

**SPECIFICATIONS
AND
BID DOCUMENTS**



**Bid Number 2023-0413
Midmount Tower Ladder Truck**

**Office of the First Selectman
501 MAIN STREET SOUTH
SOUTH BURY, CONNECTICUT**

March 8, 2023

Invitation to Bid
Midmount Tower Ladder Truck

The Town of Southbury (The Town) will accept **sealed** bids for a Midmount Tower Ladder Truck for the Southbury Volunteer Firemen's Association.

Bids will be accepted at the Office of the First Selectman, 501 Main Street South, Southbury, CT 06488 until 2:00 p.m. on April 13, 2023.

All bids must include one hard copy and a flash drive with complete bid package enclosed.

Specifications and bidding documents may be obtained electronically from the Town's website at www.southbury-ct.org/bids.

Prospective bidders shall examine the "Instructions for Bidders" and shall comply and conform strictly to the conditions and instructions contained therein.

The Town reserves the right to reject any and all bids and to accept the bid deemed to be in the best interest of the Town of Southbury.

Instructions to Bidders

Separate sealed bids will be received in the Office of the First Selectman, Town Hall, 501 Main Street South, Southbury, Connecticut, 06488, until the time and date stated in the **INVITATION TO BID**.

All bids shall be submitted in sealed, opaque envelopes clearly labeled with the name of the bidder, his address, and the words "**BID DOCUMENTS, Midmount Tower Ladder Truck**" so as to guard against opening prior to the time set therefore.

Bids may be forwarded by mail. If mailed, the sealed opaque envelope containing the proposal, marked as described above, shall be enclosed in another envelope properly addressed for mailing.

The Town may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities in or reject any and all bids.

Sealed bids must be received at the Office of the First Selectman by 2:00 pm on April 13th, 501 Main Street South, Southbury, Ct. 06488

Questions about this bid should be directed to the Southbury Volunteer Fireman's Association **via email only**, Brian Warren, firechief@southbury-ct.gov

Preparation of Proposal

Each bid must be submitted on the prescribed form and all blank spaces for bid prices must be filled, handwritten in ink or type written, in both words and figures. Bid prices shall include all labor, materials and equipment necessary to complete the work in accordance with the bid documents.

Familiarity with Laws, Site Conditions, and Documents

Each bidder is required to be familiar with and to comply with the terms and conditions of the specifications and all other Bid documents and with all Federal, State and Local laws, ordinances or regulations which in any manner relate to the furnishing of the services in accordance with the Bid.

Each bidder shall thoroughly familiarize himself with all conditions of the bid documents and specifications before preparing his proposal. The submission of a proposal shall be construed as an assurance that such examination has been made and the failure of the bidder to familiarize himself with conditions relating to the specifications shall in way relieve any bidder from any obligation in respect to his bid.

Errors, Interpretations, and Addenda

Should a bidder find any omissions, discrepancies or errors in the specifications or other Bid Documents or should he be in doubt as to the meaning of the Specifications or other Bid Documents, he should immediately notify the Town who may correct, amend or clarify such documents by a written interpretation or addendum. No oral interpretations shall be made to any bidder and no oral statement of the Town shall be effective to modify any of the provisions of the Bid Documents.

Method of Award

- (a) The Town reserves the right to reject any or all bids and may waive any informalities.
- (b) The Bid will be awarded to the responsible bidder submitting the lowest bid complying with **all** conditions set forth in these Bid Documents. The delivery or completion date and skill and experience of the bidder shall be factors considered in the awarding of the Bid and may result in an award to a vendor other than the bidder quoting the lowest price.
- (c) In the event that there is a discrepancy between the price written in words and in figures, the price written in words shall govern.

Payments

Invoices shall be furnished to the Southbury Volunteer Fire Department c/o Office of the First Selectman, 501 Main Street South, Southbury, CT 06488 for verification and approval of the amount due the Contractor. Final payment will not be made until final acceptance by the Town of Southbury and Southbury Volunteer Fire Department of all work. The Vendor agrees that he will indemnify and save the Town harmless for all claims growing out of the lawful demands of subcontractors, laborers, suppliers and assignees.

Tax Exemption

The Town of Southbury is exempt from paying tax and, for that reason; the bid price shall not include any tax on the items specified.

Code of Ethics

The Town of Southbury has a Code of Ethics which must be signed off on and included in the bid package. (Addendum A)

**BID PROPOSAL
TOWN OF SOUTHBURY
Midmount Tower Ladder Truck**

TO:

Mr. Jeff Manville
First Selectman
501 Main Street South
Southbury, Connecticut 06488

PROPOSAL OF:

NAME OF COMPANY: _____

ADDRESS: _____

CITY STATE ZIP _____

TELEPHONE () _____ FAX () _____

Midmount Tower Ladder Truck, in accordance with the attached specifications, at the

Lump Sum Price of: _____

TOTAL PRICE IN WORDS

_____ DOLLARS \$

AND

CENTS

We will order the vehicle within _____ days after receipt of a Notice to Proceed or signing of a contract and deliver the vehicle within _____ calendar days.

CONTRACT CONSIDERATIONS

EQUAL OPPORTUNITY – AFFIRMATIVE ACTION

The successful firm shall comply in all aspects with the Equal Employment Opportunity Act. A firm with 15 or more employees shall be required to have an Affirmative Action Plan that declares that the Contractor does not discriminate based on race, color, religion, sex, national origin, or age, which specifies goals target dates to assure the implementation of equal employment. A firm with fewer than 15 employees shall be required to have a written equal opportunity policy statement declaring that it does not discriminate based on race, color, religion, sex, national origin, or age.

Findings of noncompliance with applicable State and Federal equal opportunity laws and regulations could be sufficient reason for revocation or cancellation of this contract.

INDEMNIFICATION

The awarded firm agrees to indemnify, defend, and save harmless, the Town of Southbury, as well as its officers, agents, and employees from any and all claims and losses to the extent caused by the negligent act, error, or omission of the awarded firm resulting from the performance of this contract, except to the extent caused by the negligent acts of the Town of Southbury or its officers, agents or employees.

The Town, as a sovereign government, cannot indemnify businesses or individuals.

INSURANCE

Prior to the execution of any contract, the Town of Southbury requires that any awarded contractor providing materials, equipment, or services to the Town must provide to the Town a certificate of insurance (Acord or other approved format) naming the Town of Southbury as additional insured, for the following:

- General liability (including completed operations coverage) in the amounts of \$1,000,000 (combined single limit) Bodily Injury/Property Damage coverage per occurrence and \$2,000,000 general aggregate coverage.
- Automobile Liability in the amount of \$1,000,000 (combined single limit), Property Damage, and Bodily Injury coverage
- Professional Liability, in an amount not less than \$500,000.00 per occurrence and \$1,000,000.00 aggregate.
- Worker's Compensation as defined in the Connecticut General Statutes

Any subcontractor to a contracted firm shall be likewise covered and shall furnish certificates of coverage acceptable to the Town before starting work.

The awarded firm shall maintain professional liability insurance until the expiration of the statute of limitations. In the event there is no statute of limitations specifically applicable to this project,

the awarded firm shall maintain coverage for a reasonable period after the date of substantial completion of the project as agreed to by the Town and the awarded firm.

INVOICING AND PAYMENT

Invoices shall be paid promptly by the Town unless any items thereon are questioned, in which case payment will be withheld pending verification of amount claimed and the validity of the claim. Standard payment terms are Net 30 Days from receipt of properly executed invoice(s). If your firm submits a proposal that includes payment schedules based on the completion of designated phases, those stages must be clearly outlined in your proposal. The Town cannot make payments for "execution of contract" (payments due upon contract signing). The Town is tax-exempt and shall not be charged tax.

AWARD CONSIDERATIONS

The Town may reject any or all proposals or submittals for such reason as it may deem proper. In acceptance of proposals or submittals, the Town will be guided by consideration of the interests of the Town. The Town also reserves the right to negotiate further with one or more of the firms as to any features of their proposals or submittals and accept modifications of the work and price when such action will be in the Town's best interests.

Firms selected for an interview will be provided with the interview panel's content; the selected firms will be required to submit affidavits relating to their relationship(s) with members of the panel. The names of interview committee members will be released solely for the purpose of preparation of affidavits; the selected firms shall not directly contact the panel members prior to immediately following the interview process.

The individual signing this submittal hereby declares that no person or persons other than members of his/her own organization are interested in this project or in the contract proposed to be taken; that it is made without any connection with any other person or persons making a proposal for the same work and is in all respects fair and without collusion or fraud; that no person acting for or employed by the Town of Southbury is directly or indirectly interested therein, or in the supplies or works to which it relates or will receive any part of the profit or any commission therefrom in any manner which is unethical or contrary to the best interests of the Town of Southbury.

Unless otherwise noted within a proposal, proposals received in response to this document, including proposed fee schedules, are assumed to be valid and binding for one hundred and twenty (120) days from receipt of the proposal. If an award is not made within such time, the proposal can be deemed to be either no longer valid or can be extended with the mutual consent of the Town and the firm submitting the proposal. Documents/reports/data become the property of the Town of Southbury.

**NOTICE TO CONTRACTORS
CODE OF ETHICS/CONFLICT OF INTEREST ORDINANCE**

The Town of Southbury has recently adopted a Code of Ethics/Conflict of Interest Ordinance. The Contractor shall comply with all applicable provisions of said Ordinance. The Contractor acknowledges receiving a copy of said Ordinance, a copy of which is attached hereto and made a part hereof. The Contractor further agrees that any instance of its violating any provisions of the Code of Ethics/Conflict of Interest Ordinance will be sufficient cause for the Town to terminate any or all of the Contractor's contracts or pending contracts with the Town. The Contractor agrees that the above clause will also be incorporated in all of its contracts with its subcontractors and consultants.

ACKNOWLEDGEMENT OF RECEIPT

I have read the above Code of Ethics/Conflict of Interest Ordinance and agree to abide by its terms. (Shown below)

ORDINANCE RECEIVED BY: _____ (Print name)

_____ (Signature)

_____ (Date)

Code of Ethics/Conflict of Interest Ordinance

A. Declaration of Policy.

1. The proper operation of the government of the Town of Southbury requires that public officers, employees, and members of boards, commissions and committees be independent, impartial and responsible to the people; that governmental decisions and policies be made in the proper channels of the government structure and free from coercive or other improper influence; that public office and employment not be used for personal gain; and that the public have confidence in the integrity of its government.

2. The purpose of this Ordinance is to set forth standards of ethical conduct to assist public officers, employees, members of boards, commissions and committees and persons dealing with them, when they are in the performance of their duties, so as to maintain and enhance a tradition of responsible and effective public service.

3. In the interest of ensuring that concerns regarding possible conflict of interests are promptly raised, this Ordinance permits a concern that a conflict of interest may exist to be raised by any person, regardless of whether the person would be considered an aggrieved party as that term is interpreted under Connecticut law. Any failure to observe the procedures set forth in this Ordinance shall not, however, afford a basis for an action for damages against the Town, any Town board, commission, agency or employee, or any member of any Town board or commission, or for challenging a decision, license, permit or other action of a Town employee, board or commission or member of same by a person who would not, but for the provisions of this Ordinance, have standing to bring such an action.

B. Definitions.

The following definitions shall apply to this Ordinance:

1. Conflict of Interest. A conflict of interest shall be deemed to exist if any Town officer, employee, or member of any board or commission has a financial or personal interest, direct or indirect, in any purchase, contract, transaction, or decision involving his office, board, commission or employment. Indirect interest is defined as an interest in which an officer, member or employee might influence a decision or event so as to achieve gain, financial or otherwise, on behalf of a family member, friend or associate or that creates an actual or perceived monetary or personal indebtedness to any party.

2. Financial Interest. A financial interest shall be deemed to exist if:

- a. Any such officer, member or employee might, directly or indirectly, derive pecuniary or financial gain or suffer loss from any purchase, contract, transaction or decision involving his office, board, commission or employment; or

b. A business or professional enterprise in which such officer, employee or member has any interest as an owner, member, partner, officer, employee or stockholder or has any other form of participation that will be affected by the outcome of the matter under consideration.

3. Personal Interest. A personal interest shall be deemed to exist if any such officer, member or employee shall have an interest with a person involved in any such contract, transaction or decision by reason of:

a. Relationship within the fourth degree by blood or marriage; or

b. Close business relationship; or

c. An interest that is averse to the interests of the Town with respect to the matter under consideration.

4. Material Conflict of Interest. A conflict of interest shall be deemed to be material where a reasonable person would conclude that the financial or personal interest:

a. is incompatible, or would to a reasonable person appear to be incompatible, with the proper discharge of official duties; or

b. would tend to impair, or would to a reasonable person appear to impair, independence of judgment and action in the performance of official duties.

5. Public Official. An elected or appointed official, whether paid or unpaid, full or part-time, of the Town.

6. Ethics Commission. The Town of Southbury Commission on Ethics as authorized by Section 7-148h of the Connecticut General Statutes.

C. Disclosure of Conflict.

1. Any Town officer, employee, or member of any Town board or commission who has a conflict or potential conflict of interest as defined herein, whether or not such conflict or potential conflict is material, shall disclose the interest causing such conflict or potential conflict in writing to the Board of Selectmen.

2. Any member of any Town board or commission who has a conflict of interest, whether or not such conflict is material, shall, in addition to the disclosure required by this Ordinance, disclose the interest causing such conflict to such board or commission, and such disclosure shall be recorded in the board's or commission's minutes.

D. Determination of Materiality.

1. In the event that a disclosure or a claim of a conflict of interest with respect to any Town officer or employee has been made to the Board of Selectmen, and the officer or employee does not disqualify himself from matters with respect to which the conflict of interest allegedly exists, the Board of Selectmen promptly shall inquire into the facts of the matter and determine whether or not a conflict exists and if so, whether it is material.

2. In the event that a disclosure or a claim or a conflict of interest with respect to any member of a Town board or commission has been made to such board or commission, and the member does not disqualify himself from matters with respect to which the conflict of interest allegedly exists, the board or commission shall forthwith determine by a majority of those members present, excluding the member whose interest is in question, whether or not a conflict exists and, if so, whether it is material.

E. Disqualification.

If it has been determined that a material conflict of interest exists, the Town officer, employee or member of any Town board or commission who has the conflict shall be disqualified from discussing or acting upon any matter encompassed by that conflict of interest, and shall leave the room during any public hearing, discussions or deliberations regarding the matter. Any Town officer, employee or member of any Town board or commission may disqualify himself even though the conflict of interest is not material.

F. Claim of Conflict.

If a formal written complaint is made to the Ethics Commission that any Town officer, employee, or member of any Town board or commission has an undisclosed conflict of interest, the Ethics Commission shall record the claim in its minutes.

G. Gifts and Favors.

No Town officer, employee, or member of any Town board or commission shall accept or receive, directly or indirectly, anything of value (whether by rebate, gift, promise, obligation or contract for future reward or Compensation or otherwise) for awarding or influencing the award of any decision, permit, license, contract or purchase order by the Town. Anything of value when in the form of a gift shall not be deemed relevant if the actual cost of that item is less than \$10.00.

H. Representation.

1. Without the prior written consent of the Ethics Commission, no Town employee or public official shall appear for Compensation before any Town board or agency in which he/she was formerly employed or served as an official at any time within a period of one (1) year after termination of his/her service with the Town.

2. Without the prior written consent of the Ethics Commission, no present or former Town employee or public official shall represent anyone other than the Town concerning any particular matter in which he/she participated personally and substantially while in municipal service.

3. No Town employee or public official shall disclose or use confidential information acquired in the course of and by reason of his/her official duties, for personal and/or financial gain for himself/herself or others.

4. No former Town employee or public official who participated substantially in the negotiation or award of municipal contract or who supervised the negotiation or award of such a contract shall accept employment with a party to the contract other than the Town for a period of one (1) year after such contract is signed.

I. Independent Contractors.

Before hiring any consultant, independent Contractor or other advisor, the officer, employee, board or commission that proposes to hire the independent Contractor shall inquire whether the independent Contractor has any conflict of interest as that term is defined in this Ordinance or as defined in any code of ethics or similar code applicable to the independent Contractor. Any such conflict shall be specified in the appropriate Town records (such as minutes of any relevant board or commission). Prior to hiring any independent contractor with a conflict, the officer, employee, board or commission proposing to hire the independent Contractor must make a determination that the conflict is not material and/or that despite the conflict, the independent Contractor should be hired. The decision and the reasons therefore must be a matter of public record.

No consultant, independent Contractor or other advisor of the Town shall represent a private interest in any action or proceeding against the interest of the Town which is in conflict with the performance of his/her duties as such consultant, independent Contractor or advisor. No consultant, independent Contractor or advisor may represent anyone other than the Town concerning any matter in which he/she participated personally and substantially as a consultant to the Town. Neither shall such consultant, independent Contractor or advisor disclose confidential information learned while performing his/her duties for the Town, nor shall he/she use such information for the personal and/or financial interests of himself/herself or others.

J. Procedure.

All claims pertaining to a violation of this Ordinance shall be made, in writing, to the Ethics Commission in accordance with the rules and regulations promulgated by that Commission which shall be found in the Town of Southbury Ethics Commission Statement of Procedures. These rules shall require the Complainant to specify the facts that gave rise to his/her claim and the specific provision of this Ordinance that has been breached on a Form provided by the Ethics Commission. The Ethics Commission may, but is not required to consider claims made

against individuals formerly in office or formerly employed.

Any allegations and any information learned, supplied to or received from or by the Ethics Commission shall remain confidential until a finding of Probable Cause is determined by the Ethics Commission.

The Ethics Commission is authorized to issue advisory opinions at its discretion.

K. Penalties.

1. In addition to any penalty contained in any other provision of law, any person who violates any of the provisions of this Ordinance may be censured or reprimanded or may be suspended or removed from office or employment, as the case may be, in the manner provided by law.

2. Any violation of this Ordinance shall render any purchase, contract, or transaction or any part thereof affected thereby voidable by the Board or Selectmen.

3. Any violation of this Ordinance with respect to any decision of a board, commission or committee shall be subject to any remedies deemed proper by the Board of Selectmen and permitted by law.

4 The penalties provided above are in addition to any other penalties provided by law to address violations of the provisions of this Ordinance.

L. Concurrent Offices.

1. No official or employee of the Town, full or part-time, shall serve on any board or commission to which the official or employee reports or acts as staff, except as otherwise stated in the Town Charter or Ordinances. Notwithstanding the foregoing, an official or employee may serve on any board, commission or committee in an advisory capacity.

2. Except as otherwise provided in the Charter or by Ordinance, the First Selectman, the Selectmen, the Town Clerk, members of the Board of Finance and members of the Ethics Commission shall hold no other Town office, and the provisions of Section 9-210 of the General Statutes concerning incompatible Town offices shall apply to the officers described therein.

3. Subject to the restrictions set forth in applicable law and in Section L. 2 of this Ordinance, nothing in this Ordinance shall prevent the appointment of the same person to more than one office, provided the offices are not incompatible, provided the duties of the offices to which he is appointed may, in the opinion of the Board of Selectmen, be satisfactorily fulfilled by one person, and provided further that inability to fulfill satisfactorily the duties of all offices to which he is appointed shall be cause for removal from any one or more of said offices.

M. Meetings.

1. Members Attendance. Members of all boards, commissions and committees are expected to attend all meetings of such boards, commissions and committees.

2. Alternates' Attendance. Alternate members of all boards, commissions and committees are expected to attend all meetings of such boards, commissions and committees.

3. Voting. All members or seated alternates of all boards, commissions and committees who have not been disqualified shall vote on all matters upon which a vote is held by such board, commission and committee unless there shall be reasonable cause for abstention and said cause is stated and recorded in the minutes of the meeting.

4. Statement of Reasons. In every case where the action of any board, commission and committee is subject to a right of appeal to another administrative body or to the courts of the State of Connecticut, a statement of the reasons for its action shall be included in the minutes of the meeting.

N. Indemnification Certificate:

The successful bidder must submit satisfactory proof of insurance and a signed Indemnification Certificate.



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Southbury Vol. Fire Department

Midmount Tower Ladder



4 Table of Contents

5

6 LOGISTICS 2

7 PRE-DELIVERY ROAD TRIP AND FINAL FACTORY CHECKLIST 6

8 PROPULSION & ACCESSORIES 12

9 CREW CAB 17

10 CHASSIS 29

11 BODY 32

12 AERIAL TOWER DESIGN AND PERFORMANCE 38

13 PUMP DESIGN & PERFORMANCE 53

14 ELECTRICAL SYSTEMS 63

15 LIGHTING 78

16 ALARMS & SIRENS 86

17 PAINTING & STRIPING 88

18 FINISHES 93

19 MISCELLANEOUS EQUIPMENT 98

20 MANUALS & DOCUMENTATION 104

21 INSPECTIONS, WARRANTIES & CERTIFICATIONS 105

22 MOUNTING LOCATIONS TO BE DETERMINED AT FINAL INSPECTION 108

23 ITEMS SUPPLIED BY FIRE DEPARTMENT 109

24 ITEMS SHIPPED LOOSE 110

25



Southbury Vol. Fire Department



LOGISTICS

1. QUALITY AND WORKMANSHIP

The design of the apparatus shall embody the latest approved automotive engineering practices. The workmanship shall be of the highest quality in its respective field. Special consideration shall be given to the following points: Accessibility of the various units which require periodic maintenance; ease of operation (including both aerial and driving); and symmetrical proportions. Construction shall be rugged and ample safety factors shall be provided to carry the loads specified and to meet both on and off-road requirements and speed conditions as set forth under Performance Tests and Requirements. Welding shall not be employed in the assembly of the apparatus in a manner that shall prevent the ready removal of any part for service or repair. All welding shall meet the industry standard for this type of apparatus.

2. DELIVERY

To ensure proper break in of all components while still under warranty, shall be delivered under its own power - rail or truck freight shall not be acceptable. A qualified delivery engineer representing the contractor shall deliver the apparatus and remain for a sufficient length of time to instruct personnel in the proper operation, care and maintenance of the equipment delivered. The manufacturer shall supply at time of delivery, complete operation and maintenance manuals covering the completed apparatus as delivered. A permanent plate shall be mounted in the driver's compartment which specifies the quantity and type of fluids required including engine oil, engine coolant, transmission, lubrication, and drive axle.

3. SOLE SOURCE WARRANTY

To protect the purchaser from divided warranty responsibility between chassis and body manufacturers, the manufacturer and local dealer shall coordinate the apparatus warranty for the specified vehicle from bumper to bumper. Inclusive of individual component warranties, the winning bidder shall function as the sole source warranty coordinator on the entire vehicle. This shall include the cab shell, chassis assembly, and complete body structure.

4. PERFORMANCE TESTS AND REQUIREMENTS

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

A) The apparatus, when fully equipped and loaded, shall have not less than 25 percent nor more than 50 percent of the weight on the front axle, and not less than 50 percent nor more than 75 percent on the rear axle.

B) The apparatus shall be capable of accelerating to 35 mph from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed rpm of the engine.

C) The service brakes shall be capable of stopping a fully loaded vehicle in 35-feet at 20 mph on a level concrete highway. The air brake system shall conform to Federal Motor Vehicle Safety Standards (FMVSS) 121.

D) The apparatus, fully loaded, shall be capable of obtaining a speed of 50 mph on a level concrete highway with the engine not exceeding its governed rpm (full load).

5. FAILURE TO MEET TEST

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



Southbury Vol. Fire Department



1 the purchaser or its use by the purchaser during the above-specified period with the permission of the bidder shall not
2 constitute acceptance.

3 **6. LIABILITY**

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

6 **7. SPECIFICATION BID REQUIREMENTS**

7 Bidders shall also indicate "yes/no" if their bid complies on each item specified. Proposals taking total exception to
8 specifications shall not be acceptable. Also, bidders shall submit a detailed proposal. A letter only, even though written
9 on a company letterhead, shall not be sufficient.

10 **8. EXCEPTIONS**

11 Exceptions shall be allowed if they are equal to or superior to that specified and provided, they are listed and fully
12 explained, no matter how minor on a separate page. Any exceptions not taken shall be assumed by the purchaser to be
13 included in the proposal, regardless of the cost to the bidder.

14 **9. GENERAL CONSTRUCTION**

15 The apparatus shall be designed with consideration to distribution of load between the front and rear axles. Weight
16 balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association.

17 **10. CORROSION REDUCTION POLICY**

18 The manufacturer will have in place a formal corrosion reduction program and assembly procedures designed for
19 reducing and eliminating the possibility of corrosion. It is understood that fire apparatus will operate in harsh
20 environments. At the time of the bid the apparatus manufacturer will show proof of a corrosion policy. Failure to submit
21 this information could be grounds for rejection. If a formal policy is not in place explain in your bid how your firm will
22 take the necessary steps for corrosion reduction. There will be no exception to this requirement.

23 **11. COMMERCIAL GENERAL LIABILITY INSURANCE**

24 The Contractor shall maintain product liability and facility insurance equal to or exceeding \$5,000,000.

25 **12. SINGLE SOURCE MANUFACTURER**

26 Bids shall only be accepted from a sole source apparatus manufacturer. The definition of sole source is a manufacturer
27 that designs and manufactures their products using an integrated approach, including the chassis, cab, aerial ladder, and
28 body being assembled on the bidder's premises. The warranties relative to the chassis and body design (excluding
29 component warranties such as engine, transmission, axles, etc.) must be born from the principal manufacturer and not
30 split between manufacturers (i.e., body and chassis). The bidder shall provide evidence that they comply with this
31 requirement.

32 **13. GENERAL CONSTRUCTION, QUALITY AND WORKMANSHIP**

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

36
37 Distribution of load between the front and rear axles shall be engineered so that all specified equipment, including a
38 filled water tank, full complement of personnel and fire hose shall be carried without damage to the apparatus. Weight
39 balance and distribution shall be following the recommendations of the National Fire Protection Association and current
40 standard automotive practices.

41
42 All welding personnel employed in the fabrication and construction of structural components of the apparatus chassis,



Southbury Vol. Fire Department



body and aerial device shall hold a valid certificate from the AWS - American Welding Society.

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

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

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

14. NFPA COMPLIANCE

Apparatus proposed by the bidder shall meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current edition at time of contract execution. Fire department's specifications that differ from NFPA specifications shall be clearly highlighted in the proposal as "non-NFPA".

15. PERFORMANCE BOND

All vendors who bid shall supply a performance bond as security to accompany their proposal. This performance bond shall be issued by a Surety Company who is listed on the U.S. Treasury Departments list of acceptable sureties as published ATTACHMENT A 6 in Department Circular 570. The performance bond shall be issued by an authorized representative of the Surety Company and shall be accompanied by a certified power of attorney dated on or before the date of bid. The performance bond shall include language, which assures that the Vendor/Principal shall give a bond or bonds as may be specified in the bidding or contract documents, with good and sufficient surety for the faithful performance of the contract, including the Basic One (1) Year Limited Warranty, and for the prompt payment of labor and material furnished in the prosecution of the contract.

16. PROPOSAL DRAWING

There shall be a proposal drawing submitted to the Southbury Vol. Fire Department. The drawing should be a visual interpretation of the apparatus proposed. The drawing shall include all major dimensions. The drawing shall be in color and reflect the final paint color scheme as shown from all four sides.

17. APPROVAL DRAWING

A drawing of the proposed apparatus shall be provided for approval before construction begins. The sales representative shall also have a copy of the same drawing. The finalized and approved drawing shall become part of the contract documents. This drawing shall indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc. A "revised" approval drawing of the apparatus shall be prepared and submitted by the manufacturer to the purchaser showing any changes made to the approval drawing. The drawing shall include all major dimensions. The drawing shall be in color and reflect the final color scheme as shown from all four sides.

18. CONSTRUCTION PROGRESS PHOTOS

The successful bidder shall supply weekly digital photographs of the apparatus or the major components as they are being constructed. The use of a website is preferred. The photos shall start at the beginning of the manufacturing process and shall continue until just prior to the final inspection. There shall be approximately six (6) weekly reports illustrating the progress of the apparatus through the course of each week. Special attention shall be given to show the unique features and aspects of the apparatus as construction progresses.



Southbury Vol. Fire Department



1 **19. CUSTOMER REFERENCE LIST**

2 A customer reference list shall be provided with each bid. The reference list shall include a minimum of five (5)
3 Departments within the northeastern United States who currently operate the brand and model of apparatus being
4 proposed. Reference information shall include but not limited to Department name, contact information and
5 make/model of apparatus in service.

6 **20. LOCAL SERVICE FACILITY**

7 Each bidder must provide with their bid proof of a Dealer owned and operated Service Facility located within 100 miles
8 of Southbury, CT. Service personnel shall be factory trained to handle parts and warranty repair for their respective
9 manufacturer. Each bidder shall provide a background of their technician's staff along with their certifications. In
10 addition, local Service Facility must have the capability to dispatch factory trained service technicians with dealer
11 operated mobile service units to Southbury, CT for field service repairs.

12 **21. REPLACEMENT PARTS**

13 The winning bidder will maintain replacement parts for a minimum period of twenty (20) years from the date of delivery
14 of the apparatus.

15 **22. PRE-CONSTRUCTION CONFERENCE**

16 A Pre-Construction video conference for representatives of Southbury Vol. Fire Department shall be included in the bid.
17 The conference shall be held at the facility of the manufacturer's representative during normal business hours, Monday -
18 Friday. The conference shall be held prior to the commencement of any work being done on the apparatus. Factory sales
19 and engineering personnel shall take part in the conference via video conferencing (as needed) to ensure that the
20 apparatus fulfills all the requirements of the accepted bid. Authorized representatives from both the purchaser and
21 manufacturer shall approve and sign any changes made during these meetings prior to commencement of any work
22 being done on the apparatus.

23
24 It is understood and agreed that delays beyond thirty (30) days of contract approval for Pre-Construction conference
25 changes in specifications shall be cause for delay in delivery. Up to Eight (8) fire department representatives shall attend
26 the Pre-Construction Conference.

27
28 **23. FINAL INSPECTION TRIP**

29 A final inspection shall be provided at the manufacturer's facility for review of the completed unit. Motel, meals, and
30 travel expenses for up to four (4) Southbury Vol. Fire Department personnel shall be the responsibility of the successful
31 bidder. The sales representative shall be present and aid in the final inspection process.



Southbury Vol. Fire Department



PRE-DELIVERY ROAD TRIP AND FINAL FACTORY CHECKLIST

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

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

24. DELIVERY

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

Delivery shall be to 461 Main Street South, Southbury, Connecticut, USA.

25. FAMILIARIZATION

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

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

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

26. DOCUMENTATION - NFPA REQUIREMENTS

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

27. GENERAL DESIGN REQUIREMENTS

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

28. GROSS VEHICLE WEIGHT

The manufacturer shall be responsible for proper weight distribution upon the chassis and axles.

The apparatus when loaded, shall have not less than 25% nor more than 45% of the weight on the front axle and not less than 55% nor more than 75% on the rear axle.

In accordance with NFPA 1901, it shall be the responsibility of the purchaser to notify the manufacturer in the purchaser's specification of any hose, ground ladders, or equipment to be carried by the apparatus that exceeds the



Southbury Vol. Fire Department



1 minimum requirements of the NFPA 1901 standard in effect at the time of the bid.

29. VEHICLE PERFORMANCE ANALYSIS

3 A performance analysis report shall be run on the vehicle, as ordered, using computer software to compute top speed,
4 gradeability, optimum shift points and acceleration on various grades. The report shall be delivered with the completed
5 vehicle but shall be available prior to engineering of the vehicle.
6

30. GENERAL DIMENSIONS

- 7 • The wheelbase shall not exceed: 247 inches
- 8 • The total length shall not exceed: 567 inches
- 9 • The total width shall not exceed 96 inches
- 10 • The total height shall not exceed 142 inches

31. SEATING CAPACITY FOR 6

11 The safe seating capacity of the cab for properly belted passengers shall be six (6)

32. GROSS VEHICLE WEIGHT RATINGS

- 12 • Front Vehicle Weight Rating shall not exceed: 22,800 lbs.
- 13 • Rear Vehicle Weight Rating shall not exceed: 57,200 lbs.
- 14 • Gross Vehicle Weight Rating shall not exceed: 80,000 lbs.

33. CUSTOMER DECLARED EQUIPMENT WEIGHT

15 The customer declared equipment (not hose) weight shall be from 2000 to 2500 pounds. This weight shall be evenly
16 distributed.

34. STEERING

17 A heavy duty 18,000 lb. capacity power steering system shall be provided. The hydraulic pump shall be engine gear
18 driven. The steering gear "box", or fixture that the gear is mounted to, shall be fabricated in the factory of the bidder. It
19 shall be a welded assembly constructed of 3/8-inch formed steel with a 3/4-inch face plate. Vertical gussets shall be
20 provided between the face plate and the frame mounting plate to insure against frame flex while the vehicle is
21 stationary.

35. APPROACH - DEPARTURE ANGLES

22 An angle of approach and an angle of departure of at least 8-degrees shall be maintained at the front and the rear of the
23 vehicle when it is loaded to the estimated in-service weight, as defined by NFPA 1901 current edition.

36. TURNING RADIUS

24 Turning radius for the apparatus shall be no more than 41 feet.

37. AUXILIARY CYLINDER FOR POWER STEERING

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

38. AIR PIPING

26 The service brake system shall be full air type. The system is to meet or exceed current FMVSS-121 requirements. Other
27 components or accessories shall be as follows:

- 28 - Pressure protection valve
- 29 - Quick build up system
- 30 - Engine mounted, gear driven air compressor
- 31 - Bendix Model E-6 dual circuit brake treadle valve



Southbury Vol. Fire Department



- Two (2) air pressure gauges on cab dash with indicator light and buzzer
- Air reservoirs with capacity to meet FMVSS-121

The Bendix SR-7 valve, in conjunction with the double check valve, shall enable modulation of the spring brakes in case of a service-brake air system failure to allow the vehicle to be stopped. Brake piping shall consist of SAE approved; DOT rated "Synflex" reinforced colored nylon tubing. The lines shall be wrapped in a heat protective loom where necessary in the chassis. Braided hoses shall provide flexibility between axle and frame connections. Brake air lines shall be color-coded. Air inlet to air brake compressor shall be from the engine intake manifold, i.e., after transition through the engine air cleaner. A stainless braided Teflon hose and/or copper tubing shall be provided from the compressor to the air dryer. Fittings shall be brass.

The parking brake system is to be the spring set type operated by control valve on driver's console. A brake indicator light shall also be provided.

39. WET AIR RESERVOIR TANK

A minimum 1250 cubic inch wet air tank shall be provided with the air system.

40. WET AIR RESERVOIR DRAIN

A cable-controlled drain valve shall be provided on the wet tank. The pull cable shall be extended to the side of the truck with a loop provided at its end. It shall be labeled: "**Drain Daily**".

41. AIR DRYER

A Meritor WABCO 1200 System Saver air dryer shall be installed in the air brake system. It shall have a minimum capacity of 30 cfm air flow. Dryer shall be equipped with an integral, automatic, 12-volt heated moisture ejector which is thermostatically controlled. System shall include a pressure-controlled check valve installed between the wet tank and the secondary air reservoir.

42. SECONDARY AIR RESERVOIR

One (1) added 1770 cubic inch air reservoir(s) shall be provided and installed. The extra reservoir shall be isolated and be plumbed with an 85 PSI pressure protection valve on the reservoir supply side.

- One (1) drain valve(s) on the isolated air reservoirs shall be cable controlled. The pull cable(s) shall be extended to the side of the truck with a loop provided at its end. They shall be labeled: Drain Daily.

The secondary Air reservoir tank shall be used for air horn and auxiliary air outlet.

43. AUXILIARY AIR OUTLET

There shall be a 1/4-inch female air outlet with NPT plug mounted in the outrigger control compartment. A 1/4 turn shutoff valve shall be positioned adjacent to the outlet. The outlet shall be connected to the apparatus air reservoir tank.

44. FRONT AXLE

A Dana D2200 front axle with a 22,800-pound rating shall be provided. It shall include composite low-friction bushings with diagonal grooves to better distribute lube, camber settings of +1/4 degree for both left and right sides to help improve tire life and a large diameter, heat treated kingpin with a lube retaining seal.

45. DISC BRAKES

The front axle shall be provided with Meritor #EX225H air disc brakes with internal automatic adjustment, sealed synchronized twin pistons and robust sealing of slide pins for environmental protection. The #EX225H air disc brakes shall have 17" rotors and a fully sealed lever mechanism with variable mechanical ratio. A visual indicator of brake wear shall also be provided.



Southbury Vol. Fire Department



1
2 **46. FRONT SEMI-ELLIPTICAL SPRING SUSPENSION**

3 The front suspension shall be semi-elliptical 4-inch x 52-inch constant rate type springs with a military wrapped eye. The
4 correct material, spring length, width, thickness, and number shall be provided to match the leaf spring rating with that
5 of the gross axle weight rating of the vehicle.
6

7 **47. SHOCK ABSORBERS**

8 Gabriel heavy-duty telescoping shock absorbers shall also be provided on the front axle.
9

10 **48. FRONT AXLE PARKING BRAKE**

11 An auxiliary air applied front axle parking brake shall be installed with a separate control switch and properly labeled
12 indicator light in the cab. This front parking brake will only be able to be activated when the parking brake for the rear
13 axle is set.
14

15 **49. FRONT AXLE OIL SEALS**

16 The front axle shall be equipped with oil type seals with viewing windows.
17

18 **50. REAR AXLE**

19 Tandem drive axle shall be a Dana Model D/R60-190 with a capacity of 60,000 pounds at the hub. Each rear axle shall
20 include Bendix 16 1/2-inch x 7-inch S-Cam brakes with dust shields and automatic slack adjusters. Stroke indicators shall
21 be incorporated to provide a visual indicator of brake wear.
22

23 An inter-axle differential control switch shall be provided on the cab dash, easily accessible from the driver's seating
24 position.
25

26 All axles shall be purchased complete from and certified by the axle manufacturer for the specific application. Brake
27 chamber brand and size shall be decided by the axle manufacturer. All axle applications must be certified by the axle
28 manufacturer.
29

30 **51. REAR AXLE RATIO**

31 Rear Axle Ratio Shall be Set for a top speed of 60 MPH, but the customer is requesting the ratio provide the best low end
32 possible, with top speed to be as close to 60 MPH as possible.
33

34 **52. ROAD SPEED**

35 Per NFPA, the maximum road speed shall be either 68 mph or the manufacturer's fire service speed rating for the tire
36 installed on the apparatus, whichever is lower.

37 **53. ANTI-LOCK BRAKING SYSTEM (ABS)**

38 The vehicle shall be equipped with a WABCO 6S6M anti-lock braking system (ABS). The ABS shall supply six (6) channel
39 anti-lock-up braking control on the (2) front and (4) rear wheels. The system shall employ a digital electronics system
40 with microprocessor controls divided into two (2) diagonal circuits. In case of one circuit malfunction the second circuit
41 shall operate unaffected. Each wheel shall be constantly checked by the system when the vehicle is in motion. When any
42 wheel begins to lock-up during braking, a signal shall be transmitted to the processor from the wheel sensor. The control
43 unit shall instantly reduce the braking force applied to the wheel and immediately re-apply braking force so that the
44 wheel rapidly slows without locking. The system shall control all wheels simultaneously to provide maximum vehicle
45 braking in a straight line.
46

47 An ABS warning light shall be installed in the warning light panel of the driver's dash. The ABS system shall automatically
48 disengage the auxiliary braking system whenever the anti-lock braking mode is active.



Southbury Vol. Fire Department



1
2 **54. VEHICLE STABILITY COMPLIANCE – ELECTRONIC CONTROL**

3 In compliance with NFPA 1901, current edition standard 4.13.1, the vehicle, as specified, shall be equipped with a
4 Meritor-WABCO electronic Roll Stability Control system that shall utilize a centrally mounted pitch and yaw sensor and
5 steering shaft position sensor interacting with the chassis' ABS traction control, auxiliary braking system and the engine
6 ECM to minimize the vehicle's potential for rollover in a turning at speed maneuver.
7

8 **55. AUTOMATIC TRACTION CONTROL SWITCH**

9 Automatic Traction Control, working in concert with the ABS system, shall be installed which shall reduce wheel slip on
10 acceleration in deep snow, mud, wet or slippery road conditions. A light shall illuminate on the driver's dash when the
11 drive wheels slip during acceleration.
12

13 A deep snow and mud option switch shall be provided in addition to the ATC option. This function increases available
14 traction on extra soft surfaces like snow, mud, or gravel by slightly increasing the permissible wheel spin.
15

16 **56. INTER-AXLE DIFFERENTIAL LOCK**

17 The rear tandem axle set shall be equipped with an air actuated primary traction device that allows for speed
18 differences between the forward and rear tandem axles while supplying equal pulling power from each axle. When
19 disengaged, one wheel set of the forward drive axle and the opposite side wheel set of the rear drive axle shall operate
20 in drive action to minimize wear on drive components. When the IAD lock is engaged, both wheel sets of each tandem
21 axle supply drive action and does so until one side encounters slip or the vehicle is turning, thereby maximizing traction
22 without diminishing turn radius.
23

24 A dash mounted locking rocker switch shall engage and disengage the IAD lock. While the IAD lock may be engaged or
25 disengaged at rest or at road speed, it should not be engaged whenever any drive wheel is slipping.
26

27 It is understood that the IAD should be unlocked for normal dry road condition operation to avoid premature ring gear,
28 clutch, and tire wear.
29

30 **57. REAR SUSPENSION**

31 The rear suspension shall be a heavy-duty Hendrickson Brand UltiMaax fire & rescue severe duty rubber suspension
32 rated at 58,000 lb.
33

34 **58. FRONT TIRES**

35 The two (2) front tires shall be Michelin 425/65R22.5, XZY3, load range "L" with on/off road tread (heavy loads and
36 slower speeds, operating on a mixture of improved secondary and aggressive road surface). This tire has a nominal
37 rating of 11,400 pounds with a top speed of 65 mph and an intermittent fire service rating of 11,400 pounds at a top
38 speed of 75 mph.
39

40 **59. REAR TIRES**

41 The eight (8) rear tires shall be Michelin 315/80R22.5, X Works Z, load range "L", on/off road tread (heavy loads and
42 slower speeds, operating on a mixture of improved secondary and aggressive road surface) with a nominal rating of
43 8,270 pounds with a top speed of 65 mph and an intermittent fire service rating of 8,270 pounds at a top speed of 75
44 mph.
45

46 **60. WHEELS**

47 Wheels shall be Alcoa Dura Bright polished aluminum disc type and hub piloted. Chrome plated nut covers shall be
48 supplied.
49



Southbury Vol. Fire Department



1 **61. FRONT & REAR AXLE HUB CAPS**

2 Stainless-steel "Baby Moon" type hub caps shall be provided on the front and rear axles. The hub caps shall have cut
3 outs for viewing the front axle oil seals.
4

5 **62. TIRE PRESSURE INDICATORS**

6 Tires (10) shall have low-pressure indicators installed for shipment. AccuPressure Heavy Duty Safety
7 Caps shall be provided. This valve stem inflation pressure sensitive monitor shall supply a visual color
8 indication of when the tire pressure is below the manufacturers recommended level. The chrome
9 safety cap shall show green when the tire is properly inflated and red once the tire becomes under
10 inflated. Item(s) shall be shipped loose¹.



11
12 All inner wheels shall be equipped with a valve stem extension that shall allow the inner wheel to be filled without
13 removing the outer wheel.
14

15 **63. TIRE BALANCE COMPOUND**

16 EQUAL Tire Performance Balancing Compound shall be inserted into the front and rear tires to balance and maintain a
17 vibration-free rotation.



PROPULSION & ACCESSORIES

64. ENGINE

The chassis shall be powered by an EPA17/OBD17 certified and compliant Cummins diesel engine, with minimum performance characteristics as described below:

Model	X12 or Newer
Number of Cylinders	Six
Displacement Liter	14.9L
Min Rated BHP	625 @ 1800 RPM
Min Torque	2050 ft.lb. @ 1400 RPM
Governed RPM	2000

Standard equipment on the engine shall include the following:

▪ Selective Catalytic Reduction (SCR) after treatment	▪ Cooled Exhaust Gas Recirculation system
▪ Fan – 32-inch, 11 blade	▪ Charge air cooling
▪ High pressure, common rail fuel system	▪ Fuel filter with check valve and water separator
▪ Fuel strainer	▪ Governor – electronic, interact system
▪ Injectors – electronically controlled full authority injection	▪ Lube oil cooler – integral
▪ Lube oil filter – full flow	▪ Turbocharger – variable geometry type
▪ Air compressor – Wabco 26.0 CFM	▪

The engine exhaust system shall be a horizontal design constructed from heavy-duty truck components. Flexible couplings shall be used to absorb the torque and vibration of the engine. The outlet shall be directed to the forward side of the rear wheels, exiting the right side, with a straight tip. A heat-absorbing sleeve shall be used on the exhaust pipe in the engine compartment area to reduce stored heat, providing protection for the alternator, and to protect hands when checking or adding oil in the engine compartment.

65. ENGINE AND CHARGED AIR COOLING SYSTEMS

A serpentine core type radiator with continuous louvered copper fin design shall be provided. Radiator shall be fitted with formed steel side frames. The top tank shall have a built-in de-aeration system. A drain shall be positioned at the lowest point.

The engine charged air heat exchanger shall be positioned directly in front of the radiator and be bolted to its side rails. It shall be all aluminum-brazed construction. Air cooler shall be cross flow design with cast aluminum side tanks, horizontal inlet and outlet at top and aluminum louvered serpentine external air fins. Plastic tanks shall not be acceptable, no exceptions. Cooler tubers shall also be constructed of aluminum and have internal fins that eliminate laminar airflow.

The charge air cooler and the radiator shall be produced by the same manufacturer as a single assembly to provide continuity throughout the cooling system. This shall ensure a certified “balanced” package for the chassis engine air and fluid cooling systems.

The radiator and charger cooler shall be mounted to the chassis stub. Fabricated mounting bracket for the fans ring shall be attached to the front of the engine in a manner so that it “floats” with the engine and increases the fan’s efficiency by tightening the tip clearance. This mounting design eliminates engine fan and radiator shroud contact due to engine torque movement and promotes more efficient airflow. The radiator and charger cooler shall be held in place at the bottom by two (2) large bolts equipped with anti-stress rubber biscuits. The top of the radiator shall be supported by



Southbury Vol. Fire Department



two (2). $\frac{3}{4}$ " tubular braces, bolted to the chassis stub. Anti-vibration rubber biscuits shall be installed at the top threaded end of the braces where they attach to the radiator.

66. FAN CLUTCH

A fan clutch shall be provided for the engine cooling fan. The clutch shall be of a failsafe design, in that it shall fail in the "on" mode and thus prevent overheating in case of component or airline failure. Manufacturer shall also wire the clutch so that it remains "on" in the pumping mode to prevent water pressure fluctuations.

67. COOLANT OVERFLOW RESERVOIR

A coolant overflow reservoir shall be provided. It shall be positioned in the engine compartment.

68. SILICONE HOSES

All hoses in the cooling system shall be silicone type with stainless-steel constant torque Oetiker clamps.

69. TRANSMISSION

An Allison, Model 4000 - EVS, electronically controlled automatic transmission with integral fluid filter shall be provided. A transmission cooler shall be installed in the radiator bottom tank. A warning light and buzzer shall be provided on the cab dash to alert the driver should the transmission overheat.

The transmission shall include the following: an oil life monitor, a filter life monitor, and a transmission health monitor. The oil life monitor decides fluid life remaining by monitoring various operating parameters. The filter life monitor decides when fluid filter(s) need to be replaced. The transmission health monitor decides when clutch system inspection is required. The monitors send a message via a blink code to a special prognostic light on the shift pad. Also, on the shift pad shall be installed a digital, double-digit display that shows the level of transmission oil. The display shall show the oil level as "OK", "Lo" or "Hi", also indicating the number of quarts lo or hi.

The transmission shall include the following emergency vehicle specifications:

Maximum gross input power:	600 hp
Maximum gross input torque:	1850 ft.lb.
Input speed range:	1700 to 2300 rpm
Direct gear lock-up:	4 th @ 1- to 1-
Overdrive gear and ratio:	5 th @ 0.74 to 1-

The transmission shall automatically shift into neutral whenever the chassis parking brake is applied.

70. TRANSMISSION FLUID

The Allison 4000-EVS transmission shall be delivered from the factory with a synthetic SAE standard ATF, Delvac.

71. TRANSMISSION PROGRAMMING

The transmission shall be programmed as a full 5-speed (or more) automatic.

72. TOUCH PAD TRANSMISSION SHIFT CONTROL

Touch pad control shift module shall be mounted to the right of the driver on the console and be indirect lighted for after dark operation.

73. DRIVELINE

Drivelines shall be built with heavy-duty metal tubes and use Spicer 1810 series or "Equal" mechanics type universal joints with "half round" end yokes. This quick disconnect strap and bolt design type end joint shall allow the driveline to



Southbury Vol. Fire Department



1 be easily disassembled and dropped straight down for ease of service and maintenance. They also shall be dynamically
2 balanced by the truck manufacturer before installation in the chassis. A splined slip joint is to be provided in each shaft
3 assembly. A grease Zerk fitting shall be provided for lubrication of the slip joint.
4

5 **74. DRIVESHAFT DROP GUARDS**

6 Two (2) drive shaft drop guards shall be provided, one on each end of the individual driveshaft, to prevent damage to
7 the vehicle should the drive shaft fail. It shall be constructed of 2-inch x 1/2-inch steel bar stock. It shall be a two-piece
8 design with one straight bar installed over the drive line with formed ends bolted to the frame side rails. The other piece
9 shall be "U" shaped with the drive line running through it. Its top shall be flanged and bolted to the other cross member
10 so that it may be removed if drive shaft requires servicing.
11

12 **75. FUEL SYSTEM**

13 The vehicle shall be furnished with an 85-gallon fuel tank mounted behind the rear axle and just below the frame rails
14 using stainless steel rods and a stainless cradle. The tank shall be constructed of stainless-steel and equipped with a
15 swash partition and vent. The fuel tank shall meet all FHWA requirements and all DOT and FMVSS regulations for
16 rollover protection. A 2-inch diameter fill inlet shall be provided. The fuel cap shall be of brass or bronze construction,
17 non-vented and have lead safety fuses. It shall be chained to inlet tube or to the body sheet metal to prevent loss.
18 Braided hoses shall be provided for the fuel lines. A 1/2-inch NPT drain plug shall be positioned at the bottom of the
19 tank.
20

21 Tank to emulate new FDNY-style with overall height reduced by approximately 1-inch and tank lengthened to maximize
22 angle of departure.
23

24 The stainless-steel fuel fill inlet shall be positioned on the driver's side of the apparatus in the step well cavity. It shall
25 be concealed behind a door. The inside of the door shall be marked "**ULTRA LOW SULFUR DIESEL FUEL ONLY**". The fuel
26 inlet area, recessed behind the door, shall be completely enclosed to prevent dirt and debris from entering. Provision
27 shall be provided inside the fill recess for drainage of any spilled fuel within the cavity.

28 The fuel door shall be constructed of stainless-steel and shall have a highly polished finish. It shall be hinged on the
29 vertical side towards the front. A spring-loaded device with brass roller shall be provided to hold the door in the open or
30 closed position.
31

32 **76. FUEL LINE SHUTOFF VALVE**

33 A fuel line shutoff valve shall be installed to prevent fuel from draining back while changing fuel filters. The fuel line
34 shutoff valve shall be found near the fuel water separator.
35

36 **77. FUEL WATER SEPARATOR WITH ALARM**

37 A Fleetguard FH230 Series (Davco Fuel Pro® 382) top load 7-micron filter with fuel water separator, water sensor alarm
38 and 12V fuel heater shall be mounted in a serviceable and accessible location on the driver's side frame rail rear of the
39 battery box or nearby so that the cab may need to be tilted forward.
40

41 **78. ENGINE FUEL COOLER**

42 An engine fuel cooler shall be provided on the apparatus. The engine fuel cooler shall cool the returning fuel from the
43 engine.
44

45 **79. ELECTRIC FUEL PUMP**

46 An auxiliary electric fuel pump shall be provided in the fuel line to aid in priming the fuel system. Switch for pump shall
47 be positioned on cab instrument panel and labeled "**For Fuel Priming Only**".
48



Southbury Vol. Fire Department



1 The filtering system shall be remote mounted on the chassis and shall include the check valve. The system shall have a
2 drain valve and aluminum housing.

4 **80. ENGINE STARTER**

5 A Delco Remy 39MT™ Heavy Duty Gear Reduction 12-volt, 39 MT-HD engine starter shall be installed.

6 **81. ALTERNATOR**

7 A 430-amp Delco Remy high output, heavy-duty brushless alternator, Model 55SI, shall be provided.

9 **82. AIR COMPRESSOR**

10 A Wabco 26.0 cfm air compressor shall be installed. The air compressor shall be gear driven off the engine.

12 **83. AIR CLEANER**

13 A Donaldson® PowerCore® dry type engine air cleaner shall be provided. It shall be installed in a location so that the
14 filter element can be easily serviced.

15
16 An electrical engine *air restriction indicator* shall be installed in the cab information display center.

18 **84. EXHAUST**

19 A single exhaust module having an SCR chamber and a DPF chamber shall be installed on the officer-side of the vehicle,
20 forward of the rear wheels. The exhaust module shall ingest urea from a remote storage tank to remove NOx from the
21 exhaust. The exhaust assembly shall be mounted outboard of the frame rail.

23 **85. TAILPIPE EXTENSION**

24 A tailpipe extension will be installed to accommodate a PLYMOVENT exhaust evacuation system. The tailpipe will be
25 mounted perpendicular to the side of the truck and be flush with the rub rail. 12-inch of clearance between the center
26 of the pipe and the tire will be provided. The exhaust outlet shall be centered underneath the rear door of the RS1
27 compartment.

28
29 It is understood that the engine exhausts cannot be connected to exhaust evacuation systems when the Diesel Oxidation
30 Catalyst and Diesel Particulate Filter on the engine are regenerating. A PLYMOVENT 5-inch diffuser tailpipe shall be
31 mounted straight out from the body.

33 **86. DPF REGENERATION**

34 The diesel particulate filter (DPF) regeneration process shall be activated by two methods:

- 36 1) Automatically by the engine system but only when the transmission is in gear and the speedometer indicates a
37 speed above 5 mph (8km/hr.) whether the apparatus is in motion or is running in stationary pump mode with an
38 engine rpm sufficient to register 5 mph (8 km/hr.) on the speedometer.
- 40 2) Manually, when initiated by activation of a switch located in the driver's area of the driving compartment.

41
42 There shall also be an inhibit switch placed near the driver to inhibit an automatic reburn.

44 **87. DEF STORAGE**

45 The diesel exhaust fluid, a mixture solution of 2/3 water and 1/3 urea which reacts with NOx to create nitrogen and
46 water, shall be stored in a 10-gallon tank equipped with a level sensor and alarm to prevent run-out.

47
48 The DEF fill port shall be positioned to allow easy access for periodic refills.



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88. EXHAUST HEAT SHIELDS

Heat shields shall be installed as needed to prevent damage to body and wiring from excessive exhaust temperatures. The exhaust pipe shall be wrapped in multi-layered insulation blankets, from just aft of the turbo down to inlet side of the DPF. Each blanket shall have a fiberglass inner layer and a silicone impregnated fiberglass cloth outer layer

The cab shall receive 1.25-inch-thick foil back insulation blanket under the crew floor to reduce floor temperatures. All harnesses and cables, in proximity to exhaust system components, shall be protected with insulation.

89. JACOBS COMPRESSION BRAKE

A Jacobs Vehicle systems engine brake Model 465 or similar shall be included. The brake shall include three stages of operation: low/med/high, be certified and approved by the engine manufacturer, and fully integrated with engine electronic controls. The brake shall be integrated with vehicle ABS for greater driver control. The brake shall match the engine base standard warranty.

90. AGGRESSIVE DOWN SHIFT

An aggressive down shift shall be provided. This shall be tied to the auxiliary brake switch and the aggressive down shift shall only function when the auxiliary brake is ON. The auxiliary brake and aggressive down shift shall engage when you let off the accelerator and shall reset after the accelerator is applied.

91. FAST IDLE SWITCH

A fast idle switch shall activate an engine high idle. The circuit shall be wired through the neutral safety/parking brake interlock to prevent activation when the transmission is in the road mode. Fast idle shall be set at 1000 RPM's. A switch located inside the cab convenient to the driver shall be provided for this system, an added indicator light shall be provided next to the switch, on the cab dash.

92. LUBRICATION NAMEPLATE

A nameplate shall be installed that specifies the quantity and type of the following fluids used in the vehicle and tire information:

▪ Engine oil	▪ Engine coolant
▪ Chassis transmission fluid	▪ Pump transmission lubrication fluid
▪ Pump priming system fluid, if applicable	▪ Drive axle(s) lubrication fluid
▪ Air condition refrigerant	▪ Air conditioning lubrication fluid
▪ Power steering fluid	▪ Cab tilt mechanism fluid
▪ Transfer case fluid	▪ Fuel
▪ Diesel Exhaust Fluid	▪ Windshield Washer Fluid
▪ Auto Lubrication System lubricant, if applicable	▪ Equipment rack fluid, if applicable
▪ Foam system lubricant, if applicable	▪ Generator system lubricant, if applicable
▪ Aerial Hydraulic Fluid, if applicable	▪ Front tire size and cold pressure
▪ Inter tire size and cold pressure, if applicable	▪ Rear tire size and cold pressure
▪ Trailer tire size and cold pressure, if applicable	▪ Maximum tire speed ratings
▪ Ambient operating temperature	▪ Paint colors and codes

31
32
33

A layer of Velvet Polycarbonate shall overlay the lettering to protect it. The lubrication nameplate shall be installed on the interior face of the driver's door, near the hinge and below the window controls.



Southbury Vol. Fire Department



1 CREW CAB

2 All Crew compartment structures are preferred to be fabricated with stainless steel. The use of alternative metals is
3 permissible provided equivalent safety strength, and anti-corrosion methods are provided. The use of galvanized steel
4 for any components is not allowed in any area of the truck.
5

6 93. FULL TILTING CAB

7 The cab shall be designed specifically for the fire service and shall supply roll cage strength and safety. The cab shall be
8 made in the factory of the bidder and must utilize the bidder's top-of-the-line technology and manufacturing
9 techniques. The entire cab shall tilt forward 45 degrees for engine access. No plastic, or fiberglass shall be used in the
10 construction of the cab sub-frame, floor assembly, front assembly, side assemblies, back wall assemblies or roof
11 assembly.
12

13 94. SUB-FRAME

14 The sub-frame shall be metal plate and tube welded to 3-inch x 4-inch rectangular structural tubes, with the 4-inch
15 tubing used in a vertical orientation. All joints shall have continuous welds; stitch welding shall not be acceptable. The
16 sub-frame shall be designed as a continuous structure from the front to the back of the cab. It shall be used to support
17 the cab while tilting, join front pivots to the cab locks, and to join the cab to the chassis. Pocketing of the sub-frame shall
18 not be acceptable.
19

20 95. FRONT ASSEMBLY

21 The safety cage section at the front of the cab shall be constructed of 1.25-inch tubing and shall join the front door posts
22 together with the main sub-frame. There shall be a 2.50-inch x 1.50-inch x .25-inch heavy wall lower cross tube that joins
23 the cab sills together to prevent cab twisting when tilting the cab. The front fire walls shall be set back from the front
24 assembly structure to provide added protection in a frontal crash. The outer cab skin shall not be an integral structural
25 member, although it shall help stiffen the cab front face. One inch of insulating foam shall be positioned between the
26 exterior and interior front wall.
27

28 96. AIR INTAKE WITH WATER/EMBER SEPARATOR

29 The air intake shall be concealed behind the cab grille. The water and ember separator shall set behind the cab grille on
30 the officer's side. This may be cleaned or replaced by tilting the cab.
31

32 97. CAB FLOOR

33 All floor components shall be welded directly to the sub-frame.
34

35 98. SIDE WALL ASSEMBLIES AND DOORS

36 The safety cage on the sides shall be constructed of 1.25-inch tubing. Both side wall assemblies shall be joined to the
37 sub-frame via thick tubular structures, using heavy fillet welds. This shall strengthen the walls to withstand high roof
38 loading. The side wall outer skins shall be integral with the cab structure as well as additional formed components to
39 help stiffen side wall assemblies. There shall be 1.25-inch of insulating foam between the exterior and interior side walls.
40 The structure shall be reinforced for cab entry grab handle mountings.
41

42 The front door hinge mount (aka "A" pillar) shall be a 2-inch x 3-inch tube with a .19" thick wall. The rear door hinge
43 mount (aka "C" pillar) shall be equivalent to a 12-gauge formed channel with .19" thick tapping bar.
44

45 99. BACK WALL ASSEMBLY

46 The safety cage on the back wall shall be constructed of 1.25-inch tubing. It shall join the roof to the floor assembly.
47 Construction of the back wall assembly shall provide crush protection in the event of a rollover. The back wall structure
48 shall be uniform, regardless of the seating choices. All seat mounts and seat belt mounts shall use weld nuts to eliminate



Southbury Vol. Fire Department



1 pull outs and stripped threads. The outer skin shall not be an integral structural member, although it shall stiffen the
2 back wall. One inch of insulating foam shall be positioned between the exterior and interior back wall.

3
4 An aluminum tread plate overlay shall be provided over the entire exterior rear wall of the cab.

6 **100. FLAT ROOF ASSEMBLY**

7 The perimeter structure of the safety cage roof assembly shall be tied by repeating 1.25-inch tubing to maximize loading
8 potential across the whole roof. The fabricated and welded roof sills and front header shall provide crush protection in
9 the event of a rollover. The corner caps shall use spun metal technology thus retaining the metal's strength while
10 producing a very rigid corner joint. The side roof covering (rolled edges) shall be constructed in a quarter round. It shall
11 form a hollow double wall, angle reinforced roof edge with an integral drip rail. There shall be 1.25-inch of insulating
12 foam between the exterior roof and interior ceiling.

13
14 A flat roof shall be provided with an interior floor to ceiling height minimum of 57-inches.

16 **101. CAB DOOR CONSTRUCTION - FULL LENGTH**

17 The interior and exterior door handles to be flush mounted paddle style with a Trimark TM202 keyed lock incorporated
18 in the exterior handle and lever control lock incorporated in the interior handle. One (1) key per door shall be provided.
19 Six (6) inch wide strap style door checks shall be provided. The door check's straps shall have a tensile strength of 120
20 lbs./in of width. The door's latch locking mechanism shall make it impossible to lock oneself out of the cab unless locked
21 with the supplied key. Doors shall be hung on full-length, one-piece hinges. Doors shall meet Federal Motor Vehicle
22 Safety Standard #206. The doors shall be designed to allow the windows to roll completely down.

24 **102. CAB TILT**

25 The cab shall tilt a minimum of 45-degrees for normal servicing of the engine and other equipment. The tilt cab locking
26 system shall be a two-point type that locks automatically when the cab is lowered into its nested position. The hydraulic
27 tilting system shall be equipped with velocity fuses in case of any failure in the operating mode. The power supply shall
28 have an integral mechanical override in case of battery failure. All components and parts are designed for installation
29 with a minimum of 3 to 1 safety factor based on current S.A.E. standards.

30
31 In addition to the velocity fuses, a secondary safety system shall be installed to hold cab in the fully raised position in the
32 event of a failure in the primary lift mechanism. It shall consist of a metal channel device, which automatically drops
33 over the extended rod of the left side hydraulic lift cylinder thereby preventing its retraction. The safety channel can
34 only be released through an overt action made by the operator such as pulling a lever or cable. Automatic release of the
35 safety system shall not be acceptable.

36
37 The cab tilt system shall be remotely controlled utilizing a minimum twelve-foot cable with a handheld push button
38 device which is to plug into a receptacle in the bumper area. The receptacle shall have a spring-loaded weatherproof
39 cover.

41 **103. AUXILIARY ENTRANCE STEPS**

42 Auxiliary cab entrance steps shall be provided at each cab door opening, below the cab, to reduce the cab entrance step
43 height by approximately 9.5 inches.

45 **104. FRONT INTERMEDIATE CAB STEPS**

46 Two (2) stationary steps shall be provided, one at each front cab door. The steps shall be approximately 12-inch (long),
47 have a 9-inch radius, and be located to the front of each cab step well. The steps shall be constructed of aluminum
48 grating.



Southbury Vol. Fire Department



1 **105. REAR INTERMEDIATE CREW CAB STEPS**

2 Two (2) stationary steps shall be provided, one at each rear crew cab door. The steps shall be the full width of the cab
3 step well. The steps shall be constructed of aluminum grating.
4

5 **106. CAB SIDE ACCESS DOORS**

6 Two (2) side access doors shall be provided on the cab, one each side between the front doors and front crew cab
7 windows. The cab side access doors shall be vertically hinged at the front edge. The doors shall each have a strap style
8 door stay. The "D" handle type latches shall be provided on the lower part of the door.
9

10 **107. CAB SIDE ACCESS LIGHTS**

11 Each cab side access door shall have a ROM LED lighting strip installed. The full height lighting strip shall be mounted
12 vertically at the hinged side of the cab door. The LED lights shall be mounted in an anodized aluminum track. A switch,
13 installed in the door jam, shall be used to activate light.
14

15 **108. CAB SIDE ACCESS DOOR SILL PROTECTORS**

16 Hi-polished stainless-steel sill protectors, approximately 0.5-inch (wide), shall be provided on the cab side access door
17 sills to protect the painted finish.
18

19 **109. CAB SIDE ACCESS DOOR FRAME SCUFF PLATES**

20 A highly polished stainless-steel scuff plate shall be installed on the striker side of each cab side access door frame and
21 shall run the full height of the door opening. The scuff plate shall be a single bend configuration that guards the outer
22 door frame post from damage and chips to the paint.
23

24 **110. CAB ACCESS AREA MOUNTING PLATE**

25 There shall be a mounting plate installed in the officer side cab access door area. The plate shall be constructed of 0.25-
26 inch-thick aluminum sheet as large as possible. The sheet shall be mounted to the floor on four (4) 0.5-inch thick UHMW
27 spacers. The cab access area plate shall be painted Black Zolatone finish.
28

29 **111. FRONT GRILLE SCRIPT NAMEPLATE**

30 A manufacturers nameplate, fabricated from AISI 304 stainless steel, with mirror finish, shall be positioned on the front
31 engine cooling intake grille of the cab.
32

33 **112. FRONT STAINLESS-STEEL INNER LINERS**

34 Semi-circular inner liners shall be provided in each front wheel housing. They shall be constructed of 304 stainless-steel
35 and shall be bolted in place so they may be removed if damaged. Self-tapping sheet metal screws are not acceptable.
36 The outside edge of the inner liner shall be bolted along its entire length. The bottom edge of liner shall not have a
37 formed reinforcement flange to avoid trapping dirt and debris.
38

39 The inner liners exterior face (facing the tires) shall be painted job color red, to match the lower color scheme.
40

41 **113. FRONT FENDERETTE**

42 Polished stainless-steel fenderettes shall be installed in the front wheel openings. They shall be sufficiently wide to
43 completely cover the front tire and reduce wheel splash along the sides of the cab. They shall be installed with 1/4-inch
44 hex head bolts (self-tapping sheet metal screws are not acceptable) and have a full width rubber welt placed between
45 the fenderette and body wheel well opening flange. Outside edge of welting shall form a "V" bead between fender and
46 cab side face to prevent moisture from entering. Inside edge shall also have a small, raised bead. Outside edge of
47 fenderette, at the wheel opening shall be rolled inward to eliminate a sharp edge and avoid injury when cleaning
48 apparatus.
49



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114. FRONT MUD FLAPS

Heavy duty mud flaps with the manufacturer's name and/or logo placed on the rear face shall be installed to the rear of the front wheels. Flaps shall be 14-inch (wide) and be made of 0.38-inch heavy duty rubber material to prevent "sailing".

115. REAR MUD FLAP

A heavy duty, full-width rear mud flap with the manufacturer's name and/or logo placed on the rear face shall be provided and installed to the rear of the rear dual wheels. Flap shall be made of 0.38-inch heavy duty rubber material to prevent "sailing".

116. SIDE MIRRORS

Two (2) Rosco Accustyle heated mirrors with remote controls shall be installed on the cab doors, one on each side of the cab. The flat upper mirror shall measure 7-inch x 14-inch, and the lower convex section shall measure 6.5-inch x 6-inch. The mirrors shall have a chrome finish. The mirrors shall be sufficiently dampened to limit vibration. Vibration that distorts the rear-view will not be acceptable.

117. CROSSOVER MIRROR

A minimum 8-inch diameter mirror with polished stainless-steel housing shall be provided on the right front of the cab above the windshield. The main adjustment bar shall be mounted to the cab roof. The crossover mirror shall be eyeball in style. The crossover mirror bracket shall have an outboard location.

118. WINDSHIELD

The windshield shall be of tinted automotive laminated safety plate glass with a curved two-piece design. Right- and left-hand windshield glass shall be symmetrical and interchangeable from side to side to minimize spare parts stock and expense. Windshield shall be installed and held in place by an extruded rubber molding with a bright finish, decorative, locking bead. Cab shall be finish painted prior to windshield glass being installed.

119. WINDSHIELD WIPERS AND WASHERS

One (1) wet arm operated windshield wiper shall be provided for each plate of windshield glass for accessibility and greatest windshield wiping surface areas. Wipers shall be two speed type with intermittent wiping feature. One (1) control switch shall be installed and located on the self-canceling directional switch for both wiper arms. The switch shall combine the on/off (automatic park position), two speed, intermittent and washer functions in one control. The turning switch shall activate the wipers and control speed and pushing it shall run the washers.

120. WINDSHIELD WASHER RESERVOIR

A four (4) quart windshield washer fluid reservoir shall be provided. It shall be easily accessible without cab tilt using a remote fill. A visual inspection shall be possible without tilting the cab (**no exceptions**).

121. DOOR WINDOWS

A retractable window with automotive type tempered safety glass shall be provided in all four (4) cab doors. All glass shall be tinted. Glass shall slide in stainless-steel side channels with cloth/fiber liners. Rubberized fiber seals shall be positioned at the bottom of the window opening to prevent water and debris from entering the interior of the door when the glass is up (or down). A seal shall be placed on both sides (interior and exterior) of the glass. The front and rear door glass shall be standard sized and readily available for replacement. The door window openings shall be trimmed on the exterior side with a smooth, black, poly vinyl chloride (PVC) molding.

Electric power window regulator shall be manufactured by the Muncy Corporation and shall be the enclosed, sliding flexible shaft, gear type for ease of operation and reliability. The shaft shall enter a vinyl plastic protective sheath whenever it is exposed. A 12-volt electric motor with gear reduction box to slow driven gear rpm and increase power transmission shall be provided.



Southbury Vol. Fire Department



1
2 **122. DRIVER'S DOOR GLASS SWITCH**

3 An individual switch for the driver's electric door window shall be provided on the driver's door. Aftermarket add-on
4 type electric power window conversion devices like the type that replaces the crank arm will not be acceptable.
5

6 **123. OFFICER'S DOOR GLASS SWITCH**

7 An individual switch for the officer's electric door window shall be provided on the officer's door. Aftermarket add-on
8 type electric power window conversion devices like the type that replaces the crank arm will not be acceptable.
9

10 **124. CREW DOOR GLASS SWITCHES**

11 An individual switch for the crew electric door windows shall be provided on the crew doors. Aftermarket add-on type
12 electric power window conversion devices like the type that replaces the crank arm will not be acceptable.
13

14 **125. DRIVER'S GLASS CONTROL SWITCHES**

15 Three (3) added switches shall be provided to allow driver to operate all power cab door windows.
16

17 **126. CREW CAB SIDE GLASS**

18 There shall be a window on each side of the cab between the doors. They shall be tinted and be manufactured of
19 automotive tempered safety glass. Each window shall be maximized to provide maximum vision. They shall be installed
20 and held in place by an extruded rubber molding with a chrome plated, decorative, locking bead. Cab shall be finish
21 painted prior to window glass being installed.
22

23 **127. CAB DOOR FRAME SCUFF PLATES**

24 A highly polished stainless-steel scuff plate shall be installed on the striker side of each cab door frame and shall run the
25 full height of the door opening. The scuff plate shall be a single bend configuration that guards the outer door frame
26 post from damage and chips to the paint.
27

28 **128. CAB DOOR HINGES**

29 The following exterior cab door hinges shall be polished: passenger front left side, passenger rear left side, passenger
30 front right-side, passenger rear right-side, and any cab side access doors present.
31

32 **129. CAB HANDRAILS AND GRAB HANDLES**

33 ALL Cab and Body handrails shall be 1-1/4-inch diameter extruded aluminum, Hansen knurled, with a bright anodized
34 finish. All handrail stanchions shall be chrome plated and LED backlit Blue. They shall be bolted to the body with 1/4-inch
35 stainless-steel hex head bolts. Stanchions shall have a rubberized gasket placed between them and the body surface
36 they are mounted on. A drain hole shall be provided in each bottom stanchion.
37

38 Cab Handrails and handles shall be installed as follows:

- 39 • Four (4) 24-inch handrails shall be installed on the side of the cab, one just to the rear of each cab door.
- 40 • Four (4) 6-inch chrome grab handles shall be provided, one on the inside of each cab door.
- 41 • Two (2) 12-inch rubber covered grab handles shall be provided, one on the driver's side and officer's side front A-
42 pillar, above the door hinge, to aid entry to the cab.
- 43 • Two (2) 12-inch rubber covered grab handles shall be provided, one on each rear crew door hinged-pillar, on the
44 hinged side of the door, to aid entry to the cab.
45

46 **130. REAR CAB HANDRAIL**

47 One (1) 18-inch handrail shall be installed on the rear of the cab on the driver's side at a 30-degree angle to provide a 3-
48 point stance for accessing the turntable. The handrail shall be 1-1/4-inch diameter extruded aluminum, knurled, with a
49 bright anodized finish.



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1
2 All handrail stanchions shall be chrome plated. They shall be bolted to the body with 1/4-inch stainless-steel hex head
3 bolts. Stanchions shall have a rubberized gasket placed between them and the body surface they are mounted on. A
4 drain weep hole shall be provided in each bottom stanchion.
5

6 **131. REAR CAB FOLDING STEP**

7 One large polished, chrome plated, cast aluminum folding step with integral LED light shall be installed on the rear of the
8 cab on the driver's side to aid in accessing the turntable.
9

10 **132. CRASH TEST**

11 The cab shall be certified for the following tests:

- 12 • SAE J2420: Cab Over Engine (COE) Front Strength Evaluation - Dynamic Loading – Heavy Trucks
- 13 • SAE J2422: Cab Roof Strength Evaluation - Quasi Static Loading - Heavy Trucks
- 14 • ECE Regulation 29: Protection of Occupants of Cab in Commercial Vehicle

15 Performance Measure:

- 16 1. After undergoing each test, the cab of the vehicle shall exhibit a survival space accommodating a 50th percentile
17 male ATD in the median position without contact between the manikin and non-resilient parts for all seating
18 positions.
19
- 20 2. None of the doors shall open during the tests.
- 21 3. The cab attachments may be distorted or fractured; however, the cab shall remain attached to the vehicle frame in
22 at least one attachment location.
23

24 **133. HELMET HOLDER - BODY**

25 The helmets shall be stored in the body following NFPA 1901 current regulations:

- 26 • NFPA 14.1.8.4.1: A location for helmet storage shall be provided.
- 27 • NFPA 14.1.8.4.2: If helmets are to be stored in the driving or crew compartment, the helmets shall be secured in
28 compliance with 14.1.11.2.
29

30 **134. CAUTION LABELS**

31 Caution labels shall be posted in the cab so that they shall be visible from each seat position. The labels shall read: "**DO**
32 **NOT wear helmets while seated**".
33

34 **135. HEADLINER**

35 The cab shall be provided with a removable gray headliner for ease of servicing the electrical wiring placed in the cab
36 roof. The headliner shall be the multi-piece type (minimum of three (3) sections) so that the entire liner does not have to
37 be removed for local maintenance.
38

39 **136. BACK LINER**

40 The cab shall be provided with an aluminum tread plate removable back liner. The back liner shall be the multi-piece
41 type (minimum of three (3) sections) so that the entire liner does not have to be removed for localized maintenance.
42

43 **137. HEAD BUMPERS**

44 Two (2) padded gray vinyl head bumpers shall be installed each side on the interior of the cab above the crew doors in
45 the header area.
46

47 **138. ENGINE ENCLOSURE**

48 The engine enclosure structure shall have a 1-1/4-inch-thick inner lining, on the engine side, comprised of aluminized foil
49 and foam/barrier composite for heat insulation. The tunnel cover shall have 1/2-inch decoupled foam lower and 1-inch



Southbury Vol. Fire Department



1 decoupled foam upper covering, on the cab interior side, for noise insulation. The top forward portion of the hood shall
 2 have a full-width riser with a sloped face for the installation of the switch panel. The sloped panels shall be used for
 3 vehicle accessory controls. A minimum of 1-inch shall be provided between the right edge of the accelerator pedal and
 4 the side of the engine hood. A removable cover over the engine enclosure and insulation shall be coated with black
 5 LINE-X to function as an insulator for sound and engine temperature, as well as to provide an easy-to-clean work
 6 surface.

7
 8 To optimize in-cab vision and seating space for the driver, officer and crew members while properly seated and belted in
 9 turn-out gear, the maximum overall dimensions of the engine enclosure shall not exceed:

- 10 • 26.25-inch from floor to top of engine tunnel between driver and officer
- 11 • 26.25-inch from floor to top of engine tunnel at front center dash panel
- 12 • 31.25-inch from floor to top of driver and officer dash panels

139. ACCESSORY MOUNTING STRUCTURE

14 The top portion of the engine enclosure shall have a 1/8-inch-thick aluminum channel frame located between the
 15 engine tunnel structure and the cover to support the cover and facilitate mounting of accessories and equipment.

140. FIRECOM HEADSET HOOKS

16 OEM to provide and ship Six (6) Firecom hooks (REF P2112600 for concept.) Item(s) shall be shipped
 17 loose².

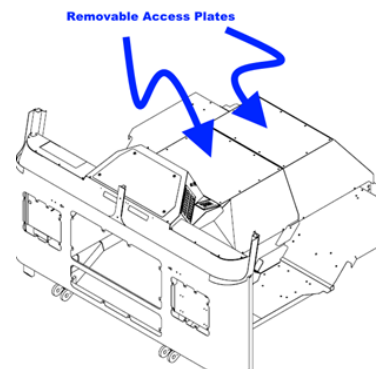


141. ENGINE COMPARTMENT ACCESS DOOR

18 An access door shall be provided at the rear of the engine enclosure for routine engine fluid checks. The access door
 19 shall be insulated from engine heat with aluminized foil/foam/barrier composite and sealed to prevent exhaust fumes
 20 from entering the crew cab.

142. REMOVABLE PANELS - TUNNEL

21 A set of access panels with LINE-X coating to match the engine tunnel shell shall be
 22 installed on top of the engine tunnel shell. They shall only provide access into the area
 23 beneath the shell and not into the actual engine tunnel. They shall be the full width of the
 24 tunnel and shall be provided on each side of the horizontal split.



143. 18-INCH STEERING WHEEL WITH TILT/TELESCOPE

25 A padded 18-inch steering wheel with center horn ring shall be provided. The upper
 26 steering column shall be of the tilt and telescopic type. A self-canceling directional switch
 27 with wiper control and headlight dimmer control shall be mounted on the steering column with an ICC four-way flash
 28 switch. The self-canceling directional switch shall be easily removable and replaceable without removing the steering
 29 wheel or column assembly. The junction of the shaft and the cab floor shall be sealed to prevent air exchange between
 30 the cab interior and exterior.

144. BLACK LINE-X FOR CAB DASH

31 The cab dash shall be sprayed with black LINE-X having a high resistance to abrasion and tearing. A vinyl cloth glued or
 32 laminated to a metal backing surface shall not be acceptable.

33 The LINE-X shall absorb impact without surface damage. The LINE-X shall be resistant to gasoline, diesel fuel, paints,
 34 bleaches, organic solvents and other cleaning agents and chemicals. It shall include sound dampening and vibration
 35 elimination properties.

36 The LINE-X shall be solvent free and be environmentally safe to apply with no VOC or CFC hazards. Its surface shall have



Southbury Vol. Fire Department



1 a non-glare, granular texture and be easily cleaned with common cleansing compounds.

2 3 **145. OVERHEAD DASH**

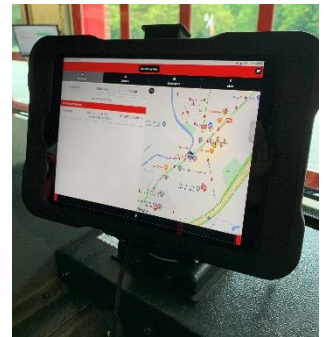
4 An overhead dropdown dash shall be provided with a full-length piano hinge and four (4) 1/4 turn latches. This dash
5 shall incorporate areas designed to hold emergency switching and selected options such as control heads and indicators
6 that shall be accessible to the driver and officer. The overhead dash shall have a black LINE-X finish.

7
8 A strap shall be installed to limit the extent of opening range for the overhead power distribution area (overhead dash)
9 access. This 2-inch (wide), retention strap shall prevent the contact between the upper, overhead, power distribution
10 access housing and the lower, center, dash housing. An approximate clearance of 3-inches shall be kept between the
11 upper and lower dash structure and retained by the strap. The strap shall be fastened by footman loops between the
12 cab roof structure and hinged upper power distribution housing.

13 14 **146. OFFICER'S DASH**

15 The top of the officer's dash shall include a mounting location and a 12-VDC electrical power
16 source for an Apple iPad tablet computer as shown.

17
18 The iPad tablet and HAVIS universal flat bottom base mounting hardware will be supplied by
19 Southbury Vol. Fire Department.



20 21 **147. CAB FLOOR**

22 The entire cab floor shall be covered with a black mat that functions as a sound dampening
23 barrier. The mat shall have a pebble textured heavy-duty wear surface and be laminated to a
24 foam underlay. The mat shall be composed of a vinyl-nitrile blend, which is the base material used in IV tubes and blood
25 bags; it is not affected by blood or other body fluids.

26
27 Aluminum tread plate flooring shall be installed over the insulated cab floor matting. Flooring shall be removable in
28 sections and may be notched around floor mounted components.

29 30 **148. SUN VISORS**

31 Two (2) approximately 8-inch x 28-inch padded, smoked Lexan sun visors shall be provided, one on the driver's side and
32 one on the officer's side. Visor shall be supported at both ends to prevent drooping.

33 34 **149. CUP HOLDERS**

35 Cup holder(s) with a black Line-X finish shall be installed in the cab. The cup holder shall be designed for mounting on
36 top of the engine tunnel. Item(s) shall be shipped loose³.

37 38 **150. VEHICLE DIMENSION SIGN**

39 A sign shall be provided in the front cab area within easy viewing of the driver showing the height of the completed
40 apparatus in feet and inches, length of the completed apparatus in feet and inches, and the gross vehicle weight rating
41 (GVWR) in tons.

42 43 **151. CABLE RACEWAY**

44 A cable raceway, 1.75-inch x 5.75-inch, shall be installed underneath the officer's floor. It shall run between the officer's
45 kick plate and the seat riser. The cable raceway shall be opened underneath the officer seat to aid the installation of
46 mobile radio or added equipment.

47 48 **152. INNER CAB DOOR PANELS - BLACK LINE-X**

49 The lower inside bolt-on panel of each cab door shall be covered with black LINE-X. The color shall match the color



Southbury Vol. Fire Department



1 chosen for the interior.

2 3 **153. INNER DOOR PANELS – BLACK LINE-X (4)**

4 The upper inside bolt-on panel on each cab door shall be removable and shall be constructed of aluminum covered with
5 black LINE-X.
6

7 **154. CHEVRON STRIPE & STOP SIGN ON CAB INTERIOR DOORS**

8 All four (4) cab passenger compartment doors shall have a reflective DOT Stop sign and a chevron stripe affixed to the
9 inside of each door to alert traffic when the door is open.

10
11 The stop signs shall be centered vertically between the chrome handle and the lower door seal plate.

12
13 The chevron stripe shall be positioned on the lower part of the door panel, below the stop sign. It shall have at least 96
14 square inches of reflective material The reflective material shall be a chevron design that complies with NFPA
15 requirements.
16

17 **155. SEATING PROTECTION – AIRBAGS**

18 Seating locations will be protected by airbags for both frontal impact and side roll protection.

19 **156. DRIVER'S SEAT**

20 The driver's seat shall be an H.O. Bostrom Sierra ABTS Electric reclining high back seat. This seat
21 shall have 8-inch horizontal and 2-inch vertical adjustments. The seat will contain a three-point
22 ABTS (All Belts to Seat) release with chrome swivel bezel. Seat trim-material shall be high-
23 strength, wear-resistant Durawear™



24 The driver's seat shall be held at NFPA regulated height by a 3CR12 stainless-steel frame that
25 measures approximately 15.5-inch (wide) x 3-inch (high) x 17.5-inch (deep), front to back at the top and 14.5-inch (deep)
26 front to back at the bottom. There shall be a panel on the front and side openings.

27 **157. OFFICER'S SEAT**

28 An H.O. Bostrom Tanker 450 SCBA seat shall be provided for the officer. The Officer's seat will be non-adjustable. It shall
29 be fixed mounted as far back as possible while still meeting all seatbelt requirements.
30

31 The officer's seat shall be held at NFPA regulated height by a 3CR12 stainless-steel frame which
32 creates an enclosed compartment. The compartment measures approximately 15.5-inch (wide) x
33 10.5-inch (high) x 21-inch (deep), front to back at the top and 12.5-inch (deep) front to back at
34 the bottom. Access to this compartment shall be through a drop-down door.
35



36 The seat riser/compartment shall have a front opening door that measures 13.5-inch (wide) by 8-
37 inch (high).
38

39 **158. REAR SEATS – REAR FACING**

40 The rear crew cab section shall contain two (2) outboard, rear facing H. O. Bostrom Tanker 450 SCBA passenger seats.
41 The seats shall be installed one (1) each side at the rear of the engine enclosure. The seating area shall allow maximum
42 room for fire fighters in full turnout gear.
43



Southbury Vol. Fire Department



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159. REAR SEATS - FORWARD FACING

The rear crew cab section shall have two (2) centered, forward facing H.O. Bostrom 400CT flip-up passenger seats. The seats shall be installed on the rear wall of the cab directly behind the engine enclosure. The seating area shall allow maximum room for fire fighters in full turnout gear.



Center, forward facing seats on the rear cab wall shall have a minimum 4-inch spacing between the seat brackets.

160. SCBA BRACKETS

Five (5) NFPA compliant IMMI SmartDock Gen 2 SCBA brackets shall be installed in the seat(s). The brackets shall use a locking mechanism that engages during deceleration. The bracket shall hold the cylinder in place while in transit and release using no straps, levers, buttons, or switches.



161. SEAT BELTS

All six (6) seats shall have a 3-point vertically adjustable D Loop style shoulder harness, to meet FMVSS and NFPA 1901 current edition requirements. The seat belts shall be red in color.

The five (5) SCBA seats shall have an IMMI ReadyReach system installed. The ReadyReach positions the seat belt forward making the seat belt easier to reach when in turnout gear.

162. SEAT UPHOLSTERY

Six (6) cab seats shall be upholstered in black H.O. Bostrom Durawear™ waterproof cloth fabric.

163. INTERIOR DÉCOR

The following components shall always be black in color:

▪ Floor matting and floor mat edging	▪ Headliner trim
▪ Back liner trim	▪ Crew heater, complete assembly
▪ Electrical panels	▪ Plastic snap plugs for wire access holes
▪ Door seals	▪ Seat risers
▪ Under seat compartments	▪ Seat belt retractor cover.
▪ Rubber covered grab handles	▪ Map Desk if present

164. CAPACITY SIGN

A sign which states the number of personnel the vehicle is designed to carry, shall be installed.

165. SCBA MASK STORAGE POUCH

Five (5) Ripstop Revolution SCBA Mask Face Piece Bag, Fleece Lined; color: Red shall be installed on the seat over the shoulder of five (5) seats with SCBAs. Items shall be shipped loose⁴.



166. CREW CAB SHELF

A mounting shelf, with 1-inch lip shall be provided at the upper rear crew cab, above the forward-facing seats. Finish shall be interior color. A 120-volt shoreline power outlet shall be provided at the center of the shelf.

167. FIRE EXTINGUISHER STORAGE

Two (2) Aluminum tread plate extinguisher holders shall be installed below the forward-facing center seats. The holders shall be installed on a slight angle toward the front of the cab to allow the extinguisher to be removed while standing. A Velcro strap shall be provided to secure the extinguisher from sliding out. The holder shall be approximately 9.75-inch-wide x 11.0-inch (tall) x 20.5-inch (long).



Southbury Vol. Fire Department



168. HEATER/DEFROSTER-FORWARD CAB

A front cab heater/defroster unit shall be provided. The unit shall have a heating capacity of 30,000 BTU and combined 520 CFM variable speed blower assembly. The unit shall be positioned on top of the engine tunnel and shall be centered on the windshield. Defroster outlets shall be positioned at the bottom of the windshield and shall direct air flow from the unit up on to the windshields. Vents shall be positioned in the drivers and officers' dashes and kick plates.

169. CONDENSER COVER

The air conditioning condenser assembly shall have an added covers to protect the Freon hoses, dryer, valves, switches and / or solenoids above the cab roof and connected to the condenser body. The main condenser body shall have one fabricated cover with openings for, and above, the condenser fans. The main condenser body cover shall be approximately 7.5-inch (high) x 46.5-inch (long) x 26.25-inch (wide) and fabricated from 1/8-inch aluminum tread plate.

Added covers, formed from 1/8-inch aluminum tread plate, shall be provided for hose and harness routing above the cab roof, as necessary.

170. MANUAL COOLANT SHUTOFF VALVE - INLET

The forward cab heater inlet flow shall be interrupted by one (1) manual engine coolant shutoff valve mounted behind the engine for auxiliary engine coolant flow control. The valve shall be 1/4 turn style with label for ease of identification.

171. MANUAL COOLANT SHUTOFF VALVE – RETURN

The forward cab heater return flow shall be interrupted by one (1) manual engine coolant shutoff valve, mounted on the lower radiator tube, for auxiliary engine coolant flow control. The valve shall be 1/4 turn style with label for ease of identification.

172. REAR CREW CAB HEATERS

Two (2) rear crew cab heaters with a combined rating of 64,000 BTU output and 850 CFM air flow shall be installed. The rear cab heaters shall be mounted under the rear facing outboard seats each side. The units shall have a variable speed blower, and a removable, replaceable filter.

173. MANUAL SHUTOFF VALVE FOR CREW CAB HVAC COOLANT INLET

The crew cab heater inlet flow shall be interrupted by one (1) manual engine coolant shutoff valve mounted behind the engine for auxiliary engine coolant flow control. The valve shall be 1/4 turn style with label for ease of identification.

174. MANUAL SHUTOFF VALVE FOR CREW CAB HVAC COOLANT - RETURN

The crew cab heater return flow shall be interrupted by one (1) manual engine coolant shutoff valve, mounted on the lower radiator tube, for auxiliary engine coolant flow control. The valve shall be 1/4 turn style with label for ease of identification.

175. CAB AIR CONDITIONING SYSTEM

The cab shall be equipped with an air conditioning system that shall include two (2) ceiling mounted evaporators. The air conditioning system shall have a combined cooling capacity of 79,000 BTU and variable speed blower assemblies for a combined 1100 CFM. The main controls for the unit shall be positioned in the dash. The evaporators shall have air diffusers to allow for multi-directional airflow. Each diffuser shall be adjustable up and down and side-to-side for individual preference. Each evaporator shall have its own sump style drain system for removal of condensation. The sump shall be integrated into the ABS evaporator cover.

The evaporators shall be compliant with all EPA regulations and use R-134A Refrigerant. All hoses used in the air conditioning system shall be "barrier" type construction for containment of the refrigerant.



Southbury Vol. Fire Department



1 The condenser assembly shall be a stacked type, low profile, dual fan compact design with dryer and pressure switch
2 included. The condenser assembly shall include a white powder coated housing over the stacked condenser coils, as
3 provided from the manufacturer. The condenser shall be positioned on the cab roof.
4

5 The air conditioning system shall exceed the industry norm by cooling the cab from the ambient temperature of 100
6 degrees Fahrenheit at 50% relative humidity to an average cab temperature of 75 degrees Fahrenheit in 30 minutes.
7

8 **176. HVAC CONTROLS - FORWARD CAB**

9 HVAC controls shall feature rotary switches, function labeling, backlighting, and have colored indicators and shall be
10 positioned in the center dash area between the driver and officer.
11

12 **177. CREW PROTECT SYSTEM**

13 A Task Force Tips CrewProtect air filtration system shall be installed in the crew cab in a location that does not interfere
14 with normal movement. The system shall address three significant air contamination concerns due to particulates,
15 volatile organic compounds (VOCs), and aerosols that carry bacteria and viruses. This includes SARS-CoV-2. The system
16 shall operate automatically when the apparatus is operating.

17 **178. MAP BOX**

18 A map box shall be mounted between the driver and officer. It shall be installed on the top of the engine hood. Box shall
19 have three (3) slots spaced on 3-inch horizontal centers. They shall slant at a 30-degree angle towards the rear of the
20 truck. The forward section shall be an open bin area. Box shall be covered with black Line-X. Item(s) shall be shipped
21 loose⁵. Location of mounting to be determined at final inspection.



Southbury Vol. Fire Department



1 CHASSIS

2
3 Chassis shall be a new, tilt-type, custom fire apparatus. The chassis shall be manufactured by the body company in the
4 apparatus body builder's facility, thus ending any split responsibility. The chassis shall be designed and manufactured for
5 heavy-duty service with adequate strength and ability to sustain the intended load and the type of service required.

6 **179. CHASSIS FRAME**

7 The chassis frame will be fabricated in its entirety at the manufacturer's facility. This will prevent any split responsibility
8 in warranty or service. The chassis shall be designed for a GVWR in excess of both a full complement of equipment and
9 six (6) person crew. The chassis frame and all components thereof shall carry a written lifetime warranty against any/all
10 types of failure with the exclusion of major accident damage. The chassis shall be designed and manufactured for heavy
11 duty/ severe use. It shall have adequate strength and capacity for its intended load and severe service required by the
12 Southbury Vol. Fire Department. It is the desire of the Southbury Vol. Fire Department to avoid "notching" of the frame
13 rails to install any equipment or accessories. Should this be needed, the vendor shall inform Southbury Vol. Fire
14 Department of the areas that require modification. All modifications shall be certified in writing by the manufacturer
15 that they do not affect the strength or rigidity of the frame.

16 The frame is to be specifically designed and produced for the vehicle as specified. Each hole made in the frame rails
17 must be used for a specific chassis part and any holes for non-required options are not acceptable.

18
19 The frame rails and cross members shall be assembled using 5/8-inch flange head, grade eight bolts and "Spiralock®"
20 flanged nuts. Spiralock® nuts shall be used exclusively in the frame assembly for mounting spring hangers, steering gear,
21 engine, transmission, etc. to maintain constant torque tension and prevent loosening from vibration. Spiralock® nuts
22 shall supply even thread load over the bolt, increasing fatigue strength and clamping torque.

23
24 Frame rails less than or equal to 480-inch in length shall receive a duo-coat primer: an E-coat followed by a powder
25 coating that meets 1000 hours of salt spray testing per ASTM B117 test procedure. Frame rails greater than 480-inch in
26 length shall be powder coated only. The inside of the rails shall be hand re-sprayed to insure coverage. This process
27 meets 240 hours of salt spray testing per ASTM B117 test procedure.

28
29 Chassis shall be a new, heavy duty, custom fire apparatus design built expressly for the fire service. All standard
30 components that have not been specified shall be provided.

31
32 Chassis shall be designed, engineered, and built by the bidder and be the manufacturer's first line custom chassis.

33
34 The chassis shall be suitable for heavy duty service with all components having adequate strength and ability for the
35 intended load to be sustained and the type of service required.

36 **180. CHASSIS ALIGNMENT**

37
38 The chassis frame rails shall be cross checked for length and square. Front and rear axles shall be laser aligned. The front
39 axle shall be aligned at the manufacturer's facility.

40 **181. BUMPER**

41
42 A heavy duty 1/4-inch-thick painted steel bumper shall be mounted to the front of the chassis. Bumper shall be channel
43 shaped with 2-1/4-inch flanges. The extension of the bumper shall be minimized to allow mounting of the Q2B siren, air
44 horns, and not interfere with cab tilt operations. It shall be painted to match the lower cab color. The bumper shall be
45 designed and constructed so that the apparatus can be lifted and towed by the extension.



Southbury Vol. Fire Department



1 As part of the bumper extension, a second 1/4-inch thick by 9.44-inch (high) formed channel with 2-inch flanges shall be
2 provided directly behind the full width of the bumper. A 3/16-inch aluminum tread plate gravel pan (deck) contoured to
3 fit just below the front face of the cab and just below the upper bumper flange shall be provided. Sides (between
4 bumper and cab corners) of the deck shall be boxed in and tapered up to meet bottom of front cab face. Pan shall not be
5 fastened to the top flange of the bumper.

6
7 In accordance with NFPA 1901 chapter 15.7.1.6, a FAMA26 "No-Step" sign shall be attached to the top of the gravel pan.
8 The sign reads: "**Fall Hazard-Railings NOT provided. Surface may be slippery - Not intended for stepping, standing, or**
9 **walking. Fall can injure or kill**".

11 **182. BUMPER LINE-X EDGE**

12 Black LINE-X shall be applied to the top flange of the bumper and shall end 1-inch down on the front and sides of the
13 extension.

15 **183. FRONT TOW EYES**

16 Two (2) painted "cut plate" type tow eyes shall be installed through the top of the aluminum tread plate "gravel" pan,
17 directly behind bumper, and securely attached to the bumper extension frame. The eyes shall be fabricated of 1-inch-
18 thick steel plate with a 3-inch diameter opening. They shall be painted to match the lower body color. Job color Red
19 LINE-X shall be applied to both front tow eyes.

21 **184. REAR TOW EYES**

22 Two (2) rear tow eyes, bolted to the frame rails, one (1) each side shall be provided. The eyes shall be fabricated of 1-
23 inch heavy duty steel plate, with a 3-inch diameter opening designed so that stress will be applied to each chassis frame
24 rail when used. They shall be painted to match the lower body color. Job color Red LINE-X shall be applied to both rear
25 tow eyes.

27 **185. FRONT BUMPER GUIDES**

28 Two (2) Bores Manufacturing polished stainless-steel sight poles, with illuminated amber
29 LED lights on the tips, shall be installed one on each side of the extended bumper in a
30 manner to not interfere with the tilting of the cab. The lights shall be wired to the
31 headlight circuit for activation with the marker lights and shall have a Deutsche
32 connector installed for the wiring at the bottom of the poles.



34 The sight poles shall use tube style mounts and shall be secured in the mount with a roll
35 pin. The sight pole brackets shall be painted to job color red, to match the lower color scheme. The pin shall allow easy
36 removal of the sight pole when the cab is being tilted. The mounts shall have a DA finish.

38 **186. RECEIVER TUBE - FRONT**

39 One (1) 2-inch receiver tube shall be installed under the front bumper extension rails and in front of the bumper. It shall
40 be bolted in place for easy removal. The tube shall be capable of supporting a 9000 lb. horizontal pulling capacity.
41 Assembly shall be constructed of a minimum of .25-inch plate, painted to match the frame rails. A 12V DC power outlet
42 for portable winch shall be adjacent.



Southbury Vol. Fire Department



187. RECEIVER TUBES - SIDES

Two (2) receiver tubes shall be installed on the sides of the body. Each 2-inch receiver tube shall be installed behind the rear axle in the fender panel, one on the left side of the body, one on the right-side. Tubular framework shall be bolted directly to the chassis frame. The receiver tubes shall be flush with the outside of the fender panels. Each assembly shall be constructed of a minimum of 0.25-inch structural steel angle and be designed, engineered, and positioned to allow up to a 45-degree angle upward pull of 2,000 lbs., side-to-side pull to a 45-degree angle of 1,000 lb., or a 9,000 lb. straight horizontal pull, with a 2.0 to 1 no-yield safety factor. The receiver tube shall be painted to match the frame rails. A 12V DC power outlet for portable winch shall be adjacent.



The receiver compartments shall have a back panel to limit road debris entering the area. The receiver shall be painted job color red, to match the lower color scheme.

188. RECEIVER TUBE DOORS

Each side receiver tube shall be positioned behind a hinged door. The doors shall be painted job color red, to match the lower color scheme and be secured by a full-length stainless-steel hinge and a chrome finish lift and turn lock.

189. RAPELLING EYES

Two (2) painted cast steel rappelling eye(s) for use within the 2-inch receiver tube shall be provided. The rappelling eye shall have a solid 2-inch square shank and a round 1.25-inch eye that has a 2.5-inch inner diameter and a 5-inch outer diameter. The whole unit shall measure 11-inch in length. A detente pin shall be included to secure each rappelling eye. Item(s) shall be shipped loose⁶.



Southbury Vol. Fire Department



BODY

To the degree possible, the body and compartments shall be constructed of heavy duty 3CR12 stainless steel.

190. COMPARTMENT CONSTRUCTION

The compartments shall be a "sweep out" design with the floor higher than the door sill. All compartment seams shall be caulked with gray adhesive/sealant. Each compartment shall be rated for 500 lbs. of storage. False bulkhead panels shall be provided on the inside of the rearward wall of the compartment aft the rear wheels and rear stabilizers, and the compartment aft of the access ladder, to cover and protect all electrical wiring and components. These panels shall be removable. Removable service panels shall be placed within each of the false bulkhead panels.

The side compartment doors shall be lap type, double panel construction with the strength of 14-gauge outer and 14-gauge inner panels. Outer panel edges that form the lap portion of the door shall be "hemmed" (bent over and back 180 degrees) over the inner panel edges. Inside corners, at the hem area, shall be welded and ground smooth.

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

191. ALUMINUM TREAD PLATE

A bright aluminum tread plate cover shall be installed over the side compartments. The cover shall not form the compartment top but shall be an overlay. The side edge of the cover shall have a 45-degree outward bend. The forward face of the side compartments shall be covered with bright aluminum tread plate overlays. All body components covered with aluminum tread plate overlays shall be coated with an anti-corrosion compound prior to installation. All tread plate shall be secured with threaded fasteners.

192. LEFT SIDE COMPARTMENTS

The left-side compartmentation shall consist of one (1) compartment ahead of the rear wheels, one (1) low height upper compartment above the forward rear wheels, one (1) full height upper compartment above the aft rear wheels, one (1) full height compartment behind the rear wheels and rear stabilizer, and one (1) compartment aft of the access ladder. All compartments shall have hinged doors.

The compartment ahead of the rear wheels and aft of the superstructure, shall have a doorframe-to-doorframe dimension of 35.25-inch (wide) x 40-inch (high). The clear door opening shall be 31.25-inch (wide) x 36-inch (high). The usable compartment space shall be 39-inch (wide) x 41.25-inch (high) x 16.50-inch (deep). This compartment shall have vertically hinged double doors.

The low height upper compartment above the forward rear wheels shall have a doorframe-to-doorframe dimension of 55.25-inch (wide) x 13.75-inch (high). The clear door opening shall be 51.75-inch (wide) x 10.25-inch (high). The usable compartment space shall be 55-inch (wide) x 15-inch (high) x 23.50-inch (deep). This compartment shall have a horizontally hinged drop down door, stainless steel, customer is aware of weight concerns.

The full height upper compartment above the aft rear wheels shall have a doorframe-to-doorframe dimension of 51.50-inch (wide) x 28.75-inch (high). The clear door opening shall be 47.50-inch (wide) x 24.75-inch (high). The usable compartment space shall be 55.50-inch (wide) x 30-inch (high) x 23.50-inch (deep). This compartment shall have vertically hinged double doors.

The full height compartment behind the rear wheels and the rear stabilizers shall have a doorframe-to-doorframe dimension of 57.50-inch (wide) x 52-inch (high). The clear door opening shall be 53.50-inch (wide) x 48-inch (high). The usable compartment space shall be 59.25-inch (wide) x 53.25-inch (high) x 23.50-inch (deep). This compartment shall have vertically hinged double doors.



Southbury Vol. Fire Department



1
2 The compartment behind the access ladders shall have a doorframe-to-doorframe dimension of 37.50-inch (wide) x 32-
3 inch (high). The clear door opening shall be 33.50-inch (wide) x 28-inch (high). The usable compartment space shall be
4 38.50-inch (wide) x 33.25-inch (high) x 23.50-inch (deep). This compartment shall have vertically hinged double doors.
5

6 **193. RIGHT SIDE COMPARTMENTS**

7 The right-side compartmentation shall consist of one (1) compartment ahead of the rear wheels, one (1) low height
8 upper compartment above the forward rear wheels, one (1) full height upper compartment above the aft rear wheels,
9 one (1) full height compartment behind the rear wheels and rear stabilizer, and one (1) compartment aft of the access
10 ladder. All compartments shall have hinged doors.
11

12 The compartment ahead of the rear wheels and aft of the superstructure, shall have a doorframe-to-doorframe
13 dimension of 35.25-inch (wide) x 40-inch (high). The clear door opening shall be 31.25-inch (wide) x 36-inch (high). The
14 usable compartment space shall be 39-inch (wide) x 41.25-inch (high) x 23.50-inch deep. This compartment shall have
15 vertically hinged double doors.
16

17 The low height upper compartments above the forward rear wheels shall have a doorframe-to-doorframe dimension of
18 55.25-inch (wide) x 13.75-inch (high). The clear door opening shall be 51.75-inch (wide) x 10.25-inch (high). The usable
19 compartment space shall be 55-inch (wide) x 15-inch (high) x 23.50-inch (deep). This compartment shall have a
20 horizontally hinged drop down door, stainless steel, customer is aware of weight concerns.
21

22 The full height upper compartments above the aft rear wheels shall have a doorframe-to-doorframe dimension of 51.50-
23 inch (wide) x 28.75-inch (high). The clear door opening shall be 47.50-inch (wide) x 24.75-inch (high). The usable
24 compartment space shall be 55.50-inch (wide) x 30-inch (high) x 23.50-inch (deep). This compartment shall have
25 vertically hinged double doors.
26

27 The full height compartment behind the rear wheels and the rear stabilizers shall have a doorframe-to-doorframe
28 dimension of 57.50-inch (wide) x 52-inch (high). The clear door opening shall be 53.50-inch (wide) x 48-inch (high). The
29 usable compartment space shall be 59.25-inch (wide) x 53.25-inch (high) x 23.50-inch (deep). This compartment shall
30 have vertically hinged double doors.
31

32 The compartment behind the access ladders shall have a doorframe-to-doorframe dimension of 37.50-inch (wide) x 32-
33 inch (high). The clear door opening shall be 33.50-inch (wide) x 28-inch (high). The usable compartment space shall be
34 38.50-inch (wide) x 33.25-inch (high) x 23.50-inch (deep). This compartment shall have vertically hinged double doors.
35

36 **194. UPPER TRANSVERSE COMPARTMENT**

37 The area above the torque tube between LS3/RS3 shall be open and transverse across. The top shall have an ATP cap.
38 A divider shall be provided to separate the area front to back, allowing a FERNO Model 71 stokes, forward, if possible,
39 please split evenly. The floor in the area where the stokes basket is shall have UHMW applied, in multiple strips to cover.
40

41 **195. COMPARTMENT VENTS**

42 Compartment vents shall be provided to meet the requirements of NFPA 1901, current edition.
43

44 **196. WHEEL WELL LINERS**

45 Full semi-circular inner liners shall be provided in each wheel housing. They shall be constructed of 304 stainless-steel
46 and shall be bolted in place so they may be removed if damaged. Self-tapping sheet metal screws are not acceptable.
47 The bottom edge of liner shall be reinforced along its full length; however, it shall not have a formed reinforcement
48 flange to avoid trapping dirt and debris.
49



Southbury Vol. Fire Department



1 The inner liners exterior face (facing the tires) shall be painted job color red, to match the lower color scheme. Painted
2 inner liners are not warranted.

4 **197. REAR FENDERETTE**

5 Polished stainless-steel fenderettes shall be installed on the rear wheel openings. The fenders shall be wide enough to
6 completely cover the outside rear tire and reduce wheel splash up the sides of the body. Self-tapping sheet metal screws
7 are not acceptable. A full width rubber welt shall be placed between the fenderette and body wheel well opening flange.
8 The outside edge of the welting shall form a "V" bead between the fender and the body side face to prevent moisture
9 from entering. The inside edge shall also have a small, raised bead. The outside edge of fenderette, at the wheel
10 opening, shall be rolled inward to eliminate any sharp edges and avoid injury when cleaning the apparatus.

12 **198. REAR FENDER PANELS**

13 Painted, removable fender panels shall be provided on the outer face of each fender area. The panels shall be painted to
14 match the job color.

16 **199. ACCESS STEPS**

17 Three (3) stationary steps shall be recessed into the right- and left-side of the body to facilitate access to the platform.
18 The steps shall be positioned aft of the compartment just to the rear of the rear axles. All vertical surfaces shall be
19 covered with aluminum tread plate. The steps shall be of Bustin aluminum grating.

21 **200. FOLDING STEPS**

22 Led-lit, folding steps shall be provided on either side of the apparatus wherever there is a need to reach or climb to
23 elevated locations, including access to the aerial. Steps shall incorporate Grip Strut® safety grating. Manufacturer shall
24 propose locations via drawings or at final inspection that Southbury Vol. Fire Department will approve. These steps shall
25 be locked in place when swung up in the stored position.

27 **201. BODY HANDRAILS**

28 Body handrails shall be installed adjacent to all locations where climbing or off-balance work is required. All handrails
29 shall be 1-1/4-inch diameter extruded aluminum, knurled, with a bright anodized finish. All handrail stanchions shall be
30 chrome plated and LED backlit Blue. They shall be bolted to the body with 1/4-inch stainless-steel hex head bolts.
31 Stanchions shall have a rubberized gasket placed between them and the body surface they are mounted on. A drain hole
32 shall be provided in each bottom stanchion.

34 **202. REAR BODY SURFACE**

35 All vertical surfaces on the rear of the body shall be smooth painted stainless-steel for application of reflective chevron
36 striping.

38 **203. COMPARTMENT DOOR HINGES**

39 Compartment doors shall be mounted on stainless-steel piano hinges with a pin diameter of .25-inch. Mounting holes
40 shall be slotted vertically on one side of the hinge and horizontally on the other side to provide for proper adjustment of
41 the door. The hinge pins shall have spun ends (crowns) at both ends to hold them in place and provide a finished look.
42 Eberhard 206 latches with stainless-steel "D" ring handles shall be provided on the lift, single, drop down, and lock door
43 (double door set-up). The free door (double door set-up) shall have an (2) Eberhard latches top and bottom with a single
44 handle located inside the door (standard location at bottom). Isolation tape shall be furnished between the door hinge
45 and door jam. A rubber gasket shall be provided between the "D" ring handle and the door.

46
47 Vertically hinged doors shall be equipped with Hansen 5EZ or Thomas EZ spring type door checks that also hold the
48 doors in the open and closed position. Checks shall be the two-point mounting type for simplicity. Spring tension (15 lb.)
49 shall be easily adjustable. Checks shall have black zinc mounting brackets with stainless-steel springs, 11-inch (long) rods



Southbury Vol. Fire Department



1 and clamps. Springs shall be polished. Horizontally hinged doors shall be held in the opened position with gas cylinder
2 type stays. Switches for automatic compartment light operation shall be installed in the door hinge area.

3 4 **204. COMPARTMENT DRIP RAILS**

5 Bright aluminum "J" channel shall be provided over each lower side body compartment and at the front and rear of the
6 compartments.

7 8 **205. COMPARTMENT DOOR LINERS**

9 Brushed overlays shall be provided on the inside of ALL compartment door(s) to protect the painted finish and to cover
10 inside door hardware. The liners shall include the ladder bay doors and forward body.

11 12 **206. BODY DOOR HINGES**

13 All piano hinges on the main body exterior doors shall be polished.

14 15 **207. BODY DOOR SENSORS**

16 DOOR OPEN sensors shall be mounted on all entry doors and cabinets. The sensors shall be mounted above normal
17 water/grit collection areas to avoid premature failure or false positive readings.

18 19 **208. OPEN STORAGE AREA**

20 To the degree possible, an open storage area shall be created between the high side compartments using partitions over
21 the wheel housing.

22 23 **209. COMPARTMENT DOOR SILL PROTECTOR(S)**

24 A hi-polished stainless-steel sill protector, approximately .50-inch (wide), shall be provided on body compartment door
25 sill(s) to protect the painted finish.

26 27 **210. COMPARTMENT TOP OF BODY**

28 One (1) compartment accessed from each side, located over the LS5 and RS5 compartments. The compartment shall be
29 between the rear access steps and the rear beacon. The compartment shall be the full width of the body as one
30 weldment. The compartment shall be notched under the platform not to interfere with the L-bracket and lifting eyes.

31
32 Box shall be approximately 6-inch (high) outboard, and approximately 3-inch (high) inboard. Due to the request of the
33 box to be full width, and manufacturing tolerances, it may not lay square/flush to body sides and body rear.

34
35 Due to design and location the box shall not be weather resistant and may have moisture enter.

36 The rear beacons shall sit on top of the Compartment.

37 The door to the compartments shall be with a d-ring handle, with pins to secure and be tied to the open-door alarm.

38 Box shall be thoroughly reinforced which shall include vertical dividers for support.

39 Aluminum Bustin grating shall also be installed on the top stepping surface (outboard) of the box to assist when entering
40 / exiting the platform.

41
42 The rear facing panel of the box shall have the Traffic Advisor Lights surface mounted. The center panel shall be
43 removable for service of the warning lights.

44 45 **211. DRI-DEK® MATS**

46 Black Dri-Dek® mat(s) shall be provided and installed on body compartment floors and/or in shelves/trays as specified.
47 Ramped edging shall be included for the front compartment openings.

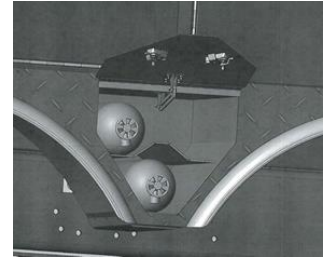


Southbury Vol. Fire Department



212. ADJUSTABLE SHELVES

Six (6) adjustable full-width shelf or shelves (with open corners) made from 3/16-inch smooth aluminum sheet metal shall be provided in the body compartment(s). Each shelf shall be supported by four (4) stainless-steel angles bolted to Aluma-Strut tracks. Shelves shall have at least 500 lb. capacity.

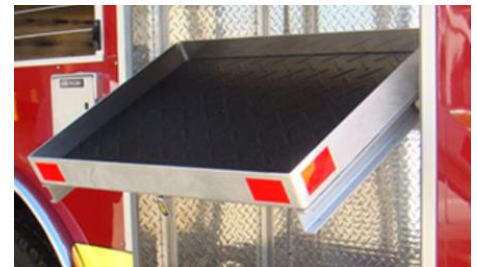


213. SLIDEOUT TRAYS

Four (4) Accuride slide out trays shall be provided and installed in customer specified locations. Sliding trays, where specified shall be mounted in a manner that provides for maximum clearance overhead. The trays shall have a capacity of 300 pounds in the fully extended position. The side mounted slides are to be equipped with ball bearings for ease of operation. Tray will lock automatically in the open and closed positions. Manual type locks will not be acceptable.

214. SLIDEOUT, TIP DOWN TRAYS

Two (2) roll out, tip down tray assembly(s) shall be provided in the body compartment(s) one on each side. Tray(s) shall be constructed of 0.188-inch aluminum and shall have edges on all four sides for added strength. The corners shall be open. Exposed edges shall have warning chevron reflective tape.

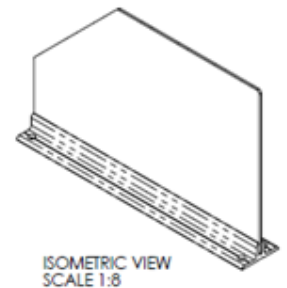


SlideMaster Model MT aluminum base depth slide mechanisms shall be installed allowing the tray to slide out and tip down. The tray shall be able to support a 200-pound load.

The SlideMaster slide mechanism shall be secured with a SlideMaster 2-rail IMS spring lock.

215. BOLT IN DIVIDERS

Twenty (20) T style bolt in dividers shall be provided with the vehicle. Shall be approximately 21.63-inch (wide) x 14-inch (tall) with an angled corner. See drawing. Item(s) shall be shipped loose⁷.



216. ALUMA-STRUTS

Five (5) set(s) of Aluma-Strut shelving supports shall be provided for future installation of a shelf or shelves. Two (2) tracks shall be installed on each side wall of the body compartment(s). The location of the compartment option(s) shall be as follows:

▪ Fourteen (14) compartment floors	▪ Six (6) shelves
▪ Transverse area both areas (2)	▪ Dunnage Area (2)
▪ One (1) Adjustable Drop Down	▪ Two (2) body Upper Compartments

217. SPARE SCBA CYLINDER COMPARTMENTS

There shall be two (2) triple wheel well enclosures provided to accommodate six (6) air bottles. A triple air bottle compartment shall be positioned on each side, between the tandem rear axles. The compartments shall be fabricated of the same material as the fender and shall provide a minimum of 23-inches of usable depth. There shall be a rubber mat provided on the rear wall and on the bottom half of each compartment to prevent damage to the bottles. The doors shall be painted job color red, to match the lower color scheme.



Southbury Vol. Fire Department



218. DRIVER'S PPE AND SCBA STORAGE

An SCBA storage module shall be provided to store one (1) Scott 60-min cylinder. Bottle not to exceed 7.5-inch in diameter. The module shall be painted gray Zolatone with clear coat and rubber lined. Location: RS3 / Locate at final for placement in compartment. Module shall be a floor mounted design.

Space allowance and shelving shall be made in this compartment to allow storage of driver's helmet, turnout coat, and pants.

219. ADDITIONAL HANDRAIL(S)

In addition to previous handrail guidance, several additional handrails may be needed for safety. Southbury Vol. Fire Department will locate these at final inspection, or earlier if needed. As before, handrail(s) shall be supported by chrome plated stanchions and be of similar construction and utilize the same mounting hardware as the other handrails on the apparatus, i.e., serrated exterior face with rubber inserts, rubberized gaskets, stainless-steel bolts, etc. Customer understands that not all locations are available when locating at inspection.

220. RUB RAILS

High polished stainless-steel rub rails shall be provided along the lower portion of the body, beneath the compartment doors, on each side to prevent damage to the body and finish. Rails will also be provided along the lower portion of the rear of the body, to prevent damage to the body and finish.

The rub rails shall be a minimum of 2-3/8-inch (wide) x 1-inch (deep) and shall be mounted on rubber supports. Rub rails shall have a 1-inch x 1-inch chamfer at the front and rear of the rails. The rails shall protrude a minimum of 1.75-inch from the face of the body.

221. REAR BODY PROTECTION

A heavy duty, fully welded, gusseted steel tubular structure that is bolted to the rearmost portion of the frame shall be provided just beneath the rearmost portion of the body. The structure shall extend past the body on both sides so that it is in line with the rub rails. The intent of this structure is to protect the body from incidental impacts during severe elevation changes. The so-called, "Whale Tail" shall be painted job color red, to match the lower color scheme.

222. YELLOW PERIMETER MARKING - BODY

In accordance with NFPA 1901 chapter 15.7.1.6, the following will be marked with a 1-inch-wide safety yellow line to delineate the designated standing or walking surface areas:

1. The perimeter of the roof of the forward body
2. The perimeter of all horizontal walking surfaces on the top of the body



1 **AERIAL TOWER DESIGN AND PERFORMANCE**

2
3 **223. TOWER SIZE**

4 A minimum 95-foot, 1000-pound tip load telescoping tower shall be mounted mid-ship of the apparatus. The
5 aerial/boom shall meet or exceed the requirements of all applicable sections of the current edition of NFPA 1901.
6

7 The aerial/boom shall be designed with a structural safety factor of two to one (2:1) based on the dead and live loads
8 and shall meet ANSI A92.2 Standard for Vehicle Mounted Aerial Devices and NFPA 1901 which requires a static stability
9 safety factor of one and one half to one (1.5:1) based on the rated load. These capabilities shall be established in the
10 unsupported configuration.
11

12 The aerial device and all supporting structures shall undergo third party testing to confirm that the tower meets the
13 original design criteria and the intent of the latest recommended NFPA standard for aerial devices. Such testing shall
14 include the use of brittle lacquer stress coating to identify all stress concentrations, followed by strain gauging to verify
15 that all nominal stresses and stress concentrations have a safety factor that is equal to or greater than 2:1 based on the
16 dead and live load.
17

18 At a minimum, the aerial shall have a rated horizontal reach of 84-feet measured in the horizontal plane at zero (0)
19 degrees from the centerline of the turntable rotation, as defined by NFPA 1901. The aerial shall be capable of
20 continuous operation through 360 degrees of rotation and from at least minus nine (-9) degrees to plus seventy-five
21 (+75) degrees elevation.
22

23 **224. TOWER CERTIFIED RATED CAPACITY**

24 The rated capacity of the platform shall be 1000 pounds while flowing 1000 GPM of water in accordance with NFPA
25 1901, current edition, with no restrictions regarding aerial/boom extension, aerial/boom elevation, or rotational
26 orientation. The platform shall be capable of flowing 2000 GPM of water, provided the monitor stops are set at 45
27 degrees above the horizontal. There shall be no restrictions regarding the simultaneous use of all three (3) motion
28 functions (elevation, rotation, and extension) with the rated platform capacities either at the main pedestal or in the
29 platform. This unit shall be capable of setting up and operating on street grades of up to 5 degrees. At the maximum
30 grade, the unit shall be capable of operating at the manufacturer's rated capacity and platform placement with no
31 operational restrictions. There shall be no nozzle orientation restrictions while flowing 1000 GPM of water.
32

33 All tower certifications shall be based on the platform being properly deployed in an unsupported configuration. The
34 capacities shall be based upon 360-degree rotation, up to full extension and from minimum to maximum angle degrees.
35

36 **225. OPERATION ON GRADE**

37 The aerial shall be capable of being operated at full rated capacity in every position in which the aerial device can be
38 placed when the apparatus is on a slope of 5 degrees (8.7%) in accordance with NFPA 1901 (19.21.3.1)
39

40 **226. SUPERSTRUCTURE CONSTRUCTION**

41 The superstructure shall be directly mounted to the chassis at a midship point by grade 8 fasteners and not welded
42 directly to the rail. It shall be capable of supporting the positioning of all aerial/boom movements and capacities. The
43 superstructure shall be constructed of structural steel solid-welded into such a fashion that the outriggers are directly
44 integrated, providing direct radial support of aerial/boom extension off the side extension.
45

46 **227. AERIAL TORQUE BOX**

47 A torque box shall be provided that transmits aerial/boom loads from the superstructure to the rear jacks. The torque
48 box also extends to the rear of the truck to provide enclosed storage for ground ladders. The sub-frame shall be
49 constructed of .25-inch", T-1 100,000 PSI yield steel plate. The torque tube shall extend from the center of rotation of



Southbury Vol. Fire Department



1 the turntable to the back of the apparatus. It shall be 25.38 high by 34- wide. Chassis mounting plates shall be welded to
 2 the sides of the torque box and then it shall be bolted to the frame rails using SAE grade 8 bolts and nuts. The torque
 3 box shall also be secured to the superstructure. The torque box assembly shall be capable of withstanding all torsional
 4 and horizontal loading when the unit is supported by the outriggers and the aerial device is fully extended and loaded to
 5 capacity.

6
 7 The torque box shall have structure for mounting the cradle and transferring the aerial/boom weight from the cradle
 8 through the torque box and into the frame rails.

228. STABILIZER/OUTRIGGER CONTROLS

11 Joystick controls shall be provided to deploy and retract stabilizers/outriggers. Street side jack and outrigger control
 12 switches for any or all curb side jacks shall require an interlock switch to be maintained at the curb side control area as
 13 confirmation of visual curb side stabilizer motion. An override switch on the street side shall be provided to override the
 14 curb side enable switch. The operator shall be able to raise and lower the jacks and outriggers independently while
 15 observing them during set up. A single control switch shall also be provided for the operator to raise and lower all jacks
 16 and outriggers at once while the interlock is activated. An automatic high idle switch and indicator shall be provided so
 17 that automatic engine RPM ramp up from hydraulic requests can be disabled.

18 All control panel(s) shall be illuminated using LED strip lights.

19
 20 For **fixed, single location** control systems:

21 Jack and outrigger/stabilizer controls shall be housed in a dedicated compartment in the left side forward body section.
 22 The upper section shall be recessed back from the outside edge of the body and shall house the outrigger stabilizer
 23 controls.

24
 25 A Rosco Color camera system, Model STSK7165, shall be provided and installed on
 26 the driver side of aerial near the right side midship stabilizer jack. The control
 27 screen will be mounted in a weatherproof compartment and allow the operator a
 28 view of the right-side jacks. while deploying and retracting the stabilizers. The
 29 system shall consist of the following items:

- 30 • One (1) STSM205 7" LCD monitor, 7.2" wide x 4.8" high x 1.1" deep, with
 31 remote control.
- 32 • One (1) STSC101 color camera with microphone, 120-degree lens and 18
 33 infrared LEDs.
- 34 • One (1) 65-foot cable; One (1) STSH301 Harness; Mounting brackets and hardware.



35 A K-10, 10-inch stainless-steel eyeball mirror shall be installed on the outside of the rear wall on the curb side of the cab
 36 for viewing of mid-body outrigger on that side from the pump control panel. The bracket holding the mirror shall be
 37 constructed of 3CR12 and shall be painted job color to match the surrounding color. Top of mounting brackets shall have
 38 an ATP cap/top to cover the hole.

39
 40 For **dual location** or **tethered** control systems:

41 Jack and outrigger control switches shall be provided on the street side of the apparatus for controlling street-side
 42 stabilizers and outriggers.

43 Jack and outrigger control switches shall be provided on the curb side of the apparatus for the curb-side stabilizers and
 44 outriggers.



Southbury Vol. Fire Department



1 Compartment locations of the control systems must provide operators a clear view of all jacks and outriggers from any
2 control box or tethered controller.

3 4 **229. INCLINOMETERS**

5 Six (6) inclinometers shall be provided. Two (2) on each side, to aid in leveling the unit from side to side and front to
6 rear. Two shall be mounted similarly in the cab within easy viewing of the driver.

7 8 **230. OUTRIGGER ALARM**

9 An automatic electronic warning device (horn) shall be provided to warn personnel when the outriggers leave their
10 nested position. The alarm shall operate only while outriggers are moving.

11 12 **231. OUTRIGGER LIGHTING**

13 Whelen ION™ Series Model ION TLIR, red LED lights, with chrome flanges shall be mounted on the outrigger feet, three
14 on each foot. On each foot, one light shall face outward, one shall face forward, and one shall face rearward, to meet
15 NFPA requirements. The lights shall be activated by engaging the PTO. The flasher shall have a comet flash pattern.

16 17 **232. OUTRIGGER SPOTLIGHTS**

18 FRC SoBrite spotlights, Model SRA-110-07A-BLA, shall be installed, one on each side of the apparatus above the
19 outriggers, to illuminate the area for spotting the outriggers in the down position. The lights shall be wired to a switch
20 on the cab dash and shall also automatically activate when the PTO is engaged. The lights shall have a Black housing.

21 22 **233. OUTRIGGER PAD STORAGE**

23 Auxiliary outrigger or jack pads shall be mounted in two holders on the apparatus. The pads shall each be made of 3/8-
24 inch smooth aluminum with a bent rod style carrying handle. The pan-style brackets, which hold the pads, shall be
25 installed on the front face of the LS1/RS1 body compartments, to the rear of the superstructure on each side of the
26 apparatus. Each holder shall have a hold in place swing tab and shall be capable of holding three (3) of these outrigger
27 pads. The front face of each outrigger pad holder shall have an ATP cover installed for a finished appearance.

28 29 **234. AERIAL CRADLE REST**

30 A heavy-duty rest shall be provided to support the aerial/boom in the travel position. Re-enforcement plates shall be
31 attached to the aerial/boom base section to protect the aerial when the unit is in the travel position. The cradle shall be
32 positioned on the top of the torque box. It shall be constructed such that the weight of the aerial/boom shall be
33 transferred through the torque box to the chassis frame rails. A limit switch mounted on the cradle shall automatically
34 stop the lowering function of the aerial/boom at the proper position in the rest.

35 36 **235. CRADLE INTERLOCKS**

37 A cradle interlock system shall be provided which automatically prevents the operator from raising the aerial device
38 from the cradle unless all outriggers are placed in a load supporting configuration. The system is activated when the
39 foot of the center outriggers contacts the ground and trips a limit switch. An LED indicator light on the jack control panel
40 shall then indicate that the aerial/boom can be operated.

41
42 An additional interlock shall be provided that prevents outrigger operation when the aerial device is not fully stowed in
43 the cradle.

44 45 **236. SHORT-JACK OPERATIONS**

46 The aerial device shall be capable of operating in a "short-jacked" stance. The aerial device shall require the operator(s)
47 to overcome specific interlocks – or to use two separate operators to simultaneously command the lift of the
48 aerial/boom from the cradle. Once the aerial/boom is lifted from the cradle, the aerial device shall be fully operational
49 by a single operator to the side of the apparatus with fully deployed outriggers and shall be denied operation to the



Southbury Vol. Fire Department



1 short set side. In the event both sides are short set, the operator will automatically be denied operation to both sides.
2 Two methods of overriding the interlock are available: an electric switch, or mechanically moving the solenoid. Both are
3 available to the single operator located at the primary operator's station.
4

5 **237. MANUAL OVERRIDES**

6 The manual overrides for the aerial device (clockwise and counterclockwise rotation and lowering interlocks) shall be in
7 the turntable control pedestal. Operation of the aerial/boom without the outriggers properly set requires the operation
8 of a diverter valve and requires a second operator. The overrides for the outriggers shall be conveniently located behind
9 the jack control panel. The outrigger overrides can be operated by one person but requires the simultaneous activation
10 of two separate controls to override the safety system.
11

12 **238. PTO FOR AERIAL HYDRAULICS**

13 The apparatus shall be equipped with a power (hot) shift PTO driven by the chassis transmission. An indicator shall be
14 positioned in the cab to indicate when the PTO is engaged. The PTO can be engaged by the aerial enable switch if the
15 transmission is in neutral and the parking brake is set or in pump mode with the parking brake set. A hydraulic valve,
16 controlled by the aerial enable switch, shall prevent aerial operation until the transmission is in neutral and the parking
17 brake has been set or in pump mode with the parking brake set.
18

19 There shall be no exceptions to this interlock system since it is designed to protect and safeguard personnel and
20 equipment.
21

22 **239. HYDRAULIC SYSTEM**

23 All stabilizer, outrigger, and tower movements shall be accomplished using hydraulic power. All functions shall be held in
24 place by holding valves when not in motion. The hydraulic system shall incorporate a pressure relief valve to protect the
25 system from excessive pressure. All hydraulic cylinders shall incorporate pilot operated holding valves to keep them in
26 place or to control their movement when hydraulic pressure is applied. The hydraulic pressure lines shall have a burst
27 pressure of at least four times the operating pressure.
28

29 **240. HYDRAULIC FILTERS**

30 The system shall incorporate two (2) filters and a remote filter condition indicator. One (1) 5-micron high pressure filter
31 shall be placed after the pump and one (1) 10-micron return filter shall be placed in the hydraulic tank. These filters shall
32 be sized for the system required pressure and flow. The high-pressure filter housing must be painted.
33

34 **241. HYDRAULIC PUMP**

35 The system shall be powered by a pressure compensated load sensing hydraulic pump. The pump shall be sized to
36 operate all aerial/boom functions simultaneously. The load sense feature operates any function at the optimum
37 pressure to maximize efficiency and minimize heat build-up.
38

39 The aerial hydraulic pump shall be mounted to the frame with a drive shaft from the PTO to the pump.
40

41 **242. HYDRAULIC OIL TANK**

42 The hydraulic oil tank shall have a sufficient capacity to operate the aerial while allowing the oil to cool and shall be
43 positioned in the front of the torque box for easy access. Note: certain options may dictate special tank locations. There
44 shall be a means provided to remove the tank, if needed. The connection points to the tank shall be easily accessible,
45 with internal baffles separating the intake and return. There shall be shut-off valves at these points to isolate the tank, if
46 needed. A filtered breather cap and a basket strainer shall be positioned in the filler neck. A dip stick shall verify the oil
47 level. There shall be a plaque mounted next to the fill cap labeled "**Hydraulic Fluid Only**".
48



Southbury Vol. Fire Department



1 **243. HYDRAULIC HOUR METER**

2 An aerial hydraulics hour meter shall be provided to accumulate hours when the transmission provides pressure to
3 engage the PTO and the aerial enable switch is engaged.
4

5 **244. EMERGENCY HYDRAULIC PUMP**

6 The apparatus shall be equipped with an emergency 12-volt hydraulic pump receiving power from the apparatus
7 batteries. It shall be capable of providing limited hydraulic power for returning the aerial/boom and outriggers to their
8 stowed position in the event of main power failure. A control switch for the emergency pump shall be positioned at the
9 outrigger control station and at the aerial control. The control switch shall be a spring-loaded momentary type to
10 prevent prolonged operation of the emergency pump. The switch shall be positioned behind the pedestal interior access
11 door and at the outrigger controls and labeled, "**Emergency Hydraulic Pump**".
12

13 **245. HOIST SYSTEM**

14 The aerial/boom shall be elevated or lowered by two (2) hydraulic lift cylinders. In case of cylinder failure, one cylinder
15 shall be capable of supporting the full load capacities of the platform. Each lift cylinder shall have two (2) counterbalance
16 valves that lock the cylinders in place when movement is stopped and provide smooth operation during raise and lower
17 functions. The minimum range of elevation shall be -9 degrees to +75 degrees.
18

19 **246. EXTENSION-RETRACTION SYSTEM**

20 A full hydraulic powered aerial/boom extension and retraction system shall be provided utilizing three hydraulic
21 cylinders synchronized by hydraulic valves. The extension/retraction cylinders shall be equipped with integral (on the
22 cylinder) holding valves to prevent the cylinder from moving should a pressurized hydraulic line be severed at any point
23 within the system.
24

25 Wear pads shall be provided between the telescoping sections for smooth operation. Wear pads shall be composed of
26 high strength polymers with friction reducing additives.
27

28 **247. ROTATION INTERLOCK SYSTEM**

29 The apparatus shall be installed with a rotation interlock system. This interlock system shall prevent the aerial from
30 being rotated over the side of the apparatus if the stabilizers on that side are not fully deployed. The interlock system
31 shall include a light and audible alarm that will activate when rotation is no longer allowed. Once rotation is stopped the
32 interlock system shall allow the operator to rotate away from the stopping point without the use of an override. A
33 manual override feature shall be provided that will allow the operator at the turntable the ability to override the
34 interlock system. There shall be NO EXCEPTIONS to this interlock system since it is designed to protect and safeguard
35 personnel and equipment.
36

37 **248. AERIAL SWIVEL WITH 5-INCH WATERWAY**

38 The aerial device shall be equipped with a swivel installed within the axial centerline of the turntable to allow 360-
39 degree rotation of the aerial device. The swivel shall float on the turntable to prevent side loading. It shall have passages
40 for the hydraulic lines from the hydraulic pump and oil reservoir to the aerial control valve bank, and for a 5-inch
41 waterway down the center. The swivel shall also maintain electrical continuity of all necessary electrical circuits while
42 ladder is rotating or when it is immobile. A minimum of thirty-six (36) collector rings shall be provided.
43

44 **249. ROTATION SYSTEM**

45 The turntable bearing shall be of 4-point contact ball construction. The bearing shall have a minimum of 46 mounting
46 holes for attachment to the superstructure and turret. All fasteners shall be grade 8. The outer race of the turntable
47 bearing shall be mounted to the top of the superstructure. The outer race shall have gear teeth to permit interaction
48 with the rotational spur gear.
49



Southbury Vol. Fire Department



1 The turntable shall be bolted to the inner race which will be free to rotate 360-degrees continuously in either direction.

2
3 Turntable rotation shall be driven by two (2) rotation assemblies each consisting of a hydraulic motor, a hydraulically
4 activated brake, and a planetary gear reducer. This system shall be capable of 360-degree continuous rotation of the
5 fully extended aerial/boom in the direction of the platform water stream while maintaining the manufacturer's rated
6 basket capacity. The angle of elevation shall not affect this performance. The hydraulically activated brake mechanism
7 shall be capable of withstanding all side forces from water flow or sudden stopping of aerial/boom rotation.

8
9 Multiple layers of paint shall be applied to limit any rusting of the components.

10 11 **250. TURNTABLE**

12 The turntable shall be bolted to the inner race of the turntable bearing using grade 8 fasteners. The bearing mounting
13 plate shall be machined to insure a smooth and flat bearing mounting surface. The turntable ears shall support the base
14 section of the aerial/boom. There shall be a set of mounting brackets for the lift cylinders.

15
16 The standing deck of the turntable shall have aluminum grating in front of the main operator's control pedestal
17 (console) and aluminum tread plate on the remainder.

18
19 There shall be a 42-inch-high guardrail mounted on the turntable next to the control pedestal. The railing shall have
20 additional bracing for support. Bracing shall be secured tightly around the railing. Brace, Bracket and Handrail are to be
21 covered in Black Linex.

22 23 **251. MANSAYER BARS**

24 Fire Research ManSaver Safety Bars shall be installed at all climbing points where possibility of
25 fall is a consideration. Bars shall be spring loaded, open up or in, have a 6-inch loop, and long
26 enough to block at least 80% of openings. Safety bars shall be rust proof.



27 28 **252. YELLOW PERIMETER MARKING - AERIAL**

29 In accordance with NFPA 1901 chapter 15.7.1.6, the perimeter of the turntable not covered with a railing shall be
30 marked with a one-inch (wide) safety yellow line to delineate the designated standing or walking surface area.

31 32 **253. CONTROL PEDESTAL - TURNTABLE**

33 The aerial control console shall be located on the right side of the turntable facing the tip. The console shall be
34 illuminated for night operation and shall have the following items clearly labeled and conveniently located on or near
35 the console for ease of operation:

- 36 ▪ Emergency STOP push button with on-light stops all platform controllability.
- 37 ▪ Aerial overload chart
- 38 ▪ Throttle switch
- 39 ▪ Intercom system - allows communication between pedestal and end of aerial.
- 40 ▪ Aerial functions joystick or directional control handles
- 41 ▪ Water Flow Meter

42 The following shall be inside the pedestal access door:

- 43 ▪ Emergency override rotation switch with protective cover labeled, "**Emergency Rotation Switch**"
- 44 ▪ Emergency pump switch with protective cover labeled, "**Emergency Pump**"

45
46 The three directional control valves shall control the elevation/lowering, clockwise/counterclockwise, and
47 extension/retraction functions for the positioning of the aerial. The controls for the three aerial functions may be
48 operated independently or simultaneously. A "Dead-man" type foot pedal switch shall ensure the controls are non-
49 operable unless the foot pedal is depressed.



Southbury Vol. Fire Department



One (1) Kussmaul Electronics Model 091-219-5-WP Dual 2.4 Charger Port shall be direct wired via a fused circuit and shall be positioned on the pedestal.



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

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

254. PEDESTAL PRESSURE/FLOW METER

An FRC Model FPA-402-X, backlit waterproof dual pressure and flow meter combination gauge shall be installed at the aerial operator's pedestal position and shall display pressure and flow readings simultaneously. Devices that require user intervention such as pushing buttons to change the mode from pressure to flow shall not be acceptable. Sensors that transmit the pressure and flow data shall be separate and independent. The sensor used to measure flow shall be a paddlewheel design.



255. PEDESTAL COVER

A hinged aluminum tread plate protector shall cover the control pedestal. Two (2) gas springs shall hold the cover in either an open or closed position. There shall be a rubber ball type latch installed on the pedestal cover to assist in holding the cover closed.

256. PEDESTAL COVER LIGHT

There shall be a TecNiq Eon LED lamp installed inside the pedestal cover. The light shall illuminate whenever the PTO is engaged, and the cover is opened.

257. PEDESTAL SERVICE LIGHT

The interior of the turntable control pedestal shall have a TecNiq EON LED work light for control valve service visibility. It shall have a stand-alone toggle switch, and labeled, "Service light".

258. CAB ROOF AVOIDANCE

Cab avoidance during aerial maneuvers shall be always maintained using the aerial electrical system. The system shall maintain an envelope around the cab to prevent the aerial from contacting the cab roof.

259. AERIAL OVERLOAD ALARM

An alarm horn and warning light shall be mounted on the control pedestal and at the platform. The alarm(s) shall sound to alert the operator should the load capacity of the aerial be exceeded. The alarm shall in no way restrict the further operation of the aerial. There shall be no exception to this safety requirement.

260. EMERGENCY AIR HORN ON AERIAL PEDESTAL

A push button switch for emergency air horns shall be mounted on the aerial pedestal.

261. AERIAL CONTROL FOOT PEDAL

A foot pedal shall be located on the turntable floor at the base of the control pedestal. Depressing the foot pedal shall activate the aerial hydraulic control valve for operating the aerial device from the turntable pedestal. Depression of the foot pedal also allows the pedestal operator to override the platform controls.



Southbury Vol. Fire Department



1 **262. CRADLE ALIGNMENT LIGHT**

2 There shall be a Whelen L32 Super-LED beacon clearance light or similar recessed on the backside of the
3 pedestal, viewable from the platform to assist the bucket operator with alignment of the aerial with the
4 cradle. The light shall illuminate when the aerial is aligned with the cradle guides.



5
6 **263. ANGLE INDICATOR**

7 A backlighted angle indicator shall be installed on the base section of the aerial, adjacent to the
8 aerial operator's position. The light shall illuminate when the aerial receives hydraulic power.



9
10 **264. INCLINOMETERS IN CAB**

11 Two (2) inclinometers shall be mounted within the cab to inform the driver if it is safe to deploy
12 the outriggers. The inclinometers shall identify the truck angles on both the X and the Y axis. They
13 shall be easy to read from the driver's seat. They shall be positioned at final inspection.

14
15 **265. AERIAL INTERCOM SYSTEM**

16 The intercom shall be a Fire Research Model ICA-900-303 PTT/PTT/PTT, 3 speaker, 3 stations with
17 ACT clear voice sound system. The master shall be a push-to-talk station with 5-LED volume
18 indicator lights and push button, arrow-up and arrow down controls. The master unit shall be
19 mounted on the turntable control pedestal. The hands-free voice transmission slave unit shall be
20 installed at the platform control console and always in transmit mode until interrupted by transmission
21 from the master unit. The third station/speaker shall be mounted at the pump panel. The system
22 stations shall be interconnected with shielded cable for static free operation in normal conditions.



23
24 **266. AERIAL/BOOM CONSTRUCTION**

25 The aerial/boom shall be constructed to withstand the stress of fully extended low angle positions combined with any
26 positioning of full flow water stream capabilities.

27
28 Teflon impregnated bearing pads shall provide a sliding surface for each section as it is extended or retracted. Wear pads
29 shall have adjusting screws to set clearance without shims. The aerial/boom extension wear pads and pivot bushings
30 shall not require grease.

31
32 **267. PLATFORM CONSTRUCTION**

33 The platform structure shall be completely constructed of welded aluminum. Any tubular aluminum shall have a
34 minimum diameter of 1.5-inch and any square aluminum shall be a minimum of 1.5-inch x 1.5-inch. It shall have a 42-
35 inch (high) hand railing. The floor shall be non-skid extruded aluminum with a minimum area of 15 sq. feet. A 4-inch
36 minimum kick plate shall surround the floor. An aluminum plate for mounting the controls station and intercom shall be
37 mounted at the left rear wall. Aluminum mounting angles for the platform control box shall be mounted on the right
38 side.

39
40 There shall be two (2) curved aluminum doors with aluminum heat shields located on the front corners of the platform.
41 The doors shall have a self-latching lock and shall swing inward. A secondary latch shall allow the door to swing in or out.

42
43 There shall be four (4) individual tie-off rings incorporated into the platform to be used as mounting points for safety
44 harnesses. Two (2) rings shall be on each side at the rear of the platform.

45
46 The platform shall be provided with a non-skid tread access ledge around the outside edge. The access ledge shall be a
47 minimum width of 8-inch.



1 **268. PLATFORM ACCESS HANDRAILS**

2 A 31-inch knurled aluminum handrail shall be provided on each side of the back of the platform to assist in accessing the
3 platform from the aerial/boom. Handrails shall have 30-degree offset stanchions outboard.
4

5 **269. PLATFORM SKID RESTS**

6 Poly skid rests shall be positioned underneath the platform to protect mounted items from damage when the platform
7 is set on the ground or a flat surface.
8

9 **270. PLATFORM CONTROL STATION**

10 A control station shall be positioned on the right-side rear corner of the interior of the platform. The control station shall
11 be constructed of aluminum.
12

13 A TecNiq clear LED EON light shall be installed to illuminate the platform control station.
14

15 **271. PLATFORM CONTROLS**

16 A single joystick control shall provide simultaneous operation of all three (3) aerial/boom movements. The control shall
17 be a self-centering handle with an integral trigger type safety interlock switch. This switch shall work in conjunction with
18 the safety interlock system at the main pedestal. The joystick control shall send a variable signal to the hydraulic valve at
19 the main pedestal for the desired movements. It shall be mounted on the right rear corner of the platform to not
20 interfere with any activities in the platform. It shall also allow constant observation of any obstacles due to directional
21 hand movement without looking at the control.
22

23 The control shall be activated by turning on the platform control's switch at the main pedestal. It shall be deactivated by
24 pushing the platform control switch "off" or by depressing the safety interlock foot pedal.
25

26 The platform joystick shall have three (3) colored LEDs with a speed control push-button. Pressing the button one time
27 shall give a creep speed and the LED shall turn red. Pressing the button again, gives 1/2 normal speed and the LED turns
28 yellow. Pressing the button again, gives normal speed and the LED changes to green. Pressing the button again returns
29 the speed to creep with a LED color of red. Moving the joystick to center shall slowly reduce speed to zero. All speeds
30 can be adjusted at final inspection to meet departmental requirements.
31

The control panel shall have the following <u>switches</u> :	The control panel shall have the following indicator <u>lights</u> :
▪ Spotlights (Aerial/boom & Stream Tracking)	▪ Cab Avoidance Active
▪ Platform Work Lights	▪ Aerial/boom Overload Alarm
▪ Platform Flood Lights	▪ Aerial/boom Aligned
▪ Platform Warning Lights	▪ Auto High Idle Active
▪	▪ Must Use Manual Leveling

32 **272. PLATFORM LEVELING SYSTEM**

33 The platform leveling system shall incorporate an electronic level sensing device that controls a proportional hydraulic
34 valve. This system shall be capable of leveling the forward/rearward tilt of the platform regardless of the truck
35 orientation. Leveling shall also be functional with the auxiliary back-up hydraulic system.
36
37

38 Hydraulic lines shall connect to a proportional control hydraulic valve. The output of an electronic level sensing device
39 controls the proportional valve to position the leveling cylinders and maintain level of the platform. If the primary power
40 is lost, the leveling electronics shall be powered with an auxiliary backup battery system that shall automatically engage.
41 The auxiliary backup battery system shall have a gauge and test switch located on the control station.
42



Southbury Vol. Fire Department



1 The two (2) leveling cylinders shall be mounted at the rear of the platform. These cylinders shall incorporate dual pilot
2 operated holding valves to hold them in place. An individual cylinder shall be capable of holding the weight of the
3 platform, if necessary.

273. PLATFORM WATERWAY SYSTEM

4
5 A mounting flange for deck gun(s) shall be mounted in the front center of the platform structure. The
6 waterway shall also be equipped with a manually operated 3-inch 150# flange "Slo-Close" worm gear
7 shut-off valve mounted in the front center portion of the platform, 1500 GPM capacity.



8
9 Valve shall be painted job color **Red**, to match the lower color scheme.

10 A water curtain assembly shall be mounted beneath the platform for protection. It shall be operated by a manual shut-
11 off valve.

274. PLATFORM AUXILIARY DISCHARGE

12
13
14 There shall be one (1) 2.5-inch coupling provided for one (1) 2.5-inch ball valve with cap in the waterline at the front
15 center portion of the platform, under the discharge gun flange of the platform for an optional hand line connection.

16
17
18 The discharge shall have a discharge pipe extended above the hose trough and terminate in a 2.5-
19 inch NST male chrome fitting. An Akron 2.5 x (2) 1.5-inch NST Leader Line Wye #1581 shall also be
20 provided on the extended pipe and will be shipped loose⁸.



21
22 The discharge pipe shall be painted job color gray to match the upper color scheme.

275. PLATFORM SAW HOOK ATTACHMENT

23
24 A folding hook shall be mounted on the right side of the platform, as looking from the turntable
25 pedestal to allow for temporary storage of saws during operations. Hook shall be spring loaded
26 to rest against the platform body when not in use, similar in operation to roof ladder hooks.
27 See image.



276. AERIAL WATERWAY SYSTEM

28
29 The aerial waterway shall be 5-inch schedule 40 aluminum pipe from the swivel to the
30 telescopic waterway. A single aluminum telescopic waterway, which has been Duranodic hard
31 coat anodized, shall be provided, and mounted to the side of the aerial/boom. The waterway
32 shall be 4-inch schedule 40 aluminum pipe from the telescopic waterway to the platform
33 waterway. The aerial waterway shall connect to the platform waterway with a 4-inch Victaulic coupling.
34
35



Southbury Vol. Fire Department



277. WATERWAY INLETS

A 5-inch inlet (2) shall be provided on each side of the vehicle that provides water direct to the platform bypassing the pump. All inlet piping below the swivel shall be stainless. Each inlet shall be trimmed with 14-gauge brushed stainless-steel garnish rings. The inlets shall each have a 5-inch Waterous/Jamesbury electric operated butterfly valve with Waterous LED indicator on each side of the apparatus.

There shall be a 1-1/2-inch drain valve provided. The drain shall be recessed behind the street side panel with the control extending through the panel and located along the bottom. The drain control shall be properly labeled. The water discharged from the drain shall be routed so it drains below the chassis frame rails.

A 3/4" Auto Drain shall be provided as well to drain water after the system pressure is released. This drain shall remain open until the system is pressurized again.

A 2-1/2-inch intake relief valve shall be permanently installed in the inlet piping. It shall have minimum pressure adjustment of 75 to 250 PSIG. The surplus water shall be plumbed to the underside of the truck away from components and the operator.

5-inch inlets shall be angled downward to eliminate the need for an elbow. The height of the inlet shall be high enough to prevent 5-inch hose from kinking.



278. WATERWAY ADAPTERS

5-inch FNPT x 5-inch MNST straight chrome plated brass rocker lug adapters (2) shall be provided for each waterway.



279. PLATFORM MONITOR

One (1) Akron Brass single waterway 1250 GPM monitor made of lightweight Pyrolite® finish shall be installed at the platform. The monitor shall have a 3-inch flange waterway with a 2.5-inch AFB (FDNY) discharge outlet. The vertical rotation travel lock shall incorporate an off-center brake handle and full contact brake band within the swivel joint. All elbows shall have cast-in turning vanes. The monitor shall not exceed 30.3-inch (high) and 16.375-inch (wide), 29.33-inch (deep) and 50 lb. in weight.



The entire water system shall be capable of delivering 1250 gallons per minute at any angle of elevation, up to full extension. The monitor shall traverse 45 degrees above and below the horizontal.

The monitor shall be painted job color Red, to match the lower color scheme.

280. STACKED TIP SET

One (1) Akron Brass #24980017 Triple stacked tips Pyrolite "black" finish to be provided. They shall have a 2.5-inch NH slotted female inlet, machined protection rings on the discharge ends, 2-inch, 1-3/4-inch, and 1.5-inch recessed orifices for protection, and shall not exceed 15-1/2-inch in length or 2-1/2-inch lbs. in weight. Item(s) shall be shipped loose⁹.



281. STREAM SHAPER (DISCHARGE PIPE)

One (1) Akron Brass Model 3488, brushed aluminum Pyrolite® discharge pipe- stream shaper shall be installed. The shaper shall measure 2.5-inch x 2.5-inch x 10.5-inch (long) and shall be designed with built-in fins. Item shall be shipped loose¹⁰.





Southbury Vol. Fire Department



282. MONITOR FOG NOZZLE

One (1) Akron Brass Master Stream Turbomaster™ Model 1755 lightweight combination fog and straight stream constant gallonage nozzle with manual pattern control shall be provided. Item shall be shipped loose¹¹.



The nozzle shall have four (4) variable settings: 500, 750, 1000 and 1250 GPM ratings. The nozzle shall be constructed of lightweight Pyrolite®, have spinning teeth, a large rubber-like control ring, and a 2.5-inch NH swivel. It shall have variable pattern selection from straight stream to wide fog with continuous detents for positive positioning.

283. STREAM TRACKING LIGHT

One (1) Whelen PAR36 chrome plated Super-LED® floodlight(s), with 12 light emitting diodes shall be installed on the forward face of the platform near the bottom to allow the operator to observe the effect of the stream from the monitor nozzle. Stream tracking light shall be mounted on the left side of the platform.



284. PLATFORM STORAGE BRACKET

One (1) bolt-on bracket shall be installed on the platform for storage of the monitor fog nozzle with all the tips attached when not in use. The bracket shall have a poly insert installed between the bracket and the tip assembly to prevent metal to metal contact.

285. AERIAL TRACKING LIGHT(S)

Two (2) FRC SoBrite Model SRA-110-07C LED scene light(s) with CD-BS-2 Base Mount shall be installed on the base section of the aerial device to illuminate the aerial device in any position of operation. The lamp head shall have 22 ultra-bright white LEDs in a black housing to provide a trapezoid light beam pattern. It shall operate at 12-volts DC, draw 5 amps, and generate 7,000 lumens of light. The lamp head shall have a unique lens that focuses the trapezoid light beam to simultaneously provide a focused, concentrated beam and a longer, wider beam to illuminate more of the work area. The lamp head shall be installed with a Collins Dynamics CD-BS-2 light mounting base. The stainless 2-inch rounded-square base has four (4) pre-drilled holes for permanent attachment of an SRA-series light. Wiring shall extend from the rear of the lamp head.



Aerial tracking lights shall be mounted on both sides of the aerial device.

286. PLATFORM FLOODLIGHTS

There shall be three (3) Fire Research Spectra LED Model SPA850-K28 120V AC flat mount brow floodlights installed under the platform facing the front and sides. One light shall be on each side of the platform, the other on the front.



They shall be installed using the 1400 FRC mounting brackets which shall allow the lamps to be aimed forward or downward. Wiring shall extend from the rear of the lamp head.

The lamp head shall have 72 ultra-bright white LEDs, 60 for flood lighting and 12 to provide a spotlight beam pattern. It shall operate at 120-volts AC, draw 2.8-amps, and generate 28,000 lumens of light.



Southbury Vol. Fire Department



287. PLATFORM TELESCOPIC LIGHTS

Two (2) Fire Research SPECTRA MAX-S LED Model FCA542-B28 with Kwik-Raze side mount/pull up telescopic lights shall be installed on the outside of the platform, each side at the rear. In the nested/travel position, lights shall not be higher than the platform hand railings. Bracket offset and outer pole dimension shall be determined by the factory and is dependent on other aerial options selected by the Southbury Vol. Fire Department.



Each lamp head shall have 72 white LEDs. It shall operate at 120-volts AC and provide 28,000 lumens of light. The lamp head shall have a unique lens that directs flood lighting onto the work area and focuses the spotlight beam into the distance. It shall have the ability to select 36 LEDs to provide a spotlight beam, 36 LEDs for flood lighting, or 72 LEDs for a flood/spot pattern. The lamp head angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamp head shall be no more than 5 3/8-inch (high) by 14-inch (wide) by 3 3/4-inch (deep) and have a heat resistant handle. The lamp head and mounting arm shall be powder coated.

288. 12-VOLT SYSTEM ON PLATFORM

12-volt wiring shall be provided to the platform. The wiring shall run from a junction box mounted below the turntable through the collector ring assembly. The two (2) FRC telescopic pole(s) shall be connected to the hazard indicator in the cab. The hazard light shall be activated when the telescopic light is not in the nested/travel position. There shall be an on/off switch provided on the lamp head. The finish of the light head and bracket shall be white.

289. PLATFORM LOCATOR LIGHTS - SIDES

Two (2) Whelen Strip-Lite Plus Duo Surface Mount Super-LED Series Green / Red LED lights, Model PSJ02FCR, with chrome flanges, shall be installed on the exterior vertical surfaces of the platform to assist in locating the platform in inclement viewing conditions. There shall be one (1) light on each side of the platform.

Two (2) Whelen ION™ T-Series™ Green / Red duo LED lights, Model TLI2J, with chrome flanges shall be installed on the front; one (1) on the left side and one (1) on the right-side of the front.

290. PLATFORM LOCATOR LIGHTS - UNDERSIDE

There shall be two (2) Whelen ION™ T-Series™ Duo Green / Red LED lights, Model TLI2J, with chrome flanges, installed on the bottom of the platform to assist in locating the platform in inclement viewing conditions.

291. AERIAL LIGHT SWITCH(ES)

One (1) 12-volt aerial light(s) shall be switched at the turntable pedestal and the platform controls using momentary contact switches and a relay. This shall allow the lights to be turned on or off from either location as long as the light head on/off switch (if provided) is in the "on" position. Two (2) light(s) shall be activated with the light switch.

The lights shall also be activated/deactivated when the aerial ladder system is engaged/disengaged in the cab.

292. CABLE TRACK

A cable track shall be provided that contains Synflex hydraulic hose for the hydraulic leveling system. There shall also be electric cables for the intercom, 12-volt DC power, 12-volt DC controls, and 120V AC. The hoses and cables shall be continuous from the turntable to the platform with no reels. There shall be electrical connectors and hydraulic connections at the turntable and platform that allow for easy maintenance.



1 **293. PARAPET ATTACHMENT**

2 A pair of brackets shall be provided on the left side of the
3 platform, as looking from the turntable pedestal, to allow
4 usage of a roof ladder for parapet operations. Brackets shall
5 be installed on the lower walkway and to the upper platform
6 railing. A positive type of latch provided to lock the ladder in
7 place.



8
9 **294. LIFTING EYES – PLATFORM L BRACKET**

10 Two (2) lifting eyes made of 1-inch aluminum rod shall be
11 welded to the bottom of the platform “L” bracket. These eyes
12 shall each have a capacity of 500 lb. and a combined capacity
13 of 1000 lb. A plaque shall be installed stating the lifting
14 capacity of these eyes. Both lifting eyes must be used when
15 carrying an item to evenly distribute the weight on the
16 platform and aerial/boom section. Any weight picked up by
17 these lifting eyes must be calculated as part of the overall
18 platform weight capacity.

19
20 **295. AERIAL ESCAPE LADDER**

21 If bid design utilizes a boom type aerial structure, a means of emergency escape from the platform shall be provided. A
22 telescoping ladder with serrated rungs and folding handrails shall be mounted on top of the boom. The erected handrail
23 height shall be 12-inch. This ladder may be utilized for emergency transfer of manpower.

24
25 A ladder with 12-inch handrails shall be mounted in the rear center portion of the platform for access to the emergency
26 escape ladder.

27
28 **296. AERIAL PIKE POLES**

29 Provisions for two (2) pike poles shall be provided inboard of the CAT TRACK on the aerial escape ladder, shall consist of
30 short piece of pipe and two (2) PAC 1001 friction locks. Shall be inboard of the Attic Ladder box and utilize Stainless-steel
31 Hardware.

32
33 **297. AERIAL FOLDING LADDER**

34 A Duo-Safety 10' folding attic ladder shall be mounted on top of the Cat Track housing, in a mill finish box.
35 Box shall have a quick release trigger style latch, not lift, and turn.



36
37 **298. AERIAL TOWER SIGNS**

38 A painted sign (2) shall be mounted to each side of the aerial device and adequately braced against
39 vibration. Each sign shall be 15-inches (tall) and 144-inches (long). The center of the metal placards shall be
40 mounted approximately 130-inches from the pivot point of the aerial device. Tower mounted options may affect the
41 location of the sign.

42
43 Color of sign shall be job color Red, to match the lower color scheme.

44
45 **299. PLATFORM STOKES MOUNTING BRACKETS**

46 The platform shall be equipped with the necessary brackets and hardware to hold a Stokes basket centered over the
47 discharge gun. These brackets shall be removable and shall be normally stored in a compartment or on top of the truck.



Southbury Vol. Fire Department



1 The brackets shall be used at the fire or emergency scene and shall not be used for carrying the Stokes basket while in
2 transit.

300. PLATFORM 1-3/4" HOSE BIN

5 A hose bin designed to hold approximately twenty feet (20') of 1-3/4-inch attack hose shall be installed on the walkway
6 at the front of the platform centered underneath the monitor. The bin shall be a drop in design for the hose line and not
7 have a dropdown door. The bin shall have a DA finish and be constructed of smooth aluminum.

301. PLATFORM TOOLBOX

10 One (1) toolbox shall be provided to the rear of the platform on the right-side. The box shall be
11 constructed of aluminum tread plate and shall have a cover, shall hinge away from the platform on
12 the driver's side. There shall be four (4) drain holes at the bottom. The toolbox shall be large
13 enough to house a Cutter's Edge CE-2171-RS Rescue saw.





PUMP DESIGN & PERFORMANCE

302. PUMP CONTROL PANEL

All pump controls and gauges shall be positioned on the left side of the apparatus on a stainless-steel panel with color coded identification plates. The following controls and gauges shall be positioned on the control panel for convenient operation:

All discharge electronic controls	Electronic engine governor
Primer control	Tank fill control
Tank to pump control	Master discharge gauge
Master intake gauge	1/4-inch NPT Allen head pressure/vacuum test plugs
Auxiliary cooler control	Master drain control
Individual discharge pressure gauges	Water level indicator

303. MOBILE RADIO - PUMP

The second of two (2) mobile radio remote heads shall be mounted within easy reach of the pump operator. A speaker shall be mounted within earshot of the pump operator.



The pump panel, mobile radio remote head, and electronic controls shall be protected from the elements using a roll up door system.

304. MASTER GAUGES

Master intake and discharge gauges shall be analog 6-inch Hale Class1 gauges. A Hale SSD FLOWMINDER 12-VDC digital display showing total gallons per minute shall be mounted adjacent to the master discharge gauge.



The gauges shall accommodate pressures between 0 and 300 psi; be backlit with red LED; meets or exceed both ANSI and NFPA standards; and be corrosion and impact resistant from -40F to 150F.

305. OPERATOR STAND EXTERIOR FINISH

The stainless-steel pump panels, on both sides of vehicle and including the gauge panel and inspection doors, shall be coated with black LINE-X, which has a high resistance to abrasion and tearing. The color shall be black. Panels with a black vinyl cloth glued or laminated in some process to a metal backing surface shall not be acceptable.

The LINE-X material shall absorb impact without surface damage, protect underlying sheet metal from corrosion and shall be resistant to gasoline, diesel fuel, paints, bleaches, organic solvents and other cleaning agents and chemicals. In the unlikely event it is damaged, such as in an accident, it shall be repairable to a like new condition. It shall also be sound dampening and eliminate vibration. Its surface shall have a non-glare, granular texture, easily cleaned with common cleansing compounds.

306. LEFT SIDE RUNNING BOARDS

The left and right-side running board shall be made of 3/16-inch aluminum tread plate. Two (2) supports shall extend from the operator stand framing to securely support the running boards. The outer edges of the running boards shall be double flanged, i.e., formed down and in.

An air space shall be provided between the aluminum running board, the body and the operator stand to prevent moisture and debris from being trapped between these components.



Southbury Vol. Fire Department



307. PUMP MOUNT BRACKET

A mounting bracket system shall be used to mount a Waterous full torque, split shaft driven pump transmission in the mid-ship drive line location. The water pump will be mounted to the rear of the aerial superstructure and the forward rear axle. Appropriate drive shafts shall connect the two. The bracket material shall be stainless steel.

308. PUMP PANEL LABEL COLOR CHART

Location/Function	Placard Wording	Color
Forward Crosslay	"1-3/4-inch Crosslay"	Yellow
Rear Crosslay	"2-1/2-inch Crosslay"	Dk. Blue
Driver Side 2-1/2" Discharge	"Driver Side Discharge"	Lime Green
Pass. Side 2-1/2" Discharge	"Passenger Side Discharge"	Purple
Pass. Side 5-inch Discharge	"Pass. Side 5-Inch Discharge"	Magenta
Aerial Waterway Discharge	"Aerial Discharge"	Lt Red
Driver Side 5-Inch Intake to Pump	"Main 5-Inch Inlet"	Lt. Blue
Pass. Side 5-Inch Intake to Pump	"Pass. Side 5-Inch Inlet"	Lt. Blue
Driver Side 2-1/2" Intake	"Driver Side Aux. Inlet"	Lt. Blue
Pass. Side 2-1/2" Intake	"Pass. Side Aux. Inlet"	Lt. Blue
Pass. Side 5-Inch Intake to Aerial	"Direct to Aerial"	Lt. Red
Engine Cooler	"Engine Cooler"	Black
Pump Drain	"Pump Drain"	Black
Primer Drain	"Primer Drain"	Black
Tank to Pump	"Tank to Pump"	Black
Tank Refill	"Tank Fill"	Black

309. PUMP PANEL LIGHTS

The driver's side of the operator stand shall have three (3) TecNiq #E10 LED lights located beneath light shields to illuminate the pump panel controls and gauges. The officer's side shall have one (1) TecNiq #E10 LED light beneath the light shield.

310. PUMP PANEL LIGHT ACTIVATION

One (1) of the lights on the driver's side of the operator stand over the master gauge panel shall be activated when the pump is engaged.

311. PUMP PANEL LIGHT SWITCH

A switch on the pump panel shall activate the pump panel lights not already activated by either the pump engaging or the marker/ground lights & parking brake combination.

312. WATEROUS PUMP

Pump shall be a Waterous S100D single stage 2000 GPM mid-ship mounted centrifugal type, carefully designed in accordance with good modern practice. The pump shall undergo testing at the manufacturer's facility and certified by an independent testing organization. The pump shall be NFPA 1901 (current version) compliant and feature:

- Pump Body: Cast in ductile iron. Double stripping edge volute minimizes radial forces at all flow rates.
- Intake: 8-inch (200mm) Victaulic®
- Discharge: 5-inch ANSI flange
- Impeller: Bronze, balanced mechanically and hydraulically for vibration-free operation and flame-plated to assure longer life despite the presence of abrasives in the water supply.



Southbury Vol. Fire Department



- Impeller Shaft and Seal: Stainless-steel shaft and impeller nut with spring-loaded mechanical shaft seal. Self-adjusting mechanical seal eliminates leakage and routine maintenance.
- Wear Rings: Bronze labyrinth-type (reverse-flow) replaceable wear rings increase pump life and keep maintenance costs to a minimum.
- V-ring: Located on the impeller shaft between mechanical seal and transmission oil seal, the V-ring provides added protection by keeping water and foreign matter out of the bearings.
- Oil Seals: Single lip, spring-loaded design for lubrication seal and additional bearing protection from dirt and water.
- S100D Bearing Housing: Cast in Aluminum
- Bearings: Deep-groove, anti-friction ball bearings give support and proper alignment to the impeller shaft assembly. Bearings are oil-splash lubricated, completely separated from the water being pumped, and protected by a V-ring and oil seal.

313. WATEROUS C20 CHAIN DRIVE TRANSMISSION

The pump shall be driven by a C20 transmission featuring the following:

- Housing: High-strength aluminum.
- Shafts: Drive line shafts made from alloy steel forgings, hardened, and ground to size.
- Drive and Driven Sprockets: made of steel. All sprockets are hardened and have ground bores.
- Drive Chain: High-strength involute form chain.
- Bearings: bearings are oil-splash lubricated, completely separated from the water being pumped, and protected by a V-ring and oil seals.
- Passive Lubrication System that eliminates the need for a separate oil pump.
- Shift Mechanism: constant-mesh, two-position sliding collar that engages all teeth simultaneously.
- In-cab controlled shift. locking mechanism provides a positive lock in PUMP or ROAD position.

314. PUMP SHIFT

An air operated shift system shall be provided that allows the shift arm position to be changed by means of an in-cab mounted switch. It shall engage either the pump drive gear or the truck drive shaft gear. A three-position positive lock air shift shall be provided.

315. TRANSMISSION LOCK UP

The direct gear transmission lockup for the fire pump operation shall engage when the pump shift control in the cab is activated and the transmission shift is changed to "Drive"

316. INTAKE PRESSURE RELIEF VALVE

A 2-1/2-inch Task Force Tips intake relief valve shall be installed to the pump intake manifold. It shall have minimum pressure adjustment of 75 to 250 PSIG. The surplus water shall be plumbed to the underside of the truck away from the operator.

The relief valve shall be preset to 150 psi.

317. PRIMING PUMP

A Trident Model #31-1.7 air operated priming system shall be installed. The unit shall be of all brass and stainless-steel construction and designed for fire pumps of 1,250 GPM (4,600 LPM) or more. Due to corrosion exposure, no aluminum or vanes shall be used in the primer design. The primer shall be three-barrel design with 3/4-inch NPT connection to the fire pump.

A Class 1 quarter turn 1/4-inch drain valve shall be provided and labeled on the operator's panel.



Southbury Vol. Fire Department



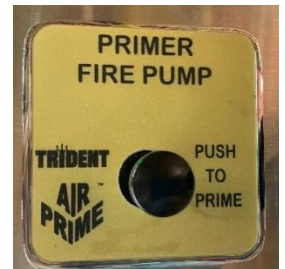
The primer shall be mounted above the pump impeller so that the priming line will automatically drain back to the pump. The primer shall also automatically drain when the panel control actuator is not in operation. The inlet side of the primer shall include a brass 'wye' type strainer with removable stainless-steel fine mesh strainer to prevent entry of debris into the primer body.

318. PRIMER AIR FLOW REQUIRMENTS

The primer shall require a minimum of 15.6 cubic foot per minute air compressor and shall be capable of meeting drafting requirements at high idle engine speed. The air supply shall be from a chassis supplied 'protected' air storage tank with a pressure protection valve. The air supply line shall have a pressure protection valve set between 70 to 80 PSIG.

319. PRIMER CONTROL

The primer control shall have a manually operated, panel mounted "push to prime" air valve, which will direct air pressure from the air brake storage tank to the primer body. To prevent freezing, no water shall flow to and from the panel control.



320. PRIMER POWER

To reduce the electrical power requirements on the fire apparatus the priming system shall be air powered. The system shall not require annual tear-down and maintenance, an electric motor or solenoid, electrical wiring, lubrication, belt drive, or clutch assembly.

321. PRESSURE GOVERNOR, MONITORING, and THROTTLE

Fire Research PumpBoss MAX pressure governor and monitor with dual sensors and LCD display shall be installed. The kit shall include a control module, intake pressure sensor, discharge pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 5 1/2-inch (high) by 10 1/2-inch (wide) by 2-inch (deep). The control knob shall be 2-inch in diameter with no mechanical stops, have a serrated grip, and a red idle push button in the center. It shall not extend more than 1 3/4-inch from the front of the control module. Inputs for monitored information shall be from a J1939 data bus or independent sensors. Outputs for engine control shall be on the J1939 data bus or engine specific wiring.



The following continuous displays shall be provided:

- Pump discharge; shown with four daylight bright LED digits more than 1/2-inch (high)
- Pump Intake; shown with four daylight bright LED digits more than 1/2-inch (high)
- Pressure / RPM setting; shown on a dot matrix message display.
- Pressure and RPM operating mode LEDs
- Throttle ready LED.
- Engine RPM; shown with four daylight bright LED digits more than 1/2-inch (high)
- Check engine and stop engine warning LEDs.
- Oil pressure; shown on a dual color (green/red) LED bar graph display.
- Engine coolant temperature; shown on a dual color (green/red) LED bar graph display.
- Transmission Temperature: shown on a dual color (green/red) LED bar graph display.
- Battery voltage; shown in dual color (red/green) LED bar graph display.
- The display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator.

All LED intensity shall be automatically adjusted for day and nighttime operation.

The program shall store the accumulated operating hours for the pump and engine to be displayed with the push of a button. It shall monitor inputs and support audible and visual warning alarms for the following conditions:



Southbury Vol. Fire Department



- High Battery Voltage
- Low Battery Voltage (Engine Off)
- Low Battery Voltage (Engine Running)
- High Transmission Temperature
- Low Engine Oil Pressure
- High Engine Coolant Temperature
- Out of Water (visual alarm only)
- No Engine Response (visual alarm only)

The program features shall be accessed via push buttons and a control knob located on the front of the control panel. There shall be a USB port located at the rear of the control module to upload future firmware enhancements.

Inputs to the control panel from the pump discharge and intake pressure sensors shall be electrical. The discharge pressure display shall show pressures from 0 to 600 PSI. The intake pressure display shall show pressures from -30 in. Hg to 600 PSI.

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

The pressure governor, monitoring and master pressure display shall be programmed to interface with a specific engine.

322. AUXILIARY COOLING SYSTEM

A supplementary heat exchange cooling system shall be installed to permit use of water from the discharge side of the fire pump to reduce the temperature of the antifreeze solution circulating through the engine cooling system.

323. PUMP PIPING –STAINLESS STEEL, MANIFOLD AND HIGH-PRESSURE HOSE

All suction and discharge lines shall use schedule 10 stainless-steel pipe or heavy-duty pressure/vacuum hose with stainless-steel end fittings. Sweat soldered copper tubing is not acceptable. Where vibration or chassis flexing may damage or loosen piping, the pipe shall be equipped with Victaulic or rubber couplings. All discharge and gated inlet lines to drain through individual drain valves. All individual drain lines are to be extended to drain below chassis frame.

A stainless-steel discharge manifold shall be used to feed the discharges, 2-1/2-inch or less, as required by the plumbing layout.

All discharge caps on the apparatus 1-1/2-inch or larger shall be vented (except for the aerial rear inlet/outlet).

All threaded fittings shall be sealed with a heavy-duty Teflon anaerobic pipe sealant. It shall be in a liquid form with a consistency like grease. Teflon tape shall not be acceptable. It shall be designed to prevent corrosion between the mating surfaces and to allow for easy disassembly of the joints if necessary. PermaBond shall manufacture with a trade name of Permalok.

All water carrying pressure gauge lines are to be of flexible tubing to prevent breakage from vibration. All suction inlets and discharge outlets shall be equipped with National Standard Threads (NST).



Southbury Vol. Fire Department



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The entire pump and plumbing system shall undergo testing in accordance with the current version of NFPA 1901.

324. MASTER DRAIN - FIRE PUMP

A master drain valve shall be provided and installed. The drain assembly shall be constructed of brass and stainless-steel with individually sealed ports for low point drainage of the fire pump and auxiliary devices.

325. DRAINS

A Class 1 quarter turn 3/4-inch ball drain or bleed off valve shall be provided for each gated hydrant inlet or discharge outlet. The valve shall be mounted in an accessible location. The valve controls shall be properly labeled and colored using the corresponding pump panel label chart. The water discharged from the valve lines shall be routed so it is exhausted below the chassis frame rails.

326. TANK TO PUMP PLUMBING

The tank to pump valve shall be a 3-inch inline, full flow valve installed between the water tank and the pump. The valve shall be a quarter turn ball type, drop out design and constructed of brass.

It shall be 12-volt electric operated with the control switch on the pump panel. A check valve shall be installed between the pump and the valve to prevent water from flowing back into the tank.

327. VALVE CONTROLS AND DISPLAY

Controls for all inlets and outlets shall be electric design, unless otherwise stated at the inlet or discharge option. All inlet, tank to pump, and tank fill valve controllers shall utilize an Akron Model 9323 Navigator Pro Valve Controller. This controller shall incorporate a full color LCD display that will include auto dimming capability that will sense ambient light and adjust brightness automatically. All Discharge outlet valve control displays shall utilize an Akron Model 9325 Navigation Pro Valve Controller that will display discharge pressure in PSI.



ALL valve controls shall be properly labeled and colored using the corresponding pump panel label chart.

328. WATER CONTROL VALVES

All direct and in-line valves shall be Akron Model 8600 or 8800 heavy duty swing-out brass valves designed for operating pressures to 250 PSI. Akron 8000 series valves have a 316 stainless-steel ball turning in self-adjusting ball seats and shall create a positive seal to hold pressure or vacuum in both directions without the use of high maintenance O-rings.

329. EMERGENCY AIR HORN BUTTON

A red momentary push button shall be provided on the operator's pump panel to activate the air horn(s). It shall be labeled "AIR HORN", as shown.



330. WATER TANK LEVEL GAUGE - MASTER

The apparatus shall be equipped with a Class 1 IntelliTank tank level gauge for indicating water level. The tank level gauge shall indicate the liquid level on a 4-light LED display and show increments of 1/8 of a tank.



The Class 1 IntelliTank tank level gauge utilizes a pressure transducer that mounts on the outside of the tank for sensing water or foam levels. No probes are required for the tank.

The lights shall be interlocked with the parking brake to operate only with the parking brake set.



Southbury Vol. Fire Department



331. MASTER PUMP INTAKES

A 6-inch pump manifold inlet shall be provided on each side of the vehicle. Removable die cast zinc strainers shall be provided in each side inlet to provide cathodic protection for the pump and thus reduce corrosion in the pump. Each inlet shall extend past the pump panel and shall allow a minimum of 8-inch clearance to the outside edge of the running board.

332. PUMP MASTER INTAKE VALVE(S)

Two (12) AKRON Electric Master Intake Valve(s) shall be provided. The full flow butterfly type valve shall be operated by a 12V electric actuator. The control shall be installed on the primary pump operator's panel. A Task Force Tips pressure relief valve shall be provided that is field adjustable from 75 to 250 PSI. The pressure relief valve shall provide overpressure protection for the suction hose even when the intake valve is closed. The outlet of the pressure relief valve shall discharge flow away from the pump operator's position.

The master intake valve and its control shall both be located on both sides.

Two (2) Task Force Tips 6-4 NH; 5-inch STORZ x Long Handle x 6" NST/NH 30-degree elbow shall be provided. Items shall be shipped loose¹².



333. AUXILIARY HYDRANT INLET(S)

Two (2) 2-1/2-inch gated hydrant inlets shall be furnished. One on the left side of the pump enclosure, one on the passenger side. The valves shall be recessed behind panels and shall be provided with an electric valve control. The valves shall be of the drop out type. Inlets shall terminate with a chrome 2-1/2-inch NST female swivel adapter and screen.



334. AUXILIARY INLET PLUG(S)

Two (2) Elkhart Brass Model 311; 2-1/2-inch chrome plated NST plugs with chains shall be provided. Items will be shipped loose¹³.



335. TANK FILL

There shall be a 2-inch pump to tank fill line installed with a 2-inch inline valve. It shall have a 2-inch electric full flow quarter turn valve.

336. CROSSLAY DISCHARGES

One (1) 1-1/2-inch discharge and one (1) 2-1/2-inch discharge shall terminate in the crosslay hose beds. Each shall be plumbed with 2-inch; high pressure hose and/or piping and a 2-inch ball type electric valve, terminating with one (1) 1.5-inch NST 90-degree swivel, and one (1) 2.5-inch NST 90-degree swivel outlet. The valve control for each crosslay discharge shall be installed on the pump operator's panel.

337. AUXILIARY DISCHARGE(S) LEFT RIGHT

Two (2) 2-1/2-inch discharge(s), each with a pump mounted, quarter turn ball electric valve shall be positioned one each on the left and right-side panels. The outlets shall be operated by 2-1/2-inch drop-out type electric valves with controls at the pump panel.

338. AUXILIARY DISCHARGE ADAPTER(S) LEFT RIGHT

Two (2) 2-1/2-inch FNPT x 2.5-inch MNST chrome plated adapter(s) shall be provided for the 2.5-inch discharge(s).



339. AUXILIARY DISCHARGE ELBOW(S) LEFT RIGHT

Two (2) 2-1/2-inch FNST x 2.5-inch MNST 45-degree chrome plated elbow(s) shall be provided for the 2-1/2-inch discharge(s). Items shall be shipped loose¹⁴.





Southbury Vol. Fire Department



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340. AUXILIARY DISCHARGE(S) REDUCERS LEFT RIGHT

Two (2) Elkhart Brass Model A-327 Female to Male Chrome Hose Adapter 2-1/2 to 1-1/2-inch reducers shall be provided. Items shall be shipped loose¹⁵.



341. AUXILIARY DISCHARGE(S) CAPS & CHAINS LEFT RIGHT

Two (2) Elkhart Brass Model 310, 1-1/2-inch NST chrome plated caps with retaining chains shall be provided for the left and right-side auxiliary gated discharge(s). Items shall be shipped loose¹⁶.



342. PASS. SIDE LDH DISCHARGE ADAPTER(S)

One (1) 4-inch Female NPT x 5-inch Male NST adapter shall be provided for the 4-inch passenger side discharge. Item shall be shipped loose¹⁷.



343. PASS. SIDE LDH DISCHARGE RIGHT

There shall be one (1) 4-inch discharge to the right-side pump panel. The outlet shall be piped from the discharge side of the pump through a 4-inch electric controlled valve with 4-inch piping. The valve shall be pump panel controlled. An open/closed indicator light module shall be provided on the pump panel.

344. PASS. SIDE LDH DISCHARGE ELBOW RIGHT

One (1) 4-inch FNST x 5-inch Storz 30-degree hard anodized aluminum elbow shall be provided for the 4-inch right-side discharge. Item shall be shipped loose¹⁸.



345. LDH STORZ CAP(S) & CHAIN(S)

Four (4) 5-inch Storz cap(s) and retaining chain(s) shall be provided for the right-side LDH discharge, and the 2 LDH inlets. The Storz caps shall have a hard anodized finish. Items shall be shipped loose¹⁹.



346. PLATFORM WATERWAY 5-INCH INLET [REDACTED]

The apparatus shall be provided with a 5-inch waterway inlet near the left side operator's panel.

The inlet shall be constructed of schedule 10 stainless-steel piping and shall enter the waterway inlet manifold to provide direct flow to the platform waterway. Galvanized or black iron (steel) pipe is not an acceptable alternative. The inlet shall be a welded fabrication. Threaded pipe and elbows shall not be used in the design of the inlet.

There shall be a 1-1/2-inch drain valve provided. The drain shall be recessed behind the left side operator's pump panel with the control extending through the panel and located along the bottom. The drain control shall be properly labeled. The water discharged from the drain shall be routed so it drains below the chassis frame rails.

A Task Force Tips 2-1/2-inch intake relief valve shall be permanently installed in the inlet piping. It shall have minimum pressure adjustment of 75 to 250 PSIG. The surplus water shall be plumbed to the underside of the truck away from components and the operator.

347. PLATFORM WATERWAY INLET VALVE [REDACTED]

One (1) Akron Revolution Intake Valve (Swivel Elbow Inlet); 5-inch STORZ x 5" NH 30-degree elbow shall be provided. Item shall be shipped loose²⁰.



348. PLATFORM WATERWAY PUMP VALVE [REDACTED]

There shall be one (1) 4-inch discharge from the pump to the aerial waterway. The outlet shall be piped from the discharge side of the pump through a 4-inch electric controlled valve with 5-inch piping to the aerial waterway. The valve shall be controlled at the pump panel.



Southbury Vol. Fire Department



349. WATER TANK

The tank shall be manufactured by ProPoly of America (PPA). The tank shall have a capacity of 300 U.S. Gallons. The tank manufacturer shall mark the tank and furnish notice that indicates proof of warranty. The purpose of the notice is to inform department personnel who store, stock, or use the tank that the unit is under warranty. There shall be a 3-inch diameter threaded plug located in the bottom of the booster tank sump to provide a drain when cleaning and flushing tank of foreign substances.

The tank shall be constructed from ½-inch thick sheet stock material that shall be a non-corrosive stress relieved thermoplastic and U. V. stabilized for maximum protection. The tank shall be of a special configuration and is so designed to be completely independent of the body and compartments. All joints and seams shall be welded and evaluated for maximum strength and integrity. The top of the tank will be fitted with locations for removable lifting eyes designed with a 3 to 1 safety factor to allow for easy removal. All transverse and longitudinal swash partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions interlock with one another and are welded to each other as well as to the walls of the tank. There shall be a 3/4-inch diameter relief hole provided in the overflow pipe at a point approximately 2-inch above the tank cover line to reduce head pressure.

350. WATER TANK FILL TOWER

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of ½-inch sheet stock material and shall be a minimum dimension of 8-inch x 8-inch outer perimeter (Standard size to be 12-inch x 12-inch). The fill tower shall be in the left front corner of the tank unless otherwise specified by the purchaser. The tower shall have a ¼-inch thick removable screen and a hinged-type cover.

Inside the fill tower shall be a combination vent overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I.D. of 4-inch that is designed to run through the tank and shall be piped behind the rear wheels to maximize traction.

The tank fill cover shall be constructed of ½-inch thick sheet stock material that is U. V. stabilized. A minimum of two lifting dowels shall be drilled and tapped to accommodate the lifting eyes.

In accordance with NFPA 1901 chapter 15.7.1.6, the perimeter of the aluminum tread plate floor over the water tank shall be marked with a one-inch-wide safety yellow line to delineate the designated standing or walking surface area.

351. WATER TANK SUMP

There shall be one (1) sump standard per tank. The sump shall be constructed of ½-inch thick sheet stock material and be in the bottom of the tank to the front. On all tanks that require a front suction, a 3-inch schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3-inch NPT threaded outlet on the bottom for a drain plug. This shall be used as a combination clean-out and drain. The tank shall have an anti-swirl plate located approximately 2-inch to 2 ½-inch above the sump.

352. WATER TANK OUTLETS

There shall be two (2) standard tank outlets: one for tank-to-pump suction line which shall be a minimum of 3-inch coupling; one for a tank fill line, which shall be a minimum of 1-inch pipe, NPT coupling. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank and be capable of withstanding sustained fill rates of up to 300 GPM.

353. WATER TANK MOUNTING

The tank shall rest on the aerial torque box structure and will not allow for more than 530-square inches of unsupported area under the tank floor. The tank will be isolated from the torque box structure using durable rubber strips with a



Southbury Vol. Fire Department



1 minimum thickness and width dimension of 1/4-inch x 2-inch and a minimum Rockwell Hardness of 60 durometer. All
2 mounting hardware, straps, and supports shall be constructed of stainless steel.

3
4 Additionally, the tank will be captured both front and rear as well as side to side to prevent the tank from shifting during
5 vehicle operation. Although the tank is designed on a free-floating suspension principle, the tank will have adequate
6 hold down restraints to minimize movement during vehicle operation. These restraints will be constructed of carbon
7 steel having minimum angular dimensions of 3-inch x 3-inch x 1/4-inch and shall be approximately 6-inch to 12-inch
8 (long). These brackets will incorporate a durable rubber isolating pad with a minimum thickness of 1/4-inch affixed on
9 the underside of the angle. The angle will be bolted to the body sidewalls of the vehicle while extending down to rest on
10 the top outside edge of the upper sidewall of the tank. Equipment such as generators, portable pumps, etc. will not be
11 mounted directly to the tank top.

12
13 Each exposed side of the water tank over the front tandem axle area shall be covered with a metal panel painted to
14 match the primary body color. The front exterior face of the crosslay will be covered with an ATP panel.

15 16 **354. CROSSLAY HOSE BED(S)**

17 There shall be two (2) crosslay hose beds provided at the top of the body, forward of the high side compartment. One
18 bed shall have the capacity to carry a minimum of 200 feet of pre-connected 1-3/4-inch double jacketed hose. The other
19 bed shall have the capacity to carry a minimum of 200 feet of 2-1/2-inch double-jacketed hose. The hose bed will be an
20 integral part of the water tank design. The construction material will be minimum 1/2-inch thick sheet stock material that
21 shall be a non-corrosive stress relieved thermoplastic and U.V. stabilized for maximum protection. The interior of the
22 hose beds shall be smooth and free from all sharp projections which might damage hose.

23
24 Feed pipes shall swivel to allow left or right access for deployed hose.

25
26 The bottom of the crosslay hose beds shall be provided with a grooved surface bed for drainage & ventilation of the
27 stored hose.

28 Black Linex shall be applied to the panel on the front exterior face of the crosslay bed.

29 30 **355. CROSSLAYS HOSE BED COVER**

31 A hose bed cover made from 20 oz. per square yard polyester shall be installed over the crosslay hose bed. The cover
32 shall be coated with a urethane topcoat (vinyl). This cover shall secure the hose from unintentional deployment while
33 the vehicle is underway in normal operations. The vinyl hose bed cover shall be black in color. Color number of the vinyl
34 is 705-1075. The hose bed cover shall be fastened with bungee cords.



1 **ELECTRICAL SYSTEMS**
2

3 **356. GENERAL 12-VOLT ELECTRICAL WIRING REQUIREMENTS**

4 The apparatus shall be equipped with a heavy-duty 12-volt electrical system. All 12-volt electrical equipment installed by
5 the apparatus manufacturer shall conform to modern automotive practices. All electrical wiring and components
6 installed in the apparatus shall be suitable for use in severe duty emergency vehicle applications.
7

8 **357. GENERAL WIRING AND WIRE HARNESS CONSTRUCTION**

9 Unless otherwise specified by the component supplier, all insulated wire and cable shall conform to SAE J1127 *Low-*
10 *voltage Battery Cable* type SGX or STX, or SAE J1128 *Low-voltage Primary Cable* type SXL, GXL, or TXL.
11

12 Circuit feeder wires shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 percent of the
13 maximum current for which the circuit is protected.
14

15 Conductor materials and stranding, other than copper, shall be permitted if all applicable requirements for physical,
16 electrical, and environmental conditions are met as dictated by the end application.
17

18 The overall covering of conductors shall be moisture-resistant loom or braid that has a minimum continuous rating of
19 194°F (90°C) except where good engineering practice dictates special consideration for loom installations exposed to
20 higher temperatures.
21

22 The overall covering of jacketed cables shall be moisture resistant and have a minimum continuous temperature rating
23 of 194°F (90°C) except where good engineering practice dictates special consideration for cable installations exposed to
24 higher temperatures.
25

26 **358. CIRCUIT IDENTIFICATION**

27 All wiring shall be uniquely identified by a circuit number and color coding. The identification shall be referenced on a
28 wiring diagram. Wires less than 8 AWG shall be permanently identified at least every 2.0 inches (50.8 mm) by a circuit
29 and function code. Cables equal to or larger than 8 AWG and wires included in jacketed cables shall be permanently
30 identified by circuit number at all terminations.
31

32 **359. WIRING CONNECTIONS**

33 All wiring connections and terminations shall use a method that provides a positive mechanical and electrical
34 connection. The wiring connections and terminations shall be installed in accordance with the device manufacturer's
35 instructions. Secondary locks shall be utilized on all connectors that are secondary lock capable.
36

37 Exterior exposed wire connectors shall be environmentally sealed to withstand elements such as temperature extremes,
38 moisture, and automotive fluids. Seal plugs shall be installed in all unused sealed connector cavities.
39

40 All ungrounded electrical terminals shall have covers or be in enclosures to protect against corrosion, excessive heat,
41 excessive vibration, physical damage, liquid contaminants, dust, and other environmental factors.
42

43 Wiring splices shall be crimp-type, molded, or sonic weld type. Adhesive lined heat shrink tubing shall be used to seal
44 and insulate splice joints.
45

46 **360. WIRE AND CABLE ROUTING**

47 Wiring routed through holes in sheet metal or castings shall have edges protected by an appropriately sized grommet.
48



Southbury Vol. Fire Department



1 Wiring shall be routed to avoid metal edges, screws, trim fasteners, and abrasive surfaces. When such routings are not
2 possible, protective devices (shields, caps, etc.) shall be used to protect the wires. When wires must cross a metal edge
3 the edge shall be covered with a protective shield.

4
5 Wiring shall be routed to provide at least 3 inches (76.2 mm) clearance to moving parts, unless positively fastened or
6 protected by a conduit.

7
8 Wire routings should avoid areas where temperatures exceed 180° F (82.2° C) and a minimum clearance of 6 inches
9 (152.4 mm) shall be maintained from exhaust system components. Where compliance with this requirement is not
10 possible, high-temperature insulation and heat shields shall be utilized.

11
12 When wiring is routed between two members where relative motion can occur the wiring shall be secured to each
13 member, with enough wire slack to allow flexing without damage to the wires.

14
15 Wiring to all circuit components (switches, relays, etc.) in exposed locations shall provide a drip loop to prevent moisture
16 from being conducted into the device via the wire connection.

17
18 Routing wires into areas exposed to wheel wash shall be avoided if possible. When such routings cannot be avoided,
19 adequate clipping or protective shields shall protect the wires from stone and ice damage.

20
21 Wiring shall be secured in its intended location with appropriately sized bolt-on clips and nylon wire ties.

22
23 Electrical components designed to be removed for maintenance shall include a sufficient length of wire to allow the
24 component to be pulled away from the mounting area for inspection and service work.

25
26 Bulkhead type connectors or sealed fittings shall be used to prevent the entry of liquid contaminants into weather tight
27 enclosures.

28 29 **361. SPARE WIRES**

30 Wiring harnesses from/to major power and signal distribution areas of the apparatus shall include spare wires for future
31 expansion of the system.

32 33 **362. ELECTRICAL SYSTEM COMPONENTS**

34 Serviceable components shall be readily accessible. Switches, relays, terminals, and connectors shall have a DC rating of
35 125% of the maximum current for which the circuit is protected.

36
37 A distributed power and signal system shall be utilized on the apparatus to minimize power supply-voltage drops. Power
38 and signal distribution areas in the cab shall be concentrated in five (5) areas.

39
40 A lower cab power and signal distribution center shall be positioned in the center forward portion of the cab "dash". It
41 shall be hinged and opened by unlocking two (2) top mounted, double hinged, lift and pull latches. This area shall
42 contain relays and circuit breakers installed in a logical and serviceable fashion.

43
44 An additional lower cab power and signal distribution center shall be positioned below the officer's dash behind the kick
45 plate.

46
47 An upper power and signal distribution area shall be positioned in the forward portion of the cab ceiling, above the
48 engine tunnel. Components in this area shall be permanently labeled and easily accessible by opening a hinged cover.

49
50 A power and signal distribution area shall be positioned in the pump module, if applicable. Components in this area shall



Southbury Vol. Fire Department



1 be permanently labeled and easily accessible.

2
3 A power and signal distribution area shall be positioned on the front of the forward body compartments. Components in
4 these areas shall be permanently labeled and easily accessible.

5
6 All electrical components or devices installed in an exposed area on the outside of the cab or body shall be mounted in
7 such a manner, or protected by a gasket, caulking or other means, so that moisture shall not accumulate in it.

9 **363. WIRE CORROSION PROTECTION**

10 Externally exposed, non-plug type, electrical connections shall be given a hand applied or sprayed application of an
11 industrial standard insulation coating with a minimum rating of 2100-volts per mil thickness. Insulation shall protect the
12 connection from water induced electrical corrosion and accidental short circuiting. Should the connection be loosened
13 or removed during the manufacturing process another coating shall be applied after it has been refastened or replaced.

15 **364. RECEPTACLES - WINCH**

16 12-volt weatherproof plug-in receptacles shall be provided next to each of the three (3) receiver tubes.

18 **365. BATTERY POWER BUSS**

19 All positive cables from the batteries shall be connected directly to a battery positive buss bar located as close to the
20 batteries as practical. The alternator shall be wired directly to the battery positive buss bar through the ammeter shunt
21 if one is provided.

23 **366. ENGINE STARTER AND INTERLOCK CIRCUITS**

24 The starter solenoid(s) shall be connected directly to the battery positive buss bar. An interlock shall be provided to
25 prevent the operator from engaging the starter when the engine is running.

27 **367. BATTERY GROUND BUSS AND SINGLE POINT GROUND SYSTEM**

28 All negative (ground) cables from the batteries shall be connected directly to a battery negative buss bar located as close
29 to the batteries as practical. Appropriately sized ground feeder cables shall be utilized to provide a low impedance
30 ground path to the negative buss bar for all electrical devices on the apparatus.

32 **368. APPARATUS GROUND BONDING**

33 The battery negative buss bar shall be connected to the chassis frame. The cab, pump enclosure (if furnished), and body
34 structure shall be electrically bonded to the vehicle frame with braided copper grounding straps.

36 **369. EMI/RFI PROTECTION**

37 The apparatus electrical system and related devices shall have the ability to function in the severe electromagnetic
38 environment typical of fire ground operations.

40 **370. EMI/RFI EMISSIONS**

41 State-of-the-art electrical system design and components shall be utilized to ensure the suppression of radiated and
42 conducted EMI (electromagnetic interference) and RFI (radio frequency interference) emissions that may cause
43 communication and navigation radio-reception interference. The electrical system and related components shall comply
44 with the applicable sections of J551/1 *Performance Levels and Methods of Measurement of Electromagnetic*
45 *Compatibility of Vehicles, Boats (up to 15 m), and Machines (16.6 Hz to 18 GHz)*

47 **371. EMI/RFI SUSCEPTIBILITY**

48 The apparatus electrical system shall incorporate immune circuit designs, filtering, shielding and twisted-pair wiring to
49 control EMI/RFI susceptibility. Particular attention shall be given to harness and cable routing to minimize the potential



Southbury Vol. Fire Department



for conducted and radiated signal susceptibility.

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

372. ELECTRICAL SYSTEM PERFORMANCE TESTING

An operational test shall be conducted to ensure that all installed electrical equipment is properly connected and is in working order. The apparatus alternator shall be evaluated with the total continuous electrical load applied and engine running up to the engine manufacturer's governed speed for a minimum of 2 hours. Additionally, all warning lights shall be run continuously during the three (3) hour NFPA pump certification test (or at another time for not less than three (3) hours). Activation of the load management system (if furnished) shall be permitted during this test. An alarm sounded by excessive battery discharge, as detected by the low-voltage warning system, or a system-voltage of less than 11.8 V dc at the battery for more than 120 seconds, shall be considered a test failure.

373. CAB DASH AND INSTRUMENTS

A non-glare instrument panel, custom designed to accommodate the appropriate functions, shall be provided. Illumination shall be provided for controls, switches, instruction plates, gauges, and instruments necessary for the operation of the apparatus. The cab dash shall be forward slanted and constructed of aluminum. Rocker switches that have integral lights shall be as follows when applicable: red indicator lights shall be provided for warning light and engine/mechanical functions, green indicator lights shall be provided for scene and auxiliary lighting and general functions; selection shall be at the manufacturer's discretion.

A system shall be provided that interacts with the engine electronics and eliminates redundant senders and switches. The electronic engine gauges shall receive information on the SAE J1939 data link to improve reliability and gauge accuracy. Connectors shall be utilized for ease of service. The dial face shall be black with white lettering. The primary letters shall be in Imperial with the secondary, smaller letters in metric. The dial shall have international non-language symbols for the gauge function (except speedometer). Gauges shall have illumination with a monochrome LCD display located on the speedometer gauge. They shall also have a 250-degree dial sweep for greater definition of scale. SAE J1939 Faults and Warnings shall be displayed on the LED display.

374. DRIVER'S INSTRUMENTATION

At a minimum, the following individually mounted gauges shall be provided: (all-inclusive gauge clusters not allowed, no exceptions)

Main Gauges

- 3-inch Speedometer: 0-85 mph with built-in LCD display
- Speedometer Mode Switch: Allows operator to select menu items in the display screen
- Speedometer Up Switch: Allows operator to scroll up through display menu items
- Speedometer Down Switch: Allows operator to scroll down through display menu items
- 3-inch Tachometer: 0-4000 rpm

Satellite Gauges

- 2-inch Fuel Level: Empty → Full; with low level warning indicator
- 2-inch-voltmeter: 10-16 VDC
- 2-inch Coolant Temperature: 100-240 Degrees Fahrenheit
- 2: Engine Oil Pressure: 0-80 psi
- 2-inch Transmission Oil Temp: 100-320 Degrees Fahrenheit



Southbury Vol. Fire Department



- 2-inch Front Air Pressure: 0-150 psi
- 2-inch Rear Air Pressure: 0-150 psi
- 2-inch DEF Level: Empty → Full; with low level warning indicator

375. DRIVER'S INDICATOR LIGHT MODULE

At a minimum, the following indicators shall be mounted in a removable modular panel in front of the steering column. The indicators shall be identified with universal ISO 2575 symbols where applicable and visible to the driver while seated. All applicable indicators in the modular panel shall automatically illuminate for 1 second upon activation of the ignition switch to verify operation:

- Battery Switch "On" green indicator light
- Ignition Switch "On" indicator (manufacturer's logo)
- Check Transmission amber indicator light
- Check Engine amber indicator light
- Stop Engine (Engine Warning) red indicator light
- High Exhaust Temperature (HEST) amber indicator light (if applicable)
- Diesel Particulate Filter Regeneration (DPF) amber indicator light (if applicable)
- Wait-to-Start amber indicator light (if applicable)
- Malfunction Indicator Light (MIL) amber indicator light (if applicable)
- ABS warning amber indicator light
- ATC/ESC activated amber indicator light
- Spring (Parking) Brake "On" red indicator light
- High Beam "On" blue indicator light
- Low air pressure red indicator light
- Left Turn signal green indicator light
- Right Turn signal green indicator light
- General Warning red indicator light (if applicable)
- DEF Level Indicator Light

376. AUDIBLE CAB ALARMS

Audible alarms shall be provided in the cab to alert the operator of conditions that require attention. The alarm device(s) shall be audible in the driving compartment and feature an adjustable volume control.

An intermittent audible tone shall sound when the following conditions are present, and the parking brake is disengaged:

- Active Hazard Warning (Do Not Move Apparatus; Door Open, Tower Raised, Ladder Rack Down, etc.)
- Seat Belt Warning

A steady audible tone shall sound when the following conditions are present:

- Stop Engine (includes High Engine Temperature and Low Engine Oil Pressure)
- Low voltage
- Engine Air Filter Restriction
- Tiller Cab Operator Not in Position (if applicable)

377. DRIVER'S AND OFFICER'S CONTROLS

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



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- 1 ▪ Ignition switch with green indicator light
- 2 ▪ Engine Start switch
- 3 ▪ Headlight / Tail-Marker-ID light switch
- 4 ▪ Instrument Panel Dimmer control rheostat

5
6 The following controls shall be stalk mounted on the steering column and identified and visible to the driver while
7 seated:

- 8 ▪ Turn Signal Control and 4-Way Hazard Warning switch
- 9 ▪ High-beam headlight switch
- 10 ▪ Windshield wiper control switch
- 11 ▪ Windshield washer control switch

12
13 The following controls shall be identified and accessible to the driver while seated:

- 14 ▪ Parking (Spring) Brake Control
- 15 ▪ High Idle control switch
- 16 ▪ Other controls (as defined elsewhere in this specification)

17
18 The following controls shall be identified and accessible to both the driver and officer while seated. Controls shall be
19 identified and illuminated for night driving.

- 20 • HVAC control panel
- 21 • Other controls (as defined elsewhere in this specification)

22 23 **378. EMERGENCY & WORK LIGHT SWITCH PANEL - DRIVER'S SIDE**

24 All emergency light and work area lighting control switches shall be mounted in a removable panel located in the
25 overhead position on the driver's side of the cab. The light switches shall be "rocker" type with an internal indicator light
26 (where applicable) to show when the switch is energized. All switches shall be properly identified by an illuminated label
27 for night driving.

28
29 A master warning light switch shall be provided for emergency lighting.

30
31 A momentary clear warning light switch shall be provided for clear emergency lighting control that shall default on. Clear
32 warning shall be a Front Clear Switch.

33
34 Work lights are defined as ground, step, rear pick up, hose bed or dunnage area, if on the apparatus and specified.

35
36 Individual switches shall be provided for each function per approved dash layout. In addition, the officer's side shall also
37 be inclusive of an emergency warning light switch.

38 39 **379. DOOR AJAR/HAZARD INDICATOR LIGHT**

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

- 42 ▪ Any passenger or equipment compartment door is open.
- 43 ▪ Any ladder or equipment rack is not in the stowed position.
- 44 ▪ Stabilizer system is not in its stowed position.
- 45 ▪ Powered light tower is extended.
- 46 ▪ Any other device permanently attached to the apparatus is open, extended, or deployed in a manner that
47 is likely to cause damage to the apparatus if the apparatus is moved.

48
49
50 The hazard warning light shall be identified with a label that reads: ***"Do Not Move Apparatus When Light Is On"*** The



Southbury Vol. Fire Department



light shall be positioned on the ceiling between the driver and the officer.

380. DOOR AJAR/HAZARD WARNING BUZZER

There shall be an audible alarm on the cab dash that shall sound whenever the door ajar/hazard warning indicator is activated. Alarm shall be wired to the parking brake control and work in conjunction with the hazard warning light.

381. SEATBELT WARNINGS

A warning light shall illuminate automatically whenever an occupied seat does not have a seatbelt fastened. The light shall be positioned on the upper dash in a location that is visible to both the driver and the officer.

The hazard warning light shall be identified with a label that reads, "**WARNING FASTEN SEATBELTS**"



A second, rear warning light shall be in full view of the rear crew seats that illuminates with the front light. It shall be accompanied with a label that reads: "**BUCKLE UP**"

A separate and distinct audible alarm shall be used for seatbelt warning. The alarm shall sound if any of the seat belts are not properly closed, and the vehicle is going 5 mph or greater. The sound shall be different from all other audible alarms in the cab.

382. DIGITAL CLOCK

A 24-hour real-time digital clock shall be visible to the driver while seated.

383. ELECTRICAL WIRING REQUIREMENTS - INTELEX™ PLUS

The apparatus shall be equipped with an INTELEX™ PLUS management system for control of the electrical system devices, where applicable. The following shall display on the information display home screen:

**SOUTHBURY FIRE DEPARTMENT
TOWER 1 LADDER**

384. CIRCUIT PROTECTION

Circuit protection devices shall be utilized to protect each electrical circuit. All circuit protection devices shall be sized according to 125% of the anticipated load to prevent wire and component damage when subjected to extreme current overload.

385. SOLID STATE CIRCUIT PROTECTION

Intelex power distribution modules shall utilize solid state output channels and feature fully protected high-side drivers (+12V) to protect wiring. High-side drivers shall provide overload protection, current limitation, transient protection, and replicate the function of an automatic reset circuit breaker. If output current exceeds the rated amperage, the output shall automatically turn off. After 30 seconds, the module shall attempt to re-energize the load. If the output is still overloaded, it shall remain off until the power is cycled. In the event of a communications loss with the vehicle's control module, all outputs not controlling a moving device, such as a ladder rack, shall remain in their previous state until communication is restored, or the power is cycled.

386. NON-SOLID STATE CIRCUIT PROTECTION

Circuit breakers shall be Type-I automatic reset (continuously resetting) and conform to SAE J553 or J258 unless operational requirements and/or safety concerns dictate Type-III manual reset type conforming to SAE J1625. Automotive-type fuses conforming to SAE J554, J1284, J1888 or J2077 shall be utilized when required to protect electronic equipment.



Southbury Vol. Fire Department



387. POWER CONTROL RELAYS AND SOLENOIDS

Power control relays and solenoids shall have a direct current (dc) rating of 125 percent of the anticipated current load.

388. BUSSMANN MVEC RELAYS AND CIRCUIT PROTECTION

Manufactured as a hardened and weather tight module, the mVEC is rated at 200-amps. The mVEC is configured to provide various OEM circuit protection and switching functions, using industry standard fuses, relays, and breakers, with the status and control of each circuit accessible through J1939 CAN open messages. Each mVEC is rated at 200-amps, with individual outputs rated up to 30-amps. Waterproof to high pressure spraying (IP66 equivalent). The mVEC is designed and manufactured with robust features such as heavy-duty housing, silicon and Gortex gaskets, and protective conformal coated electronics, to operate in demanding vehicle environments such as those found in fire apparatus.

389. INFORMATION CENTER

A minimum 5-inch color display capable of displaying graphical images as well as text messages shall be positioned on the cab dash. The main display page shall include the date, time, and ambient air temperature in Fahrenheit. Additional information pages shall be provided for the warning indications, not stowed indications, and open doors. The display shall be dimmable with a Rheostat control on the dash and shall have an override button on the control to dim to ten (10) percent. The following shall display on the information display home screen:

**SOUTHBURY FIRE DEPARTMENT
TOWER 1 LADDER**

390. DASHBOARD LAYOUT

The manufacturer shall furnish a dashboard layout drawing to the Fire Department for their review and approval. The drawing shall detail the locations for installation of radios, sirens, light switches, gauges, etc. Due to the cab dash configuration and electrical wiring design, the components shall have appointed locations that each will fit. The Fire Department shall review and approve the layout during the Engineering Conference. Signed Dash at end of order.

391. APPARATUS STATUS INDICATORS AND AUDIBLE ALARMS

If a monitored "Not Stowed" or "Warning" condition is active, the corresponding status indicator shall flash. In addition to visual indicators, audible alarms shall sound when designated conditions activate the "Not Stowed" and "Warning" status indicators.

392. WARNING INDICATOR

A flashing red triangle symbol shall alert the vehicle occupants of an active "WARNING" condition. This is defined as a situation or status on the vehicle that is of high priority or "mission critical" nature. The flashing red triangle shall be displayed on the Information Center and dash gauge panel in front of the driver. At a minimum, the following are typical "Warning" (high priority) conditions:

HYDRAULIC FILTER	LOAD MANAGE	LOW AIR PSI
CAB NOT LOCKED	LOW-VOLTAGE	
AIR RESTRICTION	ABS FAULT	

393. NOT STOWED INDICATOR

A flashing Not Stowed indicator shall alert the vehicle occupants of an active "Not Stowed" condition. This is defined as a situation or status on the vehicle that is not of high priority or "mission critical" nature but requires attention before the vehicle is put in motion. At a minimum, the following are typical "Not Stowed" (not high priority) conditions:

AERIAL RAISED	DECK GUN RAISED	JACKS EXTENDED
---------------	-----------------	----------------



Southbury Vol. Fire Department



The following items are considered Not Stowed only when the parking brake is released.

LADDER UP	JACKS EXTENDED	Q2B TILTED
LIGHT TOWER UP	DECK GUN RAISED	DS TELE LIGHT UP
OUTRIGGERS	STEP DOWN	PS TELE LIGHT UP
DS HATCH OPEN	PS HATCH OPEN	PEDESTAL COVER UP

394. AUDIBLE ALARMS

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

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

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

The following conditions shall cause a chime alarm to sound “intermittently” (i.e., beep), once the parking brake is released, signifying a condition exists that may become “mission critical” if not quickly addressed.

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

395. OPEN DOORS / DEPLOYED EQUIPMENT RACKS / EXTENDED STEPS

When a cab or compartment door is open, a step is extended, or equipment (i.e., ladder) rack is deployed, the “DOORS” indicator shall flash. Pressing the corresponding button shall display an overhead graphical representation of the apparatus. This image depicts the open cab door(s), open compartment door(s), deployed equipment rack(s), and/or extended step(s). The chime alarm shall also sound when the parking brake is released.

396. AMMETER

A heavy-duty ammeter shall be included with the cab dash gauges. The ammeter scale shall read from minus 500-amps to plus 500-amps showing charging status of the engine alternator.

397. OFFICER SPEEDOMETER

A second speedometer shall be provided on the right-hand side of the dash so that the officer can monitor apparatus speed.

398. AUTOMATED ELECTRICAL LOAD MANAGEMENT SYSTEM

The apparatus shall be equipped with an automated load management system. The load management system shall monitor battery-voltage and activate the engine high idle system (provided NFPA interlocks have been established) before disabling any electrical loads. If engine high idle is not available or activation does not result in sufficient battery system-voltage, individual electrical loads shall be automatically, and sequentially deactivated until-voltage returns to an acceptable level. Loads shall be sequentially reactivated to avoid a sudden large-voltage demand on the system. Electrical loads defined in NFPA 1901 as “minimum continuous” shall not be subject to automatic load management. Load prioritization shall be independently field programmable by authorized users.

If the load management system becomes active, the “LOAD MANAGE” indicator shall illuminate on the "Warnings" page



Southbury Vol. Fire Department



of the INTELEX™ PLUS cab mounted display.

399. LOAD SEQUENCER

A sequential switching device shall automatically energize the specified optical warning devices to minimize potentially damaging-voltage fluctuations due to the sudden addition or removal of large current demands on the electrical system. Upon activation of the "EMERGENCY MASTER" warning switch and provided the individual optical warning device switches are also activated, the following loads shall be activated (or deactivated) in 0.5 second intervals:

▪ Front Light Bar	▪ Side Light Bar (if applicable)
▪ Front and Rear Flashing Lights	▪ Side Warning
▪ Rear Beacons	▪ High Beam Headlight Flash

400. VEHICLE DATA RECORDER AND SEAT MONITOR DISPLAY

Fire Research series SBA200-A00 seat monitor display and vehicle data recorder kit shall be installed. The kit shall include a seat monitor display module, a vehicle data recorder, and cables.

The seat monitor display shall be programmable for up to thirteen (13) seats and have a seatbelt icon for each. A message display, push buttons for navigating through programs, and vehicle system warning indicators shall be positioned on the front of the seat monitor display.

The data recorder case shall be waterproof. It shall have inputs for monitored information from the vehicle J1939 CAN bus, independent sensors, seatbelt and seat occupied switches, outputs for audible alarms, and two-way FRC datalink connectors.

At a minimum, the vehicle data recorder shall record the following data once per second and store it in a 48-hour loop:

▪ Vehicle Speed	▪ Acceleration	▪ Deceleration	▪ Engine Speed
▪ Engine Throttle Position	▪ ABS Event	▪ Seat Occupied Status	▪ Seat Belt Status
▪ Master Optical Warning Device Switch	▪ Time	▪ Date	▪

The vehicle data recorder shall record the following data once per minute and have memory to store it for 100 engine hours:

▪ Maximum Vehicle Speed	▪ Maximum Acceleration	▪ Maximum Deceleration
▪ Maximum Engine Speed	▪	▪
▪ Maximum Engine Throttle Position	▪ ABS Event	▪ Seat Occupied with Seat Belt Unbuckled
▪ Master Optical Warning Device Switch	▪ Time	▪ Date

The oldest data shall be erased first when memory capacity is reached. All data shall be password protected and unloadable from the vehicle data recorder to a computer running FRC HAWK data management software. The HAWK software shall store, manage, provide graphic displays, and produce formatted reports of the vehicle data recorder data.

401. ELECTRICAL SYSTEM DIAGNOSTICS

The apparatus shall feature on-board electrical system diagnostics and provision for off-board or remote diagnostic service equipment.

402. ON-BOARD DIAGNOSTICS

On-board diagnostic indicators shall be installed to support rapid troubleshooting of the INTELEX™ PLUS based electrical power and signal system. The input and output status of each INTELEX™ PLUS system module shall be easily determined through easy-to-use display pages.



Southbury Vol. Fire Department



1
2 Switches shall be provided in the cab to allow the operator or service personnel to obtain On-Board diagnostic
3 information from the ABS system and Engine Controller.

4
5 A troubleshooting guide shall be provided with the vehicle to assist with interpretation of the diagnostic signals.

6 7 **403. OFF-BOARD DIAGNOSTIC PROVISION**

8 An interface port shall be provided for service access to the INTELEX™ PLUS data bus. The diagnostic port shall be
9 mounted inside the cab on the driver side in a location that is accessible from the ground.

10 11 **404. BATTERIES**

12 Six (6) 12-volt 950 CCA batteries shall be installed, three (3) each side of the cab under the rear entrance way.
13 Heavy-duty battery cables shall be provided to maximize power available to the electrical system.

14 15 **405. JUMPER CABLE STUDS**

16 A pair of jumper cable studs with color coded covers shall be provided under the driver's side battery storage area.

17 18 **406. BATTERY AND ELECTRICAL COMPONENT STORAGE AREAS**

19 Battery and electrical component storage areas shall be constructed of stainless-steel with structural steel tubes at the
20 corner mounting points and shall be positioned one (1) each side mounted on the vehicle frame. They shall be well
21 ventilated and enclosed to protect against road splash and debris. Suitable provisions shall be provided for drainage.

22
23 The batteries shall be held firmly in place by providing a full frame type top clamp which encloses the battery set on all
24 four (4) upper corner sides. The one-piece clamp shall be fabricated of 3/4-inch angles and be held in place by two (2) "J"
25 shaped clamping bolts. Battery inspection shall be available by tilting the full tilt cab. The interior of the battery box
26 where the batteries are installed shall be painted job color red, to match the lower color scheme.

27 28 **407. BATTERY MATS**

29 The 12-volt batteries shall be installed on a non-corrosive Turtle Tile mat.

30 31 **408. BATTERY DISCONNECT SWITCH**

32 A master load disconnect switch shall be provided between the battery positive buss bar and the remainder of the
33 switched battery electrical loads on the apparatus. A green "battery on" pilot light that is visible from the driver's
34 position shall be provided.

35
36 One (1) single battery system switch mounted near the driver's side front entrance in a location so it may be turned off
37 by a person standing on the ground outside the vehicle. It shall have the capacity to supply 350-amps of continuous
38 power.

39 40 **409. BATTERY CHARGER KIT**

41 A Kussmaul Battery Charger Kit Model 50-03-1306 shall be provided. Included in the kit shall be one (1) Kussmaul Model
42 LPC-40 single battery charger system that shall be installed in the vehicle's electrical system. The charger shall be fully
43 automatic and shall maintain the truck batteries at a full charge level when connected to a 120-VAC source. Remote
44 sensing shall be provided to compensate the charger output for the-voltage drop in the charging wires.



Southbury Vol. Fire Department



410. AUTO EJECT AND DELUXE COVER

Also included in the kit shall be one (1) Kussmaul, 20A, 120 VAC, 091-55-20-120 "Super Auto Eject" shoreline power connector. The Kussmaul Super Auto Eject Plug shall be positioned on the bumper, driver side, forward of outrigger. The shoreline power connector shall be provided with a spring-loaded cover to prevent water from entering when the shoreline is not connected. The Super Auto Eject Cover shall be red. A label shall be permanently affixed at the power inlet that indicates the line-voltage in-volts and the current rating in-amperes. The Super Auto Eject plug shall be 20-amperes.



One (1) Super Auto Eject Deluxe Cover with Bar Graph Display, Model 091-55-234 shall also be provided. The cover with lid shall open 180 degrees. The display shall have a ten (10) red LED bar graph to indicate battery status and shall be visible from the shoreline connection.



411. 12-VOLT POWER STUDS (OVERHEAD SWITCH PANEL)

Three (3) studs shall be provided in the overhead switch panel to supply a 12-volt feed. The studs shall consist of a 12-volt direct stud, switched battery stud and grounding stud.

412. 12-VOLT POWER STUDS (CAB DASH)

Four (4) studs shall be provided in the cab dash area to provide a 12-volt feed. The studs shall consist of a 12-volt direct stud, switched battery stud, switched ignition stud and grounding stud.

413. 12-VOLT BUSS BAR (UNDER OFFICER'S SEAT)

A four (4) stud 30-amp buss bar with protective cover shall be provided under the officer's seat to provide a 12-volt feed. The studs shall consist of a 12-volt direct stud, switched battery stud, switched ignition stud and grounding stud.

414. 12-VOLT BUSS BAR (UNDER ENGINE TUNNEL)

One (1) four (4) stud 30-amp buss bar(s) shall be provided under the rear engine tunnel panel to provide a 12-volt feed. The studs shall consist of two (2) 12-volt direct studs, switched battery stud, and grounding stud.

415. 12-VOLT BUSS BARS (BEHIND SERVICE PANELS)

Two (2) 3-stud 30-amp buss bars shall be provided, behind the service panel in the front body compartments, one each side of the body, to provide a 12-volt feed. The studs shall consist of a 12-volt direct stud, switched battery stud, and grounding stud.

416. 12-VOLT 2-STUD BUSS BAR

One (1) 2-stud 20-amp maximum buss bar(s) shall be provided in the upper forward corner of the driver's side body compartment(s) and/or back wall driver's side of the rear body compartment, as specified, to provide a 12-volt feed. Each buss bar shall consist of a 12-volt direct stud and grounding stud.

If additional options, such as peg board or Pac Trac are mounted in the compartment, the buss bar(s) may be mounted to the pegboard or Pac Trac. In either case, a cover, painted to match the body interior color, shall be provided that is open from the bottom. The buss bar(s) shall be powered from a 20-amp maximum circuit breaker located behind an accessible service panel in the forward bulkhead of the driver's side front compartment of the body. The 20-amp maximum circuit breaker shall be connected to the 50-amp manual resetting circuit breaker also located there.

417. 12-VOLT POWER LOCATION(S) – DRIVER SIDE

The 12-volt power shall be in the following driver's side body compartment(s) and/or body rear compartment: LS4 behind service panel.



Southbury Vol. Fire Department



418. 12-VOLT POWER LOCATION(S) – OFFICER SIDE

The 12-volt power shall be in the following officer's side body compartment(s): One for dash mounted iPad/Tablet. One in the officer side forward body compartment. One in RS4, behind service panel.

419. 12-VOLT 2-STUD BUSS BAR

Two (2) 2-Stud 20-amp maximum buss bar(s) shall be provided in the upper forward corner of the officer's side body compartment(s), as specified, to provide a 12-volt feed. Each buss bar shall consist of a 12-volt direct stud and grounding stud. If added options, such as peg board or Pac Trac are mounted in the compartment, the buss bar(s) may be mounted to the pegboard or Pac Trac. In either case, a cover, painted to match the body interior color, shall be provided that is open from the bottom. The buss bar(s) shall be powered from a 20-amp maximum circuit breaker located behind an accessible service panel in the forward bulkhead of the officer's side front compartment of the body. The 20-amp maximum circuit breaker shall be connected to the 50-amp manual resetting circuit breaker also located there.

420. 12-VOLT PLUG(S) AND RECEPTACLE(S)

Five (5) 12-volt power plug receptacle(s) and cover(s) shall be provided and shall be wired battery direct, with a fused circuit. The plug and receptacle are made from corrosion resistant marine grade materials. The plug locks into the receptacle providing a positive moisture proof connection. Location of the 12V Power Point(s) shall be:

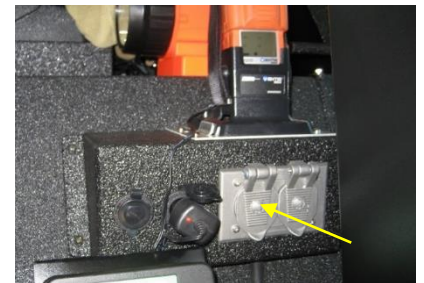
- One (1) driver's side dash
- One (1) officer's side dash
- One (1) below officer's speedometer
- Two (2) on rear of engine tunnel sides

421. 12-VOLT PLUG(S) AND RECEPTACLE(S)

Two (2) 12-volt power plug receptacle(s) and cover(s) shall be provided and shall be wired battery direct, with a fused circuit. The plug and receptacle are made from corrosion resistant marine grade materials. The plug locks into the receptacle providing a positive moisture proof connection. Location of the 12V Power Point(s) outlet box shown.

422. 12-VOLT OUTLET BOX

A fabricated 0.090-inch aluminum enclosed box that follows the contour of the engine tunnel shall be provided aft of the officer's seat on the side of the engine tunnel. It shall be covered with black LINE-X to match the color of the engine tunnel. This outlet box shall be capable of holding two (2) 12-volt power points, one USB Dual charger port, and one (1) 120-volt receptacle.



423. PUMP ENGAGEMENT CONTROLS AND INDICATORS

A "Pump Engaged" indicator shall be provided in the driving compartment to indicate the pump shift has been successfully completed. An "OK to Pump" indicator shall be provided in the driving compartment and on the pump operator's panel to indicate that all the following conditions have been met to safely operate the pump in stationary mode:

- 1) The pump shift is engaged.
- 2) The parking brake is engaged.
- 3) If the pump is driven from a transfer case PTO or aux. transmission PTO, the drive to the wheels in neutral.
- 4) If the apparatus is equipped with an automatic transmission, the chassis transmission is in the correct pump gear as follows:
 - a) If the pump is driven by a PTO after the chassis transmission gearing (e.g., split shaft PTO, transfer case PTO, etc.) the transmission is in the correct forward drive gear as noted in the shift instruction placard located in the driving compartment.
 - b) If the pump is driven by a PTO ahead of the chassis transmission gearing (e.g., flywheel PTO, crankshaft PTO, etc.) the transmission is in neutral.



Southbury Vol. Fire Department



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424. USB CHARGER PORT

Four (4) Kussmaul Electronics Model 091-219-5-WP USB 2.4/2.4-amp Dual Charger Ports with weatherproof door shall be wired battery direct with a fused circuit and shall be positioned on the dash as follows:



- Drivers side dash
- Officers side dash (see Outlet Box above)
- Rear of engine tunnel (one each side, cover shall flip up)

425. SPEAKER WIRING

The following sets of wiring and speakers to be provided:

- Three (3) 5.25-inch Speakers and boxes shall be installed on the front cab ceiling next to the am/FM speakers with wires run from the speakers to the lower dash. (1) for driver and (2) for officer outboard of Stereo speaker
- One (1) 5.25-inch Speaker and box shall be installed at the rear of the crew cab in the center between the forward-facing seats on the ceiling and this shall terminate in the lower dash.
- One (1) set of wiring shall be dead headed above the front overhead drop-down dash and this shall terminate in the lower dash.
- Two (2) 5.25-inch Speakers and boxes shall be installed between the outboard and inboard forward-facing seats, from the ceiling against the back wall.

All wiring sets to be labeled as either overhead, overhead speakers left or right, or dead head

426. TWO-WAY RADIO ANTENNA MOUNT(S)

Six (6) universal antenna mount(s), Model MATM, with 17-feet of coax cable and weatherproof cap shall be provided for the two-way radio equipment. The mount(s) shall be installed in the cab roof, behind the lightbar, unless specified differently. The antenna lead shall terminate in the officer's seat riser, run down A-post if possible. Any excess cable shall be secured in an accessible location.

Antennas to be located on lower cab roof as follows:

- Four (4) in a line running side to side aft of front lightbar and forward of the A/C condenser unit (minimum of 18-inch in between each antenna)
- Two (2) placed One (1) each side of the a/c condenser.

427. REAR VIEW CAMERA SYSTEM

A Zone Defense ZD.323.1.4 rear view camera system shall be installed. Each camera shall be waterproof and have its own trigger. At a minimum, the system shall consist of the following items:

- One (1) ZD.M.302 7" color LCD flat panel monitor with speaker, 7" wide x 4.75-inch (high) x 1-inch thick without back shield; 7.75-inch (wide) x 5.5-inch (high) x 1.25-inch thick with back shield. Monitor shall be rated for 10,000 hours.
- One (1) CAM.313C Color camera with 1/3-inch Color CCD Sensor, High Tech, True Zero Light Night Vision with 18 infrared LEDs and a microphone.
- Two (2) CAM.313MS.CRO Color cameras with 1/3-inch Color CCD Sensor, High Tech, True Zero Light Night Vision with 18 infrared LEDs and a microphone. Side vision cameras to have a simulated chrome finish (.CRO) designator
- One (1) ASSC.402.302 remote control.
- One (1) ASSC.400D Pana-vise mount shall be used to mount the monitor. Pana-vise mount shall be a T-bolt all-metal construction, pedestal mount with a 6-inch rise and adjustment knob
- One (1) 65-foot cable.





Southbury Vol. Fire Department



- 1 ▪ Two (2) 16-foot cables.
- 2 ▪ All required mounting hardware and instructions

3
4 One camera shall be mounted on the rear, near center, below the ladder doors, in a recess. The other cameras shall be
5 mounted on each side of the cab to provide side blind spot viewing.
6

7 **428. REDUNDANT AIR COMPRESSOR**

8 A Kussmaul Model #091-9B-1 "Auto Pump AC" redundant air compressor shall be installed. The Auto Pump shall be
9 wired to 120 VAC shoreline. Operation shall be automatic with the pressure switch sensing the system pressure and
10 controlling the power input. The compressor shall automatically replace air lost due to leakage in the brake system
11 without any interference to engine mounted air compressor functions. An Auto Drain shall be installed on the Kussmaul
12 Air Pump. A smooth aluminum cover shall be provided over the battery charger/air compressor. The outside finish shall
13 match the cab interior finish.
14

15 **429. SERVICE ACCESS PANELS**

16 Removable service access panels shall be provided to enable maintenance on all electrical systems, including firewall
17 and dash mounted electrical connections and wiring harnesses. Panels shall be weather tight and where visible, painted
18 job color or finished to match surrounding area.
19



Southbury Vol. Fire Department



LIGHTING

430. HEADLIGHTS

Front headlights shall be mounted on the front cab face to the left and right of the engine cooling intake grille. The headlights shall be quad type, rectangular JW Speaker Model 8800 Evolution 2, 12-volt LED with bright finished trim rings and bezels. The headlights shall include [SmartHeat](#) system. The low beam headlights shall be positioned at the outer position. The headlights shall be in the middle position.



431. ALTERNATING FLASHING HEADLIGHTS

The chassis high beam headlights shall flash alternately controlled by a rocker switch mounted in the driver's warning light overhead panel.

432. FRONT DIRECTIONAL LIGHTS

There shall be one (1) Whelen 600 Series Model 60A00TAR LED amber arrow directional signal light with colored lens installed on each side of the cab front face. The light lens shall have an amber arrow shape with black background and shall be provided with a "flash" pattern; a "sweep" pattern shall not be allowed.



433. FRONT DIRECTIONAL FLANGES

A pair of chrome plated flanges shall be provided for the Whelen 600 series front directional lights. One (1) flange shall be positioned on each side of the cab front face. The front directional light bezels shall be in the lowest position and centered below the upper bezels.

434. FRONT WARNING LIGHT DUAL LIGHT BEZELS

An added pair of bright finished dual light bezels shall be provided for the optional warning lights. The added headlight bezel shall be in the uppermost position.

435. WARNING LIGHTS

Exterior cab lighting shall meet or exceed Federal Department of Transportation, Federal Motor Vehicle Safety Standards (FMVSS) and any National Fire Protection Association requirements in effect at the time of proposal.

Five (5) pedestal mount Truck-Lite Model 10 Beehive, amber LED type clearance and identification lights with chrome mounts shall be installed across the top leading edge of the cab roof.



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



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

Weldon bumper marker lights shall be installed to fulfill FMVSS requirements.



436. MARKER LIGHTS

Two (2) additional TechNiq S34 amber LED marker lights with amber lens shall be provided and installed on the vehicle, one (1) on each side of the vehicle, forward of the rear axle. Lights shall be positioned by the manufacturer.



Southbury Vol. Fire Department



437. TURN/MARKER LIGHTS

Two (2) Weldon 9186-8580-20 LED "bug-eye" type turn/marker light shall be provided and installed horizontally on the rear fender panel below the forward air bottle compartment on each side of the vehicle. The lights shall have an amber polycarbonate lens and highly polished stainless-steel mounting flange or bezel.



438. REAR MARKER LIGHTS

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



439. LICENSE PLATE LED LIGHT & BRACKET

A steel license plate bracket, painted black, shall be installed on the rear of the vehicle on the left-hand side under the tailboard area. Mounted on the license plate bracket shall be a chrome light bracket containing a 12-volt P25 LED lamp that shall illuminate the license plate.

440. D.O.T. REFLECTORS

Reflectors shall be placed on the cab and body as required by Federal standards. One (1) amber reflector, Signal Stat, Model 32ADB, shall be placed on each side of the cab. Four (4) Signal Stat Model 32DB red reflectors shall be positioned on the rear face and sides of the body. The reflectors shall be rectangular in shape.



441. CAB SIDE DIRECTIONAL LIGHTS

Side directional lights shall be provided in addition to the front turn signals. They shall be Weldon Model 9186-8580-20, LED "bug eye" type. Lights shall have an amber polycarbonate lens and highly polished stainless-steel mounting flange or bezel.

The lights shall be positioned forward of the front door cab hinges.

Front cab cowl mounted directional lights to be mounted in vertically to match the picture



442. BRAKE/TAILLIGHTS

Two (2) Whelen series 600 LED red brake / taillights, Model 60BTT, with red outer lens, shall be mounted at the rear of the apparatus, one on each side. All brake lights shall be programmed for "steady burn" operation in compliance with FMVSS No. 108.



443. TURN SIGNAL LIGHTS

Two (2) Whelen series 600 LED amber arrow turn lights, Model 60A00TAR, shall be mounted at the rear of the apparatus, one on each side. They shall be provided with a "flash" pattern; a "sweep" pattern shall not be allowed.

444. BACK UP LIGHTS

Two (2) Whelen series 600 maximum intensity clear LED back up lights, Model 60C00WCR, shall be mounted at the rear of the apparatus, one on each side.



Southbury Vol. Fire Department



445. BRAKE/TURN/BACKUP LIGHTS CONFIGURATION

The brake, turn, backup and warning lights shall be positioned at the rear of the apparatus. Each light shall be mounted horizontally in a vertical configuration, one light atop the other in the following order:



- Top: BRAKE
- Second from top TURN
- Third from top: REVERSE

446. BRAKE/TURN/BACKUP BEZELS

One pair (2) of Whelen Model #Cast3 vertical 3-lamp, polished cast aluminum bezels shall be provided for the 600 Series rear stop/tail, turn, and backup lights.

447. CAB STEP LIGHTS

Eight (8) TecNiq Model EON, LED step lights shall be provided, two (2) at each cab entrance door. They shall be mounted one (1) above and one (1) below each intermediate step.

448. BODY STEP LIGHTS

- There shall be one (1) TecNiq Eon LED strip light center mounted under the turntable.
- There shall be two (2) TecNiq Eon LED strip lights on the top of the intake/gauge panels on the forward body, one each side of the body, to illuminate the panels and the step at their bases.
- There shall be one (1) TecNiq Eon LED step light mounted on the pedestal to illuminate the area around the pedestal. This light shall be activated with the aerial PTO.
- There shall be two (2) TecNiq Eon LED lights mounted, one on each side of the body, in the rear face of the compartment aft of the rear jacks. These lights shall illuminate the top step of each access ladder.
- There shall be two (2) TecNiq Eon LED strip lights, one on each side of the body, mounted to the underside of the top step of each access ladder to illuminate the lower steps.
- There shall be two (2) TecNiq Eon LED strip lights on the aerial/boom support to illuminate the decking. The lights shall be installed near the top of the support, one facing forward, one facing rearward.
- There shall be two (2) TecNiq Eon LED strip lights installed to illuminate the interior work area of the platform.
- There shall be four (4) TecNiq Eon LED lights with chrome bezels installed on the outside of the platform, facing downward to illuminate the step surface. There shall be two (2) lights on each side of the platform.



449. BODY STEP LIGHT(S)

Four (4) Whelen #3SC0CD CR LED step light(s) with a chrome flange shall be surface mounted on the body.

The body step lights shall be positioned back wall of cab evenly spaced above the forward body.

450. STEP LIGHTS ACTIVATION

The cab step lights shall be activated with the cab door open sensor. The step lights on the body shall be activated with the parking brake in conjunction with the marker lights.





Southbury Vol. Fire Department



451. GROUND LIGHTS - CAB

Four (4) weatherproof TecNiq #E10 LED ground lights shall be provided underneath the cab, per NFPA requirements.



452. GROUND LIGHTS

Twelve (12) weatherproof TecNiq #E10 LED ground lights shall be provided underneath the body, per NFPA requirements. At a minimum,

- Two (2) shall be positioned under the aerial access ladders, one on each side
- Two (2) shall be under the rear of the body.
- Two (2) shall be provided underneath the front body, per NFPA requirements.
- Two (2) below front bumper assembly
- Two (2) to illuminate the front jacks
- One each side (2) between the tandems

453. GROUND LIGHT ILLUMINATIONS

- All the ground lights on the right-side of the apparatus shall illuminate any time the right directional is actuated.
- All the ground lights on the left side of the apparatus shall illuminate any time the left directional is actuated. The lights shall cancel one (1) second after the directional switch is cancelled.
- All the ground lights on the body shall illuminate any time the chassis transmission is in reverse.

454. GROUND LIGHT ACTIVATION

A rocker switch shall be provided in the cab, that once activated, shall turn on all the ground lights under every cab and crew cab door and all the ground lights on the body.

In addition, the ground lights under the cab shall come on any time a cab door is opened, regardless of the perimeter light switch position.

455. CAB 12-VOLT FRONT BROW MOUNT SCENE LIGHT(S)

One (1) FireTech Model FT-B-72-W brow light shall be provided and installed on the center of the cab front brow between the windshield and light bar. The light will be capable of producing 30,096 lumens. The light features three (3) different patterns: spot, flood, and scene. The light will be controlled by a switch in the cab easily accessible by the driver.



The light head and mounting bracket shall be powder coated white.

456. CAB 12-VOLT SURFACE MOUNT LIGHT(S)

Two (2) Fire Research Spectra Max LED Scene Light Model SPA260-Q20 surface mount light(s) shall be installed on the cab side(s). The light shall be mounted with four (4) screws to a flat surface. It shall be no more than 5-7/8-inch (high) by 14-1/2-inch (wide) and have a profile of less than 1-3/4-inch beyond the mounting surface. Wiring shall extend from a weatherproof strain relief at the rear of the light head.



The light head shall have sixty (60) ultra-bright white LEDs, 56 for flood lighting and 4 to provide a spotlight beam pattern. It shall operate at 12-volts DC and generate 20,000 lumens of light. The light head shall have a unique lens that directs flood lighting onto the work area and focuses the spotlight beam into the distance

A chrome bezel and powder coated Black housing shall be provided. The cab surface mounted lights shall be positioned between the front cab door and the crew cab side window.



Southbury Vol. Fire Department



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457. BODY 12-VOLT PEDESTAL MOUNT SCENE LIGHTS

Two (2) Fire Research Spectra Max LED Scene Light SPA570-K28 top mount fixed pedestal light(s) shall be installed on the body roof. The pedestal shall allow the light 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.

The light head shall have 72 ultra-bright white LEDs, 60 for flood lighting and 12 to provide a spotlight beam pattern. It shall operate at 120-volts AC, draw 2.8-amps, and generate 28,000 lumens of light. The light head shall have a unique lens that directs flood lighting onto the work area and focuses the spotlight beam into the distance.



The light head angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The light head shall be no more than 5-3/8-inch (high) by 14-inch (wide) by 3-3/4-inch (deep) and have a heat resistant handle.

The pedestal lights shall be positioned on the body one each side over rear jacks. The lights shall each be switched at the cab dash on the driver side, and from the pump panel vicinity using a 3-way momentary switch. The light head and mounting arm shall be powder coated white.

458. BODY REAR 12-VOLT SCENE LIGHTS

Two (2) Fire Research Spectra 950 LED Scene Light Model SPA950-Q50-B surface mount light(s) shall be installed on the body rear. The light shall be mounted with four (4) screws to a flat surface. The light head shall have twenty-four (24) ultra-bright white LEDs. It shall operate at 12-volts DC and generate 5,000 lumens of light.



The bezel and the back plate shall be chrome.

The surface mounted lights shall be positioned as high as possible on the left side and the right side on the rear of the body. Other equipment and light selections may affect placement.

The lights shall both be activated by a cab switch on the driver side.

459. BODY REAR SCENE LIGHT DISABLE

A reverse disable switch shall be installed on the cab dash which shall disable the rear surface mount scene any time the apparatus transmission is placed into reverse. This is in addition to the standard switch which shall allow the driver to engage the lights anytime the battery is on.

460. ENGINE COMPARTMENT WORK LIGHTS

Two (2) TecNiq E10 LED engine compartment work lights shall be provided and wired to illuminate automatically when the cab is tilted. The lights shall also be wired through the engine compartment access door switch, providing illumination of fluid dip sticks and coolant overflow reservoir.

461. CAB INTERIOR DOME LIGHTS

Four (4) Whelen 60CREGCS 6-inch round red/clear LED lights with push buttons shall be mounted in the cab ceiling. Two (2) in front (driver & officer) and two (2) in the crew cab. All lights shall be controlled by a switch on the light head.



The white dome lights shall activate with the automatic door switch.



Southbury Vol. Fire Department



462. CAB FLOOR COURTESY LIGHTS

Two (2) TecNiq Dragon D14 Red LED courtesy lights, one each side shall be positioned under the cab dash to illuminate the floor mounted foot switches. The light shall include a chrome flange. It shall activate with the marker light circuit.



463. CREW CAB FLOOR COURTESY LIGHTS

Two (2) TecNiq Dragon D14 Red LED courtesy lights shall be positioned at the rear of the engine tunnel, evenly spaced on the vertical flange, one each side, to illuminate the crew cab floor. The light shall include a black flange. They shall activate with the marker light circuit.

464. CAB DOOR INTERIOR LIGHTS

Four (4) Whelen Model TLIJ, red/blue, ION™ T-Series™ Linear Super-LED® lights in black horizontal flanges shall be installed on the interior of all four cab entrance doors, above the door seal in the lower outboard corner.



465. EXTERIOR COMPARTMENT LIGHTS – HORIZONTAL

Two (2) exterior compartment(s) shall have a ROM LED lighting strips installed. The lighting strip shall be mounted horizontally on the ceiling in an anodized aluminum track next to the door framing. A switch, installed in the door frame, shall be used to activate light. Compartments LS2, and RS2 shall receive horizontal lighting.

466. EXTERIOR COMPARTMENT LIGHTS - VERTICAL

All remaining exterior compartment(s) shall have a ROM LED lighting strip installed vertically on both (2) sides of the door. The lighting strips shall be mounted along both sides of the door framing in an anodized aluminum track. A switch, installed in the door frame, shall be used to activate the lights.

467. MAIN LIGHTBAR

The cab lightbar shall be a Whelen Freedom IV-Q, 92-inch, with Linear Super-LED optics, no filters. Color pattern shall be **RRRRBWBRR_RRBWBRRRR**.



Illustrative only - actual light shall follow color pattern described

468. MINI LIGHTBARS

Two (2) Whelen Model F4N MINI Freedom™ IV LED 21.5-inch lightbars shall be provided and installed on the cab roof, facing outward to the sides. Each lightbar consist of two (2) Linear-LED® heads with two (2) clear LED located in the center forward facing and one (1) red LED to the outside facing the side. The lightbar shall also be equipped with two (2) red corner Linear-LED® lights in the front corners.



- The one red LED on the side of the lightbar shall be positioned toward the cab front.
- The mini lightbars shall be positioned above the crew doors.
- The Whelen mini lightbar shall be mounted using a 1.5-inch (high) mount, Model MKEZ7.

469. UPPER REAR WARNING LIGHTS

Two (2) Whelen Model L31H5FN LED red beacons with clear lens shall be provided on the upper rear of the apparatus. The rear flasher shall have a Comet Flash pattern. Beacons are to be ordered with the rotating pattern available but shall not be programmed to rotate at factory.



470. PERIMETER WARNING LIGHTS - RED

Fifteen (15) Whelen Model 60R02F*R red linear Super-LED® warning light(s) with chrome plated flange(s) shall be installed on the apparatus. The flash pattern of the light(s) shall be Triple Flash, also known as Comet Flash.





Southbury Vol. Fire Department



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471. PERIMETER WARNING LIGHTS - AMBER

Two (2) Whelen Model 60A02F*R amber linear Super-LED® warning light(s) with chrome plated flange(s) shall be installed on the apparatus. The flash pattern of the light(s) shall be Triple Flash, also known as Comet Flash.

472. PERIMETER WARNING LIGHT – BLUE

One (1) Whelen Model 60B02F*R blue linear Super-LED® warning light(s) with chrome plated flange(s) shall be installed on the apparatus. The flash pattern of the light(s) shall be Triple Flash, also known as Comet Flash.

473. PERIMETER WARNING LIGHTS - CLEAR

Two (2) Whelen Model 60C02FCR clear linear Super-LED® warning light(s) with chrome plated flange(s) shall be installed on the apparatus. The flash pattern of the light(s) shall be Triple Flash, also known as Comet Flash.

Location of each perimeter warning light shall be:

▪ Whelen Three (3) Front light bars
▪ Whelen 600 Red Warning lights above headlights - Outboard
▪ Whelen 600 Clear Warning lights above headlights - Inboard
▪ Whelen 600 Red Warning lights on side of bumper
▪ Whelen 600 Red Warning lights on side cab on "C - Post just below rain gutter (centered).
▪ Whelen 600 Red Warning lights (2) on body fenders - forward of axle
▪ Whelen 600 Red Warning lights (2) on rear outrigger access panels.
▪ Whelen 600 Red Warning lights one each side waterway inlet panel, lower
▪ Whelen 600 Red Warning lights rear of access ladder, below LS5 / RS5
▪ Whelen L31 Rear beacons D/S Blue - P/S Red
▪ Whelen 600 Amber warning-rear of body, beneath the red and blue 600.
▪ Whelen 600 Red (1) (Driver) Blue (1) (Officer) warning-Upper inboard scene lights blue driver side
▪ Whelen 600 Red Warning lights inboard three light cluster - centered, shall be centered between the Brake/Turn light inboard.

474. TRAFFIC ADVISOR™

Eight (8) Whelen 500 Amber series lights with clear lenses with a chrome surface mounted flange shall be provided. One (1) Whelen 500 Red series light with clear lenses with a chrome surface mounted flange shall be positioned in the center position and activate with the brake lights. The color pattern shall be **AAAARAAAA**.



The light shall be controlled by a TACTL1 control head mounted in the cab.

The control head for the traffic advisor shall be recess mounted in the driver's upper dash.

The Traffic Advisor™ shall be wired to be battery switched.

The Traffic Advisor shall be surface mounted on the rear of the body near the top.

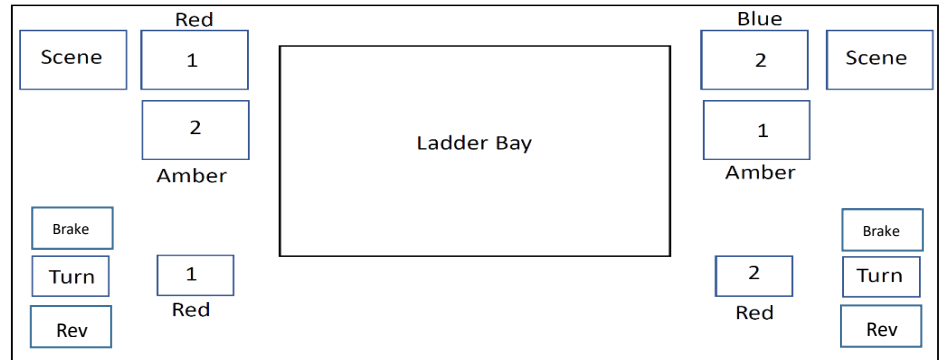


Southbury Vol. Fire Department

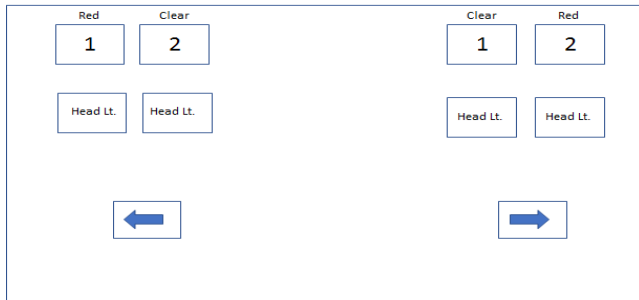


475. WARNING LIGHT FLASHERS

Two (2) flasher(s) shall be provided to coordinate the flash pattern of the LED warning lights on the front and rear.



1 REAR VIEW - LIGHTING



2 FRONT VIEW - LIGHTING

476. PUMP MODULE WORK LIGHTS

Two (2) TecNiq E18-WCS0-1 white LED lights shall be installed, one (1) on the left side behind the master gauge panel and one (1) on the right side behind the hinged panel. Each light shall have a switch on it.





1 **ALARMS & SIRENS**

2
3 **477. AUDIBLE WARNING DEVICES**

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

5
6 **478. BACKUP ALARM**

7 There shall be an Ecco SA914 electronic backup alarm provided that shall sound when the truck is placed in reverse to
8 warn persons near or on the apparatus. The alarm shall be automatically adjustable and shall maintain a sound level of a
9 minimum of 5 decibels over the environmental noise level. Sound level range shall be 87 to 112 decibels.

10
11 **479. AIR HORNS**

12 Two (2) Grover Industry "Stuttertone" chrome air horns shall be furnished. A pressure protection valve shall be installed
13 in-line to prevent loss of all air from the vehicle air brake system. The air horns shall range from 18-inch to 24-inch in
14 length and be as long as allowable, dependent upon other selected options and extension length. The horns shall be
15 mounted on chrome pedestals.

16
17 The officer side of the cab shall have an alternate overhead rope pull to activate the airhorns.

18
19 **480. AIR HORN FOOT SWITCHES**

20 Two (2) Linemaster® Model 632-S momentary foot operated switch(es) to activate the airhorns
21 shall be installed on the toe board of the cab floor. The air horns shall be activated by the right
22 Linemaster® Model 632-S foot switch and labeled "Air Horn", as shown.



23
24 **481. AIR HORN SHUT OFF**

25 An air shut off valve shall be provided in the feed line to the air horns, under the dash on the driver's side.

26
27 **482. ELECTRONIC SIREN**

28 A Whelen Model 295SLSC1 dual tone electronic siren shall be provided
29 in the cab dash. The siren has a selectable output of 100 or 200 Watts.
30 The microphone shall be removable.

31
32 The siren head shall be wired battery switched. Auxiliary activation
33 switches shall only be active when the emergency master and ignition
34 are activated. The horn ring feature of the siren head shall be wired and
35 activated, per the siren head manufacturers installation manual.



36
37 The siren microphone mount shall be a Jotto Desk Mic Magnet, Model 425-3816 magnetic microphone holder and
38 mounted within reach of driver and officer.

39 **483. ELECTRONIC SIREN SPEAKERS**

40 Two (2) Whelen Projector Series SA-315P, 100-watt speaker(s) with polished grilles shall be recess mounted in the front
41 bumper extension. Both speakers shall be positioned in the center of the bumper.

42
43 **484. ELECTRO-MECHANICAL Q2B® SIREN**

44 A Federal Signal Model Q2B® siren with chrome plated housing shall be mounted on the front bumper extension as
45 directed. There shall be an electric brake control installed in the cab, at the driver's switch panel, properly labeled.

46
47 The siren activation switches shall only be active when the emergency master is activated. The Q2B® siren shall be
48 mounted in the center of the gravel pan. The Q2B siren shall be activated by each Linemaster® Model 632-S foot switch.



Southbury Vol. Fire Department



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485. Q2B® SIREN FOOT SWITCHES

Two (2) Linemaster® Model 632-S momentary foot operated switch(es) to activate the mechanical Q2B® siren shall be installed on the toe board of the cab floor.

- A foot switch shall be positioned on the officer's side floor, vertical on kick plate, outboard position.
- A foot switch shall be positioned on the driver's side, outboard (left) of the steering column

The siren foot switches shall be deactivated when the parking brake is set.

The switch shall be mounted and positioned as directed. The switches shall be labeled, "Mechanical Siren", as shown.



486. Q2B® BRAKE ROCKER SWITCHES

Two (2) floor mounted, Model 491 siren brake rocker switches shall be provided to allow easy access for the driver and officer.

487. FOOT SWITCH BRACKETS

Two (2) metal fabricated FDNY-style angled foot switch brackets shall be installed by the officer and driver's feet. Each bracket allows for 2 Linemaster® Model 632-S foot switches.

This photo shows 2 brackets, each holding a foot switch along with a Model 491 siren brake switch between them.



488. MOBILE RADIO – CAB

A Motorola APX6500 single-band P25 mobile radio with 2 remote heads shall be mounted in the cab in a location easy to reach for maintenance. One of two (2) remote heads shall be mounted within easy reach of both driver and officer. The remote head shall be mounted on a swivel tray allowing viewing and control from either officer or driver seat.



A Jotto Desk Mic Magnet, Model 425-3816 magnetic microphone holder shall be installed and mounted within easy reach of driver and officer.



The second control head shall be mounted inside a weatherproof cabinet within easy reach and earshot of the pump operator.

489. HOWLER SIREN

An auxiliary 'Howler' style siren shall be provided with two activation switches each easily accessible by officer and driver.



Southbury Vol. Fire Department



1 PAINTING & STRIPING 2

3 **490. FINISH QUALITY STANDARDS**

4 The finish quality and appearance shall be in accordance with the manufacturer's Paint Quality Standards for dirt, gloss,
5 reflectivity, clarity, and depth of image. The standard is available to the customer at any time upon request.
6

7 **491. PAINTING PROCESSES**

8 The following processes shall be employed in the finishing of the apparatus:
9

10 Manual Surface preparation – All metal surfaces on all custom body and cabs shall be thoroughly cleaned and prepared
11 for paint. Surfaces that shall not be painted include all chrome plated, polished stainless-steel and bright aluminum
12 tread plate. As required, weld seams and other areas shall be caulked to prevent water leaks or for appearance reasons.
13 Each imperfection on the exterior metal surface shall be removed or filled and then sanded for a smooth flat
14 appearance.
15

16 Chemical Cleaning and Treatment – All painted surfaces shall be washed with a chemical degreaser, cleaner and surface
17 conditioner to allow for proper adherence of primer coat. Then they shall be washed with a neutralizer product.

18 All products used are approved by paint supplier and applied under strict process control to meet performance
19 requirements on corrosion prevention and chip resistance.
20

21 Primer/ Surface Coating for Topcoat application – a minimum of 2 coats of Epoxy based primer shall be applied to
22 surfaces inside and outside of cabs and bodies and all other parts of apparatus that shall receive a Top color coat to
23 achieve required corrosion protection. After that, a minimum of 2 coats of sealer shall be applied over the primer
24 surface. The overall thickness of the primer/sealer coat shall be between 3 to 8 mils wet. Once dried and cured all
25 surfaces that shall receive a topcoat shall be hand sanded to achieve a flat and smooth surface to meet gloss and other
26 paint quality standards. All products used are approved by paint supplier and applied under strict process control to
27 meet performance and appearance requirements according with manufacturer's Paint Quality Standard. The underside
28 of the cab and body shall be finished with one coat of epoxy primer specifically designed for this application to prevent
29 corrosion and provide chip resistance to typical paved road conditions.
30

31 Topcoat Application – Each Topcoat final color on the apparatus is applied using a two-stage paint process. The unit shall
32 be thoroughly hand cleaned to eliminate dust residues and to detect any imperfection in the surfaces. A fast drying 3.5
33 VOC polyurethane basecoat color shall be applied using a cross coat application technique. Added coats may be applied
34 as required until the coat thickness reaches 2.0 to 6.0 mils wet and a full hide appearance. If a second color is needed,
35 proper masking shall be applied to the unit and the basecoat application process shall be repeated for the second color.
36 A slow drying low VOC High Build clear coat shall be applied using a cross coat application technique until a minimum of
37 5.0 mils wet is achieved. The unit is then properly heated to assure flash and cure of the paint before leaving the paint
38 booth. All products used are approved by paint supplier and applied under strict process control to meet performance
39 and appearance requirements according to manufacturer's Paint Quality Standard.
40

41 Each batch of color topcoat shall be tested for precise color match following paint supplier color matching process. A
42 visual color match shall be checked prior to paint using customer approved paint chips.
43

44 The cab and body shall be primed, and finish painted prior to installation on the chassis to ensure paint coverage in all
45 areas including the difficult to reach places. The exterior and interior of the cab shall be finish painted before the doors
46 are installed or any assembly is started to ensure a finish painted surface beneath all trim items.
47

48 Primer/ Surface Coating for Single Coat application – a minimum of 2 coats of Epoxy based primer shall be applied to all
49 surfaces of the apparatus that shall receive a single-color coat to achieve required corrosion protection. This is a wet



Southbury Vol. Fire Department



coat process, and it shall achieve a 3.0 to 8.0 mills wet thickness and complete coverage of all bare metal. All products used are approved by paint supplier and applied under strict process control to meet performance and appearance requirements according with manufacturer's Paint Quality Standard.

Single Coat Application – A minimum of 2 coats of direct gloss paint shall be applied over all primed surface to achieve corrosion protection and appearance in accordance with manufacturer's Paint Quality Standard. This application shall be used for Gloss Black, Job Colors and Color finishes in parts of the apparatus such as frame rails, outriggers, ladders and other aerial devices, suspension, and other chassis parts, etc. as defined in the sales order.

Zolatone Coat Application – All areas to receive a Zolatone coat shall be primed following the primer/surface coating for topcoat application. A high-pressure coat of Zolatone paint shall be applied in a cross-pattern technique to achieve smooth finished surface. A second low pressure coat of Zolatone paint shall be applied in a single pattern to achieve a textured appearance.

Zolatone Clear Coat Application – Starting with a completed and dry Zolatone coat application 2 to 3 coats of Zolatone clear coat shall be applied until a thickness of 5.0 mils wet is achieved.

492. PAINTERS

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

493. PAINTING FACILITY

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

494. FRAME & UNDERCARRIAGE FINISH

Single Coat application process shall be used to apply an added coat in the color selected in this order using direct gloss paint over the primed surface as supplied by the component manufacturer on identified parts as described below:

▪ Chassis frame	▪ Bumper extension	▪ Suspension
▪ Axles	▪ Air tanks	▪ Fuel tank
▪ Battery boxes	▪ Pump module mounting brackets.	▪ Body mounting brackets.
▪ Steering gear box and steering link arm	▪ Drive shafts.	▪ Front suction, from pump house to front swivel (when furnished).
▪ Front discharge plumbing (when furnished)	▪	▪

The following items shall be furnished with the finish as provided by their respective manufacturer.

▪ Engine, transmission, and accessories	▪ Exhaust system.	▪ Retarder (when furnished).
▪ PTO & hydraulic pump (when furnished)	▪ Cab lift cylinders & hydraulic pump.	▪ Shock absorbers.
▪ Fuel filter	▪ Air drier and air cleaner.	▪ Electrical wiring and loom.
▪ Air brake lines, valves, and mounting brackets	▪	▪



Southbury Vol. Fire Department



495. PAINT INSIDE OF CAB

The inside of the cab shall be provided with gray Zolatone paint following the Zolatone Coat application process.

The following components shall be painted:

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

The inside of the full tilt cab shall be clear coated following the Zolatone Clear Coat application process in the same components that received a Zolatone application.

496. TWO-TONE CAB PAINT

The cab shall be two-tone painted with the paint break just below the windshield. The paint shall follow the Topcoat application process for two colors.

Cab Upper Exterior Paint: PPG 3359 Gray Metallic

Cab Lower Exterior Paint: PPG 71663 Red

The paint break between the two colors around the cab shall be wet sanded smooth for application of gold leaf or striping 1/2-inch or greater in dimension. The paint break shall be horizontal across the front of the cab above the wipers and taper down with a radius even with the outside corners of the grille.

497. PAINTED CAB ROOF

The exterior surface of the cab roof shall be painted in compliance with the upper exterior paint scheme.

498. BODY PAINT

The body of the apparatus shall be painted to match the primary cab color. The paint shall follow the Topcoat application process for a single color. Body exterior paint Red.

499. GOLD LEAF LETTERING

Lettering, approximately 3-inches high shall be provided. The appearance of all gold leaf lettering, striping, and emblems shall closely match the appearance of traditional, hand-applied genuine gold leaf. All gold leaf graphics shall come with a warranty against fading or deterioration.

- Officer and Driver doors shall have Department emblem, image shown from Southbury Engine 5. Replace "5" with "1", centered on the driver, officer doors:

SOUTHBURY VOL. FIREMENS (Arch)
 ASSOC. INC.
 (Straight line with gold leaf stripe each side)

- Crew Cab doors: Replace "5" with "1", centered on the crew cab doors:

TOWER **1** LADDER
(the numeral 1 shall be noticeably taller)





Southbury Vol. Fire Department



- Front of the apparatus: centered on the front of the rig, as shown:

“SOUTHBURY”
with Fleur-de-Lis on both sides



- Dividing stripe: A gold leaf stripe shall be used to divide the upper Metallic gray and lower Red job colors on the cab assembly and any place on the body where the two colors meet. Width of the stripe to be recommended by manufacturer and approved by Southbury FD once color renderings are available.

500. DECAL – REAR IDENTIFIER

A red colored decal, “SOUTHBURY L - 1” shall be positioned on the rear ladder tunnel doors. Shown is an example from Engine 5 roll-ups. Replace “5” with “1”, “E” with “L”, centered.



501. DECAL – FRONT IDENTIFIER

A colored decal, “L - 1” shall be positioned on the front bumper. Shown is an example from Engine 7. Replace “7” with “1”, “E” with “L”, centered.



502. DECALS – BUCKET

Two (2) red colored decals, “SOUTHBURY” shall be positioned on each side of the aerial bucket. Lettering can be horizontal or stepwise diagonal.

503. DECALS – TOWER SIGN

Decals for the painted tower sign shall display “Tower 1 Ladder” with gold leaf striping above and below. See representative picture.



504. DECALS – DIAL 911 ON REAR SIDES

Reflective white decals, “DIAL 911” shall be placed on both sides, lower rear compartments, behind the wheel wells as shown.



505. FORWARD BODY COMPARTMENT PAINT

The forward body lower compartment exterior shall be painted job color RED, to match the lower color scheme following the Topcoat application process. The interior of the compartments shall be painted gray Zolatone following the Zolatone Coat application process. Compartments shall also be clear coated.



Southbury Vol. Fire Department



1



1 **FINISHES**

2
3 **506. STANDARD FINISHES FOR SMALL PARTS, CUSTOM CAB**

Definition: Mill finish: as is from the manufacturer; no finish applied. It may have scratches, but it shall be shiny because of being cleaned through a deoxidization process. Parts with Mill finish may have been cleaned in a dipping process to deoxidize the part.

Definition: Etch finish: The part(s) shall be cleaned and etched to a uniform bright finish.

Definition: Line-X finish is a spray-on protective coating

Definition: S/S Brush finish denotes brushed stainless-steel

4
5 **507. FINISH – BODY SIDE COMPARTMENT INTERIOR(S)**

6 Body side compartment interior(s) shall be finished with gray Zolatone type paint following the Zolatone Coat
7 application process. These same compartment interior(s) shall be clear coated following the Zolatone Clear Coat
8 application process, applying the Clear Coat to the same components that received a gray Zolatone application.

9
10 **508. FINISH - ADJUSTABLE SHELF (OR SHELVES)**

11 Adjustable shelves shall have a DA finish on the outside edge of the shelf.

12
13 **509. FINISH - ROLL OUT TRAY(S)**

14 Roll out tray(s) shall have a DA finish applied to the outside edge of the tray.

15
16 **510. FINISH – CAB COMPARTMENT SHELVING**

- 17 - outside edge of the shelf: DA
- 18 - ALL other surfaces shall be Mill finish

19 **511. FINISH - BUMPER**

- 20 - Flange: DA
- 21 - Interior & exterior walls: Mill finish
- 22 - If the hose well sticks above the gravel pan: DA the edges

23
24 **512. FINISH – INNER LINERS**

- 25 - Mill finish

26
27 **513. FINISH - ALL STEPS**

28 Including pull downs & those on access ladders: DA outsides

29
30 **514. FINISH - PIKE POLE TUBES**

31 Six (6) pike pole tube(s) shall have a Mill finish.

32 **515. FINISH - Hat Section Brackets**

33 For Compartment, Ground or Step Lights: Mill finish. If compartment is painted, then the hat section brackets shall be
34 painted.

35 **516. FINISH - Trim Rings: Mill finish**

36
37 **517. FINISH - Patch plates: Brushed S/S (Upgrade available to polished or ATP) STD is No patch plates**

38
39 **518. FINISH - Label backing plates: DA**



Southbury Vol. Fire Department



1 **519. FINISH - Marker light guards: As purchased**

2
3 **520. FINISH - Switch guards: Brushed S/S**

4 5 OPERATOR STAND AND PLUMBING

6 7 **521. FINISH – Plumbing**

8 Pump, intake & discharge valves, drains, all hard piping*, including pipes protruding from the pump panel: Job color
9 Red, to match the lower color scheme.

- 10 - *1. All exposed pipe (not including cut threads) at the rear of the truck or welded pre-connect
11 assemblies at the front of the body shall be painted job color red, to match the lower color scheme.
- 12 - *2. All pipe holding brackets made of black steel shall be painted black, or job color red if the whole
13 surrounding area is painted job color.

14
15 **522. FINISH - Pump enclosure interior: Mill finish**

16
17 **523. FINISH - Open bin interior surfaces: Mill finish (or ATP if that is the original surface). In no cases paint**
18 **unless “special ordered” by the customer.**

19 20 **524. FINISH - Crosslays (N/A)**

- 21 - Inside surfaces – DA
- 22 - Partitions - DA

23 24 **525. FINISH - Speedlays (N/A)**

- 25 - With pull out tray- DA

26
27 **526. FINISH - Heat Pans: Mill finish (Upgrade available to DA or paint color of underside)**

28
29 **527. FINISH - Running Board w/Floating Trough: Frame shall be painted black.**

30 31 BODY

32
33 **528. FINISH - Compartment louvers: Same color as compartment interior walls**

34 35 **529. FINISH - Compartment shelves & trays**

- 36 - DA (Just the outside edge of the shelf shall be DA finished. All other surfaces shall be Mill finish.
- 37 - Upgrades available: Paint Zolatone or job color. All surfaces shall be painted.

38
39 **530. FINISH - Compartment shelf & tray brackets: Mill finish**

40
41 **531. FINISH - Brackets to hold compartment doors open: Mill finish**

42
43 **532. FINISH - Compartment door auxiliary locking brackets: Brushed S/S**

44
45 **533. FINISH - Rear aluminum compartments: Mill finish (upgrade available to paint)**



Southbury Vol. Fire Department



1 **534. FINISH - Rear aluminum compartment door interiors**

- 2 - ATP Exterior Door: DA Finish Interior
3 - Smooth Exterior Door: Etch finish Interior
4

5 **535. FINISH - Breaker box mounting brackets: Mill finish**

6
7 **536. FINISH – Pegboard Mill finish (upgrade available to DA)**

8
9 **537. FINISH - Through Compartments: Mill finish (upgrade available to paint) i.e., Hose chutes & Ladders**

10
11 **538. FINISH - Partition mounting brackets: Mill finish**

12
13 **539. FINISH - Ground ladder brackets: Etch finish**

14
15 **540. FINISH - Ground ladder or suction racking (fixtures, slides) within compartments: Mill finish**

16
17 **541. FINISH - Wheel chock holders: Mill finish**

18
19 **AERIAL COMPONENTS**

20
21 **542. FINISH - Turntable floor grating: DA sides**

22
23 **543. FINISH - Turntable underside (except cut away area): Painted**

24
25 **544. FINISH - Pedestal cover brackets: DA**

26
27 **545. FINISH - Pedestal cover interior: DA**

28
29 **546. FINISH - Pedestal compartment door interiors: Mill finish**

30
31 **547. FINISH - Electrical compartment panels:**

- 32 - Upper connection panel – Mill finish
33 - Lower ECM panel – Mill finish
34

35 **548. FINISH - Aerial forward body step: DA**

36
37 **549. FINISH - Grating on top of body: DA sides**

38
39 **550. FINISH – Stabilizer Jack control boxes:**

- 40 ▪ Interior – Mill finish
41 ▪ Door interiors – Mill finish
42

43 **551. FINISH - Cab avoidance switch brackets: Mill finish**

44
45 **552. FINISH - Outrigger pad holder brackets: Mill finish**



Southbury Vol. Fire Department



1 **553. FINISH - Outrigger pads: Mill finish**

2
3 **554. FINISH - Downrigger watt pin & watt pin holder: DA**

4
5 **555. FINISH - Piping – Swivel to Waterway: Mill finish**

6
7 **556. FINISH - Waterway: Mill finish**

8
9 **557. FINISH - Waterway brackets: Mill finish**

10
11 **558. FINISH - Monitor: Mill finish**

12
13 **559. FINISH - Brass elbow on cord reel on aerial: Mill finish**

14
15 **560. FINISH - Cat Track holders/ boxes: Mill finish**

16
17 **561. FINISH – Aerial & Basket components:**

- 18 ▪ Base section and steel base collars – painted job color Gray Metallic, to match the upper color scheme.
- 19 ▪ Aluminum extendable sections and collars – DA
- 20 ▪ Control box – DA
- 21 ▪ Under basket L brackets – Mill finish
- 22 ▪ Under basket L bracket covers – Mill finish
- 23 ▪ Under basket L bracket piping – Mill finish
- 24 ▪ Under basket heat pans – Mill finish
- 25 ▪ Under basket waterway piping- Mill finish
- 26 ▪ Basket assembly parts- Etch finish

27
28 **562. FINISH - Mounts/ brackets to hold ladders to aerial or boom: Painted same color as aerial**

29
30 **563. FINISH - Mounts/brackets to hold pike poles to aerial or boom: painted same color as aerial**

31
32 **564. FINISH - Mounts/brackets to hold stokes basket to ladder: painted same color as aerial**

33 (ATP box to hold basket shall be Mill finish)

34 **Paint & Striping**

35 **565. STABILIZER & SUPERSTRUCTURE PAINT**

36 All stabilizers, outriggers, and the superstructure on the apparatus shall be painted job color red, to match the lower
37 color scheme. Multi Coat application process shall be used to apply the color selected in this order using direct gloss
38 paint on named parts.

40 **566. TURNTABLE & AERIAL/BOOM PAINT**

41 The turntable, aerial/boom or ladders, rotation motors, lift cylinders and platform leveling cylinders and components
42 shall be painted job color Gray Metallic, to match the upper color scheme. Multi Coat application process shall be used
43 to apply the color selected in this order using direct gloss paint on named parts.

45 **567. BOOM SUPPORT PAINT**

46 If bid design utilizes a boom-type structure, the boom support shall be Multi Coat application process shall be used to
47 apply the color selected in this order using direct gloss paint on named parts.



Southbury Vol. Fire Department



1
2 **568. TORQUE BOX PAINT**

3 The interior and exterior of the torque box shall be painted job color Red, to match the lower color scheme. Multi Coat
4 application process shall be used to apply the color selected in this order.
5

6 **569. HYDRAULIC TANK PAINT**

7 The hydraulic tank shall be painted body color red. Multi Coat application process shall be used to apply the color
8 selected in this order using direct gloss paint.
9

10 **570. REFLECTIVE STRIPING – NFPA 1901**

11 All reflective striping shall comply with the current version of NFPA 1901.

12 **571. REFLECTIVE STRIPING - INTERIOR CAB DOORS**

13 The cab doors shall have a minimum of 96 square-inches of reflective material affixed to the inside of each door per
14 NFPA 1901 14.1.6.
15

16 **572. REFLECTIVE STRIPING - OUTRIGGERS**

17 In compliance with NFPA, there shall be a 2-inch white reflective stripe placed on both tension arms for each outrigger.
18

19 **573. REFLECTIVE STRIPING - CHEVRONS - NFPA 15.9.3.2**

20 The entire rear face of the body, including the rear compartment hinged door, shall be covered with 6-
21 inch-wide reflective striping in an alternating Scotchlite™ Red #680-72 and Scotchlite™ Yellow #680-71
22 chevron pattern with the stripes running at a 45-degree downward angle from the top center of the
23 vehicle. Each stripe shall be 6-inch (wide).
24



25 **574. REAR CORNER GUARDS**

26 Polished stainless-steel 0.75-inch x 0.75-inch corner guards shall be installed on the outside vertical edges where the
27 body sides meet the body rear. The guards shall be applied after the Chevron is applied. The length of the guards to be
28 determined by manufacturer and approved by Southbury Vol. Fire department.
29

30 **575. ACORN NUTS**

31 Acorn nuts shall be installed on all exposed screws and bolts.



MISCELLANEOUS EQUIPMENT

576. CAB INTERIOR - LANTERNS

Five (5) Streamlight Fire Vulcan® LED Model 44451 rechargeable hand lights with quick release shoulder straps shall be provided. The hand light shall be orange in color and feature a C4 LED primary bulb and two (2) blue LED taillights. The momentary toggle switch has 8 different modes of operation. A 12-volt DC direct wire charging rack shall be installed in the crew cab and wired to vehicle electrical system. Item(s) shall be shipped loose²¹.



577. CAB INTERIOR - FLASHLIGHTS

(6) Streamlight 90502 Survivor Led-Rechargeable flashlights with 12v DC smart chargers shall be provided: color Yellow. A 12-volt DC direct wire charging rack shall be installed in the crew cab and wired to vehicle electrical system. Item(s) shall be shipped loose²².



578. CAB INTERIOR – 4GAS METER

A mounting location for (1) MSA Altair 4xr 12v DC charger shall be provided in the cab rear. TIC and mounting bracket shall be supplied by Southbury Vol. Fire Department at final inspection.



579. CAB INTERIOR – TIC

A mounting for a Teledyne FLIR K45, 12V DC Thermal Imaging camera charger shall be provided in rear crew cab. FLIR device and mounting bracket shall be supplied by Southbury Vol. Fire Department at final inspection.



580. CAB INTERIOR – PORTABLE RADIOS

Mountings for (6) Motorola APX 6000 radios with drop in 12v DC chargers shall be provided. Two (2) shall be mounted within reach of driver, officer. Four (4) shall be mounted in the cab rear. Radios and chargers shall be supplied by Southbury Vol. Fire Department at final inspection.

581. CAB INTERIOR – WATER CANS

Two (2) Amerex 240 water extinguishers with NFPA brackets shall be mounted in cab rear. Item(s) shall be shipped loose²³.

582. CAB INTERIOR – IRONS

One (1) Firehooks Unlimited Dynamic Duo (DYN-DUO) forcible entry set shall be provided. A Firehooks Unlimited “Iron’s Nest” (IN-1) mounting bracket shall be mounted in the cab rear. Item shall be shipped loose²⁴.



583. 120-VOLT RECEPTACLE(S) – CAB INTERIOR

One (1) 120-volt, 20-amp, 3-wire receptacle(s) shall be provided in the cab interior following NFPA guidelines. A brushed stainless-steel cover plate shall be installed to protect the receptacle. The receptacles shall be powered by shoreline connection or inverter using the auto transfer switch. The receptacle shall be labeled accordingly.

The receptacle(s) shall be positioned at the top of the engine tunnel, centered side to side at the seam, facing the rear. On the rear panel of the engine tunnel.

584. 120-VOLT SHORELINE RECEPTACLE

One (1) 120-volt, 20-amp, 3-wire receptacle(s) shall be provided in the crew cab interior in accordance with NFPA guidelines. The outlet shall be mounted near the center of the crew cab rear shelf. A brushed stainless-steel cover plate shall be provided to protect the receptacle. The receptacle shall be powered by the shore power inlet and labeled “120-Volts – Shore Power”.



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585. 120-VOLT RECEPTACLE(S) - BODY COMPARTMENT(S)

120-volt, 20-amp, 3-wire receptacles shall be provided inside ALL body compartment(s) following NFPA guidelines. A brushed stainless-steel cover plate shall be installed to protect the receptacle. The receptacles shall be powered by shoreline connection or inverter using the auto transfer switch. The receptacles shall be labeled accordingly.

586. 120-VOLT RECEPTACLE - BUMPER

One (1) 120 volt 3-wire flat blade non-twist-lock receptacle(s) shall be provided and installed in a weatherproof box with spring loaded cover. The receptacle shall be mounted on the officer's side of bumper forward of downrigger.

This receptacle shall be activated by the auto transfer switch.

587. AUTO TRANSFER SWITCH

A Kussmaul 091-134 Auto Interlock II switch shall be installed to allow the receptacle to be fed from shore power through the Auto Eject when the inverter is not in use. Shall be installed near the breaker box.



588. CORD REEL

One (1) Hannay Model ECR1816-17-18 power rewind cord reel for live electric cable shall be provided. The reel shall be 12-volt electric rewind and be equipped with an electrical collector ring with a minimum #10 gauge, 3-conductor wiring. Capacity of each reel shall be a minimum of 200 feet 10/3 gauge or 250 feet of 12/3 gauge electric cable.

Access to the reel shall be from both sides of the apparatus. The reel shall be polished stainless-steel disc with chrome frame and powder coated sprocket.



589. CORD REEL CABLE

One (1) 200-foot length of 10/3 type SO electric cable shall be installed on the cord reel. The color of the cord cable shall be yellow. One (1) Hubbell Model HBL2313SW 120V/20A heavy duty twist-lock female plug(s) with watertight safety-shroud and Insulgrip® connector body shall be provided. The plug shall be installed on the working end of the cord reel cable.



590. ELECTRICAL JUNCTION BOX

One (1) Akron Brass 4-receptacle junction box shall be provided for distribution of electrical power on the fireground. The box shall be constructed of aluminum and shall be completely powder coated gray with gray hinged protective receptacle covers and the full length carry handle. Internally lighted faceplates shall supply sufficient light to make connections and alert the crew that the box is in "power-on" status. The junction box shall have dimensions of 9.25" long x 5.5" wide x 8.5" high. The box shall be equipped with a 12-inch pigtail and a L5-20 male connector.



For the box, a total of four (4) NEMA L5-20R twist-lock, single receptacles shall be provided. Each receptacle shall be rated for 20 amps at 125 Volts.

A mounting box, with brushed stainless finish, shall be provided for the junction box. The junction box mount shall be placed horizontally. The location of the mount shall be determined at final inspection. The junction box shall be shipped loose²⁵



Southbury Vol. Fire Department



591. REEL REWIND SWITCHES

The reel shall be equipped with two (2) Hannay Reel Rewind Push-Button Controls #90030. Each accessible from a side of the apparatus with clear view to the reel. A 50-amp control switch circuit breaker shall be positioned near the reel rewind switch on the body. The AN250 motor shall take 60 seconds to rewind 100-feet. The reel discs shall be polished stainless steel.

The switch shall have a Cole Hersee 5543-15-BX recess ring for the push button.

Motors are to face rearward. Wiring to pay off the top of the reel.

592. REEL ROLLER ASSEMBLY

The reel shall be equipped with a captive roller assembly mounted directly on reel frame. It shall be supplied by Hannay and have a 4-way roller assembly with stainless-steel rollers mounted in a stamped steel housing.

593. REEL CABLE STOP

A molded plastic spherical type stop shall be provided near the end of the cable/hose.

594. GROUND LADDERS – LADDER TUNNEL

Ladders shall be provided in full compliance with NFPA 1901 requirements for aerial trucks. Ladders shall be individually mounted under the open equipment area inside of the torque box and properly labeled. Duo-Safety ladders shall be supplied as follows, left to right in the ladder tunnel:

▪ Two (2) 35 ft., 2-Section	- Model #1200-A
▪ Two (2) 28 ft., 2-Section	- Model #1200-A
▪ One 24 ft., 2-Section	- Model #900-A
▪ One 10 ft., Attic, folding	- Model #585-A
▪ One 16 ft., Roof	- Model #875-DR

595. GROUND LADDERS – OUTSIDE TORQUE BOX

Ladders shall be provided in full compliance with NFPA 1901 requirements for aerial trucks. Ladders shall be individually mounted and properly labeled. Duo-Safety ladders shall be supplied as follows:

▪ One 20 ft., Roof	- Model #875-DR	Mounted on left side
▪ One 18 ft., Roof	- Model #875-DR	Mounted on right side

596. GROUND LADDERS – TOP OF BODY NEAR TURNTABLE

Ladders shall be provided in full compliance with NFPA 1901 requirements for aerial trucks. Ladders shall be individually mounted and properly labeled. Duo-Safety ladders shall be supplied as follows:

▪ One 8 ft., Roof	- Model #775-A	Mounted in a transverse tray
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597. GROUND LADDERS – TOP OF RIGHTSIDE COMPARTMENTS

Ladders shall be provided in full compliance with NFPA 1901 requirements for aerial trucks. Ladders shall be individually mounted and properly labeled. Duo-Safety ladders shall be supplied as follows:

▪ One 14 ft., 2 SECTION, FRESNO	- Model #701
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Southbury Vol. Fire Department



598. GROUND LADDERS – TRANSVERSE COMPARTMENT

Ladders shall be provided in full compliance with NFPA 1901 requirements for aerial trucks. Ladders shall be individually mounted and properly labeled. Little Giant ladder shall be supplied as follows:



- One 22 ft. Little Giant - Defender Mounted next to Stokes basket (see pic)

599. NON-STANDARD LADDERS

The following specialty ladders shall be provided:

Two (2) 10 ft., Folding (Duo-Safety)	- Model FL-10	(One mounted on Aerial)
One 22 ft. Little Giant	- Defender	Item(s) shall be shipped loose ²⁶ .

An aluminum attic ladder storage box shall be provided. A door shall be provided with a lift and turn lock. The storage box shall be incorporated to the top cover of the Cat Rack with access from the platform.

600. LADDER BAYS

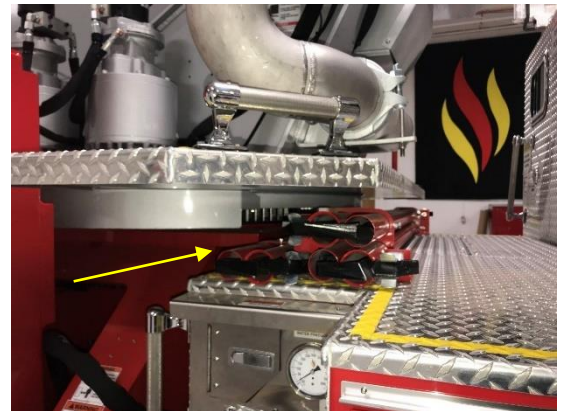
Two (2) additional ladders bays shall be provided, one on each side of the torque box. The bay on the right shall be capable of holding up to a 20-foot ladder, the bay on the left shall be capable of holding up to a 16-foot ladder. Ladders stored in the side ladder bays shall be accessed through the main ladder compartment doors.

601. PIKE POLE STORAGE - BELOW TURNTABLE

Six (6) stainless-steel pike pole tubes shall be installed below the turntable for ease of access. Three to each side. Tulip clips shall also be installed to secure the head of the pike pole. See photo for example.

Each side shall have two (2) tubes for NY roof hooks, one (1) for pike pole.

The tubes shall be painted job color red, to match the lower color scheme.



602. LADDER COMPARTMENT DOORS

Smooth aluminum double doors shall be provided at the rear of the ground ladder compartment. The doors shall be of double panel construction and shall be held open with a door holder and shut with a "D" ring with 2-point rod locks. The door hinge shall be positioned on the right-side. The primary door shall lap the secondary door and the compartment lights shall be activated when the primary door opens. The door switch shall be integrated with the door ajar hazard warning system.

Doors to be painted job color red, to match the lower color scheme.

603. PIKE POLES

- Two (2) National Hook Fiberglass with Ash Core Super & D-Handle; 4-ft Hooks, Model NHFG-4 shall be provided.
- One (1) Boston Rake Hook BRH-6 all steel with a Pry End.
- One (1) 10 ft. Fire Hooks Unlimited APH-10 pike pole(s) shall be provided. The handles shall be solid fiberglass with stainless-steel wear sleeves. There shall be a gas shutoff on the end of the pole opposite the hook.
- One (1) 12 ft. Fire Hooks Unlimited APH-12 pike pole(s) shall be provided. The handles shall be solid fiberglass with stainless-steel wear sleeves. There shall be a gas shutoff on the end of the pole opposite the hook.
- One (1) 14 ft. Fire Hooks Unlimited APH-14 pike pole(s) shall be provided. The handles shall be solid fiberglass with stainless-steel wear sleeves. There shall be a gas shutoff on the end of the pole opposite the hook.





Southbury Vol. Fire Department



1 All six (6) Items shall be shipped loose²⁷.

2
3 **604. STAINLESS TUBE PIKE POLE MOUNT(S)**

4 Six (6) stainless-steel tube(s) shall be mounted to ease storage of pike poles. The mounting tube(s) shall be positioned:
5 Three (3) in rear ladder bay for 10, 12, 14-foot poles; two (2) on Cat Rack cover for access from platform. Exact layout
6 with the folding ladder to be determined.

7
8 **605. HOOKS**

9 Two (2) 6-foot Fire Hooks "NY" fire hook(s) Model RH-6 chisel ends shall be provided.

10 Three (3) 8-foot Fire Hooks "NY" fire hook(s) Model RH-8 chisel ends shall be provided; one installed on the
11 aerial device.

12 One (1) 8-foot Fire Hooks "NY" fire hook Model RH-8; with D-handle will be provided; installed on the aerial
13 device.

14 ALL six (6) items shall be shipped loose²⁸.

15 **606. IRONS**

16 Three (3) sets of Fire Hooks Unlimited Dynamic Duo irons shall be provided. One set shall be
17 mounted in the bucket using irons nest brackets. One set will be mounted in the crew cab. A
18 third set mounting location will be decided at final inspection. Item(s) shall be shipped loose²⁹.

19 **607. RESCUE SAWS AND MOUNTS**

20 One (1) Husqvarna K770 Rescue saw shall be provided. Mounts for two (2) saws shall be
21 provided. Mounting locations for two (2) saws to be decided at final inspection. Item shall be
22 shipped loose³⁰.

23 **608. CHAIN SAWS MOUNTS**

24 Mounts for two (2) Cutter's Edge CE-2171-RS chain saws shall be provided. Mounting locations
25 to be decided at final inspection. Item(s) shall be shipped loose³¹.

26 **609. MOUNTS FOR TOOLS**

27 Mounting systems for Shovels (2), Flat Head Axes (2), Pry bars (2), Large (1) and Small (1) bolt cutters, and a
28 Sledgehammer (1) shall be provided. Mounting locations to be decided at final inspection. Item(s) shall be shipped
29 loose³².

30 **610. FANS**

31 Three (3) SUPERVAC V18-BD DEWALT battery-powered positive pressure ventilator fans shall be
32 included. Fans shall include connection for shore power, and two (2) each 12Ah battery sets/Fast
33 Chargers. Each fan shall be mounted using a TM18 Bracket. Mounting locations to be decided at final
34 inspection. Item(s) shall be shipped loose³³.

35 **611. EXTINGUISHERS**

36 The following extinguishers shall be supplied and shipped loose³⁴



▪ Two (2) Amerex #240 PW H2O	Mounted in Crew Cab
▪ One (1) Amerex 760HF 20# ABC	Mounted next to Outrigger (see pic)
▪ One (1) Amerex 332 20# CO2	Mounted next to Outrigger (other side)



Southbury Vol. Fire Department



1 Two (2) Can Harness Deluxe straps CH-312 DX shall also be provided. Item(s) shall be shipped
2 loose³⁵.



612. LADDER BELTS

5 The following thirteen (9) ladder belts shall be provided: Item(s) shall be shipped loose³⁶.

▪ Five (3) CMC Rescue Ladder Belts	Size: L/XL	Model: #202446
▪ Five (3) CMC Rescue Ladder Belts	Size: XXL	Model: #202446
▪ Three (3) CMC Rescue Ladder Belts	Size: X/M	Model: #202442

613. PORTABLE SCENE LIGHTS

10 Four (4) Akron Revel Scout LED Battery scene lights with two (2) battery sets each, along with 120v
11 chargers shall be provided. All four lights and chargers shall be mounted using SCOUT-MT truck
12 mounting hardware in compartment location(s) to be decided at final inspection. Item(s) shall be
13 shipped loose³⁷.



614. PORTABLE INVERTER/GENERATOR

15 Two (2) Honda EU2200IC 2200-Watt Companion Super Quiet Portable Inverter Generators shall be
16 provided. The portable generators shall have a 30-amp receptacle. Item(s) shall be shipped loose³⁸.



615. ZICO FOLDING ALUMINUM WHEEL CHOCKS

22 Two (2) Zico folding aluminum wheel chocks Model SAC-44-E shall be furnished by the
23 apparatus manufacturer. Two (2) matching mounting brackets shall be installed by the
24 manufacturer, exact location to be decided at final inspection. Item(s) shall be shipped
25 loose³⁹.



616. SPARE HARDWARE KIT - BODY

28 An assortment of nuts, bolts, cap screws, washers and other hardware used in vehicle construction shall be provided.

617. SPARE HARDWARE KIT - AERIAL

31 An assortment of nuts, bolts, caps crews, washers and other hardware used the in construction of the aerial device shall
32 be provided.



Southbury Vol. Fire Department



MANUALS & DOCUMENTATION

618. OPERATOR'S & PARTS MANUALS

A binder shall be supplied that has electronic copies and paper documents as listed below.

The binder shall have two (2) duplicate electronic copies stored to digital media, either microSD, DVD or similar. Each electronic copy shall have:

- Operations & maintenance instructions for items on the vehicle, except all purchased components
- Complete electrical diagrams including charts illustrating the individual wire color, number code, and function.
- Parts manuals.
- Parts drawings and an overall vehicle layout.
- Material Safety Data Sheets.
- Certificates
- Warranties

Printed documents shall include:

- Operations & maintenance instructions for items on the vehicle, not including the vendor literature.
- Operations & maintenance instructions for engine.
- Certificates of independent test results.
- Warranty documents.
- Manufacturer's record of construction details and engine power curve.
- Vehicle final alignment report.
- Vendor literature provided by the manufacturer that arrives with the purchased part.

Two (2) manual electronic copies for the water pump shall be included as provided by the pump manufacturer. Added electronic copies and paper documents, as provided by other equipment suppliers shall be emailed to Southbury Vol. Fire Department at svfafire@gmail.com.

619. ELECTRICAL WIRING DIAGRAMS

Two (2) electrical wiring diagrams, prepared for the model of chassis and body, shall be provided. There shall also be an electronic version of electrical wiring diagram emailed to Southbury Vol. Fire Department at svfafire@gmail.com.



1 **INSPECTIONS, WARRANTIES & CERTIFICATIONS**

3 **620. WARRANTY – FRONT AXLE**

4 Dana Corporation supplies a five (5) year parts and labor warranty on the front axle.

6 **621. WARRANTY- DISC BRAKES**

7 Meritor Corporation supplies a three (3) year parts and labor warranty on the EX225H disc brakes.

9 **622. WARRANTY- REAR AXLE**

10 Dana Corporation supplies a five (5) year parts and labor warranty on the rear axle.

12 **623. WARRANTY - ABS**

13 A three (3) year or 300,000 miles parts and labor warranty shall be provided by Meritor WABCO Vehicle Control Systems
14 for the Anti-Lock Braking System (ABS).

16 **624. WARRANTY – CUMMINS ENGINE**

17 Cummins provides a 5-year or 100,000-mile warranty on the X-series engine.

19 **625. WARRANTY - TRANSMISSION**

20 Allison provides a 5-year warranty on the EVS transmissions.

22 **626. PAINT/CORROSION LIMITED WARRANTY**

23 A limited pro-rated paint six (6) year warranty shall be provided.

25 **627. MANUFACTURER'S LIMITED WARRANTY**

26 A limited two (2) year warranty for parts and labor shall be provided.

28 **628. CAB FIFTEEN YEAR STRUCTURAL LIMITED WARRANTY**

29 A cab specific, limited fifteen (15) year structural warranty shall be provided.

31 **629. BODY FIFTEEN YEAR STRUCTURAL LIMITED WARRANTY**

32 A body specific, limited fifteen (15) year structural warranty shall be provided.

34 **630. AERIAL DEVICE TWENTY YEAR STRUCTURAL LIMITED WARRANTY**

35 An aerial specific, limited twenty (20) year structural warranty shall be provided.

37 **631. CHASSIS FRAME RAIL & CROSS MEMBER STRUCTURAL LIMITED LIFETIME WARRANTY**

38 A limited lifetime frame rail and cross members structural warranty shall be provided.

40 **632. WATEROUS PUMP WARRANTY**

41 The pump shall be warranted by Waterous to the original buyer that the pump is free from defects in material and
42 workmanship under normal use and service for a period of five (5) years from the date the product is first placed in
43 service, or five and one-half (5-1/2) years from the date of shipment by Waterous, whichever period shall be the first to
44 expire; provided the Buyer notifies Waterous, in writing, of the defect in said product within the warranty period, and
45 said product is found by Waterous to be nonconforming with the aforesaid warranty. This warranty covers parts only.
46 See warranty certificate for complete details.



Southbury Vol. Fire Department



1 **633. PRIMER WARRANTY**

2 The pump primer shall be covered by a five (5) year parts warranty.

3
4 **634. PRIMER PERFORMANCE, SAFETY, NFPA COMPLIANCE**

5 The priming system shall be capable to a vertical lift to 22-inches of mercury and shall be fully compliant to applicable
6 NFPA standards for vertical lift. The system shall create vacuum by using air from the chassis air brake system through a
7 three-barrel multi-stage internal "venturi nozzles" within the primer body. The noise level during operation of the primer
8 shall not exceed 75 Db.

9
10 **635. TOTAL VEHICLE ASSESSMENT CERTIFICATION**

11 The apparatus shall be third-party, independent, audit-certified through Underwriters Laboratory (UL) to the current
12 edition of NFPA 1901 standards. The certification includes: all design, production, operational, and performance testing
13 of the apparatus. No exceptions.

14 **636. PUMP TEST AND CERTIFICATION**

15 The fire pump shall undergo third party testing at the apparatus manufacturer's facility and shall conform to NFPA
16 requirements and standards. Copies of all tests and the manufacturer's record of pump construction details shall be
17 provided with the delivery documentation.

18 **637. ENGINE COOLING CERTIFICATION**

19 "EPQ" (End Product Questionnaire) certification shall be provided by the chassis manufacturer. Certification shall be
20 documented with reference to each specific chassis model by the chassis manufacturer.

21
22 **638. STEPPING SURFACE CERTIFICATION**

23 A certification that all materials used for exterior surfaces designated as stepping, standing, and walking areas, all
24 interior steps and all interior floors meet the slip resistance requirements of the applicable edition and section of NFPA
25 1901 shall be provided with the delivery documentation.

26
27 **639. TOWER TEST AND CERTIFICATION**

28 The tower shall undergo testing by Underwriter's Laboratories (UL) at the manufacturer's facility and shall conform to
29 NFPA requirements and standards. Copies of all tests shall be provided with the delivery documentation.

30
31 **640. PERFORMANCE REQUIREMENTS AND TEST - NFPA**

32 A road test shall be conducted with the apparatus loaded per NFPA recommendations (unless otherwise specified) and a
33 continuous run of ten (10) miles or more shall be made during which time the apparatus shall show no loss of power or
34 overheating.

35 The transmission drive shaft or shafts and rear axles shall run quietly and be free from abnormal vibration or noise
36 throughout the operating range of the apparatus.

37
38 The apparatus must be capable of accelerating to 35 mph from a standing start within 25 seconds on a level highway
39 without exceeding the maximum governed rpm of the engine.

40
41 The fully loaded vehicle shall be capable of obtaining a minimum top speed of 50 mph on a level highway with the
42 engine not exceeding its governed rpm (full load).

43
44 The apparatus shall be able to maintain a speed of 20 mph on any grade up to and including 6%.

45
46 The service brakes shall be capable of stopping the fully loaded vehicle in 35-feet at 20 mph on a level highway.



Southbury Vol. Fire Department



1 The apparatus performance shall meet or exceed NFPA standard practices.

2 3 **641. UNDERSIDE FINAL INSPECTION**

4 During a **final** Inspection, the complete vehicle shall be raised, allowing the Fire Department Inspection team to walk
5 under the apparatus to review the complete underside.

6 7 **642. WATERWAY FLOW INSPECTION**

8 During the **final** Inspection, the flow through the aerial waterway shall be observed for no more than one hour.

9 10 **643. GROSS WEIGHT CERTIFICATION**

11 A certified weight certificate showing weights on the front axle, rear axle, and total weight for the completed apparatus
12 with the water and fuel tanks full, but without personnel, equipment or hose shall be provided at the time of **delivery**.

13 **644. CRASH TESTING**

14 The cab shall be certified for the following tests:

15 SAE J2420: Cab Over Engine (COE) Front Strength Evaluation - Dynamic Loading – Heavy Trucks

16 SAE J2422: Cab Roof Strength Evaluation - Quasi Static Loading - Heavy Trucks

17 ECE Regulation 29: Protection of Occupants of Cab in Commercial Vehicle

18 19 **645. 12-VOLT ELECTRICAL WARRANTY**

20 The 12-volt electrical system and ancillary components used in the construction of the apparatus shall be warranted for a
21 period of five (5) years. This covers failures caused by defective design or workmanship, provided the apparatus is used in
22 a normal and reasonable manner. This warranty is extended only to the original purchaser for a period of five (5) years
23 from the date of delivery. Items specifically covered are:

- 24 ▪ Electrical harnesses and harness installation
- 25 ▪ Switches, circuit breakers and relays
- 26 ▪ LED Lighting: FMVSS required and warning lights.
- 27 ▪ Electrical connectors and connections against corrosion or deterioration

28
29 The following are excluded as they are covered by specific warranties provided by the manufacturer of the components:

- 30 ▪ Chassis electrical systems and components installed by the chassis manufacturer.
- 31 ▪ Batteries, battery chargers, two-way radio equipment, and similar equipment.
- 32 ▪ Periodic cleaning and tightening of battery terminal connections.
- 33 ▪ Accident, negligence, or unauthorized alteration of original equipment.

34 35 **646. PAINT WARRANTY**

36 The paint on the unit will be provided with a ten (10) year paint finish guarantee which will cover the finish for the
37 following items:

- 38 ▪ Peeling or delamination of the topcoat and/or other layers of paint.
- 39 ▪ Cracking or checking.
- 40 ▪ Loss of gloss caused by defective finishes which are covered by this guarantee.

41 **647. GOLD LEAF WARRANTY**

42 The gold leaf shall come with a 1-year warranty against fading or deterioration.



Southbury Vol. Fire Department



MOUNTING LOCATIONS TO BE DETERMINED AT FINAL INSPECTION

1. Irons 3rd set (1)
2. Rescue Saws (2)
3. Chain saws (2)
4. Shovels
5. Axes
6. Bolt cutters
7. Pry Bars
8. Sledgehammers
9. SuperVac Fans (3)
10. Portable Scene Lights (4)
11. Zico Chocks (4)
12. Thermal Imaging Camera
13. 4Gas meter
14. Portable Radios and chargers (6)
15. Map box
16. Additional Handrails
17. Cab inclinometers
18. Platform locator lights
19. Folding steps
20. Akron Brass 4-receptacle junction box

Providing drawings, the manufacturer may propose locations to Southbury Vol. Fire Department in advance for approval if obvious positioning exists. Southbury Vol. Fire Department will approve each in writing.



Southbury Vol. Fire Department



ITEMS SUPPLIED BY FIRE DEPARTMENT

4Gas meter and mounting bracket shall be supplied by SVFA	99
FLIR device and mounting bracket shall be supplied by SVFA.....	99
(6) Motorola APX 6000 radios with drop in 12v DC chargers shall be provided by SVFA.....	99
iPad tablet and HAVIS universal flat bottom base will be supplied by SVFA.....	24



Southbury Vol. Fire Department



ITEMS SHIPPED LOOSE

- 1 AccuPressure Heavy Duty Safety Caps (10)
- 2 Firecom Hooks (6)
- 3 Cup Holders – Cab (2)
- 4 SCBA Mask bags (5)
- 5 Map Box
- 6 Rappelling eyes (2)
- 7 Bolt in dividers (20)
- 8 Akron 2.5 x (2) 1.5-inch NST Leader Line Wye #1581
- 9 Akron Pyrolite® Triple Stacked Tip Set
- 10 Akron 3488, Pyrolite® stream shaper
- 11 Akron Master Stream Turbomaster™ Model 1755 Nozzle
- 12 TFT 6-4 NH; 5-inch STORZ x Long Handle x 6" NST/NH 30-degree elbow (2)
- 13 2-1/2 Auxiliary Inlet Plugs (2)
- 14 2-1/2 Auxiliary Discharge Elbows (2)
- 15 2-1/2 Auxiliary Discharge Reducers (2)
- 16 2-1/2 Auxiliary Discharge Caps (2)
- 17 4-inch Female NPT x 5-inch Male NST adapter
- 18 4-inch Female NST x 5-inch Storz 30-degree elbow intake (1)
- 19 LDH Storz Caps w/Chains (4)
- 20 Akron Revolution Intake Valve (Swivel Elbow Inlet); 5-inch STORZ x 5" NH 30-degree elbow (1)
- 21 Streamlight Fire Vulcan® LED Lanterns with shoulder straps (5)
- 22 Streamlight Flashlights and Chargers (6)
- 23 Water Cans and Mounts (2)
- 24 Irons Nest Mounting Bracket (1)
- 25 Akron Brass 4-receptacle Junction box and mount
- 26 Little Giant Ladder 22'
- 27 Pike Poles (6)
- 28 Hooks (6)
- 29 Irons (3 Sets)
- 30 Husqvarna Rescue Saws (2)
- 31 Chain Saws and Mounts (?)
- 32 Mounts for Shovels, Pick head Axes, Pry bars, bolt cutters, sledgehammers
- 33 Fans (3) and Mounts
- 34 Extinguishers (2) CO2, ABC
- 35 Can Harness Deluxe Extinguisher Shoulder straps (2)
- 36 Ladder Belts (9)
- 37 Portable Scene Lights (4)
- 38 Inverter/Generator (2)
- 39 Chocks (2)