided between lower compartments and auxiliary high side compartments.

BODY TRIM

The body shall be protected and covered with bright finished polished aluminum tread plate. The tread plate shall be fastened with stainless steel hardware and shall be coated with rubber type undercoating between the body panel and tread plate to protect from moisture. All edges shall be sealed with silver, rubber caulking.

Polished aluminum tread plate shall be provided in the following areas:

- All surfaces of the compartments or on top of the body where personnel may walk or mount equipment
- Front of body
- Below aerial turntable decking
- Top of the pump enclosure (if applicable)
Cover over the water tank (if applicable)
- Cover over hydraulic tank
- Top of mid-ship compartment (if applicable)

384. ALUMINUM WHEEL LINERS TILLER TRAILER

QTY: 1

Fully removable, bolt-in, 1/8" aluminum fender liners shall be provided. The wheel well liners shall extend from the outer wheel well body panel, into the truck frame. Removable vertical splash shields, inward of the wheels, shall be provided to give access to the hydraulic components. The completely washable fender liners shall be designed to protect the front and rear compartments and the main body supports from road salts, dirt accumulation and corrosion.

385. DRIVER FORWARD FENDER - TRIPLE STORAGE SLOT

QTY: 1

A storage compartment shall be inserted into the fender to provide a storage area for three (3) customer supplied SCBA cylinders (or fire extinguishers of similar size).

The storage area shall be sized as tall and wide as possible in the fender (minimum of 14" wide x 15" tall with an angled floor by fender radius), and shall be 26" deep.

The compartment shall have a non-abrasive lined cradle storage area for each of the three (3) devices.

This storage compartment shall provide a minimum of 2.3 cubic feet of storage space.

386. DRIVER REARWARD FENDER - TRIPLE STORAGE SLOT

QTY: 1

A storage compartment shall be inserted into the fender to provide a storage area for three (3) customer supplied SCBA cylinders (or fire extinguishers of similar size).

The storage area shall be sized as tall and wide as possible in the fender (minimum of 14" wide x 15" tall with an angled floor by fender radius), and shall be 26" deep.

The compartment shall have a non-abrasive lined cradle storage area for each of the three (3) devices.

This storage compartment shall provide a minimum of 2.3 cubic feet of storage space.

387. TILLER TRACTOR, REAR WHEEL WELLS & FENDERS - TAPERED TREADPLATE
SECTION 2.113

QTY: 1

The tractor shall be equipped with a flat aluminum tread plate wheel well and fender step assembly, which will be tapered on the front and rear. The fenders shall be two (2) separate sections that shall be attached to the tractor frame rails for adequate strength to support a fire fighter.*Fender to match Nashville TDA.

388. TILLER TRACTOR, REAR WHEEL WELLS & FENDERS - PAINT FLAT / TREADPLATE

QTY: 1

The tractor shall be equipped with a flat aluminum tread plate wheel well and fender step assembly. The sides of the fenders shall be painted to match the body color. The front and rear edge of the fender assembly shall be equipped with a 6" radius. The fenders shall be two (2) separate sections that shall be attached to the tractor frame rails for adequate strength to support a fire fighter.

389. OFFICER FORWARD FENDER - TRIPLE STORAGE SLOT

QTY: 1

A storage compartment shall be inserted into the fender to provide a storage area for three (3) customer supplied SCBA cylinders (or fire extinguishers of similar size).

The storage area shall be sized as tall and wide as possible in the fender (minimum of 14" wide x 15" tall with an angled floor by fender radius), and shall be 26" deep.

The compartment shall have a non-abrasive lined cradle storage area for each of the three (3) devices.

This storage compartment shall provide a minimum of 2.3 cubic feet of storage space.

390. OFFICER REARWARD FENDER - TRIPLE STORAGE SLOT

QTY: 1

A storage compartment shall be inserted into the fender to provide a storage area for three (3) customer supplied SCBA cylinders (or fire extinguishers of similar size).

The storage area shall be sized as tall and wide as possible in the fender (minimum of 14" wide x 15" tall with an angled floor by fender radius), and shall be 26" deep.

The compartment shall have a non-abrasive lined cradle storage area for each of the three (3) devices.

This storage compartment shall provide a minimum of 2.3 cubic feet of storage space.

391. TRACTOR DRAWN AERIAL TRAILER BODY COMPARTMENTS **SECTION 3.22, 3.31, 3.33, 3.34**

QTY: 1

DRIVER SIDE COMPARTMENTATION

One high side compartment shall be provided above the stabilizer (L0). The compartment dimensions shall be 28" wide x 11" high x transverse.

One full height/full depth compartment shall be provided to the rear of the stabilizer. The compartment dimensions shall be 30" wide x 59" tall x 28" deep. A false floor shall be welded in creating two storage areas. The upper area (L1) shall be 16" high with transverse storage. The lower area (L2) shall be 43" high x 28" deep and transverse below the frame rails.

One full height/full depth compartment shall be provided to the rear of the front compartment (L3). The compartment dimensions shall be 40" wide x 59" tall x 28" deep. The area above and below the frame rails shall be transverse.

One full height/full depth compartment shall be provided to the rear of the front compartment (L4). The compartment dimensions shall be 40" wide x 59" tall x 28" deep. The area above and below the frame rails shall be transverse.

One full height/full depth compartment shall be provided to the rear of the front compartment (L5). The compartment dimensions shall be 40" wide x 59" tall x 28" deep. The area below the frame rails shall be transverse.

One full height/full depth compartment shall be provided to the rear of the front compartment (L6). The compartment dimensions shall be 40" wide x 59" tall x 28" deep. The area below the frame rails shall be transverse.

One full height/full depth low side compartment shall be provided forward of the trailer steer axle (L7). The compartment dimensions shall be 32" wide x 31" tall x 28" deep. The area below the frame rails shall be transverse.

One full height/full depth low side compartment shall be provided rearward of the trailer steer axle (L8). The compartment dimensions shall be 41" wide x 31" tall x 28" deep.

OFFICER SIDE COMPARTMENTATION

One high side compartment shall be provided above the stabilizer (R0). The compartment dimensions shall be 28" wide x 11" high x transverse.

One full height/full depth compartment shall be provided to the rear of the stabilizer. The compartment dimensions shall be 30" wide x 59" tall x 28" deep. A false floor shall be welded in creating two storage areas. The upper area (R1) shall be 16" high with transverse storage. The lower area (R2) shall be 43" high x 28" deep and transverse below the frame rails.

One full height/full depth compartment shall be provided to the rear of the front compartment (R3). The compartment dimensions shall be 40" wide x 59" tall x 28" deep. The area above and below the frame rails shall be transverse.

One full height/full depth compartment shall be provided to the rear of the front compartment (R4). The compartment dimensions shall be 40" wide x 59" tall x 28" deep. The area above and below the frame rails shall be transverse.

One full height/full depth compartment shall be provided to the rear of the front compartment (R5). The compartment dimensions shall be 40" wide x 59" tall x 28" deep. The area below the frame rails shall be transverse.

One full height/full depth compartment shall be provided to the rear of the front compartment (R6). The compartment dimensions shall be 40" wide x 59" tall x 28" deep. The area below the frame rails shall be transverse.

One full height/full depth low side compartment shall be provided forward of the trailer steer axle (R7). The compartment dimensions shall be 32" wide x 31" tall x 28" deep. The area below the frame rails shall be transverse.

One full height/full depth low side compartment shall be provided rearward of the trailer steer axle (R8). The compartment dimensions shall be 41" wide x 31" tall x 28" deep.

REAR COMPARTMENTATION

One compartment shall be provided below the ladder storage area (T5). The compartment dimensions shall be 33" wide x 9" tall and as deep as the trailer frame work will allow.

One compartment shall be provided in the lower area under the ladder storage (T4). The compartment dimensions shall be 28" wide x 13" tall x 28" deep.

Two compartments shall be provided outboard of the tow eyes and below the ladder storage (T2 & T3). The compartment dimensions shall be 23" high x 13" wide x 28" deep

392. TRACTOR LOCKER COMPARTMENT CL1/CR1 & CL2/CR2 SECTION 2.210

QTY: 1

One full height/full depth locker compartment shall be provided to the rear of cab on the driver's side (CL2). The compartment dimensions shall be 33" wide x 36" tall x 25" deep.

One high side compartment shall be provided above the driver's side locker compartment (CL1). The compartment dimensions shall be 25" wide x 28" high x 25" deep.

One full height/full depth locker compartment shall be provided to the rear of cab on the officer's side (CR2). The compartment dimensions shall be 33" wide x 36" tall x 25" deep.

One high side compartment shall be provided above the officer's side locker compartment (CR1). The compartment dimensions shall be 25" wide x 28" high x 25" deep.

393. HOSE STORAGE TRAY SECTION 2.209

QTY: 1

The hose storage compartment located at the rear of the tractor cab, in between the locker compartments shall have a storage capacity for 150 feet of 3 inch hose. A latching tread-plate cover shall be provided and designed to be utilized as a walking surface. The hinge shall be towards the tractor. The lid and rear vertical surface to hinge upward to allow for hose deployment. A gas shock strut system to hold the door in the open position shall be provided.

394. STORAGE MODULE SECTION 3.37

QTY: 1

One (1) polished aluminum tread plate compartment box, with access doors on each right and left side, {will/shall} be provided and mounted transversely across the top of the trailer compartment body above the outrigger and front trailer compartment. The compartment will be designed to hold the supplied stokes basket.

One (1) watertight polished aluminum tread plate compartment box, with access doors on each right and left side, {will/shall} be provided and mounted transversely across the top of the trailer compartment body above the outrigger and front trailer compartment. The compartment {will/shall} be designed to hold the supplied Werner Ladder.

395. BEVELED OVERLAPPING DOORS, ALL COMPARTMENTS, ALL DEVICES SECTION 3.26

QTY: 1

The compartment doors shall be beveled overlapping type doors. The outer door skin shall be fabricated from 3/16" aluminum, which shall be beveled on all four (4) sides to add structural integrity to the door. The door frame shall be constructed from 2" x 1" x 1/8" "C" channel on vertically hinged doors and 1" x 5" x 1/8" channel for horizontally hinged doors.

396. #8 POLISHED (MIRROR) FINISHED STAINLESS STEEL DOOR PANS SECTION 3.40

QTY: 1

The inner door panels of each compartment door shall be equipped with high polished 16gauge stainless.

Each panel shall be fitted to the compartment door framework.

397. DOOR HINGE FOR BEVELED OVERLAPPING HINGED DOORS SECTION 3.26

QTY: 1

Hinges shall be full length polished stainless steel piano type. The hinges shall be mounted with stainless steel hardware.

398. DOOR SEAL FOR BEVELED OVERLAPPING HINGED DOORS SECTION 3.26

QTY: 1

All enclosed storage compartments shall include a full gasket around the perimeter of the compartment edge with heat resistant, "closed cell neoprene sponge" weather stripping, to insure a water tight seal.

399. ROTARY LATCHES WITH D-RING HANDLES SECTION 3.27

QTY: 1

Externally latched body doors shall be equipped with stainless steel D-ring handles.

Rotary door latches shall be provided for all full height body doors, which shall incorporate rotary latches at the top and bottom of all externally latched single or double doors.

Linkages shall be provided between the actuation handle and the latch mechanisms.

The blank door of a double door configuration shall have rotary latches at the top and bottom of each door with the latch release lever accessible thru the door frame, which eliminates the need to reach inside the compartment to release the door.

Linkages shall be provided between the actuation handle and the latch mechanisms.

Horizontally hinged doors shall be equipped with a single rotary door latch.

400. KEYED DOOR LOCKS, HINGED OR ROLL-UP DOORS

QTY: 24

Compartment door(s) shall be equipped with keyed locking door latches. All compartment door locks shall utilize a #1250 key. A total of 4 keys will be provided with each apparatus and shall be labeled to indicate the correct match.

401. GAS SHOCK ON HORIZONTALLY & VERTICALLY HINGED DOORS SECTION 3.28, 3.29

QTY: 1

Eberhard gas shock type door hold open devices shall be provided for each vertically and horizontally hinged door.

402. COMPARTMENT FLOORS (AERIALS ONLY) SECTION 3.25

QTY: 1

Compartment floors shall be welded to the compartment walls and have a sweep out design for easy cleaning.

403. REAR MUD FLAPS, TILLER ONLY SECTION 3.43

QTY: 1

Heavy duty mud flaps shall be provided behind the rear wheels on the tractor and the rear steer axle on the trailer.

404. TIE OFF RINGS SECTION 3.1

QTY: 1

Rope rigging anchor points rated at 9,000 pounds of straight line pull shall be provided in the following areas:

One each side of the trailer goose neck rearward of the waterway inlet

Engraved labels shall be provided at all tie off points indicating the weight rating associated with the anchor point.

405. WINCH RECEIVER POINT - EACH SIDE OF BODY SECTION 3.1

QTY: 1

A 2" square receiver point shall be provided beneath the rub rail toward each side of the body for a portable winch. **The winch receiver points shall be located under the L/R-7 compartment towards the seam of the L/R-6 and L/R-7 compartments.**

The receiver point shall be a 2 1/2" x 2 1/2" x 1/4" full width of body seamless steel tube welded and gusseted to 3" x 1 1/2" steel channel directly bolted to four points on the chassis frame rails. **Receiver shall be rated at a minimum of a Class IV (10,000 lbs.).**

NOTE: Receiver points **WILL NOT** include 12-volt power connections.

406. POLISHED STAINLESS STEEL FENDERETTES, TILLER TRAILER AXLE SECTION 3.24

QTY: 1

The tiller rear fenders shall be equipped with easily replaceable, polished stainless steel fenderettes.

The fenderettes shall be equipped with a rubber gasket molding between the body panel and the fender.

Integral welded crown type liners shall not be acceptable.

407. TILLER, TILLER CAB ACCESS LADDERS SECTION 3.17, 3.18

QTY: 1

Two (2) access areas, one on each side, shall be provided at the rear of the trailer in a step or ladder style configuration. The steps shall be configured to climb from the ground to the tiller cab with spacing not to exceed NFPA 1901 step distances. The steps shall be fabricated from "Grip-Strut" anti-slip material, providing a non-slip surface on each step. The steps shall provide access or egress to and from the top of the aerial body and tiller cab.

408. STAINLESS STEEL SILL PROTECTORS SECTION 3.24

QTY: 24

Stainless steel scuff plates shall be installed on the floor of each compartment near the edge of the door opening to protect the compartment floor when accessing equipment from the compartment.

409. TREAD PLATE OVERLAY, FRONT OF SIDE COMPARTMENTS (NON-WRAP AROUND) SECTION 3.24

QTY: 1

The front face of the side compartments, next to the driver and officer pump panels shall be overlaid with full height aluminum tread plate protection panels.

The overlays shall cover the front face of the compartments only, they shall not wrap around to the door opening.

410. POLISHED S.S. SCUFF PLATES, FULL HEIGHT OF REAR BODY CORNERS SECTION 3.24

QTY: 1

A polished stainless steel scuff plate shall be installed on the rear body corners.

The scuff plate shall extend the full height of the body corner panel.

411. PAINTED REAR BODY PANEL, TILLERS SECTION 3.42

QTY: 1

The entire rear of the body shall be equipped with a painted finish, which shall extend the full width between body side compartments. The paint color shall match the body job color. The rear of the body shall have an opening to access the ground ladder storage area. The opening shall be equipped with a door as specified in the ground ladder storage section.

412. 1/2 WIDTH S. S. OUTRIGGER COVER PANEL, TILLER DEVICES

QTY: 1

Each outrigger opening shall be covered by a panel mounted to the outrigger beam. The panels shall be fabricated from 14 gauge #8 finished stainless steel material. Each panel shall be adjustable up and down to help match the panel to the body lines.

The outrigger covers shall be fabricated only as wide as the outrigger beam, to allow positioning of the outriggers between parked cars or in tight areas.

413. BODY RUB RAILS, C-CHANNEL SECTION 3.46

QTY: 1

Sacrificial, C-Channel style, rub rails shall be mounted at the base of the body, extending outward from the body. The rub rails shall extend the full length of the main body. Rub rails shall be bolted to the body from the bottom side of the compartment area so it does not damage the body side panels on initial impact and provide easy replacement.

414. TILLER, BODY HANDRAILS- LIGHTED - RED INSERT SECTION 4.48

QTY: 1

All non-aerial device handrails are to be 1-1/4" diameter knurled bright anodized aluminum with chrome plated end brackets. Each grab rail shall have white LED lights that shall be wired to the DOT marker lights and interlocked to illuminate when the parking brake is applied. Each handrail shall have two (2) red reflexive reflective strips.

Locations shall be as follows:

One pair of grab handles on each corner of the turntable walking deck to assist climbing to the turntable.

One full length rail attached to the rear edge of each tiller cab access ladder.

415. CHROME REAR TOW EYES, THROUGH REAR SHEET SECTION 3.47

QTY: 1

Two (2) chrome plated tow eyes shall be furnished on the rear of the vehicle and extends through the rear body panel. The tow eyes shall be made from plate steel and bolted directly to the chassis frame rails with grade 8 bolts. The tow eyes shall be smooth and free from sharp edges. They will have a minimum eyelet hole of 2-1/2".

416. CENTER LADDER STORAGE, 101' LADDER, TILLER SECTION 3.30

QTY: 1

All ground ladders (except as noted) shall be stored in the center rear of the aerial body. The ladders stored in the center of the body shall be fully enclosed.

417. HINGED PAINTED ALUM DOOR, LADDER STORAGE, RM ONLY SECTION 3.30

QTY: 1

A horizontally hinged, painted flat aluminum door shall be provided for the ladders at the rear of the vehicle. The compartment door shall be flat overlapping type doors. The outer door the skin shall be fabricated from 3/16" (5052 -H32) aluminum. The door frame shall be constructed from 2" x 1" x 1/4" "C" channel or 1" x 5" x 1/8" channel.

The inner pan shall be constructed from 1/8" aluminum material, which shall be provided with a brushed finish. The inner door pan on running board compartments shall enclose the latch and reinforcements completely. The pan shall be easily removable to access the enclosed latch mechanism.

Two (2) gas shock door holders shall be provided on each door. The doors shall latch with a "D" ring handle.

418. STAINLESS STEEL LADDER LOCK SYSTEM SECTION 3.54

QTY: 1

A stainless plate with a two bend flange and a stainless steel hinge shall be provided to secure the aerial ladder complement. The plate assembly shall be mounted to the bottom of the entrance of the torque box ladder storage area. The plate shall be equipped with a spring loaded release to allow it to be hinged open.

When the plate is vertical, it shall secure the ladders and prevent them from migrating to the rear of the apparatus. When the plate is down and not securing the ladders, the roll-up door cannot close, which shall activate the "Open Door Indicator Light" within the cab. The roll-up door together with hinge friction shall secure the plate in place during driving operations.

419. DUO-SAFETY 1200-A 35' 2-SECTION EXTENSION LADDER (ALUMINUM) SECTION 3.54, 5.1

QTY: 2

A Duo-Safety series 1200-A, 35', aluminum, two (2) section extension ladder shall be provided.

420. DUO-SAFETY 1200-A 28' 2-SECTION EXTENSION LADDER (ALUMINUM) SECTION 3.54, 5.1

QTY: 2

A Duo-Safety series 1200-A, 28', aluminum, two (2) section extension ladder shall be provided.

421. DUO-SAFETY 875-A 20' ROOF LADDER W/ FOLDING HOOKS (ALUMINUM) SECTION 3.54, 5.1

QTY: 1

A Duo-Safety series 875-A, 20', aluminum, straight roof ladder with folding hooks shall be provided.

422. DUO-SAFETY 875-A 18' ROOF LADDER W/ FOLDING HOOKS (ALUMINUM)
SECTION 3.54, 5.1

QTY: 1

A Duo-Safety series 875-A, 18', aluminum, straight roof ladder with folding hooks shall be provided.

423. DUO-SAFETY 875-A 16' ROOF LADDER W/ FOLDING HOOKS (ALUMINUM)
SECTION 3.54, 5.1

QTY: 2

A Duo-Safety series 875-A, 16', aluminum, straight roof ladder with folding hooks shall be provided.

424. DUO-SAFETY 585-A 10' FOLDING ATTIC LADDER (ALUMINUM) **SECTION 3.54, 5.1**

QTY: 2

A Duo-Safety series 585-A, 10', folding, aluminum, attic ladder shall be provided.

425. 6' FIBERGLASS LADDER **SECTION 3.54, 5.1**

QTY: 1

A 6' Werner #6206 fiberglass 300lb rated step ladder will be provided and installed in the storage module with the stokes basket.

426. NUPLA 4' PIKE POLE **SECTION 3.54, 5.1**

QTY: 1

Two (2) Nupla 4' CWH-4YDA fiberglass handled pike pole(s) shall be provided.

427. NUPLA 12' PIKE POLE **SECTION 3.54, 5.1**

QTY: 1

Two (2) Nupla 12' model YPD-12 fiberglass handled pike pole(s) shall be provided.

428. NUPLA 10' PIKE POLE **SECTION 3.54, 5.1**

QTY: 1

Two (2) Nupla YPD-10, 10' fiberglass handled pike pole(s) shall be provided.

429. NUPLA RUBBISH HOOKS **SECTION 3.54, 5.1**

QTY: 1

The following rubbish hook pike poles from Nupla will be provided

Three (3) RH-6DA 6' Rubbish Hooks

One (1) RH-4DA 4' Rubbish Hook

Two (2) CWH-4YDA 4' Ceiling/Wall Hooks

430. NUPLA 6' PIKE POLE **SECTION 3.54, 5.1**

QTY: 1

Two (2) 6' Nupla RH-6DA fiberglass handled pike pole(s) shall be provided.

431. FIRE HOOKS UNLIMITED NY ROOF HOOKS **SECTION 3.54, 5.1**

QTY: 1

The following Fire Hooks Unlimited NY Roof Hooks will be provided

Two (2) 6'

Two (2) 4'

432. NUPLA 18' PIKE POLE **SECTION 3.54, 5.1**

QTY: 1

One (1) 18' Nupla YPD-18 fiberglass handled pike pole(s) shall be provided.

433. 1/2 DEPTH ADJUSTABLE SHELF LOCATED IN DRIVER LOCKER COMPARTMENT
SECTION 3.51

QTY: 2

Adjustable shelf in the driver side locker compartment.

434. 1/2 DEPTH ADJUSTABLE SHELF LOCATED IN OFFICER LOCKER COMPARTMENT
SECTION 3.51

QTY: 2

Adjustable shelf in the officer side locker compartment.

435. ADJUSTABLE SHELF DESCRIPTION – RESCUE SECTION 3.51

QTY: 1

Compartment shelving shall be constructed of 3/16" brush finish aluminum with a **2" lips front and back, unless otherwise noted at the shelving location**, and side supports. Shelving shall be vertically adjustable with spring nuts in aluminum strut channel. ***Note; Each of the trailer side body compartments will have Uni-strut channels provided for future installation of compartment accessories.**

Adjustable shelves shall be located as indicated at each compartment description.

436. ADJUSTABLE SHELF(S) LOCATED CL-2 SECTION 3.51

QTY: 1

Located in the left side 'CL-2' compartment. **Note: the shelf shall have a 1" lip on the outer edge.**

437. ADJUSTABLE SHELF(S) LOCATED L-2 SECTION 3.51

QTY: 2

Located in the left side compartment #2. **NOTE: THE UPPER SHELF SHOULD HAVE A 1" OUTER LIP**

438. ADJUSTABLE SHELF(S) LOCATED L-4 SECTION 3.51

QTY: 3

Located in the left side compartment #4

439. ADJUSTABLE SHELF(S) LOCATED L-5 SECTION 3.51

QTY: 2

Located in the left side compartment #5

440. ADJUSTABLE SHELF(S) LOCATED L-6 SECTION 3.51

QTY: 2

Located in the left side compartment #6. **NOTE: Both of these shelves are to have a 1" lip.**

441. ADJUSTABLE SHELF(S) LOCATED L-7 SECTION 3.51

QTY: 1

Located in the left side compartment #7

442. ADJUSTABLE SHELF(S) LOCATED CR-2 SECTION 3.51

QTY: 1

Located in the right side 'CR-2' compartment. **NOTE: The shelf shall have a 1" outer lip.**

443. ADJUSTABLE SHELF(S) LOCATED R-2 SECTION 3.51

QTY: 1

Located in the right side compartment #2. **NOTE: This shelf is to have a 1" outer lip.**

444. ADJUSTABLE SHELF(S) LOCATED R-3 SECTION 3.51

QTY: 1

Located in the right side compartment #3 NOTE: The adjustable shelf shall have a 1 inch lip and be mounted in the middle of the compartment, centered between the pull out trays.

445. ADJUSTABLE SHELF(S) LOCATED R-4 SECTION 3.51

QTY: 1

Located in the right side compartment #4. NOTE: The adjustable shelf shall have a 1" lip and be mounted in the middle of the compartment, centered between the pull out trays.

446. ADJUSTABLE SHELF(S) LOCATED R-5 SECTION 3.51

QTY: 4

Located in the right side compartment #5 as follows:

One (1) adjustable shelf shall have a 2" lip and be top mounted.

The other three (3) adjustable shelves shall have a 1" lip and be mid mounted.

447. ADJUSTABLE SHELF(S) LOCATED R-6 SECTION 3.51

QTY: 3

Located in the right side compartment #6 as follows:

One (1) adjustable shelf with a 2 inch lip. Top mounted

Two (2) adjustable shelves with a 1 inch lip. Mid mounted

448. ADJUSTABLE SHELF(S) LOCATED R-7 SECTION 3.51

QTY: 1

Located in the right side compartment #7. NOTE: The shelf shall have a 1" lip.

449. ADJUSTABLE SHELF(S) LOCATED REAR COMPARTMENT SECTION 3.51

QTY: 1

Located in the rear compartment

450. 250# FLOOR MOUNTED PULL OUT TRAY SECTION 3.52

QTY: 1

The slide out floor mounted pull out tray shall be constructed of 3/16" brush finish aluminum with 2" lip/edge, and side supports attached to #250 rated slides. The slide out floor mounted pull out tray shall have gas shocks to hold the tray in and out.

The slide out floor mounted pull out tray shall be provided in the L-7 compartment.

451. 250# FLOOR MOUNTED PULL OUT TRAY SECTION 3.52

QTY: 1

The slide out floor mounted pull out tray shall be constructed of 3/16" brush finish aluminum with 2" lip/edge, and side supports attached to #250 rated LOCK-IN/LOCK-OUT LOCKING SLIDES.

The slide out floor mounted pull out tray shall be provided in the T-4 compartment (located at the rear of the body) and shall be designed to be as deep as possible. **No pneumatic struts shall be provided.** This tray is to be used by firefighters as a work station for rebuilding chain saws.

452. 500#, FLOOR MOUNTED, ROLLOUT TRAY 100% - RESCUE SECTION 3.52

QTY: 1

500 POUND FLOOR MOUNTED ROLL OUT TRAYS SHALL BE SLIDE MASTER BRAND. EACH TRAY SHALL BE HELD OPEN AND CLOSED WITH A MANUAL 1/4 TURN RELEASE (TURN LOCK).

Floor mounted roll-out trays shall consist of heavy duty, roller bearing slide tracks with a load rating of 500 pounds, securely fastened to the compartment floor. The tray shall be fabricated from 3/16" brushed aluminum with a minimum 2" high flange on each of the four sides to assist in retaining the equipment stored on each tray. The slide tracks shall have a 100% extension, allowing the tray to extend out of the compartment completely.

The 500 pound floor mounted roll out trays shall be as indicated at each compartment description.

453. ROLLOUT TRAY, LOCATED R-3 - 100% SECTION 3.52

QTY: 2

Located in the right side compartment #3 as follows:

An upper located 60 inch deep pull out tray with 6 inch high lips.

A floor mounted 70 inch deep pull out tray with 4 inch high lips.

454. ROLLOUT TRAY, LOCATED R-4 - 100% SECTION 3.52

QTY: 2

Located in the right side compartment #4 as follows:

A top mounted 70 inch deep pull out tray with 2 inch high lips.

A floor mounted 70 inch deep pull out tray with 4 inch high lips.

455. ROLLOUT TRAY, LOCATED R-5 - 100% SECTION 3.52

QTY: 1

Located in the right side compartment #5. **NOTE: This shall be a floor mounted 70 inch deep pull out tray with 4 inch high lips.**

456. ROLLOUT TRAY, LOCATED R-6 - 100% SECTION 3.52

QTY: 1

Located in the right side compartment #6 and mounted as follows:

The floor mounted pull out tray shall be located under the frame with 6 inch high edges (right, rear, left), but no lip on the front/Officers side. Gas shock. Accessed from the Officers side only.

***Tray approx. 36" x 36".**

457. ROLLOUT TRAY, LOCATED R-8 - 100% SECTION 3.52

QTY: 1

Located in the right side compartment #8 and shall have 2" high edges.

458. DRI-DEK MATERIAL ON ALL COMPARTMENT FLOORS SECTION 3.49

QTY: 1

Dri-Dek brand floor material shall be installed on all compartment floors.

The Dri-Dek shall be custom installed to provide full floor coverage.

459. FLOORING MATERIAL ON SHELF(S) OR TRAY(S) SECTION 3.49

QTY: 32

Floor matting material shall be provided on the noted quantity of specified shelves or roll-out trays.

460. FLOORING MATERIAL COLOR (BLACK IS DEFAULT) SECTION 3.49

QTY: 1

The compartment flooring color shall be black.

461. YELLOW FLOOR EDGING SECTION 3.49

QTY: 1

All compartment floor tile shall have a beveled/ramped edge at the door opening as provided by Dri-Dek.

462. PIKE POLE TUBE(S) AERIALS SECTION 3.55

QTY: 1

Fourteen (14) pike pole tube(s) shall be provided. Each shall be an individual tube type holder, mounted in the ladder storage area (if space allows). Each pike pole holder shall be labeled to indicate the pike pole length.

463. TILLER TRAILER FRAME ASSEMBLY, 101' LADDER SECTION 3.1

QTY: 1

The trailer frame shall be of welded steel construction and gooseneck design.

The gooseneck area shall be constructed using tube and plate. This area of the trailer frame shall have a section modulus of 1172.6 in3 and a resistance to bending moment of 8,375,714 in-lb.

The rearward portion of the trailer frame shall be constructed, using "C" channel and plate. The section of frame from the gooseneck to the axle shall have a section modulus of 376.3 in³ and a resistance to bending moment of 4,038,366 in-lb.

The tube and plate gooseneck area shall be 48" wide and 14" deep. The "C" channel and plate portion of the frame shall be 34" wide and 11-1/4" deep.

464. TILLER TRAILER WHEELBASE - 343" SECTION 2.205

QTY: 1

The trailer shall be designed to provide maximum compartment space and shortest possible overall length utilizing a trailer wheelbase of 343".

465. TRAILER, STEERING AXLE, MERITOR MFS-20-133A-N, 23,000 SECTION 3.1

QTY: 1

The trailer axle shall be a Meritor MFS-20-133 A-N, includes low friction "Easy Steer" bushing technology for maximum steering ease and longer life. The axle shall be rated at 23,000 lbs.

466. TRAILER, MERITOR STEER AXLE EX-225 DISK BRAKES SECTION 3.1

QTY: 1

Meritor EX-225, 17" disk brakes shall be provided for the trailer steering axle.

Automatic slack adjusters are provided as standard equipment.

The trailer brakes shall be plumbed to the tractor parking brake control in the tractor cab within easy reach of the tractor driver's seating position.

An on indicator light shall be installed in the tractor cab dash adjacent to the control.

The trailer air brake system shall be equipped with two (2) air tanks with the capacity of 3,566 cu. in.

467. TILLER TRAILER, STEERING AXLE POLISHED ALUMINUM WHEELS SECTION 3.1

QTY: 1

The trailer wheels shall be 22.50 x 13", hub piloted polished aluminum disc.

The wheels shall have an 11-1/2" diameter bolt circle with ten (10) holes.

Chrome plated hub and nut covers shall be provided on each trailer wheel.

468. TRACTOR STEP COMPARTMENT CL3 & CR3 SECTION 2.153

QTY: 1

The fenders shall incorporate an aluminum tread plate compartment, one (1) each side forward of the wheel well, which shall also serve as step. The driver's side compartment shall be compartment CL3 and the officer's side shall be compartment CR3

The compartment will measure approximately 18" high x 14" deep x 26" wide. Depending on the type of rear suspension, the rear way of this compartment may be notch to accommodate the suspension mounts. The compartment shall be equipped with an aluminum tread plate door that shall be equipped with a stainless steel hinge and "D" ring automotive latch.

469. TILLER TRAILER, OIL SEAL FOR TRAILER STEERING AXLE

QTY: 1

Premium oil seals with viewer glass shall be provided on the trailer steering axle.

470. TILLER TRAILER, CONTINENTAL 425/65R22.5 L 22,800# HTR2 HIGHWAY - 68MPH SECTION 2.103

QTY: 1

The trailer tires shall be Continental 425/65R22.5 "20 Ply" tubeless radial HTR2 wide base highway tread.

The tires shall be fire service rated up to 22,800 lbs. and shall have a top speed of 68 mph when inflated to 120 psi.

471. TIRE PRESSURE MONITORING - VALVE STEM CAPS - TDA TIRES SECTION 2.107

QTY: 1

Each tire shall be equipped with an air pressure indicator cap on the valve stem.

Each cap shall have a visual indicator to show if the tire is correctly inflated.

472. TILLER TRAILER, STEERING SYSTEM, ROSS TA-70 SECTION 3.1

QTY: 1

The trailer steering gear shall be Ross TAS integral power steering gear box.

Steering wheel shall be vinyl padded, minimum 18" diameter.

Steering column shall have tilting and telescoping capabilities.

473. TILLER TRAILER, STEERING PUMP - PIGGYBACK ON MAIN AERIAL PUMP SECTION 3.1

QTY: 1

The trailer hydraulic steering pump shall be a Parker gear pump that shall be piggybacked on the main aerial hydraulic pump.

The steering pump shall be plumbed to the aerial hydraulic reservoir.

474. TILLER TRAILER, 100' & 101' LADDER, FIFTH WHEEL PIVOT SECTION 3.1

QTY: 1

The fifth wheel shall be a monorace bearing, 3.38 x 40.8 diameter, with the mounting plate bolted to the chassis.

The longitudinal pivot point mounting shall utilize two (2) 2-3/4" diameter steel pins.

Grease fittings shall be provided in two (2) locations on the bearing.

Due to the high load and wear on the trailer pivot points, the pin journals in the trailer gooseneck shall be designed to provide bearing surfaces utilizing ToughMet® 3 AT110 Temper Plate high strength alloy bearing material.

The journals shall have minimum yield strength of 110,000 psi.

Both upper and lower surfaces mated to the bearing shall be milled to provide a true bearing plate.

There will be no exceptions.

To reduce flexing between the tractor and trailer during aerial operation, a trailer lock-out system shall be provided.

The lock out system shall consist of four (4) stainless steel pins that are lowered into position by the operator during the aerial outrigger setup.

475. TILLER TRAILER, SUSPENSION, RIDEWELL RAS-227 AIR R SECTION 3.1

QTY: 1

The trailer suspension shall be a Ridewell Model RAS-227 air ride suspension system.

The suspension shall have a capacity at ground equal to that of the trailer steer axle.

Heavy duty shock absorbers shall be installed on the trailer suspension.

476. TILLER CAB, GENERAL DESCRIPTION SECTION 3.2

QTY: 1

A permanently mounted tiller cab shall be provided on top of the trailer, to the rear of the aerial ladder.

The minimum width of the cab shall be 42" to provided adequate room and improve visibility for the tiller driver.

The tiller cab shall be constructed from a combination of 3/16" and 1/8" 5052 and 6063 aluminum and shall be painted to match the body.

The tiller cab shall be designed and tested to meet NFPA 1901 roof loading standards.

477. TILLER CAB, INTERIOR SECTION 3.2

QTY: 1

The floor of the tiller cab compartment shall be covered with aluminum tread plate.

The dash and headliner shall be padded and upholstered to reduce noise level.

478. TILLER CAB INTERIOR PAINT SECTION 3.2

QTY: 1

The structure and interior surfaces of the cab {will/shall} be painted with Black Line-X to match the cab interior.

479. TILLER CAB SEAT, USSC SECTION 3.2

QTY: 1

Tiller driver's seat shall be non-air ride with adjustable fore/aft seat base. USSC seat, I back ABTS with Ready Reach seat belt holder.

480. USSC SEATING MATERIAL - BLACK CORDURA SECTION 3.2

QTY: 1

The seats shall be upholstered with Black Cordura material with red top stitching as provided by USSC.

All seating shall have "quick removal" covers.

481. TILLER CAB SEAT, RED LAP SEAT BELT SECTION 3.2

QTY: 1

A lap seat belt shall be provided for the Tillerman seating position.

The seat belt assembly shall be mounted to the seat frame and the tiller cab framework.

The color of the seat belt shall be red.

482. TILLER CAB WIND/GLASS, "NO POST VISION", SLIDING DOORS SECTION 3.5

QTY: 1

The front windshield of the tiller cab shall be a 740 in². flat, single piece of tinted automotive industry approved safety glass.

The front windshield shall be designed with a "No Post Vision" seamless joint between the front and side viewing windows, requiring no corner post which shall obstruct the visibility of the driver.

Two (2) rear viewing corner windows shall be provided in each rear corner of the tiller cab.

The rear corner windows shall provide a clear view for the tiller driver when looking over his shoulder at the rear corners of the tiller body.

The rear corner windows shall be designed with a "No Post Vision" seamless joint between the rear and side viewing windows, requiring no corner post which shall obstruct the visibility of the driver.

One (1) horizontally split sliding rear window assembly shall be provided on the back of the tiller cab.

483. TILLER CAB, WINDSHIELD WIPERS, SINGLE PANOGRAPHIC SECTION 3.5

QTY: 1

A single electrically operated, pantographic, wet arm, self-parking windshield wiper shall be installed on the front center of the tiller cab.

The Tillerman shall be able to control wiper state (ON/OFF), speed (LOW /HI), and intermittent delay time (DLY) as well as washer pump (ON) from clearly labeled switches on the overhead panel.

A 3/4 gallon washer fluid reservoir shall be readily accessible in the tiller cab.

There shall be a removable panel on the front face of the cab for access to the wiper motor assembly.

There will be no exceptions.

484. TILLER CAB, STEERING WHEEL/COLUMN SECTION 3.6

QTY: 1

The tiller steering wheel shall be vinyl padded, minimum 18" diameter, with a center hub mounted horn button.

There shall be a self-canceling, directional signal lever and a traffic hazard switch on the steering column.

The steering column shall have tilting and telescoping capability to provide increase comfort and visibility for the Tillerman.

485. TILLER CAB, STEERING WHEEL POSITION INDICATOR SECTION 3.16

QTY: 1

The tiller steering wheel shall have a rudder position indicator to confirm orientation of the trailer steering position.

The gauge shall be located in the tiller cab dash panel.

486. TILLER CAB, PADDED SUNVISOR

QTY: 1

A 19.5" x 7.5" vinyl covered, padded sun visor shall be provided for the front windshield.

The visor shall be double hinged for a wider range of sun screening.

487. KICK PANEL

QTY: 1

Install a 4" high, polished stainless steel kick plate on the sides, doors and front of the tiller cab.

488. TILLER CAB, TWO (2) SALEM SERIES MANUAL VENTS, REAR OF CAB

QTY: 1

Two (2) Salem series, two-way, hinge less air vents shall be provided on the rear of the tiller cab, one (1) each side.

The vents shall be flush mounted below the windshield and painted to match the color of the tiller cab.

**489. TILLER CAB, ALUMINUM KNURLED GRAB RAILS, EACH SIDE, LIGHTED, RED
INSERT SECTION 3.17, 3.18**

QTY: 1

Two (2) 1-1/4" diameter x full height, knurled, bright anodized aluminum grab rails shall be provided, located one (1) at each tiller cab door entrance.

Grab rail stanchions shall be chrome plated and of an offset design, when necessary, to prevent "hand-pinching" when opening or closing the doors.

Each grab rail shall have white LED lights that shall be wired to the DOT marker lights and interlocked to illuminate when the parking brake is applied.

Each handrail shall have two (2) red diamond grade reflective strips.

Formed rubber gaskets shall be provided between each stanchion base and the cab surface.

490. TILLER CAB, VELVAC # 708164-5, 6-1/2" X 6" CONVEX SECTION 3.15

QTY: 1

Two (2) Velvac # 708164-5, 6 1/2" x 6" convex mirrors shall be provided and mounted on the exterior of the cab.

The mirrors shall be attached to adjustable arms and shall be mounted and located at final inspection.

491. TILLER CAB, GROTE 6" CONVEX MIRROR ON BODY FORWARD SECTION 3.15

QTY: 1

Two (2) Grote #28043, 6" convex mirrors shall be provided and mounted on the top body edge forward of the tiller cab.

The mirrors shall be attached to adjustable arms and shall be located and mounted during the final inspection.

492. TILLER CAB, SLIDING DOORS SECTION 3.3

QTY: 1

The tiller cab shall be equipped with sliding doors for access to the cab.

The tiller cab door opening shall be a minimum of 36-3/4" W x 47-5/8" H.

The slides for the doors shall be a heavy duty ball bearing design.

The tiller cab doors shall have drop down (vertically) sliding type windows to provide greater ventilation of the tiller cab.

Each window shall be 37-7/8" H x 28" W.

The doors shall be capable of being latched in the open and closed positions.

The tiller cab doors shall be wired to the "Door Open Indicator" of the tractor cab with an override switch for training.

493. TILLER CAB, INSTRUMENT & SWITCH PANEL SECTION 3.2

QTY: 1

A switch panel shall be installed in the Tillerman cab forward of the steering wheel.

The switch panel shall be provided with illuminated rocker switches to enable the Tillerman to turn on/off the under body lights, the step lights and any other specified lights.

494. TILLER CAB, TURN SIGNAL INDICATORS, WELDON #9186-15 SECTION 3.7

QTY: 1

Two (2) Weldon, model #9186-1500-20, amber LED, left and right turn signal indicator lights shall be mounted on cab dash frame on each side of the steering column.

The lights shall alert the Tillerman of the tractor driver's intent.

495. TILLER CAB, WELDON 8080-8000-13 WHITE/RED LED INTE SECTION 4.33

QTY: 1

A combination red/white LED dome light shall be furnished in the tiller cab. The light shall be Weldon model # 8080-8000-13, LED with euro style switch. The dome light shall have an integral selector switch. The dome light shall also activate when the either tiller cab door is opened.

496. TRACTOR ALIGNMENT LIGHT ON TRACTOR CAB ROOF SECTION 4.34

QTY: 1

An amber surface mounted light shall be provided and mounted at the center rear of the antenna array/rear of the roof mounted HVAC. The light must be visible to the rear for the Tillerman to use for alignment.

497. TILLER CAB, DRIVE DISABLE SYSTEM - TILLER CAB STEERING COLUMN SECTION 3.8

QTY: 1

To not allow the transmission to be shifted without a Tillerman seated in the tiller cab, a safety drive system shall be provided between the tractor cab and the tiller cab.

One (1) Linemaster #491-S foot switches shall be floor mounted on the officer's side of the tiller cab floor, and shall serve as a momentary contact switch, which must be activated in conjunction with shifting the transmission in the tractor cab.

The system shall reset with park brake activation. *Note; this system will allow for the tractor driver to start the engine, but the transmission will not shift out of neutral until the tiller driver is depressing the floor mounted switch.

498. TILLER CAB, BUZZER SECTION 3.9

QTY: 1

A buzzer warning system shall be provided between the tractor and tiller cabs.

The tiller cab buzzer shall be activated through a dash mounted switch in the tractor, and the Tillerman's steering wheel center horn push button activator.

The buzzer controls shall be labeled: 1-Stop, 2-Go, 3-Backup.

499. JACK KNIFE ALARM SECTION 2.187

QTY: 1

An audible and visual warning system to alert both the driver and tiller operator when the tractor and trailer approaches the maximum allowable "jackknife" angle. Warning system, audible and visual warning devices to be as per previous units.

The "jack knife" alarm will be silenced whenever the park brake is set.

500. TILLER CAB, HEATER - BUS AIR 12VDC - 1100 BTU SECTION 3.11

QTY: 1

A Bus Air 12 VDC, 1100 BTU, 450 cfm, electric controlled combination heater/defroster shall be furnished for the tiller cab.

The heater shall be mounted under the dash with an outlet vent on each side of the dash.

Controls shall will be provided on the tiller cab dash panel.

501. TILLER CAB, TWO (2) ACC CLIMATE CONTROL 12-VOLT DEFOGGER FANS SECTION 3.11

QTY: 1

Two (2), six (6) inch ACC Climate Control defogger fans shall be provided for the tiller cab windshield.

They shall be located with one (1) at each forward corner of the cab overhead.

502. BERGSTROM AUXILIARY AC TILLER CAB SECTION 3.11

QTY: 1

A Bergstrom Model # BSP00029AC12 12-volt. The system shall consist of one (1) air conditioning roof mounted on top of the tiller cab. The cover of the air conditioning unit shall be painted red (job/body color). An IOTA #DLS-75-X converter to convert 110 volt power to 12 volt power for the aux AC system will be provided. The system shall be powered through the blue shoreline power auto eject. The system shall be managed through the load manager to shut down auxiliary AC system in the event that the battery power drops below recommended levels. Note: This electrical system shall feed both the cab mounted and the tiller cab mounted auxiliary AC systems. (Note: The custom cab mounted AC unit is located in the custom cab area of the specification.)

503. 101' TILLER LADDER

QTY: 1

504. 101' LADDER, TILLER GEN. INTENT & DESIGN STANDARDS SECTION 3.78, 3.85, 3.86, 3.87, 3.88, 3.89, 3.90

QTY: 1

The aerial ladder assembly shall be a four (4) section telescoping ladder constructed from high strength steel alloy, pre-piped waterway (if applicable), steel turntable, and outriggers.

The intent of these specifications is to describe a telescoping elevating ladder.

It shall consist of the true steel truss ladder type.

The aerial ladder consists of four (4) steel ladder sections, a steel turntable, and two (2) outriggers.

The height of the unit is 101' and the horizontal reach is 94'.

The device shall meet all the requirements of the National Fire Protection Association's (NFPA) 1901 standard, in effect at time of purchase.

This is a fire service proven piece of apparatus that shall be manufactured in the U.S.A.

Ladders attached to booms, whether solid or lattice, or articulating arms shall not be considered as meeting these specifications or the intent of these specifications.

The design criteria of the unit shall be to create a structure and system that emphasizes safety, product reliability, and ease of operation.

These criteria are:

The hydraulic system shall be designed so that if a failure of any component or assembly within the system occurs, a single point failure of the entire system shall not occur.

The minimum ultimate design condition at the ladder base shall be 6.8 million inch pounds.

All structure load supporting elements of the aerial ladder that are made of a ductile material, shall have a design stress of not more than 50 % of the minimum yield strength of the material based on the combination of the live load and the dead load.

This 2.5:1 structural safety factor meets the current National Fire Protection Association (NFPA) 901 standard.

Design verification shall be accomplished with comprehensive Finite Element Analysis (FEA) and verified with extensive strain gage testing.

An independent engineering firm employing a Registered Professional Engineer shall verify the aerial safety factor.

The aerial device shall be capable of sustaining a static load one and one-half times it's rated tip load capacity (live load), in every position in which the aerial device can be placed when the vehicle is on a firm and level surface.

The aerial device shall be capable of sustaining a static load one and one-third times it's rated tip load capacity (live load) in every position in which the aerial devices can be placed when the vehicle is on a slope of five degrees downward in the direction most likely to cause overturning.

All welds in the aerial device shall be designed per the static and fatigue criteria of the American Welding Society No. D1.1.

All aluminum welds shall be designed per the static and fatigue criteria of the American Welding Society Standard No. D1.2.

To optimize strength versus weight, high strength steel shall be utilized for the construction of the aerial device

The aerial device shall be capable of operating with a rated tip load in the following conditions:

Conditions of high wind up to 50 mph.

Conditions of icing, up to a coating of 1/4" over the entire aerial structure.

All of the design criteria will be supported by the following information:

Strain gauge testing of the complete aerial device.

Analysis of deflection data taken while the aerial device was under test load.

Accelerometer test to determine dynamic response during ladder operation.

Accelerometer test to determine dynamic response during road travel.

Material fracture mechanics testing.

Weld fracture mechanics testing.

Hydraulic component operating and burst strength testing.

505. MOUNTING OF AERIAL, TILLERS

QTY: 1

The elevating aerial ladder turntable shall be tiller mounted thus providing the following vehicle benefits:

Improved mobility vs. rear and mid ship mounted units.

Greater positioning ability of the turntable for optimum reach at fire ground operations.

Increased compartmentation and ladder storage.

506. HEIGHT AND REACH, 101' TILLER SECTION 3.89

QTY: 1

The height of the unit shall be a minimum of 101' as measured by NFPA-1901 requirements, Section 19.2.2, which states, "The rated vertical height of an aerial ladder shall be at least 50 ft and shall be measured in a vertical plane with the ladder at maximum elevation and extension from the outermost rung of the outermost fly section to the ground."

The horizontal reach of the unit shall be a minimum of 94' as measured by NFPA-1901 requirements, Section 19.2.3, which states, "The rated horizontal reach of an aerial ladder shall be measured in a horizontal plane from the centerline of the turntable rotation to the outermost rung on the outermost fly section with the aerial ladder extended to its maximum horizontal reach."

507. MATERIAL STANDARDS, ALL DEVICES

QTY: 1

The following standards for materials are to be used in the design of the aerial device.

Materials are to be certified by the mill that manufactured the material.

Materials that are certified or recertified by vendors other than the mill shall not be accepted.

Material testing that is performed after the mill test shall be only for verification and not with the intent of "paper changing" the material classification.

508. 100' & 101' LADDER, TILLER. HYDRAULIC SYSTEM SECTION 3.132

QTY: 1

The hydraulic system shall provide power to the entire aerial device as efficient as possible without the use of a hydraulic cooler.

There will be no exceptions.

A hydraulic system relief valve as well as individual circuit relief valves shall be provided to prevent damage to any function or circuit.

The relief valve shall have a stain-less steel relief spring to ensure proper function and product reliability.

509. PARKER HOSE KIT - 2 JACK UNIT TDA SECTION 3.132

QTY: 1

All hydraulic steel tubing, hydraulic rubber covered wire braided hoses, and hydraulic fittings/adapters shall have a minimum burst pressure rating of four times the operating pressure. Hoses and tubing shall be properly sized to minimize heat buildup during extended periods of operation. Hoses and tubing shall be properly sized to minimize flow restrictions.

All hydraulic hose shall have a tube and cover constructed of synthetic rubber and shall have a braided/spiral wire reinforcement capable of maintaining a 4:1 safety factor in all areas of the hydraulic system. The hose shall meet the appropriate SAE performance specifications: 100R2, 100R19, J517, J1942, ISO 3862-1, USCG HF, DNV,ABS or 100R12.

The connector system was jointly designed by engineers from both the manufacturer and Parker Hannifin and incorporate the following design upgrades and advantages:

All hydraulic ports (manifolds, pumps, tank, etc) to elastomeric sealing technology

No pipe threads in the hydraulic system

Sealing to be done by O-rings with the mechanical holding power of straight threads

All tube and hose connections to Parker Seal-Lok, O-ring face seal technology

Sealing to be done by O-ring with the mechanical holding power of straight thread fittings rated up to 6000 psi

Drop-in design of Seal-Lok connectors to allow easier maintenance and assembly

Fittings resist 200% over torque, with optimum vibration resistance.

Shaped fittings machined from forged bodies for compact design and strength

Fittings meet/exceed the performance and dimensional requirements of SAE J1453 and J1926

Minimized unnecessary fittings and adapters, streamlining the system

Increased connector accessibility, making assembly and maintenance easier

Standardized the connector system on the aerial unit

Incorporated pressure diagnostic system with Parker PD diagnostic test points into the connector design

All fluid connector assemblers have been trained and certified in Dry Technology.

This training included: proper handling, installation, torque requirements, troubleshooting, and quality control procedures of the fluid connector products.

An exclusive three-year leak free guarantee shall warrant the Seal-Lok, O-ring face seal connections to be leak-free for a period of three (3) years.

510. HYDRAULIC PUMP - PRESSURE COMPENSATED (TDA) SECTION 3.130

QTY: 1

A load sense pressure compensated hydraulic axial piston pump shall be provided which shall be capable of operating under any rated platform load condition and aerial device position at normal engine idle or governor controlled fast idle.

The hydraulic pump shall be capable of generating sufficient flows to allow multiple aerial functions without significant loss of speed.

511. HYDRAULIC RESERVOIR-TDA SECTION 3.132

QTY: 1

A hydraulic oil reservoir shall be provided to supply the needs of the hydraulic system.

A 2" gated suction line shall be provided between the oil reservoir and the hydraulic pump.

The tank fill shall be provided with a strainer screen and vent cap.

Located near the fill cap shall be a dip-stick for checking fluid levels.

The tank shall be mounted in behind the cab on the tractor.

Before adding fluid the tank must be cleaned and free from all contaminants.

Suction and return ports will be designed to SAE Straight Thread O-ring Specifications. These ports will incorporate an O-ring seal rather than pipe threads.

512. HYDRAULIC OIL - REGULAR - A/W 46 - 60 GALLON SECTION 3.132

QTY: 1

The hydraulic oil reservoir shall be filled with A/W 46 grade Hydraulic Oil.

This oil provides superior anti wear properties, and is specially formulated with improved thermally stable additives.

These oils offer outstanding resistance to sludge formation, are chemically stable and exhibit excellent anti wear protection.

513. MAGNETIC DISKS IN BOTTOM OF HYDRAULIC RESERVOIR SECTION 3.132

QTY: 1

A six (6) disc type magnetic drains shall also be provided to collect any ferrous contaminants.

514. ELECTRONIC LEVEL GAUGE FOR HYDRAULIC RESERVOIR SECTION 3.133

QTY: 1

An electronic oil level sensor in the reservoir shall provide an indication of oil level on a gauge mounted adjacent to the hydraulic oil tank.

515. DIVERTER VALVE, TDA SECTION 3.126

QTY: 1

There shall be an automatic electric over hydraulic three (3) position diverter valve located at the left side of the apparatus.

This diverter valve shall divert hydraulic fluid to either the aerial ladder controls or the outrigger controls.

To prevent accidental operation of the ladder prior to the outriggers being properly set, the diverter valve shall only allow hydraulic fluid to the outriggers until the outriggers are set properly.

To prevent accidental operation of the outrigger system during the aerial ladder operation the diverter valve shall only allow hydraulic fluid to the ladder controls, when the aerial device is raised from the aerial travel support.

In the event of electrical failure the operator shall be able to manually move the diverter valve to the ladder or outrigger position for continuous uninterrupted operation.

NOTE: All safety controls are displaced when vehicle is in manual mode of operation.

516. MAUNAL OUTRIGGER HYDRAULIC CONTROL VALVE – TDA SECTION 3.125

QTY: 1

The outrigger cylinder system shall be controlled by a pressure compensated control valve that is designed for parallel hydraulic circuit operations.

This valve shall be modular in design so that individual sections can be replaced in the field, rather than complete valve assemblies, thus reducing maintenance costs.

The valve housings shall be made of high tensile cast iron for durability and the individual spools shall be hard, chrome plated for long life and resistance to corrosion.

Each valve shall be equipped with mechanical handles of ease in override operations.

The mechanical handles shall be equipped with large knobs with integral labels inside each knob indicating the function of the handle.

517. MANUAL TURNTABLE HYDRAULIC CONTROL VALVE, TDA LADDER SECTION 3.127

QTY: 1

The lift, extension, and rotation systems shall be controlled by a pressure compensated, proportional control valve.

This valve shall be of a modular construction that simplifies troubleshooting, minimizes downtime, and simplifies field service.

The main control valve shall be positioned at the turntable control console for direct manual control of each aerial function.

Use of electrical controls at the main turntable control console shall not be acceptable.

518. MAUNAL OUTRIGGER HYDRAULIC CONTROL VALVE – TDA SECTION 3.125

QTY: 1

The outrigger cylinder system shall be controlled by a pressure compensated control valve that is designed for parallel hydraulic circuit operations.

This valve shall be modular in design so that individual sections can be replaced in the field, rather than complete valve assemblies, thus reducing maintenance costs.

The valve housings shall be made of high tensile cast iron for durability and the individual spools shall be hard, chrome plated for long life and resistance to corrosion.

Each valve shall be equipped with mechanical handles of ease in override operations.

The mechanical handles shall be equipped with large knobs with integral labels inside each knob indicating the function of the handle.

Clarification; The manual handles for the outriggers and 5th wheel will be oriented as follows, working from left to right

Drivers side beam

Officers side beam

Drivers side jack

Officers side jack

5th wheel lock.

***This configuration matches the customers current KME TDAs**

519. HYDRAULIC SYSTEM FILTRATION, TDA SECTION 3.132

QTY: 1

The pressure filter shall be made of a micro glass medium, which has the highest capture efficiency, dirt holding capacity and life expectancy over other media such as cellulose and synthetic.

The pressure filter shall have a bypass circuit protected by a check valve, which shall be installed around the pressure filter.

The pressure line filter shall be required even if a suction line filter is provided in the reservoir due to the suction line filter's inability to trap contaminants entering the system.

The pressure filter cartridge shall have a sensor, which shall indicate the condition of the filter and provide an output for a warning light or message if the pressure filter is blocked or in the bypass mode.

The pressure filter shall have an absolute rating of five (5) microns.

The return filter shall be made of a micro glass medium, which has the highest capture efficiency, dirt holding capacity and life expectancy over other media such as cellulose and synthetic.

The return filter shall have a bypass circuit protected by a check valve, which shall be installed around the return filter.

The return filter shall have a bypass circuit protected by a check valve, which shall be installed around the return filter.

The return filter cartridge shall have a sensor, which shall indicate the condition of the filter and provide an output for a warning light or message if the return filter is blocked or in the bypass mode.

The return filter shall have an absolute rating of five (5) microns.

520. 100' & 101' LADDER, TILLER. EMERG HYD. PUMP, EPU SECTION 3.138

QTY: 1

In the event of failure of the main hydraulic pump or vehicle engine, the unit shall be equipped with an emergency hydraulic pump which shall be plumbed into the hydraulic system and be electrically driven from the chassis batteries. The emergency pump system shall be capable of limited functions of the ladder and outriggers to stow the unit. The pump shall be controlled from both the outrigger control box and turntable control stations with spring loaded momentary contact switches.

The pump shall have a separate hydraulic oil supply line, from the main supply line attached directly to the hydraulic oil reservoir. A shutoff valve for each line shall be provided and check valve shall be incorporated on the pressure side of the pump to ensure that one shall continue to operate the ladder in the event the other fails.

The pump shall have high tensile steel shafts and gears with the shafts supported by needle bearings. The cylinder plate and gears shall be ground as a set to ensure exacting tolerances. Clearance shall be maintained by a Mylar shim.

521. PTO CONTROLS IN CAB FOR ALL TILLER AERIAL DEVICES SECTION 2.73

QTY: 1

The apparatus shall be equipped with a PTO driven by the chassis transmission.

The PTO shall be engaged at all times to allow for the trailer steering pump to be activated.

The PTO shall be a heavy duty pressure lubricated and cooled unit for extended operations.

A master 12 volt "Ladder Power" switch shall be provided to control of all ladder 12 volt power, with the exception of the emergency pump circuits.

An aerial hour meter shall be installed in the cab adjacent to the ladder power control switch.

The hour meter shall be wired to the aerial PTO circuit to record the amount of hours the PTO is activated.

The hour meter shall aid in scheduling preventative maintenance as outlined in the operator's manual.

522. FAST IDLE CONTROL FOR ALL AERIAL DEVICES

QTY: 1

The fast idle actuator shall be used to raise the engine RPM to a preset level for proper aerial operation.

The fast idle switches shall be located at the main outrigger control station and the aerial control station/s.

For the safety of personnel and equipment, the fast idle system shall not activate unless the transmission is in neutral.

There will be no exceptions.

523. TRACTOR DRAWN LADDER, "IQAN" MOTION CONTROL SYSTEM - MANUAL CONTROLS @ TURNTABLE SECTION 3.111, 3.112, 3.113

QTY: 1

The ladder, outrigger system and interlock systems shall be controlled with the computer operated and monitored hydraulic motion control system. The motion control system shall provide state of the art controls for the ladder, outriggers, auto-level and interlock systems as required. The motion control system must be an electro-hydraulic management system that monitors operator inputs from the control station(s) and converts this data to a usable electronic signal that controls hydraulic valve functions.

The turntable control station shall be equipped with a Master Display Module MD3. The Master Display Module MD3 shall be a completely weather proof and shock resistant microprocessor which includes a 3" x 4.5" LCD screen (referenced above). The MD3 shall contain programmed parameters for each aerial device function, which provide for proper machine operation and reduce the possibility of abusive operation. The number of wires required to connect the MD3 module and control hardware shall be kept to a minimum through the use of serial CAN-bus data transmission technology. The CAN-bus modules shall be attached to each other using just two communication wires.

Each component of the IQAN motion control system shall be proven, off the shelf modules and parts, which are available throughout the world. Proprietary hardware designs are not acceptable due to the lack of parts availability and support.

The MD3 display will have built-in troubleshooting and shall allow troubleshooting and function history monitoring for the entire motion control system. The memory function will allow a service technician to identify if these warnings were ignored or overridden.

The IQAN motion control system shall receive rotation information from an absolute encoder located on the rotation swivel. The encoder shall provide absolute position of the turntable at any given position from 0 degrees to 360 degrees of rotation.

An MD3 information center shall be provided at the turntable. The MD3 display shall allow the system to be diagnosed and calibrated without the need for separate controllers or computers.

The turntable MD3 display shall indicate the following information from on-demand screen:

524. 100' & 101' LADDER, TILLER MANUAL OUTRIGGER CONTROLS SECTION 3.125

QTY: 1

Two (2) illuminated manual outrigger control stations shall be provided on the forward section of the body to the rear of the gooseneck area, one (1) on each side of the turntable. The control handles shall be enclosed with slots for each control handle in an aluminum door. The controls shall be located such that the operator can see the outrigger he is operating.

Out and down outrigger control functions for the outriggers shall be operated independently, so that vehicle may be set up in restricted areas or on uneven terrain. The diverter valve override control shall be mounted behind the left side control panel.

A hinged outrigger control panel shall be provided at the left side of the trailer gooseneck area. The panel shall be equipped with a stainless steel hinged, which shall allow the operator to access the diverter valve manual override control and manual override controls.

The main outrigger control station shall incorporate the following:

Four (4) outrigger set indicator lights
One (1) ladder power indicator light
Fast idle switch
Emergency pump control button with red indicator light
Warning decals
"Hydraulic Filter By-Pass" indicator light
Hydraulic test ports

525. HYDRAULIC PUMP PRESSURE – DISPLAY SECTION 3.134

QTY: 1

Hydraulic pump pressure.

526. ELEVATION ANGLE OF LADDER – DISPLAY SECTION 3.134

QTY: 1

Elevation angle of the ladder.

527. HYDRAULIC PRESSURE GAUGE NEAR OUTRIGGER VALVE

QTY: 1

A Hydraulic pressure gauge shall be located near the outrigger hydraulic valve.

528. VERTICAL HEIGHT OF LADDER – DISPLAY SECTION 3.145

QTY: 1

Continuous ladder extension percentage.

529. DEGREE OF ROTATION FROM VEHICLE CENTERLINE - DISPLAY

QTY: 1

Degree of rotation from centerline of vehicle.

530. E-ZONE SHORT JACK WARNING - DISPLAY

QTY: 1

E-Zone™ short jack warning.

531. CRADLE ALIGNMENT MESSAGE - DISPLAY

QTY: 1

Cradle alignment message.

532. DEVICE LOAD MONITORING - DISPLAY

QTY: 1

Device tip moment load monitoring.

533. IQAN - INCLINOMETER

QTY: 1

An inclinometer shall be provided on the base section of the aerial device to measure the relative angle of the ladder.

534. IQAN - MOMENT LOAD INDICATOR

QTY: 1

A pressure switch shall be installed on the lift cylinder to indicate the amount of lifting force being imparted onto the aerial device.

535. WARNING MESSAGES - TURNTABLE ONLY

QTY: 1

The MD3 screen will also display warning/message screens to alert the operator to a potentially unsafe condition of the aerial device.

536. IQAN - "E-ZONE" ROTATION SAFETY SYSTEM, 2-OUTRIGGERS SECTION 3.111

QTY: 1

The E-Zone™ Rotation Safety System has been designed to aid the aerial device operator who has primary operational responsibility in preventing the rotation of the aerial device into an over turning mode.

Controlled by the IQAN system, the E-Zone™ Rotation Safety System senses outrigger extension and outrigger jack positioning in conjunction with the aerial device movement.

If the aerial device operator attempts to move the aerial device off vehicle center, and the outriggers are not fully extended on the direction of the rotation side, and all jacks in firm ground contact, the E-Zone™ Rotation Safety System shall sense this fault and shall audibly and visually warn the operator to return the aerial device to the center line position.

If the operator continues rotation into the short-jacked zone, the aerial device rotation shall stop.

When rotation is stopped, the E-Zone™ Rotation Safety System shall allow the operator to only rotate back to the fully jacked side of the vehicle.

537. IQAN - "E-ZONE" CAB & BODY PROXIMITY SYSTEM - LADDERS SECTION 3.112

QTY: 1

Controlled by the IQAN system, a cab proximity system shall be provided utilizing E-Zone™ technology on the rotation and elevation systems to alert the aerial device operator when rotating left or right at low angles and or lowering the ladder, toward the vehicle cab.

The E-Zone™ system shall also automatically stop rotation or lowering functions when the device is in the defined zone regardless of the ladder rotation degree or elevation degree. When the E-Zone™ system stops rotation towards the cab, the operator shall only be capable of rotating in the opposite direction or elevate the ladder above the defined zone.

If the E-Zone™ system stops the lowering function when the ladder is in the defined zone over the cab, the operator shall only be capable of raising or rotating the ladder away from the cab. The E-Zone™ system shall sound an audible alarm and display a warning message in the MD3 display located at the control stations. The audible and visual warning message shall stay activated until the operator moves the device from the defined zone.

Controlled by the IQAN system, a body proximity system shall be provided utilizing E-Zone™ technology on the rotation and elevation systems to alert the aerial device operator when rotating left or right at low angles and or lowering the ladder, toward the body.

The E-Zone™ system shall also automatically stop rotation or lowering functions when the device is in the defined zone regardless of the ladder rotation degree or elevation degree. When the E-Zone™ system stops rotation towards the body, the operator shall only be capable of rotating in the opposite direction or elevate the ladder above the defined zone.

If the E-Zone™ system stops the lowering function when the ladder is in the defined zone over the body, the operator shall only be capable of raising or rotating the ladder away from the body. The E-Zone™ system shall sound an audible alarm and display a warning message in the MD3 display located at the control stations. The audible and visual warning message shall stay activated until the operator moves the device from the defined zone.

538. IQAN - EXTENSION SYSTEM STRING POTENTIOMETER

QTY: 1

An extension string potentiometer shall be provided on the aerial device to measure the relative extension of the aerial device.

539. 101' LADDER, TILLER TORQUE BOX SECTION 3.114

QTY: 1

The torque box shall be steel side tubes which shall be welded together within the gooseneck of the tiller trailer.

The gooseneck shall be an integral design housing the fifth wheel bearing plate, turntable lower bearing plate and the outrigger housings creating a torque box weldment that shall transfer all aerial loads to the outrigger.

The torque box assembly shall be equipped with two (2) integral "H" type, out and down outriggers.

There shall be a 44-1/4" x 44-1/4" welded structural steel pedestal plate to support the turntable, secure the outriggers trailer gooseneck and torque box as one integral unit.

The torque box structure shall transfer all aerial loads into the outriggers, thus preventing damage to the chassis frame, trailer frame and body.

540. AERIAL TRAVEL SUPPORT, ALL DEVICES SECTION 3.100

QTY: 1

A heavy duty rest shall be provided to support the aerial in the travel position.

Stainless steel bedding plates shall be attached to the aerial base section to protect the aerial when the unit is in the travel position.

541. IQAN - OUTRIGGER STRING POTENTIOMETER - TWO (2) OUTRIGGERS

QTY: 1

An extension string potentiometer shall be provided on each outrigger to measure the relative extension of the outrigger

The potentiometer shall sense and provide a signal for full outrigger extension.

542. OUTRIGGER INTERLOCK SYSTEM & ALARM, ALL DEVICES

QTY: 1

An interlock system shall be provided between the outriggers and ladder that prevents the operation of the ladder until the operator places all jacks in the load supporting configuration. Each outrigger shall be equipped with a pressure sensitive switch that closes only when the jack is firmly in contact with the ground. Until all jack switches close, electrical power shall not be transmitted to the turntable (hence preventing ladder operation).

A guarded momentary toggle switch shall be provided at the central outrigger control station for emergency override of the interlock system. A green indicator light shall be provided on the outrigger control panel to indicate the position of the foot pad. Illumination of the indicator light indicates firm ground contact.

An outrigger deployment warning device shall be provided to warn personnel in the vicinity of the apparatus that the outriggers are in motion. Whenever an outrigger control is utilized, the device shall produce a pulsing tone, separate and distinctive from that of other audible warning systems provided on the apparatus. When the outrigger control is released to its neutral position, the signal shall cease.

A guarded momentary toggle switch will be provided for the outrigger/aerial manual over-ride system. A keyed system will not be acceptable.

543. 101' LADDER, TILLER OUTRIGGERS, 14' STANCE SECTION 3.115

QTY: 1

Two (2) double box beam "H" type out and down outriggers shall be located below the turntable to provide vehicle stability during aerial tower operation.

The outriggers shall be equipped with a 14' jack spread. There will be no exceptions.

The horizontal outrigger beam shall be fabricated from 3/8" steel side plates and 3/4" steel top and bottom plates.

Each outrigger assembly shall have 2 Nylatron slide pads with a total square area of 24 sq. in. to provide smooth operation and to extend the life of the outrigger.

The vertical jack cylinder rods shall be fully enclosed by a telescopic inner steel jack box that shall do the following:

Protect the cylinder rods against damage which may occur while on the fire ground.

Add lateral stability to the outrigger structure.

544. OUTRIGGER ORALITE - V98, RED/LIME

QTY: 1

Red/Lime Oralite V98 material in a Chevron pattern shall be furnished on both sides of the horizontal and vertical beams of the rear outriggers. This material/colors should match the rear of body chevron.

545. 101' LADDER, TILLER OUTRIGGERS - HORIZONTAL CYLINDERS SECTION 3.115, 3.118

QTY: 1

The extension of the horizontal outrigger beam shall be accomplished by a hydraulic cylinder which shall have a 3" bore and 2" rod and 38" stroke.

This cylinder shall have cushion porting to reduce shocks in stopping the cylinder at full extension and retraction.

The horizontal outrigger beam shall be fabricated from 3/8" steel side plates and 3/4" steel top and bottom plates.

546. OUTRIGGER LEVEL SIDE TO SIDE, ALL TILLER DEVICES SECTION 3.122

QTY: 1

One (1) bubble type side to side leveling device shall be provided at each outrigger control location to assist the operator aerial device setup.

These leveling devices shall be mounted on the front face of the body panel and shall be at eye level to the operator.

The leveling devices shall be color coded indicating the following conditions:

Green Safe operating zone.

Yellow Caution operating zone.

Since use of this leveling device is of a critical nature, it shall have a serialized number from its manufacturer to indicate documented quality control.

547. OUTRIGGERS NOT STOWED INDICATOR ON DASH

QTY: 1

"Outrigger(s) Extended" indicator light

548. DRIVER START OVERRIDE

QTY: 1

A switch will be provided under the dash to allow the driver to start the vehicle without a Tillerman being inside of the tiller cab.

549. 101' LADDER, TILLER OUTRIGGERS - VERTICAL CYLINDER SECTION 3.116

QTY: 1

Each jack cylinder shall have a 5" bore with a 3-3/4" rod and a 27" stroke.

The jack cylinders shall be equipped with integral (on the cylinder) holding valves, which shall hold the jack cylinder in either the stowed position or the deployed position should a hydraulic line be severed at any point within the hydraulic system.

Each jack cylinder shall also have a thermal relief system that shall prevent the cylinder fluid pressure from rising due to fluid temperature increase.

550. OVERSIZED OUTRIGGER/JACK FOOT PADS, TILLER DEVICES

QTY: 1

A permanently attached self-centering steel foot pad, 1/2" x 20.5" x 22.5" shall be provided on each vertical jack beam.

Each foot pad shall swivel longitudinal and require no adjustment during outrigger set-up.

The outrigger pad shall be attached without the use of a bearing type swivel due to maintenance required on this design.

551. LED OUTRIGGER GROUND LIGHTS SECTION 3.121

QTY: 1

One (1) adjustable, Federal Signal COM750-SQ LED ground flood light mounted under the body, to illuminate each outrigger foot pad area.

Both the flashing lights and the foot pad illumination lights shall be energized by the ladder power circuit.

552. FEDERAL SIGNAL LED LOLLIPOP LIGHTS, 2-OUTRIGGERS SECTION 3.121

QTY: 1

Two (2) Federal Signal Micro Pulse LED lights shall be mounted back to back on the inside surface of each outrigger.

Each light head shall be equipped with red LEDs and a colored lens.

553. 101' LADDER, TILLER TURNTABLE SECTION 3.95

QTY: 1

The turntable shall be a fabricated steel weldment designed for the rotation and elevation of the ladder sections.

It shall consist of the following:

A 44.25" x 48.00" x 1" machined steel bearing plate and matching top plate that shall be machined to insure proper fit to the rotation bearing.

There will be no exceptions.

554. TURNTABLE DECK - ALUMINUM TREADPLATE SECTION 3.95

QTY: 1

The turntable deck shall cover the entire turntable frame, providing a safe walking surface around the ladder.

It shall have a 1.5" downward flange on all sides.

The deck shall be constructed from aluminum tread plate to provide an anti-slip walking surface.

555. TDA NOTICE!!! TURNTABLE DECK SECTION 3.95

QTY: 1

Special attention is required for the size and position of the turntable deck to provide adequate clearance for the trailer break over angles.

Proper clearance shall be designed into any components located forward of the trailer gooseneck and trailer fifth wheel.

556. HEEL PIN STEP ON TURNTABLE, 79', 103', 109' & 123' SECTION 3.95

QTY: 1

A two (2) step aluminum tread plate access step shall be mounted near the heel of the ladder to provide easy access to the ladder from the turntable deck. The step shall cover the rotation motor and brake assembly and shall easily removable for access to the drive assembly.

557. TURNTABLE HANDRAILS, KNURLED ALUM. LIGHTED - NO INSERTS - 3 SIDES SECTION 3.95

QTY: 1

Two (2) Hansen 1-1/4" diameter, knurled, bright anodized aluminum handrails shall be provided at the rear most portion of the turntable.

Each grab rail shall have white LED lights that shall be wired to the DOT marker lights and interlocked to illuminate when the parking brake is applied.

Additional side safety handrails shall be provided as non-lighted.

The handrails shall be knurled aluminum tubing and the joining fittings shall be polished chrome plated tees and ell.

The handrails shall secure to the turntable deck with coated steel stanchions.

All rails shall be a minimum of 42" high.

Formed rubber gaskets shall be provided between each stanchion base and the turntable surface.

558. HEEL PINS - 100' & 101' TDA SECTION 3.96

QTY: 1

The turntable and ladder shall be designed with dual heel pins at the turntable/ladder pivot point.

The pins shall be solid steel extending the full width of the turntable vertical supports.

The heel pins shall be a minimum of 3" in diameter and is to be equipped with large pin journals in the ladder and turntable supports, which will reduce wear and distribute loads.

Due to the high load and wear on the ladder pivot points, the pin journals in the ladder base rail shall be designed to provide bearing surfaces utilizing ToughMet® 3 AT110 Temper Plate high strength alloy bearing material.

The journals shall have minimum yield strength of 110,000 psi.

Grease fittings shall be provided in bearing at the rear of the ladder section.

559. STAINLESS STEEL CRADLE ALIGNMENT ARROWS ON TURNTABLE SECTION 3.101

QTY: 1

Stainless steel arrows shall be provided on the turntable surface in view of the operator when standing at the turntable control station.

The arrows shall assist the operator in indicating the alignment of the aerial ladder with the ladder travel cradle.

The indicators shall be overlaid with Scotchlite material.

560. FIRE RESEARCH "MAN SAVER" BARS @ TURNTABLE OPENINGS SECTION 3.95

QTY: 1

Two (2) Fire Research model #MSA110-A34-N, "ManSaver" safety bars shall be provided at the turntable handrail opening at the rear of the turntable.

The "ManSaver" bars SHALL BE PROVIDED WITH NO VINYL PADDED COVERING that shall open in two (2) directions, in and up to provided additional safety at the turntable walking areas.

The safety bars shall be mounted to the turntable handrails with MS22 mounting brackets.

561. 101' LADDER, TILLER TURNTABLE SWIVEL SECTION 3.139, 3.140

QTY: 1

Hydraulic power to the turntable hydraulic circuits shall be provided through a three (3) port, high pressure, hydraulic swivel that permits 360 degrees of continuous turntable rotation.

Electrical power to the turntable electric circuits shall be provided by a collector ring assembly.

The collector rings shall be used for electrical ground, ladder control functions, and a 120 volt A.C. system during 360 degrees of continuous turntable rotation.

The collector ring assembly shall have a minimum of 32 circuits.

Water shall be transferred to the aerial waterway by means of a four (4) inch water swivel enabling 360 degree continuous rotation of the turntable (if applicable).

562. IQAN - SWIVEL ROTATION ENCODER

QTY: 1

The swivel shall be designed with an integral absolute encoder to provide a continuous output indicating the position of the turntable at any given time.

The encoder shall be designed to indicate position of the turntable even if power interruption occurs.

The number of degrees of rotation shall be shown in a digital readout on the MD3 display.

563. 101' LADDER, TILLER, LADDER CONSTRUCTION SECTION 3.90

QTY: 1

The elevating ladder shall consist of four (4) steel ladder sections referred to as the base section, lower mid-section, upper mid-section and fly section.

Each section will be fabricated from 100,000 psi yield ultra high strength steel.

The design and construction criteria for these ladder sections shall be:

Each section shall be fabricated using high strength steel, welded together to form a structural unit.

All welding shall be done by welders that have been certified in accordance with the American Welding Society Standard specifications #D1.1.

Each ladder section shall be constructed in an assembly fixture to ensure uniformity and interchangeability.

K-bracing at each rung shall be utilized to minimize side deflection of the ladder.

All rungs shall be 1-1/8" in diameter, spaced at 14" centers. Rungs will be round. {No Exceptions}

All rungs, K-braces, and diagonals shall be positioned so that they are continuously welded to the ladder section.

All side rails shall be protected from interior corrosion by coating the interior of the rail with a corrosion preventative film.

Ladder handrails and diagonal material are to be constructed from square or rectangular tubing, which provide a larger welding surface area where the materials are attached to each other.

564. 101' H.D. 4-SECTION TILLER, LADDER DIMENSIONS **SECTION 3.92**

QTY: 1

The aerial device shall be constructed with the following section dimensions:

Handrail
Height
Handrail
Width

Base Section

28-3/8"
41"

Lower Mid-Section

25-5/8"
34-1/2"

Upper Mid-Section

23-7/16"
29"

Fly Section

21-5/16"
23-1/2"

Overlap surfaces between sections:

Base to Mid-Section
78"

Lower Mid to Upper Mid-Section
78"

Upper Mid to Fly Section
78"

565. RUNG COVERS - PHOTOLUMINESCENT, ALL DEVICES SECTION 3.93

QTY: 1

Each rung shall be covered with a secure, heavy-duty, fiberglass pultrusion that incorporates an aggressive, non-slip coating.

The rung covers shall be secured to each rung utilizing a Silyl Modified Polymer (SMP) based adhesive and shall be easily replaceable should the rung cover become damaged.

Each rung shall have a minimum of 4" of photo luminescent coating in the center of the rung, two (2) 5" black sections on each side of the center photo luminescent and additional photo luminescent sections on the outside edge of each cover.

The covers shall provide an aggressive, non-slip coating and assist in providing a light source for each rung during low light conditions.

The photo luminescent coating shall remain visible for up to 20 hours after exposure to light.

The rung covers shall be covered by a ten (10) year warranty. A copy of the written warranty shall be provided.

There will be no exceptions.

566. LADDER, CABLE/HOSE/WIRE ROUTING, 101' LADDER

QTY: 1

All lines to the ladder tip shall be enclosed and protected from the turntable to the ladder tip.

All lines shall be routed through extrusions and high flex energy chain systems.

567. ROOF LADDER MOUNT WITHIN FLY SECTION; 3S-75-MM-HD SECTION 3.146

QTY: 1

There shall be a mount furnished in the fly section of the aerial ladder.

The mounts shall include an aluminum receptacle box for the heel end of the ladder and a mechanical pin lock for the roof hook end of the ladder.

568. 10' DUO-SAFETY 585A-10 ATTIC LADDER PROVIDED – FLY SECTION 5.1

QTY: 1

One (1) Duo-Safety model 585A-10; 10', aluminum, folding attic ladder shall be provided to be mounted in the roof ladder mount in the fly section. **Clarification; A folding attic ladder will be mounted within the aerial fly section. The ladder will be mounted to the driver's side of the ladder, as viewed when the aerial ladder is resting in the cradle.**

569. SPECIFIED ROOF LADDER MOUNTED ON LEFT SIDE OF FLY SECTION 3.146

QTY: 1

The specified roof ladder shall be mounted on the left side of the fly section.

570. ROOF LADDER MOUNT ON BASE SECTION; 4S-100-HD SECTION 3.147

QTY: 1

There shall be a mount furnished on the base section of the aerial ladder for a roof ladder. The mounts shall be designed to cradle the ladder with a pin to keep the ladder from sliding when the aerial device is elevated. Velcro strap shall secure the ladder in the brackets. The brackets will be painted with dark grey line-x paint.

571. 14' DUO-SAFETY 775A-14 ROOF LADDER PROVIDED – BASE SECTION 3.147, 5.1

QTY: 2

One (1) Duo-Safety model 14-775A-DR; 14', aluminum, straight roof ladder with folding hooks on both ends, shall be provided to be mounted in the roof ladder mount on the base section.

572. SPECIFIED ROOF LADDER MOUNTED ON BOTH SIDE OF BASE SECTION 3.147

QTY: 1

The specified roof ladders shall be mounted on both sides of the base section.

573. RESCUE EYELET ON LAST RUNG OF LADDER TIP SECTION 3.191

QTY: 1

Two (2) lifting eyes shall be provided at the end of the ladder fly section. Each lifting eye shall give the fire department the capabilities to tie off or lift from the ladder fly section.

The lifting eyes shall be third party tested and certified with the device for a minimum capacity of 250 pounds. The rating shall include a 2:1 safety factor.

574. STAINLESS STEEL EGRESS W/TIP SKID GUARDS SECTION 3.94

QTY: 1

The tip of the fly section be equipped with a bolt-on egress section. The egress shall extend from the end of the fly and be constructed of 1.25" round knurled stainless steel. The knurled construction shall allow for easy grip during exit and entry off and on the ladder tip. The egress shall be designed to fully support the rated capacity of the ladder. Each end of the egress base rail shall be designed with rounded "Ladder Tip Skid Guard" to prevent ladder tip hang up if the ladder slides on a building surface.

575. DUAL FOLDING STEPS @ LADDER TIP, ALL DEVICES SECTION 3.98

QTY: 1

Two (2) sets of folding steps shall be conveniently located at the end portion of the fly section. These shall be used for one person to place his feet so that he is positioned parallel to the ladder. The steps shall fold into proper position for usage and fold toward the sides of the ladder when not in use to provide adequate clearance when the ladder is being climbed. The steps shall be placed approximately 56" & 84" from the center of the last rung toward the base of the aerial.

Clarification; The folding steps within the fly section will also have a cut out to allow for the 3" hose to be used in conjunction with the clamp-on monitor.

576. RED SCOTCHLITE MATERIAL ON LAST 6' OF LADDER TIP

QTY: 1

To assist in positioning of the ladder tip, the last six (6) feet of the fly section shall be equipped with red Scotchlite material on the ladder handrails, diagonal braces and ladder base rail.

577. LADDER LEVEL INDICATOR (BASE SECTION) – LIGHTED SECTION 3.144

QTY: 1

One (1) Rieker 12 volt lighted, ladder angle indicator shall be provided on the base section of the ladder, near the turntable control console. The integrated light shall be activated with ladder power.

578. 101' LADDER, TILLER, ELEVATION SYSTEM SECTION 3.89, 3.103

QTY: 1

Two (2) double acting lift cylinders shall be attached between the turntable and the base section near the midpoint of the base section thus creating a better lifting geometry resulting in lower hydraulic operating pressures and improved load distribution on the base ladder section.

The cylinders shall function only to elevate the aerial device and not as a structural member to stabilize the ladder sideways.

The lift cylinder rods shall be attached to the base section with self-aligning swivel bearings which prevent side loading on the lift cylinders resulting in longer cylinder seal life.

They shall provide smooth precise elevation from -7 degrees below horizontal to +80 degrees above horizontal.

The lift cylinders shall have a 5-1/2" internal bore, a 3" diameter rod and 29-13/16" stroke.

The lift cylinders shall be equipped with integral (on the cylinder) holding valves which prevents the ladder from lowering should a hydraulic line be ruptured at any point within the hydraulic system.

They shall also have a manifold line with velocity fuses between the cylinders to prevent uneven cylinder lift.

They shall have both rod and piston hydraulic cushions.

These cushions shall decelerate the cylinder near the end of its stroke creating a smooth stop at full stroke.

A limit switch at the aerial travel support shall be provided to prevent operation of the outriggers once the aerial has been elevated from the nested position.

This system will prevent operation of the outriggers once the ladder has been elevated from the nested position.

579. 101' LADDER, TILLER, ROTATION SYSTEM SECTION 3.108

QTY: 1

A 41" diameter external tooth monorace bearing shall be provided for 360 degree continuous rotation of the aerial device.

The bearing shall be bolted to the turntable and bolted to the pedestal bearing plate using forty (40) 3/4" diameter SAE Grade 8 bolts to secure the bearing to the turntable and thirty three (33) 3/4" diameter SAE Grade 8 bolts to secure the bearing to the pedestal bearing plate.

Both upper and lower bearing surfaces shall be milled to ensure a true mounting surface for the rotation bearing.

580. ROTATION MOTOR AND BRAKE - 41" EXTERNAL BEARINGS SECTION 3.110

QTY: 1

A hydraulic driven planetary swing drive system shall provide smooth and precise rotation. A spring applied, hydraulically released, disc type brake shall be furnished on each gear box to provide positive braking of the turntable assembly against reactionary forces such as water and gravity.

581. SWING DRIVE ADJUSTMENT

QTY: 1

The swing drive shall be designed with an adjustable mount. This shall allow the back lash to be set at assembly and provide the ability to re-adjust as components wear. This shall prevent the need to replace rotation components that may exceed manufacturer's allowable back lash in later aerial inspections. Units that do not allow adjustment shall not be acceptable.

582. 101' LADDER, TILLER, EXTENSION/RETRACTION SYSTEM SECTION 3.104

QTY: 1

A full hydraulic powered extension and retraction system of the ladder shall be provided through dual hydraulic cylinders and cables, each capable of operating the ladder in the event of failure of one of the systems.

The extension cylinders shall have a 3.00" internal bore with a 2.00" rod. Both cylinders shall be equipped with two integral holding valves to protect both extension and retraction movement during water tower

operations or to prevent the ladder from falling should a line be severed at any point within the hydraulic system.

Cables attached to the base and mid ladder sections shall be routed over sheave wheels on the base section and cylinder sheave mount. This cable arrangement shall act as a stroke multiplier to provide full ladder extension and retraction. The sheave wheel bearings shall be maintenance free and not require external lubrication. Extension and retraction cables shall have a minimum safety factor of 5 :1 and shall be .50" diameter from the base to mid-section cable and be .375" from the base to the fly section.. The minimum ratio of the diameter of wire rope to the sheave used shall be 1:12.

583. EXTENSION CYLINDERS PAINTED LADDER PAINT COLOR SECTION 3.59, 3.6

QTY: 1

The extension cylinders shall be painted to match the color of the ladder.

584. LADDER SLIDE PADS, 100' & 101' LADDER SECTION 3.106

QTY: 1

Nylatron slide pads with a sliding coefficient of friction of .15 shall be used between the telescoping ladder sections.

Slides are required because of greater surface area for load transfer between the telescoping sections.

Slide pads shall also be used to control side play between the ladder sections.

The rear slide pads shall be held into place by a machined receiver, which is welded into the base rail of the extending sections.

Each slide pad shall be held in place with an easily removable keeper, allowing the pad to be removed from the rear of the ladder section.

To control movement side to side the receiver shall allow for adjustment of each pad.

585. LADDER, 120 VOLT ELECTRICAL SYSTEM SECTION 4.68

QTY: 1

Two (2) 120 volt 20 amp electrical circuits utilizing 12 gauge five strand electrical cable shall be provided to the tip.

Circuits shall be wired from the tip to the turntable through the collector ring assembly.

586. TWO (2) FEDERAL SIGNAL COMMANDER SECTION 4.66

QTY: 1

Two (2) Federal Signal Commander 15,000 lumens, 120 volt permanently mounted, swivel based, LED lights shall be mounted at the tip of the ladder, one on each side. The lights shall be individually switched at the light head. **In addition, the 120-volt lights located at the tip of the aerial ladder will have a "cutoff" switch located on the turntable pedestal.**

587. LADDER, 120 VOLT NEMA L5-15 AMP RECEPTACLE @ LADDER SECTION 4.68

QTY: 1

One (1) 120 volt weatherproof outlet, Nema L5-15R, twist lock type and an environmental cover shall be furnished near the end of the fly section.

588. CRADLE ILLUMINATION LIGHTS - GROTE WHITELIGHT LED SECTION 3.100

QTY: 1

Two (2) 12 volt Grote White Light 63611 LED flood lights shall be mounted near the ladder travel support to illuminate this area during night time operation.

The lights shall be wired and activated by the ladder power circuit.

589. HEEL PIN STEP LIGHTS - TECNIQ EON 3 LED LIGHTS SECTION 3.97

QTY: 1

Seven (7) polished stainless steel, TecNiq Eon 3-LED horizontal surface mounted lights shall be provided and installed with a gasket at the base of the ladder in the turntable heel pin step area.

590. TURNTABLE CONTROL CONSOLE LIGHTING - LUMA BAR LED SECTION 3.127

QTY: 1

A sealed 12" Amdor Lumabar LED H20 light shall be used to illuminate the turntable control console.

The light shall be mounted across the top of the control panel to assure proper illumination of all controls.

The light shall be wired to the ladder power circuit.

591. TURNTABLE CONSOLE STEP LIGHT - TECNIQ EON 3 LED SECTION 3.97

QTY: 1

One (1) polished stainless steel, TecNiq Eon 3-LED horizontal surface mounted lights shall be provided and installed with a gasket at the front face of the turntable console facing the operator, to illuminate the step area in front of the control console.

The light shall be mounted no lower than 18" from the step deck.

592. TWO (2) FEDERAL SIGNAL LED LIGHTS @ LADDER BASE SECTION 3.97

QTY: 1

Two (2) Federal Signal 1220-SQ LED lights shall be mounted at the rear of the base ladder section, one on each handrail.

593. TWO (2) FEDERAL SIGNAL LED FLOOD LIGHTS @ LADDER TIP SECTION 3.99

QTY: 1

Two (2) Federal Signal Model COM1200-SQ LED floodlights shall be mounted near the tip of the ladder, one on each side.

594. LADDER WALKWAY ILLUMINATION LIGHTS, 4-SECT LADDER SECTION 4.69

QTY: 1

Both side of the ladder sections shall be equipped with the Luma Bar Pathfinder™ aerial illumination system. This system shall illuminate the rungs of the ladder to support night time operations.

The Luma Bar Pathfinder™ system shall consist of a continuous path of Blue LED lights spaced every ¾" which shall offer a minimum viewing angle of 120 degrees. The assembly shall be encapsulated within an enclosure which is resistant to UV and ozone and shall be terminated using sealed end caps with RTV silicone.

The complete assembly shall offer a minimum water proof rating of IP68. This sealed enclosure shall be mounted within a clear anodized aluminum C-channel on the inside of the rung base rail, on each ladder section. The Luma Bar Pathfinder™ assembly shall incorporate a UV stabilized high impact polycarbonate shield which is integral to the supplied aluminum C-channel. The Luma Bar Pathfinder™ system shall be wired to the ladder power circuit with a disabling switch at the turntable control console.

595. CUTOFF SWITCH FOR LADDER TIP 12 VOLT LIGHTS @ LOWER CONTROL SECTION 3.127

QTY: 1

A switch shall be provided at the lower control console for the 12 volt light(s) located at the ladder tip.

The switch shall be wired to the light circuit to give the operator the capability to shut down the lights if the switch on the light head is in the on position.

596. BASE SECTION LIGHTS SWITCHES @ TURNTABLE CONSOLE SECTION 3.127

QTY: 1

One (1) switch shall be provided at the turntable control console for the base aerial section lighting.

597. LADDER, CONTROL STATION SECTION 3.127

QTY: 1

There shall be a control station at the turntable.

All elevation, extension and rotation operational controls shall operate from this position.

These controls shall be arranged to permit the operator to regulate the speed of these operations within the safe limits as determined by the manufacturer.

Load instruction plates shall be located at the control station to show the recommended safe load of the ladder.

The control devices shall be clearly marked and suitably lighted.

598. TDA LADDERS, CONSOLE LOCATED @ RH SIDE OF TURNTABLE SECTION 3.127

QTY: 1

The turntable control station shall be located on the right side of the turntable such that the operator can easily observe the ladder tip while operating the controls.

**599. PAINTED ALUMINUM TURNTABLE CONSOLE - MATCH LADDER SECTION 3.59,
3.60**

QTY: 1

The control console shall be manufactured from aluminum material and designed to support the components mounted in and on the console.

The console shall be painted to match the ladder structure.

600. 101' LADDER, TILLER TURNTABLE CONTROL STATION SECTION 3.127

QTY: 1

The lower part of the console shall be angled away from the operator, to provide as much foot room as possible for the operator.

An access door shall be provided on the front of the console to provide complete access to the electrical and hydraulic components mounted inside the console.

The console shall be illuminated for night operations, and shall have the following controls/indicators:

The following items shall be clearly marked:

Three (3) ladder control levers.

A foot operated "dead man switch". That electrically opens the aerial control valve shall protect against accidental movement of the control handles.

Master electrical power switch with emergency shutdown capabilities.

Rung alignment indicator light for ladder climbing operations.

Cradle alignment indicator light.

Engine fast idle control switch.

Emergency pump power switch.

5,000 psi hydraulic oil pressure gauge (Liquid filled).

Intercom controls

Illuminated load chart on front of console.

601. AERIAL HOURMETER @ TURNTABLE CONTROL CONSOLE SECTION 3.128

QTY: 1

Aerial Hour meter

602. ENGINE START

QTY: 1

Push Button waterproof momentary engine starter switch

603. LADDER TIP 12 VOLT LIGHTS SWITCH @ TURNTABLE CONSOLE SECTION 3.127

QTY: 1

Cutoff switch for 12 volt light(s) @ the ladder tip

604. TURNTABLE CONSOLE COVER - PAINTED RADIUS SECTION 3.127

QTY: 1

The turntable control console shall be designed with an aluminum cover to match the console.

The cover shall be designed with a radius shape that pivots over the top of the control panel and does not obstruct viability for the operator when the ladder is operated at low angles.

605. LADDER, FRC ACT -2 WAY COMMUNICATION SYSTEM - LOWER CONTROLS SECTION 3.141

QTY: 1

A Fire Research "ACT" communication system shall be furnished between the ladder tip and the rear operator's position.

A master control at the turntable operator's console shall be provided, with a push-to-talk button and a volume control.

606. LADDER, FRC ACT 2-WAY COMMUNICATION SYSTEM - UPPER SPEAKER/MIC SECTION 3.141

QTY: 1

A self-contained, hands-free speaker microphone shall be located at the ladder tip.

No operator action shall be required to transmit or receive messages at this speaker microphone.

607. AKRON #1494 LADDER CLAMP-ON MONITOR SECTION 3.143, 5.1

QTY: 1

An Akron #1494 CAN Electric aluminum ladder pipe monitor assembly including shutoff, ladder pipe, and a 5177 electronic CAN MS nozzle.

The Akron clamp on monitor shall be equipped with 2 ½" NSTF threads.

The ladder pipe hose storage shall will be located on top of the officer's side of the base section. The clamp-on monitor mount shall be designed with rung spacing to accommodate the clamp on monitor.

A mount shall be provided for the Akron ladder pipe to securely be carried/stored. Final mounting location shall be made at the final inspection.

608. 101' LADDER, TILLER LADDER CAPACITIES SECTION 3.86

QTY: 1

The following ladder tip load capacities shall be established with the truck level, the outriggers fully extended and lowered to relieve the chassis weight from the axles. Capacities are based upon full extension and 360 degree rotation.

LADDER CAPACITIES IN POUNDS
(50 MPH WIND and 1/4" ICE BUILD UP CONDITIONS / UNCHARGED WATERWAY)

	DEGREES OF ELEVATION							
	-7 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	71 to 80
Base Section	250	250	500	500	500	500	500	500
Lower Mid	250	250	250	250	250	500	500	500

Upper Mid	---	---	---	---	250	250	500	500
Fly Section	---	---	---	---	---	---	250	500
Fly Tip	500	500	500	500	500	500	500	500

The ladder and water system shall be designed to permit the following flows:

1500 GPM at 90 degrees to ladder centerline either side.

1500 GPM parallel to ladder centerline and as far below horizontal as nozzle design allows.

1500 GPM above ladder centerline as far as deck gun design allows.

Note: Tip capacity is reduced to 250 lbs. when flowing water with the nozzle above the waterway centerline.

LADDER CAPACITIES IN POUNDS
(50 MPH WIND and 1/4" ICE BUILD UP CONDITIONS / CHARGED WATERWAY)

	DEGREES OF ELEVATION							
	-7 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	71 to 80
Base Section	---	---	250	250	500	500	500	500
Lower Mid	---	---	---	---	250	250	500	500
Upper Mid	---	---	---	---	---	250	250	500
Fly Section	---	---	---	---	---	---	250	250
Fly Tip	500	500	500	500	500	500	500	500

The aerial unit can be operated in any plane up to 3.5 degrees out of level at full capacities. Operation beyond this limit shall be at operator's discretion.

609. AERIAL LADDER, MANUALS, TWO (2) SETS SECTION 3.79

QTY: 1

The aerial manufacturer shall provide the following manuals pertaining to the aerial device:

Two (2) Operator's manuals

Two (2) Parts manuals

Two (2) Complete Electrical and Hydraulic Diagrams

Four (4) USB Thumb drives with all information listed above

610. 100' & 101' LADDER, TILLER SPECIAL AERIAL TOOLS SECTION 3.80, 3.81

QTY: 1

A steel tool box shall be provided with the following special tools for retorquing of specified bolts as recommended by the aerial manufacturer:

Torque wrench

4:1 multiplier

Extensions, adapters and sockets as required

611. FIRE DEPT AERIAL FAMILIARIZATION - PROVIDED BY FACTORY SECTION 3.82

QTY: 1

An on-site program for familiarization of Fire Department personnel shall be provided.

This program shall be designed to assure complete understanding of all aspects of the aerial device in the operating environment.

The familiarization shall cover all applicable required items in NFPA 1901 code, and be performed by a qualified person per the code.

The familiarization program shall be designed to instruct the individual who has never utilized an aerial device of this type before.

The individual shall receive thorough instructions on operation of the device including hands-on operations for personnel.

The training shall include at a minimum:

Location and operation of all gauges and indicators, as well as fluid level checks.

How to tilt the cab (if a tilt cab is provided), or how to locate all required maintenance areas.

Explanation of all cab controls, instruments, mirrors, safety devices or alarms, brake operations, transmission control, pump controls (if equipped), exhaust regeneration (if provided), seat adjustments, warning light engagement, and other operational equipment.

Familiarization of the aerial device engagement, operations, emergency overrides, safety devices, and maintenance systems.

If the unit is equipped with a fire pump, familiarization of the complete pumping system components, engagement, operations, etc.

If the unit is equipped with a generator, familiarization of the generator system engagement and operations.

If the unit is equipped with a foam system, familiarization of the foam system engagement and operations.

612. FACTORY FAMILIARIZATION - FIVE (5) DAYS SECTION 3.82

QTY: 1

After the unit has been accepted, a factory qualified person shall be provided for a minimum of five (5) days of familiarization.

613. AERIAL SERVICE, ALL DEVICES

QTY: 1

Due to the importance of keeping this vital piece of firefighting apparatus in service with a minimum of downtime, the bidder maintains a network of service centers with factory trained personnel.

The bidder shall have a separate facility for service of units so they do not conflict with production units.

The service facility carries an inventory of parts, separate from production parts.

614. 101' LADDER, TILLER CERT. & TESTING SECTION 3.76, 3.77, 3.78

QTY: 1

The aerial device shall be tested in compliance with the National Fire Protection Association's Standard #1911 (latest edition).

Ongoing structural and physical property testing during construction shall also be done.

The following tests shall be conducted by personnel holding a Level II certification to detect defects and improperly secured components:

Three (3) random samples of each lot or shipment of raw material (plate, tubing, bar, etc.) and fabricated parts from outside vendors shall have a mechanical (tensile, yield, and elongation) and chemical (material content) analysis performed

Magnetic particle inspection shall be conducted on all ferrous welds to assure the integrity of the weldments and also detect any flaws or weaknesses. These tests shall be performed prior to paint or assembly.

Dye penetrant testing be conducted on all structural aluminum welds

Ultrasonic inspection shall be used to detect any flaws in pins, bolts and other critical mounting components. The bolts shall be tested after any torqueing to ensure the bolt was not damaged.

All extension/retraction cables shall be proof load tested, serialized, and certified by the cable vendor.

All cable ends shall be dye penetrant tested to find any cracks, imperfections, etc.

Functional tests, load tests, stability tests and visual structural examination shall be performed.

These tests shall determine any unusual deflection, vibration, or instability characteristic of the unit.

Hydraulic oil sample test prior to delivery.

Additionally, a waterway pressure test shall be performed.

Upon completion of the preceding inspections, the independent testing company shall issue a Certificate of Inspection indicating that all specified standards have been satisfied.

The Type I certification shall be provided by Underwriters Laboratories Inc. (UL).

Aerial manufacturers not utilizing third party, independent testing companies shall not be acceptable.

The following test shall be conducted to the aerial device prior to delivery.

All listed tests shall be witnessed and certified by Underwriters Laboratories Inc. (UL) to ensure the device meets all requirements of NFPA-1901. The manufacturer of the aerial device is required to provide a written statement signed by the Chief Engineer certifying the aerial's ability to perform the following tests:

1-1/2:1 DYNAMIC STABILITY AND LIFT TEST -A test of the apparatus shall be performed that the ladder sections are so designed and powered to support a load representing 150% of the manufacturer's rated tip load capacity at maximum horizontal reach on level ground. Since this is a dynamic test, the load will

be raised, lowered and rotated without evidence of instability. Specifically, 750 pounds at the ladder tip with the ladder fully extended at zero degrees shall be rotated 360°.

1-1/3:1 DYNAMIC STABILITY AND LIFT TEST -A test of the apparatus shall be performed that the tip and ladder sections are so designed and powered to support a load representing 133% of the manufacturer's rated tip load capacity at maximum horizontal reach on a five (5) degree slope. Since this is a dynamic test, the load will be raised, lowered and rotated without evidence of instability. Specifically, 666 pounds at the ladder tip with the ladder fully extended at zero degrees shall be rotated 360°.

TIME TEST - A test of the apparatus shall be performed to raise the ladder from a bedded position extended to full height and rotated through a 90° turn smoothly and without undue vibration in not over 120 seconds.

WATER TOWER TEST #1 -A test of the apparatus shall be performed to test its ability to discharge 1000 gallons per minute parallel to the ladder with the unit at full extension and zero degree elevation and through a 360° rotation. The unit shall be capable of performing this test with a rated tip load of 250 pounds at the ladder tip.

WATER TOWER TEST #2 -A test of the apparatus shall be performed to test the ability to discharge 1000 gallons per minute, 90° to the ladder with the ladder at full extension, zero degree elevation and through 360° of rotation. The unit shall be capable of performing this test with a rated tip load of 250 pounds at the ladder tip.

WATER TEST #3 -A test of the apparatus shall be performed to test the ability to discharge 1000 GPM above the ladder centerline and as many degrees above 0° as the deck gun design allows. This test shall also be performed with the ladder fully extended at 0° elevation and through 360° of rotation with a rated tip load of 250 pounds.

Bidders must state their ability to comply with all of the above tests. Failure to do so shall be grounds for rejection of their bid.

615. WARNING DECALS, ALL DEVICES SECTION 3.148

QTY: 1

Warning decals shall be provided in appropriate locations to alert the operator of potential hazards and operating instructions.

All warning labels shall be in general compliance with ANSI Z34.1 recommendations.

616. GENERAL PAINT DESCRIPTION SECTION 3.62, 3.65

QTY: 1

The apparatus body shall be painted with Sikkens paint product. The paint process shall meet or exceed current state regulations concerning paint operations. Pollution control shall include measures to protect the atmosphere, water, and soil. Contractor shall, upon demand, provide evidence that the manufacturing facility is in compliance with State EPA rules and regulations.

The exterior shall have no mounted components prior to painting to assure full coverage of metal treatments and paint to the exterior surfaces of the body. Any vertically or horizontally hinged smooth-plate compartment doors shall be painted separately to assure proper paint coverage on body, door jambs and door edges.

Paint process shall feature Sikkens high solid LV products and be performed in the following steps:

- Corrosion Prevention - all aluminum surfaces shall be pre-treated with the Alodine 5700 conversion coating to provide superior corrosion resistance and excellent adhesion of the base coat.

- Sikkens Sealer/Primer LV - acrylic urethane sealer/primer shall be applied to guarantee excellent gloss hold-out, chip resistance and a uniform base color.
- Sikkens High Solid LVBT650 (Base coat) - a lead-free, chromate-free high solid acrylic urethane base coat shall be applied, providing excellent coverage and durability. A minimum of two (2) coats shall be applied.
- Sikkens High Solid LVBT650 (Clear coat) - high solid LV clear coat shall be applied as the final step in order to ensure full gloss and color retention and durability. A minimum of two (2) coats shall be applied.

Any location where the material is penetrated after painting, for the purpose of mounting steps, hand rails, doors, lights, or other specified components shall be treated at the point of penetration with a corrosion inhibiting pre-treatment (ECK Corrosion Control). The pre-treatment shall be applied to the aluminum sheet metal or aluminum extrusions in all locations where the aluminum has been penetrated. All hardware used in mounting steps, hand rails, doors, lights, or other specified components shall be individually treated with the corrosion inhibiting pre-treatment.

After the paint process is complete, the gloss rating of the unit shall be tested with a 20 degree gloss meter. Coating thickness shall be measured with a digital MIL gauge and the orange peel with a digital wave scan device.

617. GENERAL PRIMER & PREP DESCRIPTION - LADDER/PLATFOR SECTION 3.62

QTY: 1

All exposed welds shall be ground smooth for final finishing of areas to be painted. The compartments and doors are totally degreased and phosphatized. After final body work is completed, grinding (36 and 80 grit), and finish sanding shall be used in preparation for priming.

618. GENERAL FINISH PAINT DESCRIPTION - LADDER/PLATFORM SECTION 3.59

QTY: 1

The body shall be finish sanded and prepared for final paint. Upon completion of final preparation, the body shall be painted utilizing the highest quality, state of the art, low V.O.C., polyurethane base paint. Finish paint shall be applied in multiple coats to ensure proper paint coverage with a high gloss finish.

619. CUSTOM FINISH PAINT & PREP SECTION 3.59, 3.60

QTY: 1

The entire cab shall be finish sanded and prepared for final paint.

Upon completion of final preparation, the cab shall be painted utilizing the highest quality, state of the art, low V.O.C., polyurethane base paint.

Finish paint shall be applied in multiple coats to ensure proper paint coverage with a high gloss finish.

620. CUSTOM CAB PRIMER & PREP SECTION 3.59, 3.60

QTY: 1

The cab primer shall be a two (2) stage process.

First stage shall be a coating with a two part component, self-etching, and corrosion resistant primer to chemically bond the surface of the metal for increased adhesion.

Second stage shall be multiple coats of a catalyzed, two component, polyurethane primer applied for leveling of small imperfections and top coat sealing.

621. CUSTOM CAB UNDERSIDE PAINT - JOB COLOR SECTION 3.59, 3.60

QTY: 1

The exposed areas under the cab shall be painted job color to match the exterior cab.

On two tone cabs, this shall match the primary color.

622. CUSTOM CAB BUFFING & FINISH SECTION 3.61

QTY: 1

The entire exterior finish of the cab shall be buffed and detailed.

623. CUSTOM CAB INTERIOR PAINT - LINE-X + ABS - PREDATO

QTY: 1

624. CUSTOM CAB INTERIOR PAINT - BLACK LINE-X SECTION 2.21

QTY: 1

The interior metal surfaces of the cab shall be painted using black Line-X material.

The interior of both the tractor cab and the tillerman's cab will be sprayed with black Line-X

625. BODY BUFFING & FINISH - LADDER/PLATFORM SECTION 3.61

QTY: 1

The entire body shall be buffed and detailed.

626. INSIDE/UNDERSIDE BODY PAINTED JOB COLOR – TDA SECTION 3.60

QTY: 1

The inside and underside of the complete body assembly shall be painted job color using a Sikkens paint system, prior to installation of the body on the chassis or torque box.

627. LINE-X COMPARTMENT INTERIORS – TDA SECTION 3.57

QTY: 1

The interior of the body compartments shall be painted with Line-X material.

628. DARK GRAY LINE-X COMPARTMENT COLOR SECTION 3.57

QTY: 1

The Line-X coating shall be dark gray in color.

629. FENDER COMPARTMENT INTERIOR - DARK GRAY LINE-X SECTION 3.53

QTY: 1

The interior of the fender storage compartments (if fender compartments are specified) shall be finish painted with Dark Gray Line-X paint to provide a protective finish.

630. SINGLE COLOR CUSTOM CAB PAINT SCHEME – RED SECTION 3.66

QTY: 1

The cab exterior shall be finish painted with Sikkens paint system, single color, to match purchaser's furnished paint code.

631. SINGLE COLOR BODY PAINT SCHEME – TDA SECTION 3.66

QTY: 1

The body paint finish shall be Sikkens paint system in a single color, to match customer furnished paint codes and requirements.

632. LADDER RUST INHIBITOR - ALL DEVICES SECTION 3.84

QTY: 1

All internal surfaces of the ladder exposed to the atmosphere, i.e., inside base, mid and fly section side rails shall be undercoated prior to ladder assembly using Procyon Corrosion Inhibitor to prevent internal corrosion. The corrosion inhibitor will meet the Boeing BMS-3-29 specification and meet a 1500-hour salt spray test. Manufacturers that do not rustproof the interiors of the ladder sections shall not be considered. (No Exceptions)

633. PINT OF TOUCH-UP PAINT SECTION 3.67

QTY: 1

One (1) pint of each exterior color paint for touch-up purposes shall be supplied when the apparatus is delivered to the end user.

634. FINALIZATION & DETAILING - LADDER/PLATFORM

QTY: 1

Prior to delivery of the vehicle, the interior and exterior be cleaned and detailed. The finalization process detailing shall include installation of NFPA required labels, checking fluid levels, sealing and caulking required areas of the cab and body, rust proofing, paint touch-up, etc.

635. CUSTOM CHASSIS JOB COLOR FRAME RAILS SECTION 2.133

QTY: 1

The chassis frame rails, suspension, axles, and drivelines (with the exception of any PTO drivelines which shall be safety yellow) shall be painted with polyurethane paint to match the body color code prior to the installation of any air lines or electrical system to ensure serviceability.

FOR CLARIFICATION: The chassis, torque box, trailer frame along with the underside of both the tractor and trailer compartments will be painted job color red.

636. LADDER, PAINTING, ALL DEVICES, WHITE #FLNA41528 SECTION 3.63

QTY: 1

Prior to any painting, all weldments such as the outrigger beams, torque box, turntable, and ladder sections shall be sand blasted, cleaned and inspected to insure the removal of any surface imperfections and to insure superior paint adhesion to the metal.

The entire painting system shall utilize a single manufacturer's paint for compatibility between primers and finished coats. All painting shall be done in atmosphere controlled spray booths. The weldments shall then be primed with Sikkens primer. All seams between adjoining pieces that are not continuously welded shall be caulked to inhibit corrosion.

Before assembly, in preparation for final painting, the aerial unit shall be thoroughly cleaned, conforming to good painting practices.

The aerial components shall then be sprayed with Sikkens Polyurethane primer sealer. Finished paint used on the turntable, lift cylinder, and ladder sections shall be painted Sikkens FLNA41528 white.

637. LADDER, PAINTING, ALL DEVICES, WHITE #FLNA41528

QTY: 1

Prior to any painting, all weldments such as the outrigger beams, torque box, turntable, and ladder sections shall be sand blasted, cleaned and inspected to insure the removal of any surface imperfections and to insure superior paint adhesion to the metal.

The entire painting system shall utilize a single manufacturer's paint for compatibility between primers and finished coats. All painting shall be done in atmosphere controlled spray booths. The weldments shall then be primed with Sikkens primer. All seams between adjoining pieces that are not continuously welded shall be caulked to inhibit corrosion.

Before assembly, in preparation for final painting, the aerial unit shall be thoroughly cleaned, conforming to good painting practices.

The aerial components shall then be sprayed with Sikkens Polyurethane primer sealer. Finished paint used on the turntable, lift cylinder, and ladder sections shall be painted Sikkens FLNA41528 white. The rung rails of the ladder shall be painted job color.

**638. EXTENSION CYLINDERS PAINTED TO MATCH LADDER COLOR SECTION 3.59,
3.60**

QTY: 1

The extension cylinders shall be painted to match the color of the ladder.

639. TORQUEBOX PAINT - JOB COLOR SECTION 3.65

QTY: 1

The torque box shall be painted to match job color or the base color of the body, allowing easy touch-up after extended use.

FOR CLARIFICATION: The chassis, torque box, trailer frame along with the underside of both the tractor and trailer compartments will be painted job color red.

640. OUTRIGGER PAINT - SILVER URETHABOND 104 SECTION 3.117

QTY: 1

The outrigger beams and the vertical jack shall be painted with Silver Urethabond 104 non-leaving aluminum urethane primer/finish, allowing easy touch-up after extended use.

641. TURNTABLE PAINT - LADDER COLOR SECTION 3.63

QTY: 1

The turntable shall be painted to match the base color of the ladder, allowing easy touch-up after extended use.

642. TURNTABLE CONSOLE PAINT - LADDER COLOR SECTION 3.63

QTY: 1

The turntable console shall be painted to match the base color of the ladder, allowing easy touch-up after extended use.

643. LIFT CYLINDERS PAINT - LADDER COLOR SECTION 3.63

QTY: 1

The aerial lift cylinders shall be painted to match the base color of the ladder, allowing easy touch-up after extended use.

644. SCOTCH-LITE W/ DROP SHADOW LETTERING ON FRONT CAB DOORS SECTION 3.68

QTY: 1

Scotch-Lite with drop shadow lettering shall be provided on the cab drivers and officer's doors per the fire department requirements.

The design of the lettering on the cab doors shall be designed to fit in the 496 sq. inches available.

645. 3" LETTERING ON FRONT CAB DOORS SECTION 3.68

QTY: 1

Lettering provided on the driver's and officer's cab doors shall be 3" high.

646. FRONT CAB DOOR TEXT LINE 1 - RIVERSIDE COUNTY SECTION 3.68

QTY: 1

647. FRONT CAB DOOR TEXT LINE 2 – FIRE SECTION 3.68

QTY: 1

648. FIRE DEPARTMENT LOGO SECTION 3.68

QTY: 1

The customer will supply two (2) county and (2) city logo's for each unit.

649. AMERICAN FLAG DECAL SECTION 1.23

QTY: 1

An American Flag, non-waving, decal will be provided and installed on each aerial sign panel, located toward the tip of the aerial device.

650. 6" SCOTCH-LITE CUSTOM RIBBON IN STRIPE SECTION 1.23, 3.71

QTY: 1

A six (6) inch custom ribbon shall be incorporated into the Scotch-Lite scheme on the body.

Final layout of this configuration shall be determined by the Fire Department.

651. 6" SCOTCH-LITE STRIPE ON CAB AND BODY - TDA AERIAL SECTION 1.23, 3.71

QTY: 1

A six (6) inch high "Scotch-Lite" stripe shall be provided. The stripe shall be applied on a minimum of 60 percent of each side of the unit, 60 percent on the rear of the unit and 40 percent on the front of the unit. The Scotch-Lite stripe layout shall be determined by the Fire Department.

652. WHITE SCOTCH-LITE

QTY: 1

The Scotch-Lite shall be white in color.

653. SILVER STRIPE IN RUB RAIL SECTION 1.23

QTY: 1

There will be a 2" diamond grade reflective striping installed in the rub rail channel. The reflective stripe will be silver in color

654. REAR CHEVRON STRIPING SECTION 1.23, 3.73

QTY: 1

REAR CHEVRON STRIPING

655. REAR CHEVRON TO BE AS FOLLOWS: SECTION 1.23, 3.73

QTY: 1

The rear trailer vertical surface of the body shall be 100% covered with alternating strips of reflective striping.

For Clarification: The Rear surface of the tiller cab is not to be covered.

656. 6" FULL REAR ORALITE CHEVRON STRIPING SECTION 1.23

QTY: 1

The striping shall be 6" Oralite reflective striping.

657. RED & FLOURESCENT LIME ORALITE V98 SECTION 1.23, 3.72

QTY: 1

The Oralite V98 reflective tape shall be 012 red and L2 fluorescent lime in color.

658. 19" X 144" LETTERING PANELS ON BASE SECTION SECTION 3.147

QTY: 1

Painted aluminum panels shall be furnished on each side of the aerial device base section. The panels shall be approximately 19" high X 144" long.

659. SIGN PANELS TO PAINTED TO MATCH AERIAL DEVICE COLOR SECTION 3.59, 3.60

QTY: 1

The sign panels shall be painted to match the aerial ladder paint color.

660. SCOTCH-LITE W/ DROP SHADOW LETTERING FOR AERIAL SECTION 3.150

QTY: 1

Scotch-Lite with drop shadow lettering shall be provided on the signboard per the fire department requirements. The design of the lettering on the signboard shall be designed with a maximum text height of 12" and fit in the available area.

The sign panels for the four trucks will be lettered as follows;

City of Temecula

City of Moreno Valley

Cove Communities

City of Menifee

661. ROAD SAFETY KITS SECTION 2.193

QTY: 1

A road safety kit shall be furnished with the following equipment:

- 2 1/2 lb. B-C fire extinguisher
- Triangle safety reflectors.

662. ANGUS HOSE SECTION 5.1

QTY: 1

Two (2) 130 foot sections of 3" hose with 2.5" NST couplings will be provided for loose equipment.

663. TASK FORCE TIPS JUMBO GATE VALVE SECTION 5.1

QTY: 1

A TFT model AN4P7P02 jumbo gate valve will be included with the loose equipment. The valve shall be painted silver as per TFT standard.

664. ZICO SCBA BOTTLE BRACKET, MOUNTED AS DIRECTED SECTION 5.1

QTY: 3

A Zico # UH-6-30-2-SF SCBA bottle brackets shall be provided and installed.

The mounting location shall be determined at the final inspection.

665. STREAMLITE "FIRE VULCAN" C4LED HANDLIGHT SECTION 4.59, 5.1

QTY: 5

A Streamlight model 44451 orange "Fire Vulcan" C4 LED rechargeable hand light(s) and 12 volt charger shall be installed as directed by the purchaser. Charger shall be wired to the chassis battery system.

The lights shall be mounted in the following compartments:

Two (2) in the rear doghouse area of the cab, adjacent to each rear facing seat.

One (1) within the CL-2 compartment

One (1) within the CR-2 compartment

One (1) within the L-8 compartment

***Exact mounting locations within these compartments will be determined during an in-process or final inspection.**

666. FOUR (4) #SAC-44 FOLDING WHEEL CHOCKS, (2) MTD EACH SIDE SECTION 3.75

QTY: 1

Four (4) ZICO #SAC-44 folding wheel chocks shall be mounted two (2) on each side forward of the rear wheels below the side running board compartments.

667. KME WARRANTY, STARTING ON IN-SERVICE DATE

QTY: 1

Warranty coverage by KME will begin when the customer places the unit in service. This date may not exceed 60 days from the date of delivery to the customer.

The Customer must email kmeservice@kmeffire.com within 60 days of delivery, or the warranty start date will default to the original delivery date.

668. 2 YEAR WARRANTY - BASE WITH CUSTOM CHASSIS SECTION 1.10

QTY: 1

The proposed vehicle includes a two (2) year new vehicle warranty, upon delivery and acceptance of the vehicle. The warranty will ensure that the vehicle has been manufactured to the proposed contract specifications and will be free from defects in material and workmanship that may appear under normal use and service within the warranty period. The warranty may be subject to different time and mileage limitations for specific components and parts. This warranty is issued to the original purchaser of the vehicle.

The warranty will not apply to tires, batteries, or other parts or components that are warranted directly by their manufacturers. The warranty will not apply to routine maintenance requirements as described in the service and operators manual. No warranty whether express, implied, statutory or otherwise including, but not limited to any warranty of merchantability or fitness for purpose will be imposed.

OVERALL UNIT AND CUSTOM CHASSIS

All components and parts of the vehicle are warranted for a period of two (2) years from acceptance of the vehicle unless excluded elsewhere in this warranty or described as having longer time limitations.

669. 5 YEAR CUMMINS BASE WARRANTY SECTION 1.10

QTY: 1

The proposed unit will be equipped with a Fire Service rated engine, which will come furnished with a five (5) year Engine Manufacturer's warranty. A copy of the manufacturer's warranty will be supplied to define additional details of the warranty provisions.

670. 5 YEAR ALLISON EVS TRANSMISSION WARRANTY SECTION 1.10

QTY: 1

The proposed Allison transmission will be provided with a five (5) year warranty. A copy of the Allison transmission warranty will be supplied to the purchaser to define additional details of the warranty provisions.

671. 3 YEAR COOLING SYSTEM WARRANTY – CUSTOM SECTION 1.10

QTY: 1

Kovatch Mobile Equipment (KME) warrants all Cooling System Equipment components used in the construction of KME Fire Apparatus against defects and workmanship provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original user-purchaser for a period of three (3) years from the date of delivery/acceptance to the original user-purchaser, whichever occurs first.

This warranty applies to both purchased and fabricated, manufacturer supplied coolant system components and is not provided in lieu of any Vendor provided warranties. All coolant system components provided by the engine manufacturer are covered by the engine manufacturer's warranty only.

672. LIFETIME FRAMERAIL WARRANTY SECTION 1.10

QTY: 1

The proposed KME custom chassis frame and cross members will be warranted to the original purchaser for the life of the vehicle. A copy of KME's frame rail warranty will be supplied to define additional details of the warranty provisions.

673. SHEPPARD STEERING GEAR STANDARD - THREE YEAR WARRANTY SECTION 1.10

QTY: 1

The proposed Sheppard steering gear will be warranted for a period of three (3) years from the first date of service or 150,000 miles (241,401 kilometers), whichever occurs first. The product will be free from defects in material and workmanship under normal use in applications approved in advance by Sheppard.

674. 5 YEAR MERITOR FRONT AXLE – WARRANTY SECTION 1.10

QTY: 1

The Meritor axle shall be provided with a five (5) year parts and labor warranty. The wheel seals, gaskets and wheel bearings shall have a one (1) year warranty. A copy of Meritor's warranty shall be supplied to define additional details of the warranty provisions.

675. 5 YEAR MERITOR SINGLE AXLE REAR – WARRANTY SECTION 1.10

QTY: 1

The Meritor axle/s shall be furnished with a five (5) year warranty; the first two (2) years shall be parts and labor, the remaining three (3) years shall be parts only. Wheel seals, gaskets and wheel bearings shall

be covered for one (1) year providing that Meritor supplies and assembles the wheel end equipment. A copy of the warranty from Meritor shall be supplied to define additional details of the warranty provisions. For vehicles that operate full or part-time outside of the United States and Canada, a one (1) year parts only warranty shall apply.

676. 3 YEAR MERITOR ABS – WARRANTY SECTION 1.10

QTY: 1

The Meritor ABS shall be provided with a three (3) year warranty, parts and labor. A copy of Meritor's warranty shall be supplied to define additional details of the warranty provisions. Vehicles that operate full or part-time outside the United States and Canada shall have a one (1) year, parts only warranty.

677. 10 YEAR CAB STRUCTURAL WARRANTY SECTION 1.10, 2.25

QTY: 1

The proposed cab will be warranted against structural defects for a period of ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

678. 10 YEAR BODY STRUCTURAL WARRANTY SECTION 1.10

QTY: 1

The proposed body will be warranted against structural defects for a period of ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

679. 10 YEAR CAB & BODY CORROSION WARRANTY SECTION 1.10

QTY: 1

The cab and body shall be warranted against rust-through or perforation, due to corrosion from within, for a period of ten (10) years. Perforation is defined as a condition in which an actual hole occurs in a sheet metal panel due to rust or corrosion from within. Surface rust or corrosion caused by chips or scratches in the paint is not covered by this warranty.

680. PAINT FINISH WARRANTY, TEN (10) YEAR SECTION 1.10

QTY: 1

The proposed paint finish will be warranted for a period of ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

681. 5 YEAR LETTERING WARRANTY SECTION 1.10

QTY: 1

The apparatus manufacturer will provide a five (5) year warranty against defects in material and workmanship for all graphics processes. Any valid claims must be made in writing within 15 days of the determination of any defects to the manufacturer's fire apparatus. The manufacturer will at its option make any necessary repairs either at a local authorized service center or at the factory if required. The manufacturer will make the final decision as to where the repairs are to be made and any transportation cost is the owner's responsibility. The manufacturer will at its option, repair or replace any verified defects in workmanship or materials at no cost to the owner provided all the requirements of this warranty have been met.

The manufacturer will not be liable to the original purchaser or anyone else for consequential, incidental, special or direct damages, including, but not limited to, any claims for loss of profits, downtime, loss of use or inconvenience. THE COMPANY MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, AND SPECIFICALLY, DISCLAIMS ANY IMPLIED WARRANTY INCLUDING THE WARRANTY OF MERCHANTABILITY.

The manufacturer continually strives to improve its products and therefore, reserves the right to make improvements or changes without incurring any obligations to make such changes or additions to equipment previously sold.

682. 1 YEAR BRIGHTWORK WARRANTY SECTION 1.10

QTY: 1

KME Fire Apparatus (KME) warrants all bright finish components used in the construction of KME Fire Apparatus against defects and workmanship provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original user-purchaser for a period of one (1) year from the date of delivery/acceptance to the original user-purchaser, whichever occurs first.

The expressed warranty excludes corrosion or degradation of bright finished components caused by damage to the component.

683. REAR SUSPENSION - RIDEWELL - AIR RIDE - 3 YEAR WARRANTY SECTION 1.10

QTY: 1

Ridewell Suspensions warrants suspension systems manufactured by it to be free from defects in material and workmanship under proper use installation, application and maintenance for a period of three (3) years with no mileage limit after delivery to the original purchaser.

The responsibility of Ride well Suspensions under this warranty is limited to making good at the company factory by repair or replacement of any part or parts which it manufactures.

Subject to all of the above conditions, if repair or replacement of any defective part is made by Ridewell Suspensions, Ridewell will return the repaired or replaced part to the original purchaser with transportation charges prepaid.

1 to 12 months 100% Parts & Labor

13 to 24 months 100% Parts & 50% Labor

25 to 36 months 50% Parts Only

684. WELDON V-MUX - VEHICLE MULTIPLEXING WARRANTY SECTION 1.10

QTY: 1

The Weldon warranty will cover parts and labor at the Weldon service department to repair/replace a returned device. This does not reflect the labor to remove/replace any such devices, nor indicate Weldon accepts any responsibility for such removal, replacement or troubleshooting of said devices.(see attached warranty PDF for this line item)

685. USSC SEATING 6 YEAR WARRANTY SECTION 1.10

QTY: 1

USSC will warrant each new seat manufactured, to be free from defects in materials and workmanship when delivered to the original purchaser for a period of six (6) years.

Labor to remove or reinstall defective items will not be covered under this warranty. All warranty claims shall have prior approval from USSC warranty department.

686. CORROSION TREATMENT SECTION 1.10

QTY: 1

The entire unit shall be thoroughly rust proofed utilizing rustproof and sound deadening materials applied in manufacturer recommended application procedures.

Rust proofing shall be applied during the assembly process and upon completion to insure proper coverage in all critical areas.

687. HARRISON PTO/HYD GENERATORS SECTION 1.10, 4.71

QTY: 1

The specified generator shall have a five (5) year or one thousand (1000) hour warranty as provided by the generator manufacturer. A copy of the generator warranty shall be provided at the time of delivery.

688. ADDITIONAL ITEMS SHIPPED WITH VEHICLE SECTION 3.67

QTY: 1

- 1 - Pint of touch up paint for each color
- 1 - Bag of assorted stainless steel nuts and bolts

- 1 - Complete set of hydraulic filters for the pressure filter and the return line filter
- 2 - Complete sets of aerial override keys



One Industrial Complex – Nesquehoning, PA 18240
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KME FIRE APPARATUS
NEW PRODUCT WARRANTY
(Domestic Fire Service Sales)

Kovatch Mobile Equipment Corporation ("KME"), hereby warrants to the original purchaser (first end users) that any new products manufactured by KME shall be free from defects in material and workmanship under normal use, maintenance and service for a period of two (2) year from date of delivery, subject to the conditions and exceptions stated herein. Under this warranty, KME'S obligation is limited to the repair or replacement at KME'S option, at its factory, by its representative, or by its authorized service facility, of any part found to be defective by KME. If KME deems it necessary, all parts for which warranty claim is made, shall be returned to KME, transportation charges prepaid, for examination by KME who shall be the sole judge as to whether such part was defective in material or workmanship under normal use, maintenance or service.

THIS WARRANTY DOES NOT APPLY TO:

1. Any product or component which has been subjected to misuse, neglect, alteration, accident or lack of normal maintenance, or which has been operated above factory rated capacity.
2. Routine maintenance items; such as filters, belts and lights, and routine maintenance service, such as normal lubrication or proper adjustments.
3. Components manufactured by others that are warranted by the manufactures thereof to the original purchaser; such as, engines, tires, rims, ignition apparatus, horn or other signal devices, generators, batteries, speedometers, and other trade accessories.

THIS WARRANTY IS EXPRESSLY GRANTED IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.

KME shall not be liable to the original purchaser or anyone else for consequential, incidental, special or direct damages, including, but not limited to, any claims for loss of profits, down time, loss of use or inconvenience.

KME neither assumes nor authorizes any other person to make or assume for it any other obligation, liability or warranty or to make any other representation on its behalf in connection with the sale or use of the new product covered by this warranty.

Legal Remedies: Any claim or controversy arising out of or relating to this limited warranty, or beach thereof, shall be settled by arbitration administered by the American Arbitration Association in Milwaukee, Wisconsin in accordance with the Commercial Arbitration Rules of the American Arbitration Association. The laws of the State of Wisconsin shall be applied in any arbitration proceedings, without regard to principles of conflict of law. Each party shall bear its own costs, fees and expenses of arbitration. The arbitrator(s) determination and the basis for that determination shall be in writing and shall include an explanation of the basis for the determination. The determination of the arbitrator(s) shall be final and binding and judgment upon such determination may be entered in any court having jurisdiction. The arbitration proceedings and arbitration award shall be maintained by the parties as strictly confidential, except as otherwise required by court order or as is necessary to confirm, vacate, or enforce the award and for disclosure in confidence to the parties' respective attorneys, tax advisors, or senior management personnel. Furthermore, any action for breach of warranty must be commenced within three months following the expiration of the warranty period.



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KME FIRE APPARATUS
NEW SHEET METAL CAB WARRANTY
(Domestic Fire Service Sales)

KME FIRE APPARATUS DIVISION of KOVATCH MOBILE EQUIPMENT CORP., ("KME") hereby warrants to the original purchaser (first end user) that any new fire apparatus cab manufactured by KME shall be free from structural defects under normal use, maintenance, or service for a period of ten (10) years from date of delivery, subject to the conditions and exceptions stated herein. Under this warranty, KME'S obligation is limited to the repair or replacement at KME'S option, at its factory, by it's representative, or by its authorized service facility, of any structural part of the fire apparatus cab found to be defective by KME. For purposes of this warranty, fire apparatus cab is defined as all sheet metal and welds.

THIS WARRANTY DOES NOT APPLY TO:

1. Hinges, door latches, bolt-on items or accessories or other items that are not an integral part of the cab itself.
2. Any part or component which has been subjected to misuse, abuse, neglect, alteration, or lack of normal maintenance.
3. Components that may be manufactured by others and that are warranted by the manufacturers thereof to the original purchaser.
4. Cab components damaged as a result of corrosion, including but not limited to exposure to salt, acidic material, or other damaging chemicals.

THIS WARRANTY IS EXPRESSLY GRANTED IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.

KME shall not be liable to the original purchaser or anyone else for consequential, incidental, special or direct damages, including, but not limited to, any claims for loss of profits, down time, loss of use or inconvenience.

KME neither assumes nor authorizes any other person to make or assume for it any other obligation, liability or warranty or to make any other representation on its behalf in connection with the sale or use of the new product covered by this warranty.

Legal Remedies: Any claim or controversy arising out of or relating to this limited warranty, or breach thereof, shall be settled by arbitration administered by the American Arbitration Association in Milwaukee, Wisconsin in accordance with the Commercial Arbitration Rules of the American Arbitration Association. The laws of the State of Wisconsin shall be applied in any arbitration proceedings, without regard to principles of conflict of law. Each party shall bear its own costs, fees and expenses of arbitration. The arbitrator(s) determination and the basis for that determination shall be in writing and shall include an explanation of the basis for the determination. The determination of the arbitrator(s) shall be final and binding and judgment upon such determination may be entered in any court having jurisdiction. The arbitration proceedings and arbitration award shall be maintained by the parties as strictly confidential, except as otherwise required by court order or as is necessary to confirm, vacate, or enforce the award and for disclosure in confidence to the parties' respective attorneys, tax advisors, or senior management personnel. Furthermore, any action for breach of warranty must be commenced within three months following the expiration of the warranty period.



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KME FIRE APPARATUS
NEW SHEET METAL BODY WARRANTY
(Domestic Fire Service Sales)

KME FIRE APPARATUS DIVISION of KOVATCH MOBILE EQUIPMENT CORP., ("KME") hereby warrants to the original purchaser (first end user) that any new fire apparatus body manufactured by KME shall be free from structural defects under normal use, maintenance, or service for a period of ten (10) years from date of delivery, subject to the conditions and exceptions stated herein. Under this warranty, KME'S obligation is limited to the repair or replacement at KME'S option, at its factory, by it's representative, or by its authorized service facility, of any structural part of the fire apparatus body found to be defective by KME. For purposes of this warranty, fire apparatus body is defined as all sheet metal and welds.

THIS WARRANTY DOES NOT APPLY TO:

1. Hinges, door latches, bolt-on items or accessories or other items that are not an integral part of the body itself.
2. Any part or component which has been subjected to misuse, abuse, neglect, alteration, or lack of normal maintenance.
3. Components that may be manufactured by others and that are warranted by the manufacturers thereof to the original purchaser.

THIS WARRANTY IS EXPRESSLY GRANTED IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.

KME shall not be liable to the original purchaser or anyone else for consequential, incidental, special or direct damages, including, but not limited to, any claims for loss of profits, down time, loss of use or inconvenience.

KME neither assumes nor authorizes any other person to make or assume for it any other obligation, liability or warranty or to make any other representation on its behalf in connection with the sale or use of the new product covered by this warranty.

Legal Remedies: Any claim or controversy arising out of or relating to this limited warranty, or beach thereof, shall be settled by arbitration administered by the American Arbitration Association in Milwaukee, Wisconsin in accordance with the Commercial Arbitration Rules of the American Arbitration Association. The laws of the State of Wisconsin shall be applied in any arbitration proceedings, without regard to principles of conflict of law. Each party shall bear its own costs, fees and expenses of arbitration. The arbitrator(s) determination and the basis for that determination shall be in writing and shall include an explanation of the basis for the determination. The determination of the arbitrator(s) shall be final and binding and judgment upon such determination may be entered in any court having jurisdiction. The arbitration proceedings and arbitration award shall be maintained by the parties as strictly confidential, except as otherwise required by court order or as is necessary to confirm, vacate, or enforce the award and for disclosure in confidence to the parties' respective attorneys, tax advisors, or senior management personnel. Furthermore, any action for breach of warranty must be commenced within three months following the expiration of the warranty period



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KME Fire Apparatus 10 Year Corrosion Limited Warranty

KME Fire Apparatus provides to the original owner a rustproofing warranty for a period of ten (10) years on new fire apparatus that is operated for non-commercial purposes, provided the owner to whom this warranty is issued follows the "Customer Responsibilities" set forth below. This warranty commences on the date of application of rustproofing material, and is non-transferable. The apparatus is warranted against rust perforation from the inside out (rust through) of any covered area(s). KME will at its discretion either (1) repair, or (2) replace the rusted through covered area(s).

CUSTOMER RESPONSIBILITIES:

1. **Inspections.** Customer shall have the apparatus inspected once a year by an authorized KME service provider. Records of such inspections shall be kept and presented to KME upon demand.
2. **Damage to Fire Truck.** If the fire truck is involved in a collision or other incident that damages the rustproofing application, the owner must notify KME within thirty (30) days of such occurrence. If notice is not given, then this warranty shall automatically become null and void. If KME is notified as required, KME will inspect the vehicle, and if KME determines it necessary in order to continue this warranty, KME will perform either partial or complete reapplication of the rust preventative material at the then-current rates to be charged to the customer.
3. **Rust-through Claims Procedure.** In the event of rust through during the term of this warranty, the customer must notify KME within thirty (30) days of the first notice of rust. Conformance by the customer with the thirty (30) day notice requirement will be judged by KME on the basis of the extent of damage resulting from rust-through. If, in the opinion of KME, the rust-through is substantially larger than that which could have reasonably occurred within thirty (30) days of the first notice of rust-through, no such claim will be valid under this warranty. Further, in no event shall a claim be considered timely if made later than the last day of the term of this warranty.

EXCLUSIONS:

Service provided by KME or its authorized representative under this warranty does not include the following:

- A. Repair or replacement of exhaust systems, which are not covered.
- B. Repair or replacement of any parts damaged by rusting through, if such repair or replacement was performed before obtaining KME's authorization in writing.
- C. This warranty does not apply to exterior surface or cosmetic rust, rust caused by external damage from any cause, such as dents, scratches, chipped paint, etc.
- D. Repair or replacement of parts damaged by rusting through on any fire truck whose owner does not present us with copies of inspection records showing that all required inspections have been timely performed.
- E. Repair or replacement of parts damaged by rusting through if such parts were repaired or replaced because of rust damage and such parts were not treated with rust preventative compound within thirty (30) days of repair or replacement.
- F. This limited warranty applies only to exterior body and cab paint. Paint on the vehicle's undercarriage, cab and body interior is warranted only under the KME proposed general warranty.
- G. Those areas within the vehicle that are foam or caulk filled.

DISCLAIMER OF IMPLIED WARRANTIES:

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. Some states do not allow disclaimers of or limitations on duration of implied warranties, so these limitations may not apply to you.

INCIDENTAL AND CONSEQUENTIAL DAMAGES EXCLUDED:

The customer shall not be entitled to recover from KME, its successors or assigns, any consequential damages to property, damages for loss of use, loss of time, loss of profits or income, or any other incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Legal Remedies: Any claim or controversy arising out of or relating to this limited warranty, or breach thereof, shall be settled by arbitration administered by the American Arbitration Association in Milwaukee, Wisconsin in accordance with the Commercial Arbitration Rules of the American Arbitration Association. The laws of the State of Wisconsin shall be applied in any arbitration proceedings, without regard to principles of conflict of law. Each party shall bear its own costs, fees and expenses of arbitration. The arbitrator(s) determination and the basis for that determination shall be in writing and shall include an explanation of the basis for the determination. The determination of the arbitrator(s) shall be final and binding and judgment upon such determination may be entered in any court having jurisdiction. The arbitration proceedings and arbitration award shall be maintained by the parties as strictly confidential, except as otherwise required by court order or as is necessary to confirm, vacate, or enforce the award and for disclosure in confidence to the parties' respective attorneys, tax advisors, or senior management personnel. Furthermore, any action for breach of warranty must be commenced within three months following the expiration of the warranty period.



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KME FIRE APPARATUS
CHASSIS LIFETIME FRAME WARRANTY
(Domestic Fire Service Sales)

KOVATCH MOBILE EQUIPMENT CORP. warrants to the original purchaser of a KME chassis that the frame and frame cross members are free of defects in material and workmanship for the lifetime of the vehicle, provided that the chassis is used in a normal and reasonable manner. KOVATCH MOBILE EQUIPMENT CORP'S obligation under this warranty is strictly limited to repairing or replacing, as KOVATCH MOBILE EQUIPMENT CORP. may elect, any part or parts of such frame or frame members which KOVATCH MOBILE EQUIPMENT CORP'S examination discloses to be defective in material or workmanship.

Any part or parts considered to be covered by the conditions of this warranty shall be returned, freight prepaid, to the Company's factory at Nesquehoning, Pennsylvania.

This warranty shall be null and void if the frame shows evidence of alterations, cutting, splicing, welding or drilling of rails or flanges without the written authorization of KOVATCH MOBILE EQUIPMENT CORP. Further, this warranty shall be void if the vehicle is involved in an accident, shows signs of abuse or evidence of being operated in a manner, or for a purpose, not recommended by KOVATCH MOBILE EQUIPMENT CORP.

Chassis frame components damaged as a result of corrosion, including but not limited to exposure to salt, acidic material, or other damaging chemicals are not covered under this warranty.

Nothing contained in this warranty shall make KOVATCH MOBILE EQUIPMENT CORP. liable beyond the express limitations hereof, for loss, injury or damage of any kind to any person or entity resulting from any defect or failure in the chassis or frame.

To the extent permitted by law, THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

To the extent permitted by law, this warranty is also in lieu of all other obligations or liabilities on the part of KOVATCH MOBILE EQUIPMENT CORP., or the Seller, including liability for incidental and consequential damages.

KOVATCH MOBILE EQUIPMENT CORP. makes no representation that the chassis or frame has the capacity to perform any functions other than as contained in the Company's written literature, catalogs or specification accompanying delivery of the chassis.

No person or affiliated company representative is authorized to give any other warranties or to assume any other liability on behalf of KOVATCH MOBILE EQUIPMENT CORP. in connection with the sale, servicing or repair of any KME Chassis. KOVATCH MOBILE EQUIPMENT CORP. reserves the right to make design changes or improvements in its products without imposing any obligation upon itself to change or improve previously manufactured products.

Legal Remedies: Any claim or controversy arising out of or relating to this limited warranty, or breach thereof, shall be settled by arbitration administered by the American Arbitration Association in Milwaukee, Wisconsin in accordance with the Commercial Arbitration Rules of the American Arbitration Association. The laws of the State of Wisconsin shall be applied in any arbitration proceedings, without regard to principles of conflict of law. Each party shall bear its own costs, fees and expenses of arbitration. The arbitrator(s) determination and the basis for that determination shall be in writing and shall include an explanation of the basis for the determination. The determination of the arbitrator(s) shall be final and binding and judgment upon such determination may be entered in any court having jurisdiction. The arbitration proceedings and arbitration award shall be maintained by the parties as strictly confidential, except as otherwise required by court order or as is necessary to confirm, vacate, or enforce the award and for disclosure in confidence to the parties' respective attorneys, tax advisors, or senior management personnel. Furthermore, any action for breach of warranty must be commenced within three months following the expiration of the warranty period.



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KME FIRE APPARATUS - AERIAL DEVICE
TWENTY (20) – YEAR STRUCTURAL WARRANTY
(Domestic Fire Service)

1. **LIMITED WARRANTY.** Except as provided below, for a period beginning on the date of acceptance by the original purchaser/first end user (“Buyer”) and ending on the first to occur of the expiration of twenty (20) years or 100,000 miles of use KME Fire Apparatus warrants to the first end user that each new Aerial Device of its manufacture which is installed on its Fire and Rescue Apparatus vehicles shall be free of defects in materials and workmanship. This warranty shall apply to all structural load-supporting elements of the Aerial Device that are made of ductile material, as identified in the KME Fire Apparatus specifications for the Aerial Device. This warranty shall be void if, or to the extent that, the Aerial Device is not maintained in strict compliance with NFPA Standard 1911 in effect at time of sale, and including such periodic inspections and testing by qualified third parties as are required by that Standard as it may be in effect from time to time. Proof of such compliance shall accompany any claims under this warranty. Identification of third-party testing agencies known to KME Fire Apparatus to be qualified for such purposes may be obtained from the KME Customer Service Department. This limited warranty shall apply only if the Aerial Device is properly maintained and used in service which is normal to the particular vehicle on which it is installed. Normal service means service which does not subject the Aerial Device or vehicle to stresses or impacts greater than those that normally result from the careful use of the Aerial Device or vehicle. If the Buyer discovers a defect or nonconformity, it must notify KME Fire Apparatus in writing within thirty (30) days after the date of discovery. This limited warranty is not transferable by the first end user. KME Fire Apparatus makes no warranty whatsoever as to: (1) Integral parts, components, attachments or trade accessories not manufactured by KME Fire Apparatus, but instead, the applicable warranties, if any, of the respective manufacturers thereof shall apply; (2) Any Aerial Device, or component, part, attachment or accessory damaged by misuse, neglect or accident; (3) Any vehicle chassis or component, part, attachment or accessory that shall have been repaired, altered or assembled in any way by others than KME which, in the sole judgment of KME Fire Apparatus, affects the performance, integrity, stability or purpose for which it was manufactured; or (4) Products or parts which are not defective but which may wear out and have to be replaced during the warranty period, including, but not limited to, hoses, fluids, gaskets and light bulbs. KME Fire Apparatus assumes no responsibility for the assembly of its parts or sub-assemblies into finished products unless such assembly is performed by KME Fire Apparatus.

2. **DISCLAIMERS OF WARRANTIES.** THE WARRANTIES SET FORTH IN PARAGRAPH 1 ARE THE EXCLUSIVE WARRANTIES GIVEN BY KME FIRE APPARATUS. KME FIRE APPARATUS HEREBY DISCLAIMS AND EXCLUDES ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING ANY WARRANTY OF MERCHANTABILITY, ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING OR USAGE OF TRADE, EXCEPT AS PROHIBITED BY LAW.

3. **BUYER'S REMEDIES.** If the product fails to conform to the warranties as set forth in paragraph 1 and such nonconformity is not due to accident, misuse, improper maintenance, or other cause excluded under paragraph 1, Buyer shall notify KME Fire Apparatus as provided in paragraph 1, and shall make the product available for inspection by KME Fire Apparatus or its designated agent. At the request of KME Fire Apparatus, any defective part shall be returned to KME Fire Apparatus for examination, with transportation charges prepaid and assumed by shipper. Within a reasonable time after receipt, KME Fire Apparatus shall provide, at its option, with regard to a covered warranty claim, repair or replacement of any nonconforming or defective parts. Repair or replacement shall be made only by a facility approved in advance by KME Fire Apparatus. THIS REMEDY SHALL BE THE EXCLUSIVE AND SOLE REMEDY FOR ANY BREACH OF WARRANTY.

4. **EXCLUSION OF CONSEQUENTIAL AND INCIDENTAL DAMAGES.** EXCEPT AS REQUIRED BY LAW, IN NO EVENT SHALL KME FIRE APPARATUS BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM NON-DELIVERY OR FROM THE USE, MISUSE OR INABILITY TO USE THE PRODUCT OR FROM DEFECTS IN THE PRODUCT OR FROM THE NEGLIGENCE OF KME FIRE APPARATUS OR FROM TORT. This exclusion applies regardless of whether such damages are sought for breach of warranty, breach of contract, negligence or strict liability in tort or under any other legal theory.

Note: Surety Bond, if a part of the sale of the vehicle to which this limited warranty is provided, applies only to the Basic One-Year Warranty for such vehicle, and not to any other warranty, extended or otherwise, made by KME Fire Apparatus or any KME Fire Apparatus Supplier.

KME continually strives to improve its products and, therefore, reserves the right to make improvements or changes without incurring any obligations to make such changes or additions on equipment previously sold.

Legal Remedies: Any claim or controversy arising out of or relating to this limited warranty, or breach thereof, shall be settled by arbitration administered by the American Arbitration Association in Milwaukee, Wisconsin in accordance with the Commercial Arbitration Rules of the American Arbitration Association. The laws of the State of Wisconsin shall be applied in any arbitration proceedings, without regard to principles of conflict of law. Each party shall bear its own costs, fees and expenses of arbitration. The arbitrator(s) determination and the basis for that determination shall be in writing and shall include an explanation of the basis for the determination. The determination of the arbitrator(s) shall be final and binding and judgment upon such determination may be entered in any court having jurisdiction. The arbitration proceedings and arbitration award shall be maintained by the parties as strictly confidential, except as otherwise required by court order or as is necessary to confirm, vacate, or enforce the award and for disclosure in confidence to the parties' respective attorneys, tax advisors, or senior management personnel. Furthermore, any action for breach of warranty must be commenced within three months following the expiration of the warranty period.



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STATEMENT OF WARRANTY

10-YEAR LIMITED PAINT AND PERFORATION

KME (the “Company”) warrants each new fire and rescue apparatus during the warranty period, when used in normal and reasonable manner. All apparatus shall be warranted against peeling, cracking, blistering and corrosion. This warranty shall provide for repair or replacement at KME’s option, any claim in accordance with the following terms and conditions.

WHAT IS COVERED

- **WARRANTY APPLIES** - This warranty is for all new fire and rescue apparatus manufactured by KME and is extended only to the original user-purchaser. The warranty registration must be received by KME within 30 days of the in-service for the warranty to apply.
- **REPAIRS COVERED** –The warranty covers repair or replacement at KME’s option. Repairs shall be made at a KME owned service facility or another approved service facility at KME’s option.
- **OBTAINING REPAIRS** –The original user-purchaser must notify KME in writing within 30 days after any claimed defect has appeared. Transportation costs to and from the servicing center shall be the responsibility of the user-purchaser.
- **WARRANTY PERIOD** –The warranty period shall begin upon delivery of the apparatus to the original user-purchaser. The warranty period shall be for TEN YEARS. Corrosion perforation is defined as complete penetration through the exterior metal of the apparatus. The following percentages apply:

<u>Topcoat & Appearance</u> Gloss, Color Retention, Cracking	<u>Coating System, Adhesion & Corrosion</u> Includes Dissimilar Metal Corrosion, Flaking, Blistering, Bubbling
0-72 Months 100% 73 To 120 Months 50%	0 To 36 Months 100% 37 To 84 Months 50% 85 To 120 Months 25%

NOTES:

- Under carriage, cab and body interiors are covered under our standard one year warranty.
- Demonstration vehicles sold to an end user will have the full warranty, if sold within one year of demonstration service, and will be prorated if sold after the first year.

WHAT IS NOT COVERED

- ✓ Any cab not manufactured by KME.
- ✓ Damage caused by fire, misuse, negligence or accident.
- ✓ Damage caused by theft, vandalism, riot or explosion.
- ✓ Damage caused by lightning, earthquake, windstorm, hail, flood or use in an acidic environment (such as de-icing compounds, road salts and acid rain).
- ✓ Any repairs, modifications, alterations or aftermarket parts added after manufacture without the authorization of KME.
- ✓ Damage from lack of, maintenance and cleaning (proper cleaning and maintenance procedures are detailed in the KME maintenance manual).
- ✓ Gold leaf or striping except that which is affected by repair (Gold Leaf or striping must have been installed during manufacturing to be covered under this limited warranty).
- ✓ Loss of time, loss of use of the product, inconvenience, lodging, food or other consequential or incidental loss that may result from a failure.

Legal Remedies: Any claim or controversy arising out of or relating to this limited warranty, or breach thereof, shall be settled by arbitration administered by the American Arbitration Association in Milwaukee, Wisconsin in accordance with the Commercial Arbitration Rules of the American Arbitration Association. The laws of the State of Wisconsin shall be applied in any arbitration proceedings, without regard to principles of conflict of law. Each party shall bear its own costs, fees and expenses of arbitration. The arbitrator(s) determination and the basis for that determination shall be in writing and shall include an explanation of the basis for the determination. The determination of the arbitrator(s) shall be final and binding and judgment upon such determination may be entered in any court having jurisdiction. The arbitration proceedings and arbitration award shall be maintained by the parties as strictly confidential, except as otherwise required by court order or as is necessary to confirm, vacate, or enforce the award and for disclosure in confidence to the parties' respective attorneys, tax advisors, or senior management personnel. Furthermore, any action for breach of warranty must be commenced within three months following the expiration of the warranty period.