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**Subject:** FW: Recommended Purchase of Fire Ladder Truck on July 11th agenda  
**Attachments:** image001.jpg; ATT00001.htm; S230@cityofpasadena.com\_20160623\_132153.pdf; ATT00002.htm

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**Subject:** RE: Recommended Purchase of Fire Ladder Truck on July 11th agenda

Good morning Councilmember, thank you for your note, staff appreciates the opportunity to share additional information regarding this proposed purchase. Please allow me to respond to your questions:

1. Release of the specifications. My recollection, which certainly could be wrong, is that you asked for a copy of the specifications as opposed to having them posted on the city's website. I forwarded a scanned copy of them to the Council on June 23<sup>rd</sup>. They are a matter of public record, so I will ask Mark to post them under the agenda item. (Mark, copy attached).
2. Since the passage of California's proposition 209 we no longer report on the diversity of city contractors. However, in the information passed along yesterday, we included Seagrave's EEO report. We will issue a city standard purchase order contract which contains a provision regarding equal opportunity employment. The City Attorney would know better than I, but I believe this is the limit to what the City is able to do in this regard.

Regards,

Steve Mermell  
Interim City Manager – 626.744.6936

07/11/2016  
Item 13

# Pasadena Fire Department Tractor Drawn Aerial

One (1)  
00-03-110B

Contract "A" - COD Payment

One (1)  
00-03-11ZZ

In the event that the Purchaser does not utilize the Contractor's standard sales contract language provided herein the Contractor shall have the right to charge Purchaser for additional legal and administrative expenses for any such amendments to the Contractor's standard contract terms.

One (1)  
00-03-230B

## PAYMENT TERMS

Terms are Net, Payment in Full upon Delivery and Acceptance.

One (1)  
00-03-2410

## PURCHASING COOPERATIVE

The apparatus shall be acquired through the H-GAC purchasing cooperative.

One (1)  
00-04-0010

## PRICING EXPIRATION

Unless this proposal is accepted by July 29, 2016, the right is reserved to withdraw this proposition.

One (1)  
00-04-0130

## INTENT OF BID PROPOSAL SPECIFICATIONS

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

One (1)  
00-04-01A0

## COMPLIANCE WITH NFPA 1901

The National Fire Protection Association Standard "NFPA 1901 - Standard for Automotive Fire Apparatus - Current Edition" (hereinafter referred to as NPFA 1901) in effect at the time of the purchase shall be used as a reference and its requirements shall be met by the apparatus manufacturer. The apparatus shall be constructed in accordance with federal and state laws at the time of bid. Any federal, state or NFPA amended changes that shall affect the cost of producing said apparatus shall be charged to the purchaser. Mandatory minor apparatus equipment as stated in the applicable paragraphs (5.8, 6.7, 7.7, 8.8, 9.8, 10.5, 11.9 and respective subparagraphs) of the NFPA standard shall not be provided unless specifically stated and listed in purchaser's written specifications.

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

One (1)  
00-04-01B0

### PURCHASER'S NFPA 1901 RESPONSIBILITIES

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

- Its required performance, including where operations at or above elevations of 2000 ft. or on grades greater than 6 percent are required.
- The maximum number of firefighters to ride within the apparatus.
- Specific electrical loads that are to be part of the minimum continuous electrical load defined in 13.3.3 of NFPA 2003.
- Any hose, ground ladders, or equipment to be carried by the apparatus that exceed the minimum requirements of the NFPA 1901 standard in effect at the time of the bid. Equipment weight and location on the apparatus are the responsibility of the purchaser as a prerequisite of defining the loaded vehicle's vertical center of gravity for rollover stability calculations, when required.

One (1)  
00-04-023E

### ACQUAINTANCE WITH SPECIFICATIONS

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

One (1)  
00-04-0320

### ERRORS AND OMISSIONS

Any error or omission in the specifications shall be reported immediately to the purchaser for correction, prior to bidding.

One (1)  
00-04-0430

### SINGLE SOURCE MANUFACTURER

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

# Pasadena Fire Department

## Tractor Drawn Aerial

One (1)  
00-04-1030

### MANUFACTURER'S LIABILITY

Seagrave Fire Apparatus, LLC, if our bid is accepted, shall defend any and all suits and assume all liability for the use of any patented process, device or article forming a part of the apparatus or any appliance furnished under the contract.

One (1)  
00-04-1100

### DISCONTINUANCE POLICY

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

One (1)  
00-04-1110

### STANDARD PLACEMENT OF COMPONENTS

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

00-04-5710

### COMPLETION DATE

Barring any significant change in our current backlog of orders, and delays due to strikes, war or international conflict, failures to obtain materials, or other causes beyond our control not preventing, the apparatus and equipment detailed in the attached specification shall be delivered to you within approximately Three Hundred Sixty (360) Calendar Days after receiving the complete order and signed approval drawing. It shall be understood and agreed that changes requested after the pre-construction conference and the resulting signed change orders and approval drawings, if approved, after the order has been released to Engineering, shall constitute a valid cause for production delay and without penalty to the contractor.

One (1)  
00-04-5930

### PROPOSAL DRAWINGS

Full size, blueprint type drawings of the apparatus being proposed have been included with our bid package. These drawings are drawn to scale on a CAD system to ensure an accurate and professional drawing. The drawing shows five (5) views of the vehicle (front, rear, both sides and top). The drawing also shows the wheelbase and overall dimensions of the apparatus, proposed compartment sizes and features, booster tank position and the location of all emergency warning equipment, work lights, seating and other major items that are to be provided on the apparatus.

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One (1)  
00-04-7000

## APPROVAL DRAWINGS

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

One (1)  
00-04-7100

## CHANGE ORDERS

To ensure the proper engineering and construction of the purchaser's custom fire apparatus in a timely manner, the contractor shall consider the order final and complete after any changes made during the pre-construction conference are mutually approved. Change orders requested after the pre-construction conference are discouraged. It shall be understood and agreed that any changes, if approved, after the order has been released to Engineering, shall constitute a valid cause for production delay and without penalty to the contractor.

One (1)  
00-04-813C

## PRE-CONSTRUCTION CONFERENCE

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

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

Due to Pasadena Fire Department's obligation to plan and assist with the ROSE BOWL ACTIVITIES, the Engineering Conference cannot be scheduled between December 1 and January 7 of any calendar year.

Four (4)  
00-04-813Z

Number of Fire Department Representatives Attending Pre-Construction Conference

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One (1)  
00-04-823C

### IN-PROCESS INSPECTION TRIP

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

Due to Pasadena Fire Department's obligation to plan and assist with the ROSE BOWL ACTIVITIES, the In-process Inspection cannot be scheduled between December 1 and January 7 of any calendar year.

Four (4)  
00-04-823Z

Number of Fire Department Representatives Attending In-Process Inspection

One (1)  
00-04-833C

### FINAL INSPECTION TRIP

One (1) "Final" inspection trip for representatives of the purchaser shall be included in the bid. The inspection shall take place at a company facility or an authorized representative's facility during normal business hours, Monday - Friday. The cost of transportation, meals and lodging shall be included. A distributor or sales representative shall accompany the purchaser on the inspection trip.

Due to Pasadena Fire Department's obligation to plan and assist with the ROSE BOWL ACTIVITIES, the Final Inspection cannot be scheduled between December 1 and January 7 of any calendar year.

The satisfactory completion of all items noted during the Final Inspection must be confirmed via video and/or photographs prior to the unit shipping from Seagrave - Clintonville, WI.

Four (4)  
00-04-834Z

Number of Fire Department Representatives Attending Final Inspection

One (1)  
00-04-8400

### PRE-DELIVERY ROAD TRIP AND FINAL FACTORY CHECKLIST

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

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

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One (1)  
00-04-8450

### 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. The delivery shall be made by a Non- Smoking driver.

The apparatus shall be delivered to an authorized Seagrave Fire Apparatus repair facility in the Los Angeles Area. Upon delivery of the apparatus to the facility a pre-delivery inspection shall be completed. All deficiencies items noted during this inspection and those identified by the delivery driver during delivery need to be repaired will be completed by the service center. Once all noted items are taken care of the apparatus will be cleaned and detailed in preparation for the delivery of the apparatus to Pasadena, CA Fire Department.

Due to Pasadena Fire Department's obligation to plan and assist with the ROSE BOWL ACTIVITIES, no deliveries will be scheduled between December 1 and January 7 of any calendar year.

One (1)  
00-04-8520

### FAMILIARIZATION

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

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

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

One (1)  
00-04-8700

### DOCUMENTATION - NFPA REQUIREMENTS

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

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One (1)  
00-05-013A

### GENERAL DESIGN REQUIREMENTS

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

Seagrave's deluxe custom cab chassis shall be provided. It incorporates an all steel cab for strength, durability and safety. The cab and body sheet metal shall be constructed of stainless steel, no exception.

The cab has the highest strength-to-weight ratio of any stainless steel cab design in the industry. A 3" rectangular tube steel subframe anchors a completely enclosed, all-stainless steel super-structure; providing a protective safety-cage that totally surrounds and protects the properly seat belted driver, officer and crew. This safety-cage is covered in heavy gauge stainless steel, making the finished product the strongest, safest cab in the industry.

One (1)  
00-05-0210

The specified apparatus shall be designed to be fully operational in the local climate of the purchaser.

### GROSS VEHICLE WEIGHT

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

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

One (1)  
00-05-0310

### IN-SERVICE WEIGHT CALCULATION

A weight calculation showing weights on the front axle, rear axle and total weight for the completed apparatus as specified by the purchaser, with water and fuel tanks full, equipment and hose, shall be supplied. This calculation shall be available for the pre-construction conference.

For the purpose of calculating the in-service weight, firefighter weight shall be calculated at 250 pounds per crew member, including SCBA. If a hose load is not provided, the minimum hose load required by NFPA 1901 shall be used for the calculation. If a loose equipment load is not provided, including its location on the vehicle, the NFPA 1901 load amount based on the cube of the body shall be used.



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One (1)  
00-05-032Z

### CUSTOMER DECLARED EQUIPMENT WEIGHT

The customer declared equipment weight shall be from 2000 to 2500 pounds. This weight shall be evenly distributed.

One (1)  
00-05-0420

### VEHICLE PERFORMANCE ANALYSIS

A performance analysis report shall be run on the vehicle, as ordered, using computer software to determine top speed, gradeability, optimum shift points and acceleration on various grades. The report shall be delivered with the completed vehicle and shall be available during pre-construction conference.

One (1)  
00-05-1010

### APPARATUS OVERALL HEIGHT

The overall height of the completed apparatus shall not exceed 134.00 inches. This measurement shall be taken with the water tank empty and no hose, equipment or personnel on the apparatus. All permanently mounted equipment shall be in the stowed/travel position.

One (1)  
00-05-1110

### APPARATUS OVERALL LENGTH

The overall length of the completed apparatus shall not exceed 714.00 inches. This measurement shall be taken with all permanently mounted equipment in the stowed/travel position.

One (1)  
00-05-2000

### GENERAL CONSTRUCTION, QUALITY AND WORKMANSHIP

The design and construction of the apparatus shall embody standard automotive heavy vehicle engineering practices. The apparatus shall be designed, engineered and constructed with due consideration for the severe service nature of the fire service. All parts of the apparatus shall be installed in accordance with the OEM specifications and shall be strong enough to withstand the general service under full load for twenty (20) years.

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

The workmanship shall be of the highest quality in its respective field. In order to assure the quality of apparatus, all welding personnel that shall be utilized in the fabrication and construction of structural components of the apparatus chassis, body and aerial device shall hold a valid certificate from the AWS - American Welding Society.

The apparatus shall be designed to conform to the intent of ANSI and NFPA 1901 standards. The

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following design criteria shall be applicable to this specification to the extent specified herein:

- American Society for Testing Materials (ASTM) - A-36, Specification for Structural Steel
- Society of Automotive Engineers, Inc. (SAE) - SAE Handbook
- American Welding Society (AWS) - AWS014.4-77 Classification and Application of Welded Joints for Machinery and Equipment
- American Society for Non-Destructive Testing (ASNT)
- ASNT Guidelines; Procedure SNT-TC-1A

The apparatus shall have symmetrical proportions and a pleasing appearance as a result of design detail and fit/finish quality. The apparatus shall be engineered with firefighter safety as the top priority. Ease of operation and ease of maintenance shall also be considered in the apparatus design, but shall not compromise safety. No special tools shall be required to access normal service or maintenance items.

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

One (1)  
00-05-2110

### STEPPING SURFACE CERTIFICATION

A certification that all materials used for exterior surfaces designated as stepping, standing and walking areas, all interior steps and all interior floors meet the slip resistance requirements of the applicable edition and section of NFPA 1901 shall be provided with the delivery documentation.

One (1)  
00-05-310S

### AERIAL TEST AND CERTIFICATION

The aerial device shall be third party tested at the manufacturer's facility and shall conform to NFPA requirements and standards. Copies of all tests shall be provided with the delivery documentation.

One (1)  
00-05-4000

### PERFORMANCE REQUIREMENTS AND TEST - NFPA

A road test shall be conducted with the apparatus loaded per NFPA recommendations (unless otherwise specified) and a continuous run of ten (10) miles or more shall be made during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts and rear axles shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus.

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

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

The apparatus shall be able to maintain a speed of 20 mph on any grade up to and including 6%.

The service brakes shall be capable of stopping the fully loaded vehicle in 35 feet at 20 mph on a level

# Pasadena Fire Department Tractor Drawn Aerial

concrete highway.

The apparatus shall be tested and approved in accordance with NFPA standard practices.

One (1)  
00-05-4100

## FAILURE TO MEET TEST

In the event that the apparatus fails to meet the road test requirements of these specifications upon delivery, during the first trials, second trials may be made at the option of the bidder within 30 days of the date of the first trials. Such trials shall be final and conclusive and failure to comply with these requirements shall be cause for rejection of the apparatus. Permission from the manufacturer to keep or store the apparatus in any building owned or occupied by the purchaser or its use by the Fire Department during the above specified period shall not constitute acceptance.

One (1)  
10-00-0620

## GENERAL

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

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

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

One (1)  
10-00-9910

## WHEELBASE

The wheelbase shall be:

Tractor - 165.00"

Tractor drive axle to trailer axle - 305.00"

One (1)  
10-00-9920

## SEATING CAPACITY

The safe seating capacity of the cab for properly belted passengers shall be:

Tractor - Five (5)

Trailer - One (1)

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One (1)  
10-00-9935

## APPROACH - DEPARTURE ANGLES

An angle of approach and an angle of departure of at least 8 degrees shall be maintained at the front and the rear of the vehicle when it is loaded to the estimated in-service weight, as defined by NFPA 1901, 2016 edition.

One (1)  
10-00-994T

## GROSS VEHICLE WEIGHT RATINGS

Front Tractor Weight Rating shall be: #20,000  
Rear Tractor Weight Rating shall be: #24,000  
Tiller Axle Weight Rating shall be: #21,500  
Gross Vehicle Weight Rating shall be: #65,500

One (1)  
10-10-1000

## FRAME

The chassis frame shall be built with two steel channels with a minimum of five (5) cross members. Pump shall not be counted as a cross member. The side rails shall be of heat treated steel. Each rail shall have a section modulus of 16.4, a minimum elastic limit of 120,000 PSI and a minimum resisting bending moment of 2,124,000 inch pounds. The cross members shall be of heavy duty, fabricated, all-welded design, made out of a minimum of 50,000 psi material. The frame and cross members shall be a bolted assembly utilizing 5/8" flange head grade eight bolts and Spirallock® flange nuts. Spirallock® nuts shall be used exclusively in the frame assembly for mounting spring hangers, steering gear, engine, transmission, etc. because of their ability to maintain a constant torque tension and prevent vibration loosening. Their design shall provide for an even thread load distribution over the bolt, increased fatigue strength and life, and clamping torque. All holes made must be used and any holes in the frame for options not required on this chassis are not acceptable.

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

One (1)  
10-11-0000

## BUMPER

A heavy duty, 10" high, ribbed, highly polished stainless steel bumper shall be mounted to the front of the chassis. The bumper shall be a "ribbed" cross section shape with 2" flanges and rounded corners.

As part of the bumper extension, a second formed channel with 2" flanges shall be provided directly behind the full width of the flat portion of the bumper. The bumper extension support shall be of channel (minimum 9-7/16" x 3" x 3/8") construction, bolted to the chassis frame stub. A 3/16" aluminum tread

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## Tractor Drawn Aerial

plate gravel pan (deck) contoured to fit just below the front face of the cab and just below the upper bumper flange shall be provided. The gravel pan shall not be fastened to the top flange of the bumper.

One (1)  
10-11-000X

### BUMPER PLACARD

A 12" wide x 9" tall blank number plate shall be mounted to the front of the bumper to the driver's side. It shall be constructed of 16 gauge stainless steel and painted job color red.

One (1)  
10-12-0012

### 12" BUMPER EXTENSION

A bumper extension shall be installed at the front of the cab. The front of the bumper shall be approximately 12" from the front face of the cab. A gravel pan made of 3/16" aluminum tread plate shall be installed between the front bumper and the cab. The bumper extension shall be designed and constructed so that the apparatus can be pulled by the extension.

One (1)  
10-12-00A0

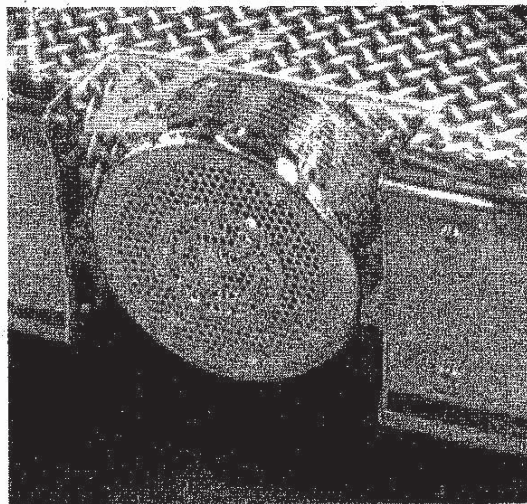
### LIFTABLE AND TOWABLE BUMPER EXTENSION

The bumper extension shall be designed and constructed so that the apparatus can be lifted and towed by the extension.

One (1)  
10-12-152F

### RECESSED NOTCH IN FRONT BUMPER FOR LEFT SIDE Q2B SIREN

A recessed notch shall be cut into the left side of the front bumper and gravel pan for a Q2B siren. It shall be boxed in on the three vertical sides with aluminum tread plate. The outside edges shall be covered with strips of polished stainless steel.



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One (1)  
10-12-8010

### FAMA26 NO-STEP SIGN

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

One (1)  
10-20-0300

### FRONT TOW EYES

Two (2) chrome plated "cut plate" type tow eyes shall be furnished. They shall be installed through the front face of the bumper and securely attached (bolted) to the bumper extension frame. The eyes shall be fabricated of 1" thick steel plate with a 3" diameter opening. The tow eye openings shall be with approximately 0.5" of the bumper face.

One (1)  
10-22-0400

### REAR TOW EYES

Two (2) rear tow eyes, bolted to the frame rails, one (1) each side shall be provided. The eyes shall be fabricated of 1" heavy duty steel plate, with a 3" diameter opening designed so that stress will be applied to each chassis frame rail, when utilized.

One (1)  
10-25-0100

### STEERING

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

One (1)  
10-25-1300

### AUXILIARY CYLINDER FOR POWER STEERING

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

One (1)  
10-25-2000

### CHASSIS ALIGNMENT

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

The completed apparatus should be rechecked for proper alignment after a 100 mile road test has been completed at the factory.

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One (1)  
10-28-0300

### AIR PIPING

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

- Pressure protection valve
- Quick build up system
- Engine mounted, gear driven air compressor
- Bendix Model E-6 dual circuit brake treadle valve
- Two (2) air pressure gauges on cab dash with indicator light and buzzer
- Manual drain valves on all air reservoirs
- Air reservoirs

Brake piping shall consist of SAE approved, DOT rated "Synflex" reinforced nylon colored tubing. 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. A flexible stainless steel braided Teflon hose shall be provided from the compressor, a copper tube shall run from the stainless steel braided line, where it enters the frame rail to where it connects to the air dryer.

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.

All airline fittings to be nut and ferrule style. NO PUSH LOCK FITTINGS TO BE USED ANYWHERE ON THE APPARATUS. Scuff/Rub protection shall be provided at all locations in the frame and the bulkhead where any airline passes through. No electrical harness or air lines shall be attached to the copper tube that runs in the frame rail to the air dryer.

No electrical harness or airlines shall be attached to the copper tube that runs in the frame rail to the air dryer.

One (1)  
10-28-2800

### ADDITIONAL AIR RESERVOIR

One (1) additional 1250 cubic inch air reservoir(s) shall be provided and installed. Each extra reservoir shall be isolated and be plumbed with a pressure protection valve on the reservoir supply side.

Tank shall be used to increase system capacity.

One (1)  
10-28-3500

### WET AIR RESERVOIR DRAIN CONTROL

A cable controlled drain valve shall be provided on the wet tank. The pull cable shall be extended to the side of the truck with a loop provided at its end.

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One (1)  
10-28-3810

## AIR DRYER

A Bendix AD-9 air dryer shall be installed in the air brake system. It shall be equipped with an automatic heated moisture ejector.

One (1)  
10-28-4900

## AUXILIARY AIR OUTLET

There shall be a 1/4" female air outlet with a plug mounted and 1/4" valve installed. The outlet shall be connected to one of the vehicle's air reservoirs and shall provide an air supply for non-emergency uses. A 1/4 turn shutoff valve shall be located adjacent to the outlet.

The location shall be determined at the pre-construction meeting.

One (1)  
10-28-5600

## AUXILIARY AIR INLET

There shall be an auxiliary air inlet installed to maintain the chassis air pressure while the engine is not running. A check valve shall be installed in the line to prevent outflow of air pressure from the "wet" or "supply" tank.

Auxiliary air inlet location shall be on the front of the driver's step well.

One (1)  
11-00-360A

## FRONT AXLE

A Meritor MFS front axle with a 20,000 pound rating shall be provided. It shall include composite low-friction bushings with diagonal grooves to better distribute lube, camber settings of +1/4 degree for both left and right sides to help improve tire life and a large diameter, heat treated kingpin with a lube retaining seal.

## DISC BRAKES

The front axle shall be provided with 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.

## FRONT SEMI-ELLIPTICAL SPRING SUSPENSION, 4" X 52"

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



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### SHOCK ABSORBERS

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

One (1)  
11-00-9000

### AUXILIARY AIR APPLIED FRONT AXLE PARKING BRAKE

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

One (1)  
11-00-9500

### FRONT AXLE OIL SEALS

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

One (1)  
11-10-0200

### REAR AXLE

The rear axle shall be a Meritor model RS24-160 with a capacity of 24,000 pounds at the hub. The rear 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.

All axles shall be purchased complete from and certified by the axle manufacturer for the specific application. Brake chamber brand and size shall be determined by the axle manufacturer.

Rear axle ratio shall be calculated for top speed of 60 MPH.

One (1)  
11-10-9900

All axle applications must be certified by the axle manufacturer.

One (1)  
11-10-9998

### ROAD SPEED

Per NFPA, the maximum top road speed shall be 60 mph at the governed engine RPM.

One (1)  
11-20-2700

### ANTI-LOCK BRAKING SYSTEM (ABS)

The vehicle shall be equipped with dual WABCO anti-lock braking system (ABS). The tractor ABS shall provide four (4) channel anti-lock-up braking control on the (2) front and (2) rear wheels. The trailer ABS shall provide two (2) channel anti-lock-up braking control on the tiller steer axle's (2) wheels and shall be linked to the tractor system via permanent cabling. The system shall employ a digital electronics system with microprocessor controls divided into two (2) diagonal circuits. In the event of one circuit's malfunction the second circuit shall operate unaffected. Each wheel shall be constantly monitored by the

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system when the vehicle is in motion. When any wheel begins to "lock-up" during braking a signal shall be transmitted to the processor from the wheel sensor. The control unit shall instantly reduce the braking force applied to the wheel and immediately re-apply braking force so that the wheel rapidly slows without locking. The system shall control all wheels simultaneously to provide maximum vehicle braking in a relatively straight line.

An ABS warning light shall be installed in the warning light panel of the driver's dash.

The ABS system shall automatically disengage the auxiliary braking system whenever the anti-lock braking mode is active.

One (1)  
11-20-2780

### VEHICLE STABILITY COMPLIANCE

In compliance with NFPA 1901, current edition, the vehicle stability compliance shall be performed on a tilt table.

One (1)  
11-20-2795

### AUTOMATIC TRACTION CONTROL WITH DEEP SNOW AND MUD SWITCH

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

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

Deep Mud and snow switch to be a Black rocker located in upper row of dash zone #16 in the 1st slot.

One (1)  
11-30-0700

### REAR SUSPENSION

A Neway AD-123 heavy duty 24,000 lb. capacity air ride suspension shall be used. The assembly utilizes air springs and a parallelogram framework design that reduces driveline wear and vibration while maintaining a constant pinion angle. The air ride offers a smoother ride with less stress on truck components. It eliminates tire hopping and helps provide superior traction to the wheels.

Two (2)  
12-15-1250

### FRONT TIRES

The two (2) front tires shall be Michelin 385/65R22.5, XFE, load range "L" with regional tread (medium to heavy loads, frequently on 2-lane roads). This tire has a nominal rating of 9,920 pounds with a top speed of 75 mph and an intermittent fire service rating of 10,000 pounds at a top speed of 75 mph.

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Four (4)  
12-16-1200

### REAR TIRES

The four (4) rear tires shall be Michelin 12R22.5, XDN2, load range "H", neige tread (all-weather premium drive tire optimized for exceptional traction and mileage). This tire has a nominal rating of 6,780 pounds with a top speed of 75 mph and an intermittent fire service rating of 7,220 pounds at a top speed of 75 mph.

One (1)  
12-50-0500

### WHEELS

Wheels shall be Alcoa polished aluminum disc type and hub piloted. Chrome plated nut covers shall be furnished.

One (1)  
12-80-01C0

### FRONT AXLE "BABY MOON" HUB CAPS

Stainless steel "Baby Moon" type hub caps shall be provided on the front axle. The hub caps shall be cut out for viewing of the front axle oil seals.

One (1)  
12-90-0200

### REAR AXLE "HIGH HAT" HUB CAPS

Stainless steel "High Hat" type hub caps shall be provided on the rear axle(s).

One (1)  
12-90-1030

### TIRE PRESSURE INDICATORS

Tires shall have non-pressure indicators installed for shipment.

Accu-Pressure Heavy Duty Safety Caps shall be provided and shipped loose. This valve stem inflation pressure sensitive monitor shall provide a visual color indication of when the tire pressure is below the manufacturers recommended level. The chrome safety cap shall show green when the tire is properly inflated and red once the tire becomes under inflated.

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

Standard valve stem caps from tires to be shipped loose.

One (1)  
12-90-1210

### TIRE BALANCE

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

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One (1)  
13-00-5050

## ENGINE

The chassis shall be powered by an EPA 13/GHG17-certified and compliant Cummins ISX12 diesel engine, as described below:

Model	ISX12
Number of Cylinders	Six
Bore and Stroke	5.11 x 5.91 in
Displacement Liter (Cu. In.)	11.9 (729)
Rated BHP	500 @ 1800 RPM
Torque	1645 ft.lb. @ 1200 RPM
Governed RPM	2100
Oil Capacity / Type	12 gallons / SAE CJ-4
Fuel Requirement	Ultra low sulfur diesel (15 ppm max.)

Standard equipment on the engine shall include the following:

- Selective Catalytic Reduction (SCR) after treatment
- Cooled Exhaust Gas Recirculation system
- Fan – 32", 11 blade
- Charge air cooling
- High pressure, common rail fuel system
- Fuel filter 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 18.7 CFM

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

## ENGINE AND CHARGED AIR COOLING SYSTEMS

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

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

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

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

One (1)  
13-00-7000

### ENGINE COOLING CERTIFICATION

"EPQ" (End Product Questionnaire) certification shall be provided by the apparatus manufacturer and shall be done on a completed unit (after pump and complete body installation). Incomplete certifications (chassis only) shall not be acceptable.

One (1)  
13-00-7010

### ENGINE FUEL COOLER

An engine fuel cooler shall be provided on the apparatus. It shall cool the returning fuel from the engine.

One (1)  
13-00-7510

### FAN CLUTCH

A thermostatically controlled, clutch shall be provided for the engine cooling fan. The clutch shall be of a failsafe design, in that it shall fail in the "on" mode and thus prevent overheating in the event 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.

One (1)  
13-00-760F

### COOLANT OVERFLOW RESERVOIR

A six (6) quart coolant overflow reservoir shall be provided. It shall be located in the engine compartment.

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One (1)  
13-01-2100

### SILICONE HOSES

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

One (1)  
13-01-2400

### SKID PLATE

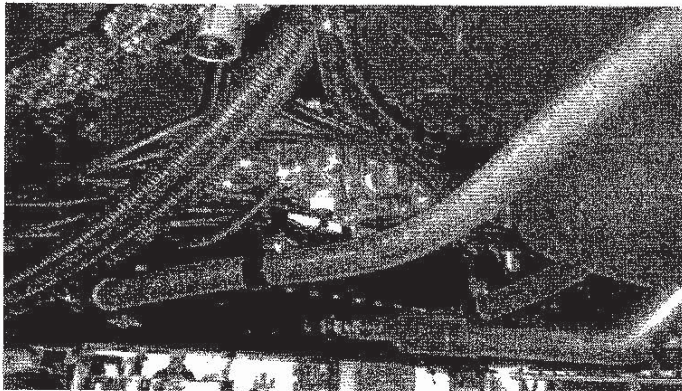
A radiator skid plate shall be provided to protect the radiator from debris. The skid plate shall cover the lower radiator tank and shall be painted to match the frame rails.

One (1)  
13-03-1200

### TRANSMISSION

An Allison, Model 4000 - EVS, electronically controlled, 5 speed automatic transmission with integral fluid filter shall be provided. A transmission cooler shall be installed in the radiator bottom tank. A warning light and buzzer shall be provided on the cab dash to alert the driver should the transmission overheat.

The transmission shall include the following: an oil life monitor, a filter life monitor, and a transmission health monitor. The oil life monitor determines fluid life remaining by monitoring various operating parameters. The filter life monitor determines when fluid filter(s) need to be replaced. The transmission health monitor determines when clutch system inspection is required. The monitors send a message via a blink code to a special prognostic light on the shift pad. Also on the shift pad shall be installed a digital, double-digit display that identifies the level of transmission oil. The display shall identify the oil level as "Ok", "Lo" or "Hi", also indicating the number of quarts lo or hi. The transmission cooler lines to be run straight back off of bottom tank, and below cross-member.



The transmission shall include the following emergency vehicle specifications:

Maximum gross input power: 600 hp  
Maximum gross input torque: 1850 ft.lb.

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Input speed range: 1700 to 2300 rpm  
Direct gear lock-up: 4<sup>th</sup> @ 1.00 to 1.00  
Overdrive gear and ratio: 5<sup>th</sup> @ 0.74 to 1.00

Gear ratios shall be as follows:

1st	3.51 to 1
2nd	1.91 to 1
3rd	1.43 to 1
4th	1.00 to 1
5th	0.74 to 1
6th	0.64 to 1
Rev	-4.80 to 1

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

One (1)  
13-03-2015

### TRANSMISSION FLUID

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

One (1)  
13-03-3000

### TRANSMISSION PROGRAMMING

The transmission shall be programmed as a 5-speed with 5th gear (overdrive) selected by mode button only.

One (1)  
13-03-4000

### TOUCH PAD TRANSMISSION SHIFT CONTROL

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

One (1)  
13-05-0200

### DRIVELINE

Drivelines shall be built with heavy-duty metal tubes and utilize Spicer 1810 series or "Equal" mechanics type universal joints with "half round" end yokes. This quick disconnect strap and bolt design type end joint shall allow the driveline to be easily disassembled and dropped straight down for ease of service and maintenance. They also shall be dynamically balanced by the truck manufacturer before installation in the chassis. A splined slip joint is to be provided in each shaft assembly.

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One (1)  
13-08-050T

### FUEL SYSTEM

The vehicle shall be furnished with a 50 gallon fuel tank mounted behind the rear tractor axle and just below the frame rails using a stainless steel strap. The tank shall be constructed of hot rolled, pickled in oil steel and equipped with a swash partition and vent. The fuel tank shall meet all FHWA requirements including a fill capacity of 95% of tank volume and all DOT and FMVSS regulations for rollover protection. The fuel fill inlets shall be located on both sides of the apparatus. They shall be labeled "DIESEL FUEL ONLY". The fuel caps shall be of brass or bronze construction, non-vented and have lead safety fuses. It shall be chained to inlet tube or to the body sheet metal to prevent loss. Braided hoses shall be provided for the fuel lines. A 1/2" NPT drain plug shall be located at the bottom of the tank. The tank shall be installed using stainless steel straps and hardware, separated from the tank by a rubber insulating strip to prevent against chaffing. The fuel tank pickup tube and sending unit shall be accessible without having to remove the tank.

One (1)  
13-08-5100

### FUEL LINE SHUTOFF VALVE

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

One (1)  
13-08-5680

### FUEL WATER SEPARATOR WITH ALARM & HEATER

A Racor 490 spin-on 10 micron filter with fuel water separator with water sensor alarm and heater shall be provided.

One (1)  
13-09-0010

### ENGINE STARTER

A Denso, 12 volt, 5.0 kW double reduction starter shall be installed.

One (1)  
13-10-2500

### ALTERNATOR

A 430 amp Delco alternator, model 55SI, shall be provided.

One (1)  
13-11-0400

### AIR COMPRESSOR

A Wabco 18.7 cfm air compressor shall be furnished. The air compressor shall be gear driven off the engine.



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One (1)  
13-12-0500

### AIR CLEANER

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

One (1)  
13-12-5500

### AIR RESTRICTION INDICATOR IN INFORMATION DISPLAY CENTER

An electrical engine air restriction indicator shall be provided and installed in the cab information display center.

One (1)  
13-13-0010

### EXHAUST

A SCR chamber shall be installed in "switchback" series with the DPF chamber on the right side of the vehicle, immediately behind the cab and shall ingest urea from a remote storage tank providing a catalytic reaction with diesel exhaust particulates. The exhaust assembly shall be mounted outboard of the frame rail.

One (1)  
13-13-0030

### DPF REGENERATION PROCESS

NFPA 12.2.6.7.1 The regeneration process shall be activated by two methods:

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

There shall also be an inhibit switch placed near the driver to inhibit an automatic return.

One (1)  
13-13-0050

### DEF

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

One (1) tank full of urea solution shall be required for every 500 gallons of diesel fluid.

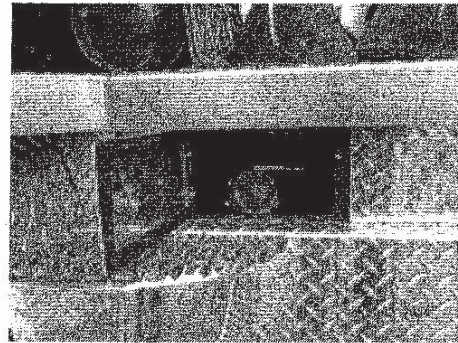
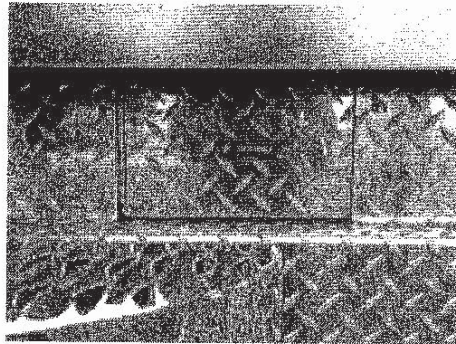
# Pasadena Fire Department Tractor Drawn Aerial

One (1)  
13-13-0053

## DEF ACCESS

The DEF shall be filled via a vertically hinged aluminum tread plate door with a 1/4 turn latch. The door shall be located over the intermediate step in the driver's side crew cab step area.

A viewing slot shall be provided in the vertical surface of the left crew cab step riser above the intermediate step. The slot shall be marked with a black line to indicate the maximum DEF fill level.



One (1)  
13-13-0085

## MUFFLER COVER

A brushed stainless steel cover shall be installed over the outboard face of the muffler. This cover shall not be a structural component, but shall dress up the appearance of the muffler. The cover shall be provided with perforated slots.

One (1)  
13-13-0900

## TAILPIPE EXTENSION

The tailpipe shall be provided to accommodate a Plymovent exhaust evacuation system. The tailpipe shall be mounted at a 90 degree angle to the side of the truck and be flush with the body. 12" of clearance between the pipe and the tire will be provided. The tailpipe mounting shall be 90 degrees out from the tractor apron.

It is understood that the 2013 engine exhausts cannot be connected to exhaust evacuation systems when the Diesel Oxidation Catalyst and Diesel Particulate Filter on the engine are regenerating.

One (1)  
13-13-1130

## EXHAUST HEAT SHIELDS

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

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The cab shall receive 1.25" thick foil back insulation blanket under the crew floor to reduce floor temperatures.

All harnesses and cables, in proximity to exhaust system components, shall be protected with insulation.

One (1)  
13-15-0700

### ENGINE BRAKE

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

Black rocker style switches to be located in top row of dash zone #16 in the 8th and 9th slots to the right respectively.

One (1)  
13-15-1610

### AGGRESSIVE DOWN SHIFT

An aggressive down shift shall be provided that shifts the transmission down to 3rd gear. This shall be tied to the Jacobs engine brake switch and the aggressive down shift shall only function when the Jacobs engine brake is ON. The Jacobs brake shall engage when you let off the accelerator and the aggressive down shift shall engage when the brake pedal is depressed and shall reset after the accelerator is applied.

One (1)  
13-15-3300

### ENGINE HEATER

A 110 volt, 1500 Watt direct immersion block heater shall be provided with AC electrical inlet (shoreline) connection. A recessed on/off switch with indicator light shall be provided in the driver's front cab door stepwell. Backside of switch to be weather tight and protected from damage by road debris.

One (1)  
13-15-4100

### FAST IDLE SWITCH

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

One (1)  
13-15-5000

### LUBRICATION DECAL

An engraved placard shall be installed on the interior face of the driver's door, near the hinge and below the window controls. The placard shall be engraved plastic with white background and black letters. The placard shall be installed that specifies the quantity and type of fluids used in the vehicle and tire information.

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One (1)  
18-00-0100

### TRAILER FRAME

The trailer frame shall be of the curved gooseneck design, welded channel construction, incorporating a forward section for the turntable and rearward section for the body and tiller station. The frame is to have an 110,000 PSI yield and a minimum resistance to bending moment of 2,300,000 in lbs. per rail.

The distance from the center line of the tiller axle to the trailer frame cut off shall be 126.0"

One (1)  
18-02-0100

### FIFTH WHEEL

A heavy duty fifth wheel shall be provided with a monorace bearing of a minimum of 3" x 30" in diameter. The mounting plate shall be bolted to the tractor frame rails using .75" grade 8 bolts. The longitudinal pivot shall utilize two (2) 1.75" minimum diameter 4340 heat treated steel pins mounted in double shear.

One (1)  
18-03-0100

### AXLE

Trailer axle to be Meritor Model FL-941 with auto slacks, drum brakes and a rated capacity of 21,500 lbs. Chrome plated wheel nut covers shall be furnished.

### STEERING

A steering gear pump and assist cylinder shall be provided for the trailer axle steering.

One (1)  
18-04-0100

### TILLER AXLE OIL SEALS

The tiller axle shall be equipped with oil type seals with viewing windows.

One (1)  
18-05-0200

### SUSPENSION

The tiller axle suspension, (up to 21,500 lb), shall be a Ridewell RAS-227 air type. Heavy duty sway and stabilizer bars as well as shock absorbers shall be provided. A 1250 cubic inch air reservoir will be provided to supply the required air for the suspension.

One (1)  
18-07-0100

### BRAKES

The trailer is to have full air type Rockwell brakes. The system is to meet or exceed current FMVSS-121 requirements.

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One (1)  
18-07-1000

### NYLON BRAKE PIPING

Nylon brake lines shall be provided in the trailer frame.

Two (2)  
18-12-M410

### TILLER TIRES

The two (2) tiller axle tires shall be Michelin 425/65R22.5, XZY3, load range "L", on/off road tread (heavy loads and slower speeds, operating on a mixture of improved secondary and aggressive road surface). This tire has a nominal rating of 11,400 pounds with a top speed of 65 mph and an intermittent fire service rating of 12,200 pounds at a top speed of 65 mph.

Two (2)  
18-13-0020

### TILLER WHEELS

The two (2) tiller wheels shall be Alcoa polished aluminum disc type and hub piloted. Chrome plated nut covers shall be furnished.

One (1)  
18-13-0120

### TILLER AXLE HUB CAPS

Stainless steel "Baby Moon" type hub caps shall be provided on the tiller axle.

One (1)  
18-15-0200

### TOW EYES

Two (2) chrome plated rear tow eyes are to be provided, attached directly to the trailer frame rails.

One (1)  
20-00-670A

### STAINLESS STEEL FULL TILT CAB

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

### CAB DIMENSIONS

The back wall of the 141" cab shall measure 72" from the center of the front axle. The cab shall have an inside width of 91" and outside width of 96". Entrance step wells to the driver's and officer's positions shall be a minimum of 26" wide and the rear crew step wells shall be 26" wide. They shall be "spaced" at front, rear and side to prevent trapping of dirt and other residue. Entrance steps shall be made of expanded aluminum grating.

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### CAB MOUNTING

A four point isolated mounting system shall be provided. The cab mounting system shall consist of two (2) front pivot mounts fabricated of steel and two (2) rear cab mounts that are isolated from the chassis frame by center bonded rubber isolators. Each front pivot mount shall consist of a greaseless pin and a multi-layered, self-lubricating, composite bearing. The outer layer of the bearing shall be high-durometer rubber to isolate road vibrations and shock.

### CUSTOM CAB DESIGN AND CONSTRUCTION

#### SUB-FRAME

The sub-frame shall be stainless steel plate and tube welded to 3" x 4" rectangular structural steel tubes, with the 4" stainless steel tubing used in a vertical orientation. All joints shall have continuous welds; stitch welding shall not be acceptable. The sub-frame shall be designed as a continuous structure from the front to the back of the cab. It shall be used to support the cab while tilting, join front pivots to the cab locks, and to join the cab to the chassis. Pocketing of the sub-frame shall not be acceptable. Use of the engine tunnel as part of the main sub-frame shall not be acceptable.

#### CAB FLOORS

All floor components shall be welded directly to the sub-frame. The floor shall be constructed of 50,000 psi stainless steel.

#### FRONT ASSEMBLY

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

#### SIDE WALL ASSEMBLIES AND DOORS

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

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

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### BACK WALL ASSEMBLY

Cab--upon engineering a back wall structure layout with dimensions based off from the centerline of the vehicle to the vertical structural components (including wiring) shall be sent to the customer via EDR--customer will be adding plates to the interior back wall of the cab in the future and would like to know where the can attach them.

The safety cage on the back wall shall be constructed of 1.25" stainless steel tubing. It shall join the roof to the floor assembly. Construction of the back wall assembly shall utilize a minimum of 12 gauge stainless steel material and the design shall provide crush protection in the event of a rollover. The back wall structure shall be uniform, regardless of the seating choices. All seat mounts and seat belt mounts shall use weld nuts to eliminate pull outs and stripped threads. The outer skin shall not be an integral structural member, although it shall stiffen the back wall. One inch of insulating foam shall be located between the exterior and interior back walls.

### ROOF ASSEMBLY

The perimeter structure of the safety cage roof assembly shall be tied by repeating 1.25" stainless steel tubing to maximize loading potential across the whole roof. The fabricated and welded roof sills and front header shall be made of 50,000 psi stainless steel material. The corner caps shall utilize spun metal technology thus retaining the metal's strength while producing a very rigid corner joint. The side roof covering (rolled edges) shall be constructed of stainless steel formed in a quarter round. It shall form a hollow double wall, angle reinforced roof edge with an integral drip rail. There shall be 1.25" of insulating foam between the exterior roof and interior ceiling.

One (1)  
20-00-68B1

### ATP OVERLAY ON BACK OF CAB

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

One (1)  
20-00-6910

### CAB GRILLE - VERTICAL BARS AND RAISED BEZEL SURROUND

The cab front opening shall be covered with a custom made polished stainless steel grille that shall be fabricated in the bidder's factory. The grille shall have formed vertical bars spaced apart on 2" centers. The upper polished stainless steel grille shall have a matching lower counterpart to further facilitate engine cooling. The two (2) stainless grilles shall be housed in a custom, raised and chrome plated bezel.

One (1)  
20-00-69MV

### ENGINE AIR INTAKE GRILLE WITH WATER/EMBER SEPARATOR

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

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One (1)  
20-00-7410

## FLAT ROOF

A flat roof shall be provided with an interior floor to ceiling height of 57".

One (1)  
20-00-78B1

## PAINTED CAB ROOF WITH ATP STRIPS

The exterior surface of the cab roof shall be painted in compliance with the cab paint specifications detailed elsewhere in this specification document. A strip of embossed, skid resistant aluminum tread plate shall be provided on each side of the cab roof, parallel to the cab side near the outside edge.

The exact location to be determined at the pre-construction meeting.

One (1)  
20-00-78S0

## FAMA26 NO-STEP SIGN

In accordance with NFPA 1901 chapter 15.7.1.6, a FAMA26 "No-Step" sign shall be located on the rear of the cab roof. The sign reads: "Fall Hazard-Railings NOT provided. Surface may be slippery - Not intended for stepping, standing or walking. Fall will injure or kill"

One (1)  
20-00-8310

## CAB DOOR CONSTRUCTION - FULL LENGTH

The cab doors shall be full length and fabricated from stainless steel (No exceptions). The cab doors shall be 34.75" wide. The interior and exterior door handles to be flush mounted paddle style with a keyed lock incorporated in the exterior handle and lever control lock incorporated in the interior handle. Six (6) inch wide strap style door checks shall be provided. The door check's straps shall have a tensile strength of 120 lbs/in of width. The door's latch locking mechanism shall make it impossible to lock oneself out of the cab unless locked with the supplied key. Doors shall be hung on stainless steel full length hinges attached to cab and door with .25" bolts. The hinges for each door shall be of one-piece 304-2B stainless steel construction, with ¼ stainless steel pins and 0.090 gauge leaves with 2" joints and a 3" width opening. Doors shall meet Federal Motor Vehicle Safety Standard #206. The doors shall be designed so as to allow the windows to roll completely down.

Crew doors to be set so that the doors open up at 90 degrees plus.

One (1)  
20-00-8500

## CAB TILT

The cab shall tilt a minimum of 45 degrees for normal servicing of the engine and other equipment. The tilt cab locking system shall be a two-point type that locks automatically when the cab is lowered into its nested position. The cab tilt package is custom designed for safety and ease of vehicle maintenance. The hydraulic tilting system consists of two (2) heavy-duty single acting cylinders equipped with velocity fuses at the cylinder base in case of any failure in the operating mode. The power supply is a high efficiency electric over hydraulic system with an integral mechanical override in case of battery failure.



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All components and parts are designed for installation with a minimum of 3 to 1 safety factor based on current S.A.E. standards.

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

The cab tilt system shall be remotely controlled utilizing a twelve foot cable with a hand held push button device which is to plug into a receptacle in the bumper area on the left-hand side of the cab. The receptacle shall have a spring-loaded weatherproof cover.

One (1)  
20-00-9110

### INTERMEDIATE CAB STEPS

Four (4) stationary steps shall be provided, one at each cab door. The steps shall be approximately 12.0" long, have a 9.0" radius, and be located to the front of each cab step well. The steps shall be constructed of aluminum grating.

One (1)  
20-00-SR10

### FRONT GRILLE SCRIPT NAMEPLATE

A 19.43" long "Seagrave" nameplate, fabricated from AISI 304 stainless steel, with mirror finish, shall be located on the lower front engine cooling intake grille of the cab.

One (1)  
20-05-2020

### FRONT ALUMINUM INNER LINERS

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

One (1)  
20-05-2110

### FRONT FENDERETTE

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

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One (1)  
20-07-030R

### FRONT AND REAR MUD FLAPS

Heavy duty mud flaps with manufacturer's "script and flame logo" shall be provided at the rear of each front wheel and at the rear of the rear dual wheels. Front flaps shall be 15" wide and rear flaps shall be 24" wide. Mud flaps shall be made of 0.38" heavy duty rubber material to prevent "sailing".

One (1)  
20-07-040R

### TILLER WHEELS MUD FLAPS

Heavy duty rear mud flaps with the manufacturer's "script and flame logo" placed on the rear face shall be provided and installed to the rear of the tiller wheels. Flaps shall be 24" wide and be made of 0.38" heavy duty rubber material to prevent "sailing".

One (1)  
20-10-2700

### CONVEX SPOT MIRRORS

A Velvac 8.5" diameter bolt on convex mirror shall be provided below each of the West Coast mirrors.

One (1)  
20-10-4000

### MIRRORS

Two (2) "Velvac" 2010 stainless steel heated mirrors with 2-way remote shall be installed, one each side of the cab. The mirror heads shall be West Coast style, flat 7" x 16". Mirrors shall be installed on the cab doors.

Do not wire the mirror heaters. A switch on the cab dash is not required.

One (1)  
20-12-0300

### WINDSHIELD

The windshield shall be of tinted automotive laminated safety plate glass with a curved two-piece design. The windshield shall have approximately 2900 square inches of visual area. Right and left hand windshield glass shall be symmetrical and interchangeable from side to side to minimize spare parts stock and expense. Windshield shall be installed and held in place by an extruded rubber molding with a bright finish, decorative, locking bead. Cab shall be finish painted prior to windshield glass being installed.

One (1)  
20-12-0305

### WINDSHIELD WIPERS AND WASHERS

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

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## Tractor Drawn Aerial

One (1)  
20-12-031F

### WINDSHIELD WASHER RESERVOIR

A four (4) quart windshield washer fluid reservoir shall be provided. It shall be accessed in the driver's step well with a remote fill. A visual inspection shall be possible without tilting the cab (NO EXCEPTIONS).

One (1)  
20-12-2210

### 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 located at the bottom of the window opening to prevent water and debris from entering the interior of the door when the glass is up (or down). A seal shall be placed on both sides (interior and exterior) of the glass. The front door glass shall be 23.75" high x 25.75" wide upper and 27.50" wide lower. The rear door glass shall be 23.75" high x 30" wide. The door window openings shall be trimmed on the exterior side with a smooth, black, poly vinyl chloride (PVC) molding

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. Window crank effort shall be the same over the entire raising or lowering process. Crank arm shall be installed on a 3/8" square shaft (splined shaft will not be acceptable). Regulator shall not require any periodic maintenance over its lifetime. Sector gear/lever action or sprocket/moving arm type regulator mechanisms will not be acceptable.

One (1)  
20-14-1110

### CREW CAB SIDE GLASS

There shall be a side window on each side of the cab between the doors. They shall be tinted and be manufactured of automotive tempered safety glass. Each window shall be 23" high x 17" wide to provide maximum vision. They shall be installed and held in place by an extruded rubber molding with a chrome plated, decorative, locking bead. Cab shall be finish painted prior to window glass being installed.

One (1)  
20-16-5000

### CAB DOOR FRAME SCUFF PLATES

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

One (1)  
20-16-9020

### CAB DOOR HINGES

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

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One (1)  
20-18-0100

### CAB HANDRAILS AND GRAB HANDLES

Handrails shall be 1-1/4" diameter extruded aluminum, knurled, with a bright anodized finish.

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

Handrails and handles shall be installed as follows:

Four (4) 24" handrails shall be installed on the side of the cab, one just to the rear of each cab door.

Four (4) 6" chrome grab handles shall be provided, one on the inside of each cab door:

Two (2) 12" rubber covered grab handles shall be provided, one on the driver's side and officer's side front A-pillar, above the door hinge, to assist in entry to the cab.

Two (2) 12" rubber covered grab handles shall be provided, one on each rear crew door hinged-pillar, on the hinged side of the door, to assist in entry to the cab.

One (1)  
20-20-0100

### CRASH TEST

The cab shall be certified for the following tests:

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

Performance Measure:

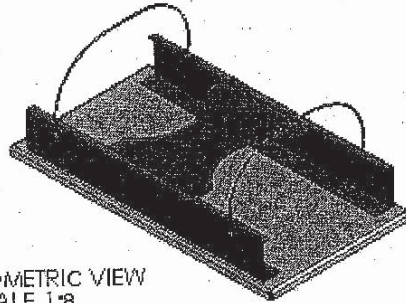
1. After undergoing each test, the cab of the vehicle shall exhibit a survival space accommodating a 50th percentile male ATD in the median position without contact between the manikin and non-resilient parts for all seating positions.
2. None of the doors shall open during the tests.
3. The cab attachments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

One (1)  
20-20-4010

### HELMET HOLDER

Two (2) Larsen 07 SEA-LA style aluminum finish (black) helmet holders shall be provided and installed. Locations within the cab for the holders shall be determined at the time of the preconference meeting. The cab and tiller driver's helmet holders shall be installed in a tractor or body compartment.

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ISOMETRIC VIEW  
SCALE 1:8

One (1)  
20-20-4028

## CAUTION LABELS

Caution labels shall be posted in the main cab and the tiller cab so that they shall be visible from each seat position. The labels shall read: "Do Not Wear Helmets While Seated".

One (1)  
20-25-0800

## HEADLINER

The cab shall be provided with a removable headliner for ease of servicing the electrical wiring placed in the cab roof. The headliner shall consist of 3 layers of material. Next to the roof shall be a layer of acoustical insulation made of polyester and polypropylene fibers. The next layer is 1/4" thick Luann. Finally, there is a 1/4" thick layer of foam/perforated acoustical vinyl.

The headliner shall be the multi-piece type (minimum of three (3) sections) so that the entire liner does not have to be removed for localized maintenance.

One (1)  
20-25-0910

## BACK LINER

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

One (1)  
20-25-101B

## ENGINE ENCLOSURE

The engine enclosure structure shall have a 1-1/4" thick inner lining, on the engine side, comprised of aluminized foil and foam/barrier composite for heat insulation. The tunnel cover shall have 1/2" decoupled foam lower and 1" decoupled foam upper covering, on the cab interior side, for noise insulation. The top forward portion of the hood shall have a full-width riser with a sloped face for the installation of the switch panel. The sloped panels shall be used for vehicle accessory controls. A

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minimum of 1" shall be provided between the right edge of the accelerator pedal and the side of the engine hood. A removable cover over the engine enclosure and insulation shall be coated with black LINE-X to act as an insulator for sound and engine temperature, as well as to provide an easy-to-clean work surface.

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

- 26.25" from floor to top of engine tunnel between driver and officer
- 26.25" from floor to top of engine tunnel at front center dash panel
- 31.25" from floor to top of driver and officer dash panels

### ACCESSORY MOUNTING STRUCTURE

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

### ENGINE COMPARTMENT ACCESS DOOR

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

One (1)  
20-25-3000

### 18" STEERING WHEEL WITH TILT/TELESCOPE

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

One (1)  
20-25-400B

### BLACK LINE-X FOR CAB DASH

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

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

The LINE-X shall be solvent free and be environmentally safe to apply with no VOC or CFC hazards. Its surface shall have a non-glare, granular texture and be easily cleaned with common cleansing compounds.

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One (1)  
20-25-408G

### OVERHEAD DASH

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

One (1)  
20-25-4120

### OFFICER'S DASH

The top of the officer's dash shall include a pocket for a laptop computer. The pocket shall measure 15.25" wide x 8.75" deep x 3.00" high at the rear.

One (1)  
20-25-4500

### ENTIRE CAB FLOOR

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

One (1)  
20-25-4510

### FORWARD CAB FLOOR

Aluminum tread plate flooring shall be installed over the insulated forward cab floor matting. Flooring shall be removable in sections.

One (1)  
20-25-4610

### CREW CAB FLOOR

Aluminum tread plate flooring shall be installed over the insulated crew cab floor matting. Flooring shall be removable in sections.

One (1)  
20-25-5000

### SUN VISORS

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

One (1)  
20-25-8000

### VEHICLE DIMENSION SIGN

A sign shall be provided in the front cab area indicating the height of the completed apparatus in feet and inches, length of the completed apparatus in feet and inches, and the gross vehicle weight rating (GVWR) in tons.

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One (1)  
20-26-1200

### CABLE RACEWAY

A cable raceway, 1.75" x 5.75", shall be installed underneath the officer's floor. It shall run between the officer's kick plate and the seat riser. The holes shall be knocked out and a pull wire shall be added.

One (1)  
20-50-1200

### CAB DOOR PANELS

The lower inside bolt-on panel of each cab door shall be covered with brushed stainless steel to serve as a door kick plate.

One (1)  
20-50-5200

### INNER DOOR PANELS-BRUSHED STAINLESS STEEL (4)

The upper inside bolt-on panel on each cab door shall be removable and shall be constructed of brushed stainless steel.

One (1)  
20-50-6000

All cab passenger compartment doors shall have at least 96 square inches of reflective material affixed to the inside of each door to alert traffic when the door is open. The reflective material shall be a chevron design that complies with NFPA requirements.

One (1)  
21-00-0120

### DRIVER'S SEAT

The driver's seat shall be an H.O. Bostrom Sierra Air-100 reclining high back seat with air suspension. This seat shall have 5" horizontal adjustment.

One (1)  
21-01-0120

### OFFICER'S SEAT

The officer's seat shall be an H.O. Bostrom Sierra Air-100 reclining high back air suspension seat with 5" horizontal adjustment.

One (1)  
21-07-033D

The driver's seat shall be held at NFPA regulated height by a 3CR12 stainless steel frame which creates an enclosed compartment. The compartment measures approximately 15.5" wide x 4" high x 17.5" deep, front to back at the top and 13.5" deep front to back at the bottom. Access to this compartment shall be through a vertically hinged door.

One (1)  
21-07-033O

The compartment shall have a side opening door, 10.5" wide x 2.5" high.

The officer's seat shall be held at NFPA regulated height by a 3CR12 stainless steel frame which creates an enclosed compartment. The compartment measures approximately 15.5" wide x 4" high x 17.5" deep,



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front to back at the top and 13.5" deep front to back at the bottom. Access to this compartment shall be through a vertically hinged door.

The compartment shall have a side opening door, 10.5" wide x 2.5" high.

One (1)  
21-11-6B00

## REAR SEATING

The rear crew cab section shall contain one (1) forward facing seat. The forward facing seat shall be an H.O. Bostrom Sierra high back flip-up seat installed on the rear wall of the cab directly behind the engine enclosure. The seating area shall allow maximum room for fire fighters in full turn out gear.

One (1)  
21-11-7A00

## REAR SEATING

The rear crew cab section shall contain two (2) outboard forward facing seats. The two forward facing seats shall be H.O. Bostrom Sierra high back flip-up seats installed on the rear wall of the cab. The seating area shall allow maximum room for fire fighters in full turn out gear.

One (1)  
21-12-700D

## SEAT BELT

The driver's seat shall have a 3-point vertically adjustable D Loop style shoulder harness, to meet FMVSS and NFPA 1901 current edition requirements. The seat belt shall be red in color.

One (1)  
21-12-701D

## SEAT BELT

The officer's seat shall have a 3-point vertically adjustable D Loop style shoulder harness, to meet FMVSS and NFPA 1901 current edition requirements. The seat belt shall be red in color.

One (1)  
21-12-704E

## SEAT BELTS

The one (1) inboard, forward facing seat(s) shall have a 3-point vertically adjustable D Loop style shoulder harness, to meet FMVSS and NFPA 1901 current edition requirements. The seat belts shall be red in color.

An IMMI ReadyReach shall be attached to each of the inboard forward facing seat belts. The ReadyReach positions the seat belt forward making the seat belt easier to reach.

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## Tractor Drawn Aerial

Two (2)  
21-12-705E

### SEAT BELTS

The two (2) outboard, forward facing seat(s) shall have a 3-point vertically adjustable D Loop style shoulder harness, to meet FMVSS and NFPA 1901 current edition requirements. The seat belts shall be red in color.

An IMMI ReadyReach shall be attached to each of the outboard forward facing seat belts. The ReadyReach positions the seat belt forward making the seat belt easier to reach.

Five (5)  
21-12-7150

### ELBOW PADS

Two (2) "head bumper style" elbow pads shall be installed on the engine tunnel inboard of the officer and the driver. They shall be covered in vinyl and be attached to the engine tunnel with Velcro. The rear end of the "elbow pad" shall be 26" off from the dash face.

The color of the elbow pads shall be black. Ship four (4) sets loose with the vehicle.

Six (6)  
21-12-7500

### SEAT UPHOLSTERY

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

One (1)  
21-13-1400

### INTERIOR DÉCOR

The following components shall be gray in color:

- Headliner
- Head bumpers over crew doors
- Back liner, if using padded acoustical material
- Vinyl visors, if selecting vinyl

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

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One (1)  
21-13-1800

### INTERIOR LINE-X DECOR

The following items, with LINE-X finish, shall be grey in color:  
Overhead dash

The following items, with LINE-X finish, shall be black in color:  
Engine cover and center dash, including engine access door and electrical access door  
Driver and officer dashes  
Upper interior door panels (void if selecting brushed S/S)  
Lower door panels (void if selecting brushed S/S or ATP)  
All interior compartment exteriors, if selecting (large storage compartment and side access compartments)

A map box shall always have a black LINE-X finish.

One (1)  
21-13-2500

### CAPACITY SIGN

A sign visible to the driver, that states the number of personnel the vehicle is designed to carry, shall be provided.

One (1)  
21-23-0710

### 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 located on top of the engine tunnel and shall be centered on the windshield. Defroster outlets shall be located at the bottom of the windshield and shall direct air flow from the unit up on to the windshields. Vents shall be located in the drivers and officers dashes and kick plates.

Shall be wired hot off the ignition.

One (1)  
21-23-079A

### CONDENSER COVER

The air conditioning condenser assembly shall have an additional cover and / or 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" high x 46.5" long x 26.25" wide and fabricated from 1/8" aluminum tread plate.

Additional covers, formed from 1/8" aluminum tread plate, shall be provided for hose and harness routing above the cab roof, as necessary. Note: Condenser location and orientation is dependent on other influential options.

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One (1)  
21-23-0810

### 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.

One (1)  
21-23-3810

### 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 located 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.

The condenser assembly shall be a stacked type, low profile, dual fan compact design with dryer and pressure switch included. The condenser assembly shall include a white powder coated cover over the stacked condenser coils. The condenser shall be located on the cab roof.

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

One (1)  
21-23-8010

### HVAC CONTROLS - FORWARD CAB

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

One (1)  
21-50-0900

### MAP BOX

A map box shall be provided and shipped loose. It shall be installed on the top of the engine hood. Box shall have eight (8) slots spaced on 3.00 inch horizontal centers. Each slot shall be 14.00 inches wide and 7.00 inches deep. They shall slant at a 30 degree angle towards the rear of the truck.

Box shall be constructed of .125 inch thick smooth 5052 aluminum sheet metal with welded assembly. It shall be covered with black LINE-X.

# Pasadena Fire Department Tractor Drawn Aerial

One (1)  
91-75-0015

## WARRANTY

Meritor Corporation provides a two (2) year parts and labor warranty on the front axle.

One (1)  
91-75-0020

## WARRANTY

Meritor Corporation provides a three (3) year parts and labor warranty on the EX225H disc brakes.

One (1)  
91-75-0020

## WARRANTY

Meritor Corporation provides a three (3) year parts and labor warranty on the EX225H disc brakes.

One (1)  
91-75-0025

## WARRANTY

Meritor Corporation provides a two (2) year parts and labor warranty on the rear axle.

One (1)  
91-75-003A

## WARRANTY

A three (3) year or 300,000 miles parts and labor warranty shall be provided by Meritor WABCO Vehicle Control Systems for the Anti-Lock Braking System (ABS).

One (1)  
91-75-004A

## WARRANTY

Cummins provides a 5 year or 100,000 mile warranty on the ISX12 engine.

One (1)  
91-75-0065

## WARRANTY

Allison provides a 5 year warranty on the EVS transmissions.

One (1)  
22-00-0105

## GENERAL 12-VOLT ELECTRICAL WIRING REQUIREMENTS 12-VOLT ELECTRICAL SYSTEM

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

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## Tractor Drawn Aerial

### GENERAL WIRING AND WIRE HARNESS CONSTRUCTION

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

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

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

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

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

### CIRCUIT IDENTIFICATION

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

### WIRING CONNECTIONS

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

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

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

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

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## Tractor Drawn Aerial

### WIRE AND CABLE ROUTING

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

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

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

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

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

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

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

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

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

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

### SPARE WIRES

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

### ELECTRICAL SYSTEM COMPONENTS

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

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

A lower cab power and signal distribution center shall be located in the center forward portion of the cab

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## Tractor Drawn Aerial

"dash". It shall be hinged and opened by unlocking two (2) top mounted, double hinged, lift and pull latches. This area shall contain relays and circuit breakers installed in a logical and serviceable fashion.

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

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

A power and signal distribution area shall be located in the pump module, if applicable. Components in this area shall be permanently labeled and easily accessible.

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

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

### CORROSION PROTECTION

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

Scuff/Rub protection shall be provided at all locations in the frame and the bulkhead where any electrical line(s) passes through.

One (1)  
22-00-0110

### MAIN BATTERY AND STARTER CIRCUITS

#### BATTERY POWER BUSS

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

#### ENGINE STARTER AND INTERLOCK CIRCUITS

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



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## Tractor Drawn Aerial

### BATTERY GROUND BUSS AND SINGLE POINT GROUND SYSTEM

All negative (ground) cables from the batteries shall be connected directly to a battery negative buss bar located as close to the batteries as practical. A 2/0 AWG cable shall connect the battery negative buss bar to the chassis frame. Appropriately sized ground feeder cables shall be utilized to provide a low impedance ground path to the negative buss bar for all electrical devices on the apparatus.

### APPARATUS GROUND BONDING

A 2/0 AWG cable shall connect the battery negative buss bar to the chassis frame. The cab, pump enclosure (if furnished), and body structure shall be electrically bonded to the vehicle frame with two (2) 2 AWG braided copper grounding straps.

One (1)  
22-00-0120

### EMI/RFI PROTECTION

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

### EMI/RFI EMISSIONS

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

### EMI/RFI SUSCEPTIBILITY

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

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

One (1)  
22-00-0130

### ELECTRICAL SYSTEM PERFORMANCE TESTING

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

# Pasadena Fire Department

## Tractor Drawn Aerial

battery discharge, as detected by the low voltage warning system, or a system voltage of less than 11.8 V dc at the battery for more than 120 seconds, shall be considered a test failure.

One (1)  
22-00-014A

### CAB DASH AND INSTRUMENTS FOR 2013 EMISSIONS ENGINE

A non-glare instrument panel, custom designed to accommodate the appropriate functions, shall be provided. Illumination shall be provided for controls, switches, instruction plates, gauges, and instruments necessary for the operation of the apparatus. The cab dash shall be forward slanted, and constructed of aluminum.

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

### DRIVER'S INSTRUMENTATION

The following gauges shall be provided:

#### Main Gauges

3" 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" Tachometer:	0-4000 rpm

#### Satellite Gauges

2" Fuel Level:	Empty – full with low level warning indicator
2" Voltmeter:	10-16 VDC
2" Coolant Temperature:	100-240 Degrees Fahrenheit
2: Engine Oil Pressure:	0-80 psi
2" Transmission Oil Temp:	100-320 Degrees Fahrenheit
2" Front Air Pressure:	0-150 psi
2" Rear Air Pressure:	0-150 psi
2" DEF Level:	Empty – full with low level warning indicator

Fuel Gauge--electric and chassis grounds must be split.

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### DRIVER'S INDICATOR LIGHT MODULE

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

- Battery Switch "On" green indicator light
- Ignition Switch "On" indicator (Seagrave Flame 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

### 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
- Jackknife Warning (if applicable)
- Tiller Cab Operator Not in Position (if applicable)

# Pasadena Fire Department Tractor Drawn Aerial

## DRIVER'S AND OFFICER'S CONTROLS

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

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

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

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

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

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

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

- HVAC control panel

- Other controls (as defined elsewhere in this specification)

One (1)  
22-00-015D

## EMERGENCY & WORK LIGHT SWITCH PANEL - DRIVER'S SIDE

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

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

One (1)  
22-00-0160

## DOOR AJAR/HAZARD INDICATOR LIGHT (DO NOT MOVE APPARATUS)

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

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

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

One (1)  
22-00-017B

### DIGITAL CLOCK

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

One (1)  
22-00-0300

### ELECTRICAL WIRING REQUIREMENTS - INTELEX™ PLUS

The apparatus shall be equipped with an INTELEX™ PLUS management system for control of the electrical system devices, where applicable.

### CIRCUIT PROTECTION

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

### SOLID STATE CIRCUIT PROTECTION

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

### NON-SOLID STATE CIRCUIT PROTECTION

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

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### POWER CONTROL RELAYS AND SOLENOIDS

Power control relays and solenoids shall have a direct current (dc) rating of 125 percent of the anticipated current load.

### BUSSMANN MVEC RELAYS AND CIRCUIT PROTECTION

Manufactured as a hardened and weather tight module, the mVEC is rated at 200 Amps. The mVEC is configured to provide various OEM circuit protection and switching functions, using industry standard fuses, relays and breakers, with the status and control of each circuit accessible through J1939 CAN open messages. Each mVEC is rated at 200 Amps, with individual outputs rated up to 30 Amps. Waterproof to high pressure spraying (IP66 equivalent). The mVEC is designed and manufactured with robust features such as heavy-duty housing, silicon and Gortex gaskets, and protective conformal coated electronics, to operate in demanding vehicle environments such as those found in fire apparatus.

One (1)  
22-00-0310

### INFORMATION CENTER II

A 6" color display capable of displaying graphical images as well as text messages shall be located on the cab dash. The main display page shall include the date and time. Additional information pages shall be provided for the warning indications, not stowed indications, and open doors.

### APPARATUS STATUS INDICATORS AND AUDIBLE ALARMS

If a monitored "Not Stowed" or "Warning" condition is active, the corresponding status indicator shall flash. In addition to visual indicators, audible alarms shall sound when designated conditions activate the "Not Stowed" and "Warning" status indicators.

### WARNING INDICATOR

A flashing red triangle symbol shall alert the vehicle occupants of an active "WARNING" condition. This is defined as a situation or status on the vehicle that is of high priority or "mission critical" nature. The flashing red triangle shall be displayed on the Information Center and dash gauge panel in front of the driver. The following are typical "Warning" (high priority) conditions:

HYDRAULIC FILTER	LOAD MANAGE	LOW AIR PSI
CAB NOT LOCKED	LOW VOLTAGE	JACK KNIFE
AIR RESTRICTION	ABS FAULT	TRAILER ABS

### NOT STOWED INDICATOR

A flashing Not Stowed indicator shall alert the vehicle occupants of an active "Not Stowed" condition. This is defined as a situation or status on the vehicle that is not of high priority or "mission critical" nature, but requires attention before the vehicle is put in motion. The following are typical "Not Stowed" (not high priority) conditions:

AERIAL RAISED	DECK GUN RAISED	JACKS EXTENDED
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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	

### 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 VOLT
LOW AIR	ABS FAULT	
LOW COOLANT	LOW OIL PRESSURE	

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

The following conditions shall cause a chime alarm to sound “intermittently” (i.e., beep), once the parking brake is released, signifying a condition exists that may become “mission critical” if not quickly addressed.

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

An audible alarm shall sound if any of the seat belts are not properly closed and the vehicle is going 5 mph or greater. The sound shall be different from all other audible alarms in the cab.

### OPEN DOORS / DEPLOYED EQUIPMENT RACKS / EXTENDED STEPS

When a cab or compartment door is open, a step is extended, or equipment (i.e., ladder) rack is deployed, the “DOORS” indicator shall flash. Pressing the corresponding button shall display an overhead graphical representation of the apparatus. This image depicts the open cab door(s), open compartment door(s), deployed equipment rack(s), and/or extended step(s). The chime alarm shall also sound when the parking brake is released.

One (1)  
22-00-0320

### AUTOMATED ELECTRICAL LOAD MANAGEMENT SYSTEM

The apparatus shall be equipped with an automated load management system. The load management system shall monitor battery voltage and activate the engine high idle system (provided NFPA interlocks have been established) before disabling any electrical loads. If engine high idle is not available or activation does not result in sufficient battery system voltage, individual electrical loads shall be automatically and sequentially deactivated until voltage returns to an acceptable level. Loads shall be sequentially reactivated to avoid a sudden large voltage demand on the system. Electrical loads defined in

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## Tractor Drawn Aerial

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 of the INTELEX™ PLUS cab-mounted display.

One (1)  
22-00-0330

### LOAD SEQUENCER

A sequential switching device shall automatically energize the specified optical warning devices to minimize potentially damaging voltage fluctuations due to the sudden addition or removal of large current demands on the electrical system. Upon activation of the "EMERGENCY MASTER" warning switch and provided the individual optical warning device switches are also activated, the following loads shall be activated (or deactivated) in 0.5 second intervals:

Front Light Bar  
Side Light Bar (if applicable)  
Front and Rear Flashing Lights  
Side Warning  
Rear Beacons  
High Beam Headlight Flash

One (1)  
22-00-0344

### VEHICLE DATA RECORDER AND SEAT MONITOR DISPLAY

Fire Research series SBA300-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. An alarm silence button and LED indicators for power and data link status shall be located on the front of the seat monitor display.

The data recorder case shall be waterproof. It shall have inputs for monitored information from the vehicle J1939 CAN bus, independent sensors, seatbelt and seat occupied switches, outputs for audible alarms, and two-way FRC data link connectors.

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

- Vehicle Speed
- Acceleration
- Deceleration
- Engine Speed
- Engine Throttle Position
- ABS Event
- Seat Occupied Status
- Seat Belt Status
- Master Optical Warning Device Switch
- Time
- Date



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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 up loadable 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.

An audible alarm shall sound if any of the seat belts are not properly closed and the vehicle is going 5 mph or greater. The sound shall be different from all other audible alarms in the cab.

One (1)  
22-00-0350

### ELECTRICAL SYSTEM DIAGNOSTICS

The apparatus shall feature on-board electrical system diagnostics and provision for off-board diagnostic service equipment.

### ON-BOARD DIAGNOSTICS

On-board diagnostic indicators shall be provided to support rapid troubleshooting of the INTELEX™ PLUS based electrical power and signal system. The input and output status of each INTELEX™ PLUS system module shall be easily determined through easy to use display pages.

Switches shall be provided in the cab to allow the operator or service personnel to obtain On-Board diagnostic information from the ABS system and Engine Controller.

A troubleshooting guide shall be provided with the vehicle to assist with interpretation of the diagnostic signals.

### OFF-BOARD DIAGNOSTIC PROVISION

An interface port shall be provided for service access to the INTELEX™ PLUS data bus. The diagnostic port shall be mounted inside the cab on the driver side in a location that is accessible from the ground.

# Pasadena Fire Department Tractor Drawn Aerial

One (1)  
22-00-0505

## POWER STUDS (OVERHEAD SWITCH PANEL)

Three (3) studs shall be provided in the overhead switch panel to provide a 12 volt feed. The studs shall consist of a 12 volt direct stud, switched battery stud and grounding stud.

One (1)  
22-00-0520

## POWER STUDS (CAB DASH)

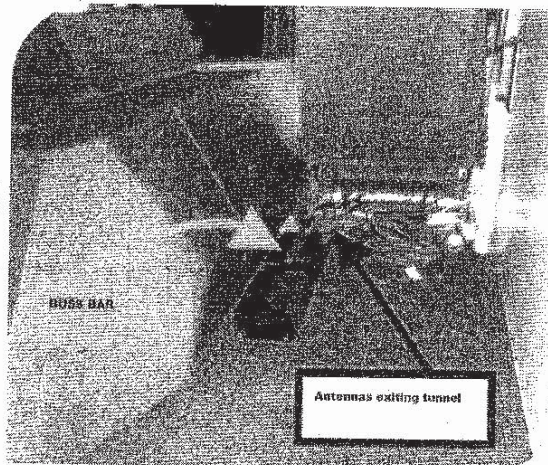
Four (4) studs shall be provided in the cab dash area to provide a 12 volt feed. The studs shall consist of a 12 volt direct stud, switched battery stud, switched ignition stud and grounding stud.

One (1)  
22-00-0530

## BUSS BAR (BEHIND OFFICER'S SEAT)

A four (4) stud buss bar shall be provided behind 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.

Buss bar aft of officer's seat to be on floor near engine tunnel with painted cover.



One (1)  
22-00-0595

## BUSS BAR (TILLER CAB)

One (1) four (4) stud buss bar with painted cover shall be provided in the Tiller Cab, below the cab dash 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.

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## Tractor Drawn Aerial

One (1)  
22-00-06B0

### DASH LAYOUT

The Manufacturer shall furnish a dash layout drawing to the Fire Department for their review and approval. The drawing shall detail the locations for installation of radios, sirens, light switches, gauges, etc. Due to the cab dash configuration and electrical wiring design, the components shall have designated locations that each will fit. The Fire Department shall review and approve the layout during the Engineering Conference.

One (1)  
22-01-0600

### AMMETER

A heavy duty ammeter shall be included with the cab dash gauges. The ammeter scale shall read from -500 amps to +500 amps indicating charging status of the engine alternator.

Two (2)  
22-03-1300

### 12 VOLT PLUG(S) AND RECEPTACLE(S)

Two (2) 12 volt power plug receptacle(s) and cover(s) shall be provided on the officer's side of the dash and shall be wired battery direct with protected circuits (FUSED). 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 shall be Cab Dash Zone 19.

Four (4)  
22-03-1397

### FUSE BLOCK POWER POINTS

Provide four (4) - 6 space automotive "blade style" 12 V fuse blocks, with cover. The contacts shall be protected from accidental shorting. Each block shall be wired battery direct and include a ground wire. The wire gauge shall be (8) gauge wire--they will be located at the pre-construction meeting.

Locate within body compartments, up high on the back wall, in the forward corner. All shall be covered with an aluminum cover, painted to match the body interior color, with the sides open for access.

Four (4)  
22-03-1400

### 12 VOLT PLUG(S) AND RECEPTACLE(S)

Four (4) 12 volt power plug receptacle(s) and cover(s) shall be provided and shall be wired battery direct with protected circuits (FUSED). The plug and receptacle are made from corrosion resistant marine grade materials. The plug locks into the receptacle providing a positive moisture proof connection.

One (1) each side of the engine access door recessed into the engine tunnel.

Two (2) shall be located at the pre-construction meeting.

# Pasadena Fire Department Tractor Drawn Aerial

Two (2)  
22-03-14US

## USB CHARGER PORT

Two (2) Kussmaul Electronics model 091-219 USB Dual Charger Ports shall be located on the dash as follows:

A Kussmaul Dual port #091-219 USB charger port shall be installed in dash zone #19

One (1) shall be located at the pre-construction meeting.

One (1)  
22-0A-5040

## RADIO

One (1) Pioneer AM/FM/CD/MP3 stereo radio with four (4) 5.25" coaxial speakers shall be provided and installed. The AM/FM radio, with OEL display, shall have a CD and MP3 player. It shall have USB direct control for iPod/iPhone. The stereo radio shall be centrally located in the overhead console and the speakers to be located inboard of the driver and officer per photo, in boxes painted to match the cab interior, and in the crew cab side wall, extended portion behind crew door. A stereo antenna shall also be installed.

A Radio defeat switch shall be located in Zone 11 for ease of use by the driver so the AM/FM radio may be turned off for incoming 2-way radio communication clarity.

Stereo to be located in dash zone #5. Stereo Antenna to be located in left front corner of cab (Seagrave std. position). Stereo to be wired battery switched with memory wire run battery direct.

Five (5)  
22-0A-5120

## TWO-WAY RADIO ANTENNA MOUNT(S)

Five (5) 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. All installation locations and cable routing shall be confirmed with the customer during the pre-construction process.

Five (5) will be placed per the Antenna Layout.

One (1)  
22-0A-5130

## RADIO ANTENNA

One (1) radio antenna(s) supplied by the fire department shall be mounted on the cab roof with wiring run to the radio box.

See antenna layout.

# Pasadena Fire Department Tractor Drawn Aerial

One (1)  
22-0A-515A

The antenna lead shall terminate in the overhead dash. Any excess cable shall be secured in an accessible location.

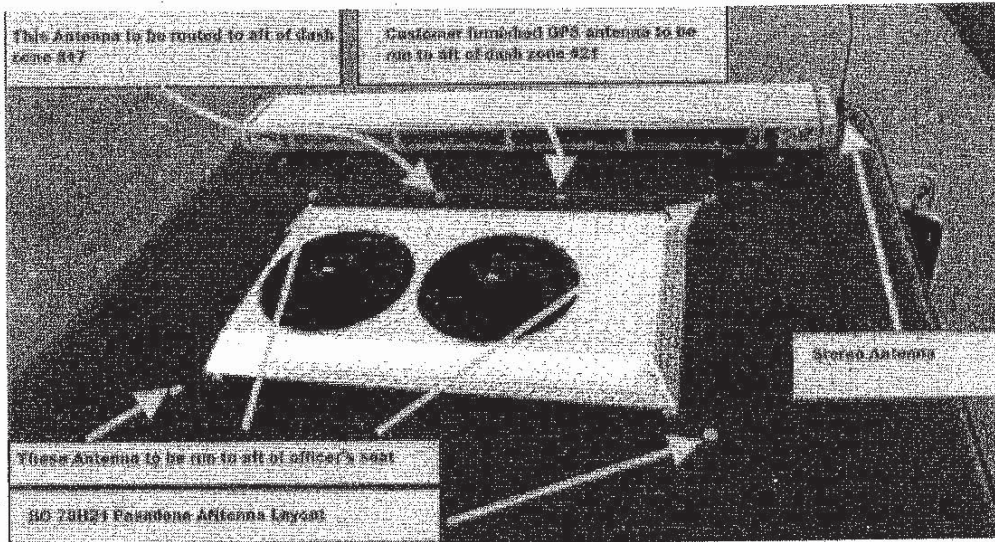
Five (5)  
22-0A-515C

Antenna lead shall terminate in the officer's seat riser Zone 17. Any excess cable shall be secured in an accessible location.

Four (4) cables shall be routed to behind the officer's seat and come out of engine tunnel and exit at floor level and shall be clearly labeled, any excess cable shall be secured in that location. One (1) cable shall be located at the pre-construction meeting and shall be clearly labeled, any excess cable shall be secured in that location.

One (1)  
22-0A-515Y

## ANTENNA LAYOUT

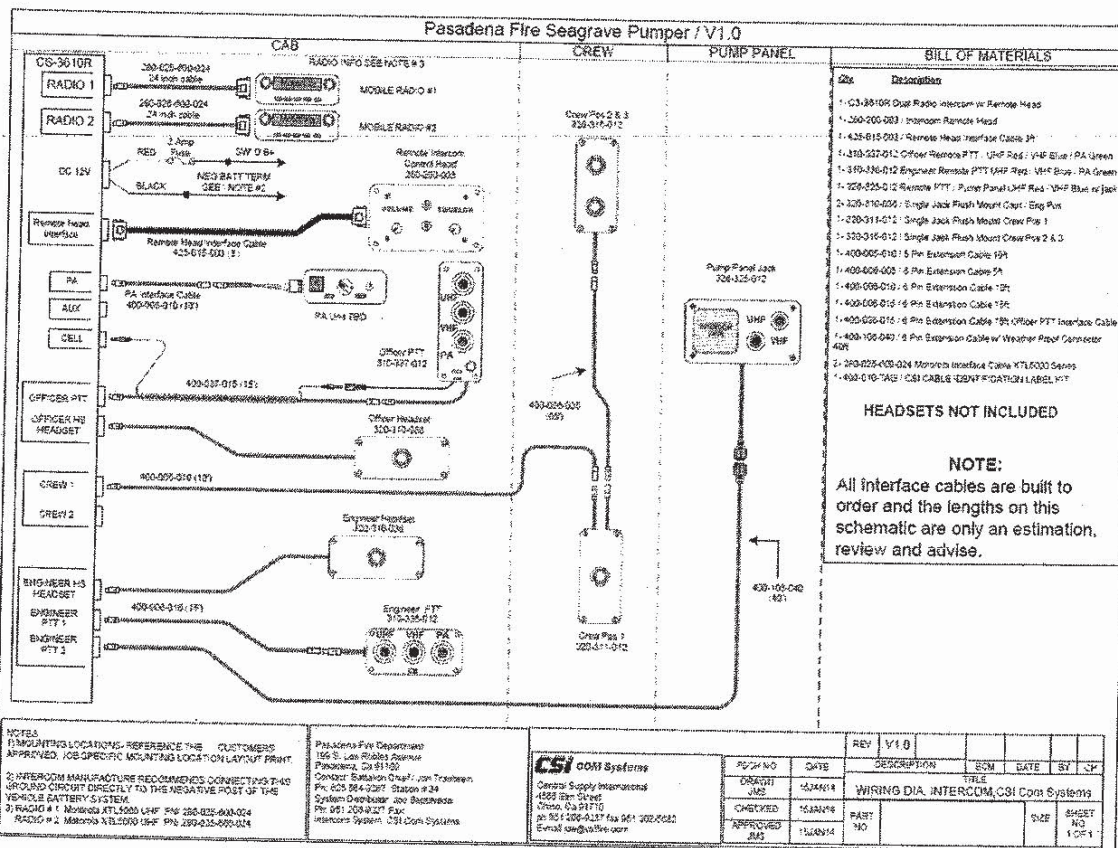


One (1)  
22-0B-0001

## INTERCOM SYSTEM

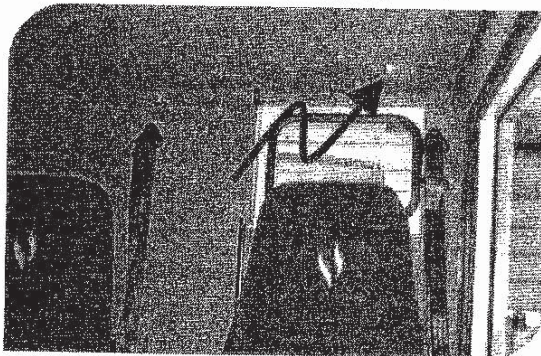
Seagrave Fire Apparatus shall purchase the below described CSI Headset Communication System from Central Supply, Inc., Chino, CA. This system shall be installed by Seagrave during the construction of the apparatus. Delete the pump panel jack; add the Tiller Cab and Turntable Pedestal Position.

# Pasadena Fire Department Tractor Drawn Aerial



**Intercom system--**

- 1) Ship headset hooks loose.
- 2) Driver's PTT buttons to be placed in dash zone #16 bottom row.
- 3) Officer's PTT buttons to be placed in dash zone #19.
- 4) Crew cab Headset jacks to be placed in the ceiling in the outboard positions (per the attached picture).



# Pasadena Fire Department

## Tractor Drawn Aerial

One (1)  
22-10-0720

### BATTERIES

Six (6) Optima 12V Group 31 900 CCA batteries shall be installed three each side of the cab under the rear entrance way.

Heavy-duty battery cables shall be provided to maximize power available to the electrical system.

One (1)  
22-10-5200

### JUMPER CABLE STUDS

A pair of jumper cable studs with color coded covers shall be provided under the driver's side battery storage area.

One (1)  
22-11-0600

### BATTERY AND ELECTRICAL COMPONENT STORAGE AREAS

Battery and electrical component storage areas shall be constructed of stainless steel with structural steel tubes at the corner mounting points and shall be located one (1) each side mounted on the vehicle frame. They shall be well ventilated and enclosed to protect against road splash and debris. Suitable provisions shall be provided for drainage.

The batteries shall be held firmly in place by providing a full frame type top clamp which encloses the battery set on all four (4) upper corner sides. The one piece clamp shall be fabricated of 3/4" angles and be held in place by two (2) "J" shaped clamping bolts. Battery inspection shall be available by tilting the full tilt cab.

One (1)  
22-15-1400

### DISCONNECT SWITCH - BLUE SEA 9003

A master load disconnect switch shall be provided between the battery positive buss bar and the remainder of the switched battery electrical loads on the apparatus. A green "battery on" pilot light that is visible from the driver's position shall be provided.

One (1) single battery system switch mounted near the driver's side front entrance in a location so it may be turned off by a person standing on the ground outside the vehicle. It shall have the capacity to handle 350 amps of continuous power.

One (1)  
22-15-3650

### BATTERY CHARGER

There shall be a Newmar battery charger model #EV-40 installed behind the driver's seat with a cover. There shall be an EVM-12-1 display located in zone 6.

One (1)  
22-15-4LDF

It shall be located on the floor behind the driver's seat.

# Pasadena Fire Department

## Tractor Drawn Aerial

One (1)  
22-15-5000

### BATTERY CHARGER COVER

A smooth aluminum cover shall be provided over the battery charger. The outside finish shall match the cab interior finish.

One (1)  
22-15-5500

### AUTO EJECT PLUG

A Kussmaul 20 Amp, 120 VAC "Super Auto Eject" shoreline power connector shall be provided for the battery charger. The shoreline power connector shall be provided with a spring loaded cover to prevent water from entering when the shoreline is not connected. A label shall be permanently affixed at the power inlet that indicates the line voltage in volts and the current rating in amps.

One (1)  
22-20-5810

The Kussmaul Super Auto Eject Plug shall be located behind the driver's door on the cab's side.

One (1)  
22-20-58RD

The Super Auto Eject Cover shall be red.

One (1)  
22-90-0025

### UPPER RAISED BEZEL SURROUNDS, WITH PANELS

A custom raised and chrome plated bezel shall be installed on the front face of the cab, on each side of the front grille. Housed within each bezel shall be a removable panel, painted job color. The removable panel shall provide service access to the forward side, firewall mounted electrical connections and wiring harness.

One (1)  
22-90-004A

### 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 halogen with bright finished trim rings and bezels. The low beam headlights shall be located at the outer position.

Headlights shall be in the lowest position.

Lowest position is not available when a Q2B siren, bell or front suction blocks the light output.

One (1)  
22-90-0065

### ALTERNATING FLASHING HEADLIGHTS

The chassis high beam headlights shall flash alternately controlled by a rocker switch.



# Pasadena Fire Department

## Tractor Drawn Aerial

One (1)  
22-90-007A

### FRONT DIRECTIONAL DUAL LIGHT BEZEL

The front directional lights shall be mounted in a chrome plated dual light bezel located on each side of the cab front face. The dual light bezel shall match the headlight housing.

The front directional dual light bezels shall be in the uppermost position.

Lowest position is not available when a Q2B siren, bell or front suction blocks the light output.

One (1)  
22-90-008D

### FRONT DIRECTIONAL LIGHTS

There shall be one (1) Whelen 600 Series model 60A00TAR LED amber arrow directional signal light 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.

One (1)  
22-90-0095

### ADDITIONAL FRONT WARNING LIGHT DUAL LIGHT BEZELS

An additional pair of bright finished dual light bezels shall be provided for the optional warning lights.

The warning light dual light bezels shall be in the middle position.

One (1)  
22-90-0210

### LIGHTS

Exterior cab lighting shall meet or exceed Federal Department of Transportation, Federal Motor Vehicle Safety Standards and any National Fire Protection Association requirements in effect at the time of proposal.

Five (5) Weldon 9186-1500-20, amber LED type clearance and identification lights shall be surface mounted across the top leading edge of the cab roof.

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

Seven (7) Techniq S34, red LED marker and clearance lights 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.

# Pasadena Fire Department Tractor Drawn Aerial

One (1)  
22-90-031P

## TURN/MARKER LIGHTS

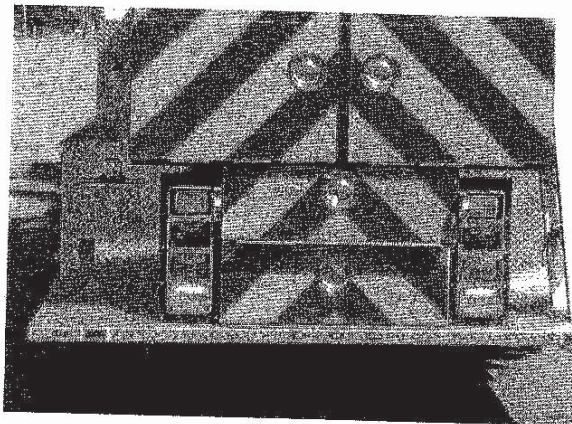
One (1) Truck-Lite model 60117Y turn/marker light shall be provided and installed on the rear fender panel below the forward air bottle compartment on each side of the vehicle. The lights shall have an amber polycarbonate lens and highly polished stainless steel mounting flange or bezel.

One (1)  
22-90-0400

## LICENSE PLATE LED LIGHT & BRACKET

A steel license plate bracket, painted black, shall be installed on the rear of the vehicle. Mounted on the license plate bracket shall be a chrome light bracket containing a 12 volt LED lamp that shall illuminate the license plate.

Located on rear face of the LS6 compartment on the driver's side.



One (1)  
22-90-0500

## D.O.T. REFLECTORS

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

One (1)  
23-02-9400

## SIDE DIRECTIONAL LIGHTS

Cab side directional lights shall be provided in addition to the front turn signals. They shall be Truck-Lite model 60117Y "Super 60" LED side turn signal lamps. One (1) light shall be flush mounted above the front wheel well on each side of the cab. Lights shall have an amber polycarbonate lens and a polished stainless steel flange, #60719. The lights shall be wired into both the turn signal and the marker light circuits.

# Pasadena Fire Department Tractor Drawn Aerial

One (1)  
23-03-0010

## BRAKE/TURN/BACKUP/WARNING LIGHTS CONFIGURATION

The brake, turn, backup and warning lights shall be located at the rear of the apparatus. Each light shall be mounted horizontally in a vertical configuration, one light atop the other.

The order of lights shall be as follows:  
Top: Brake & Tail  
Second from top: Directional  
Third from top: Backup  
Bottom: Warning



One (1)  
23-03-BWK1

## BRAKE/TAIL LIGHTS

Two (2) Whelen series 600 LED red brake/tail lights, model 60BTT, shall be mounted at the rear of the apparatus, one on each side. All brakes lights shall be programmed for "steady burn" operation in compliance with FMVSS No. 108.

One (1)  
23-03-TWL3

## 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.

One (1)  
23-03-VWL2

## 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.

Three (3)  
23-03-XWH4

## BEZELS - FOUR (4) LIGHT

Three (3) pair of Whelen model #Cast4V vertical 4-lamp, polished cast aluminum bezels shall be provided for the 600 Series rear stop/tail, turn, and backup lights and lower level warning lights.

# Pasadena Fire Department

## Tractor Drawn Aerial

One (1)  
23-03-XWHX

### TAIL LIGHT BOXES

There shall be two (2) vertical tail-light housings provided for the rear tail light clusters, the boxes shall be fabricated of stainless steel, painted Job color Red.

One (1)  
23-04-020A

### REAR PICKUP LIGHTS

Two (2) Whelen PAR36 chrome plated Super-LED floodlights, model PFBS12C, with 12 diodes, shall be installed at the rear of the apparatus. A switch shall be provided in the cab.

One (1)  
23-05-0010

### LIGHT ACTIVATION

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

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

One (1)  
23-05-0110

### 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.

One (1)  
23-05-0530

### TURNTABLE STEP LIGHTS

Two (2) TecNiq T410 LED step lights with a rubber grommet shall be recess mounted, one (1) on each side to illuminate the folding steps to the turntable.

One (1) TecNiq T410 LED step light with rubber grommet shall be recess mounted to the forward side of each rear tractor fender to illuminate the tractor running boards.

One (1)  
23-05-11A0

### ACCESS LADDER STEP LIGHTS

The access ladder shall be illuminated by TecNiq Eon LED horizontal surface mounted step lights.

One (1)  
23-05-1220

### TURNTABLE STEP LIGHTS

There shall be three (3) step lights at the base of the aerial to illuminate the turntable stepping surfaces. There shall be a LED step light on the pedestal to illuminate the area around the pedestal. This light shall be activated with the aerial PTO.

# Pasadena Fire Department Tractor Drawn Aerial

One (1)  
23-05-2110

## GROUND LIGHTS

Four (4) weatherproof TecNiq #E10 LED ground lights shall be provided underneath the cab, per NFPA requirements.

Ten (10)  
23-05-2130

## GROUND LIGHTS

Ten (10) weatherproof TecNiq #E10 LED ground lights shall be provided underneath the body, per NFPA requirements.

One (1)  
23-05-3010

## ENGINE COMPARTMENT WORK LIGHT

One (1) Truck-Lite 4094SW engine compartment work light with integral switch shall be provided and wired to illuminate automatically when the cab is tilted. The light shall also be wired through the engine compartment access door switch, providing illumination of fluid dip sticks and coolant overflow reservoir.

One (1)  
23-11-1000

## INTERIOR CAB DOME LIGHTS

Four (4) Weldon 8086-6978-68 red/clear lights with push button shall be mounted in the cab ceiling. Two (2) in front (driver & officer) and two (2) in the crew cab. All lights shall be controlled by a switch by the lens.

Cab Dome lights--clear side to be oriented towards the front of the apparatus.

One (1)  
23-11-1410

## AUTOMATIC DOOR SWITCHES

Automatic door switches shall be provided for the cab dome lights.

One (1)  
23-11-1450

The white dome light activates with the automatic door switch.

One (1)  
23-11-2200

## MAP LIGHT

A Roxter #7237 map light with integral switch and flexible neck shall be provided on the cab dash near the officer.

# Pasadena Fire Department Tractor Drawn Aerial

Two (2)  
23-11-290A

## DOOR INTERIOR LIGHTS

Four (4) Whelen-model RVR03ZCR TIR3 Super-LED red vertical light with black flange shall be installed on the interior of the each cab door, above the door seal in the lower outboard corner.

One (1)  
23-25-0130

## EXTERIOR COMPARTMENT LIGHT - LED STRIP(S)

One (1) exterior compartment(s) shall have a ROM LED lighting strip installed. The lighting strip shall be mounted horizontally on the ceiling next to the door framing in all specified body compartments. The LED lights shall be mounted in an anodized aluminum track. A switch, installed in the door frame, shall be used to activate light.

LS tractor apron compartment.

Two (2)  
23-25-0140

## EXTERIOR COMPARTMENT LIGHT - LED STRIP(S)

Two (2) exterior compartment(s) shall have a ROM LED lighting strip installed. The full height lighting strip shall be mounted vertically along the right side of the door framing (standing outside, facing the inside of the compartment) in all specified body compartments. The LED lights shall be mounted in an anodized aluminum track. A switch, installed in the door frame, shall be used to activate light.

LS1 /RS1 gooseneck compartments.

Twelve (12)  
23-25-0150

## EXTERIOR COMPARTMENT LIGHTS - (2) LED STRIP(S)

Twelve (12) exterior compartment(s) shall have a ROM LED lighting strip installed on both sides of the door. The lighting strips shall be mounted vertically along both sides of the door framing in all specified body compartments. The LED lights shall be mounted in an anodized aluminum track. A switch, installed in the door frame, shall be used to activate the lights.

Tractor - LT1, RT1

Trailer - LS2, LS3, LS4, LS5, LS6, RS2, RS3, RS4, RS5, RS6

Four (4)  
23-25-016D

## COMPARTMENT LIGHT(S)

Four (4) transverse compartment(s) shall be provided with two (2) Weldon 2631-0000-30 LED lights mounted on a "hat" shaped metal brackets welded to the compartment ceiling or side wall to eliminate mounting holes through the top of the compartment. Each light shall be automatically illuminated by opening the respective compartment door. A switch, installed in each door frame, shall be used to activate the light nearest that door. Lights shall not have any other individual switch on the light base.

# Pasadena Fire Department Tractor Drawn Aerial

One (1)  
24-10-WFE6

## MINI LIGHTBAR

Two (2) Whelen model F4NMINI Mini Freedom™ IV LED 21.5" lightbars shall be provided and installed on the cab roof over the rear doors, 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 lightbars shall be located one (1) each side, side facing, centered over the rear crew cab doors.

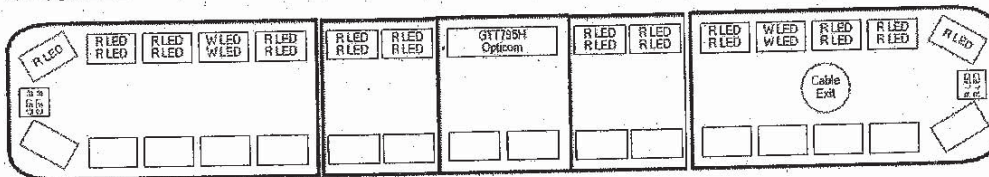
The rear facing lens of the bar shall be "blacked-out" so that it does not blind the tiller operator.

One (1)  
24-10-WFF9

## LIGHTBAR WITH EMITTER

A Whelen 81" Led lightbar shall be provided with the following configuration.  
There are to be no rear facing LED in the lightbar.

### Configuration



A GTT LED emitter assembly shall be installed in the center section on the front of the lightbar. The emitter shall provide intersection control for quick response and reduced risk of accidents. The emitter shall be programmed with high priority flash rate.

One (1)  
24-20-WLFE

## WARNING LIGHTS

Two (2) Whelen Micro Edge MCFLED2R red Super-LED® warning lights shall be provided and installed on the upper rear of the apparatus. Each light shall consist of two (2) Linear-LED Super LED®s with a built-in flasher.

The forward facing corners of the bar shall be "blacked-out" so that it does not blind the tiller operator.

Lens color shall be clear.

# Pasadena Fire Department Tractor Drawn Aerial

24-30-WL6A

## WARNING LIGHTS

Fourteen (14) 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.

Four (4)

24-30-WLTE

## WARNING LIGHTS

Four (4) Whelen model 50R03Z\*R TIR6™ Super-LED® red warning light(s) with chrome plated flange(s) shall be provided on the apparatus. The flash pattern of the light(s) shall be Triple Flash, also known as Comet Flash.

One (1)

24-3L-0100

Location of each perimeter warning light shall be:

Zone A - Upper: Front light bars

Zone A - Lower: One (1) Whelen 600 Red on each side of the cab front, inboard of the turn signal.  
Two (2) Whelen 600 Red on each side of the cab front above the headlights.

Zone B/D - Lower: One (1) Whelen 600 Red on each side of the cab bumper extension  
One (1) Whelen 600 Red on each side of the cab, above the wheel well  
One (1) Whelen 500 Red on each side of the trailer hung beneath LS3 / RS3  
One (1) Whelen 500 Red on each side of the trailer body fender just forward of the tiller axle  
One (1) Whelen 600 Red on each side of the trailer near the end side facing

Zone C - Upper: One (1) Rear beacons

Zone C - Lower: One (1) Whelen 600 Red each side of the rear of the body, below the backup lights

One (1)

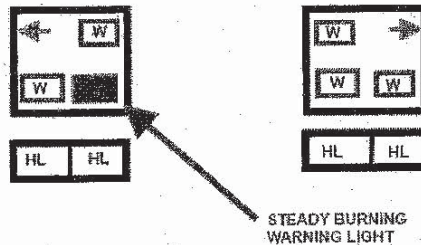
24-3L-010X

## STEADY BURN RED

Steady Burn requirement--Whelen 600 series light officer's side inboard position of the warning light (see diagram for concept).



# Pasadena Fire Department Tractor Drawn Aerial



One (1)  
24-80-WLD3

TRAFFIC ADVISOR™

A Whelen TAD8 TIR3™ Super-LED® Dominator™ series Traffic Advisor™ shall be provided. The light bar shall be 30.36" long and have eight (8) Super-LED® lamps. It shall be mounted in an extruded aluminum housing. The lights shall be controlled by a TADCTL1 controller mounted in the cab.

The Traffic Advisor™ shall be wired battery direct.

One (1)  
24-81-CTUD

Located in upper drop down dash area to the driver's side center.

One (1)  
24-82-IN0T

The traffic advisor shall be mounted on top of the body, at the rear.

One (1)  
24-UN-LNCC

The lens color shall be clear.

One (1)  
24-UN-LNCC

The lens color shall be clear.

24-UN-LNCC

The lens color shall be clear.

Four (4)  
24-UN-LNCC

The lens color shall be clear.

One (1)  
25-00-0200

AUDIBLE WARNING DEVICES

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

# Pasadena Fire Department

## Tractor Drawn Aerial

One (1)  
25-01-0100

### BACKUP ALARM

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

One (1)  
25-16-1000

### TWO-WAY TILLER TO CAB BUZZER SYSTEM

There shall be a two way signal and warning system provided to indicate truck movement as required by the NFPA. It shall consist of a buzzer mounted in the tractor cab that shall instruct the driver to go forward, backup or stop and a second buzzer located in the tiller cab to alert tillerman that the vehicle will be moving forward or backward. Buzzers shall be activated by a switch located in tractor cab, the tiller cab steering wheel button and a foot switch located in the tiller cab to the right of the steering wheel. They shall be labeled: (1 - STOP) (2 - GO) (3 - BACKUP).

The tillerman's buzzer button shall also be part of the engine starting system interlock that requires tillerman to be on board, i.e. he must activate buzzer to allow driver to start engine.

One (1)  
26-00-0020

### SINGLE AIR HORN

One (1) Grover 1510 chrome air horn shall be furnished. A pressure protection valve shall be installed in-line to prevent loss of all air from the vehicle air brake system.

The air horn shall be located on the right side of the bumper.

One (1)  
26-00-0110

### AIR HORN SELECTOR SWITCH

An air/electric horn selector switch shall be provided which will allow either the electric or air horn to be actuated by the horn button on the steering wheel.

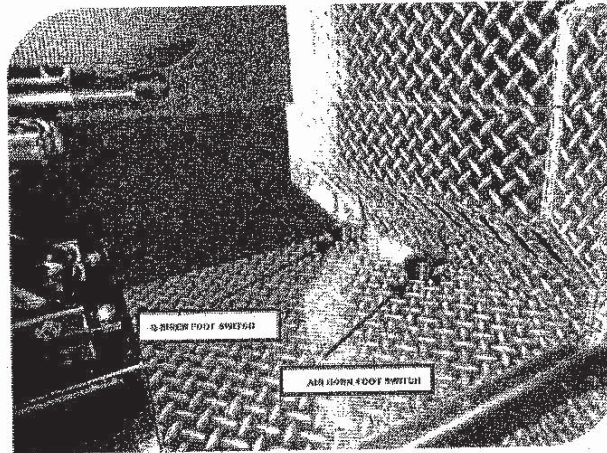
One (1)  
26-00-0410

### AIR HORN FOOTSWITCH

One (1) Linemaster® Model 491 momentary foot operated switch(es) to activate the air horn(s) shall be installed on the cab floor.

Linemaster foot switch to be located by the officer's feet to control the air horn--it will be outboard of the Q2B siren switch mounted per the attached picture.

# Pasadena Fire Department Tractor Drawn Aerial



One (1)  
26-10-7420

## WHELEN SIREN

A Whelen model 295SLSC1 electronic siren shall be provided in the cab dash. The siren has a selectable output of 100 or 200 Watts. The microphone shall be removable. The location of the Mic Clip shall be determined at the Pre-Construction Conference.

One (1)  
26-10-8Z25

The electronic siren control head shall be recess mounted in the center overhead console, to the right of the center panel, (Zone 5).

One (1)  
26-11-FE1E

## SIREN SPEAKER(S)

One (1) Federal Signal Model ES100 compact 100 watt speaker(s) shall be provided and recess mounted in the front bumper. Opening in the bumper for the speaker shall be covered with a Seagrave "Flame" grille.

One (1) speaker shall be located on the center of the bumper.

One (1)  
26-15-4500

## MECHANICAL SIREN

A Federal Signal Model Q2B® siren with chrome plated housing shall be recessed mounted in the front bumper extension with front and vane grille exposed. There shall be an electric brake control installed in the cab, at Zone 16 (red rocker switch), properly labeled.

Mounting location shall be on the left side of the bumper, partially notched out and flush.

# Pasadena Fire Department

## Tractor Drawn Aerial

Two (2)  
26-15-5980

### MECHANICAL Q2B® FOOTSWITCH

Two (2) Linemaster® Model 491 momentary foot operated switch(es) to activate the mechanical Q2B® siren shall be installed on the toe board of the cab floor.

Driver's foot switch to be placed on the floor outboard of the steering column. Officer's foot switch to be placed on the floor next to the engine tunnel.

One (1)  
26-15-6010

### ADDITIONAL Q2B® BRAKE ROCKER SWITCH

An additional siren brake red rocker switch shall be provided in zone-19.

One (1)  
26-15-6666

### REVERSE CONTROL SYSTEM

A TRUCKBACKER System manufactured by Reverse Control, Inc. shall be provided and installed in the tractor cab. The system shall include two (2) LED lights mounted one (1) each side on the interior of the cab on the "A" post at mirror height. A wireless handheld remote control used to signal the driver to go/back-up/stop is included. The antenna furnished with the kit shall be installed on the cab roof of the tractor with the lead terminating in Zone 17. The TRUCKBACKER Control Module shall be located in the lower cab dash electrical panel behind the Zone 17 panel. The system speaker shall be flush mounted on the surface of Cab Dash Zone 17, above the A/C controls.

One (1)  
44-00-0005

### TRACTOR MOUNTING SUBSTRUCTURE

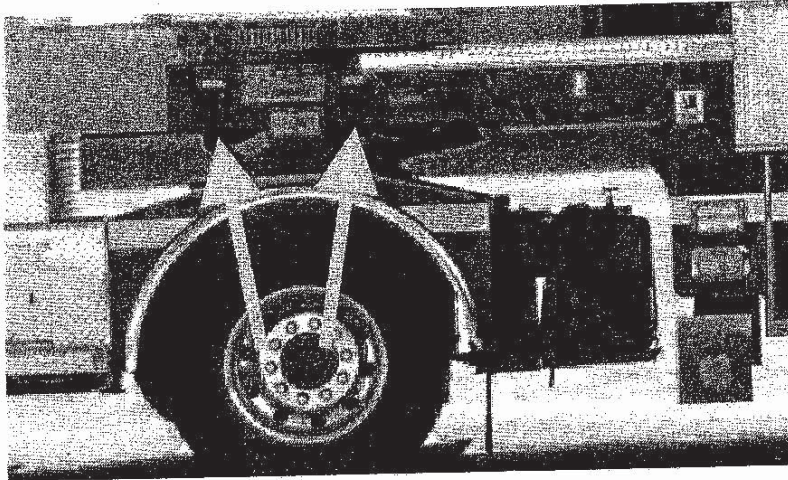
The tractor body shall be mounted to the chassis frame with 6 heavy duty gusseted angle L-brackets (3 each side). The angle brackets shall be made from 3" x 3" x 0.25" horizontal angles and 3" x 5# vertical channel welded in an "L" shape. These angle brackets shall also serve to support the running boards on each side of the vehicle. The rear fender areas shall be supported by a 3" x 5 lb. "C" channel assembly that shall be bolted to the chassis frame (1 each side). The front fender area shall be supported by a 3" x 5 lb. channel that is fully transverse from driver's to officer's side and bolted to a chassis cross member. In addition, the compartment behind the cab shall be supported by (4) 0.38" formed steel brackets (1 in each corner of the compartment) and bolted directly to the chassis frame.

One (1)  
44-00-0007

### TRAILER GOOSENECK ROPE TIE OFFS

Two rope tie off points shall be located on each side of the 5<sup>th</sup> wheel frame area. The rope tie off points shall be approx. 24.00" apart. The tie off points shall be rated for 6000# each. Use Seagrave part number P3422388 for the tie off points.

# Pasadena Fire Department Tractor Drawn Aerial



One (1)  
44-00-0015

## TRACTOR REAR ALUMINUM INNER LINERS

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

One (1)  
44-00-0030

## TRACTOR REAR FENDERETTES

Polished stainless steel fenderettes shall be installed in the rear tractor fender compartment wheel openings. The fenderette shall be sufficiently wide to completely cover the outside rear tire and reduce wheel splash along the sides of the tractor and trailer. They shall be installed with  $\frac{1}{4}$ " hex head bolts (self-tapping sheet metal screws are not acceptable) and have a full width rubber welt placed between the fenderette and wheel opening flange. A liberal coating of anti-corrosive and rust preventative shall be applied to the fenderette and wheel opening flange during the assembly process. The outside edge of the welting shall form a "V" bead between the fenderette and the fender compartment to prevent moisture from entering. The inside edge shall also have a small raised bead. The outside edge of the fenderette, at the wheel opening, shall be rolled inward to eliminate a sharp edge and avoid injury when cleaning the apparatus.

One (1)  
44-00-0060

## TRACTOR REAR FENDERS

Rear tractor fenders assemblies shall be fabricated of heavy duty 3CR12 stainless steel. The front and rear top of the fender shall have large "mitered" corners. The top and forward face of the fender shall have a  $\frac{1}{8}$ " aluminum treadplate overlay. The outward, side face shall be painted to match job color.

# Pasadena Fire Department

## Tractor Drawn Aerial

One (1)  
44-00-0210

### RUNNING BOARDS

A running board shall be installed on the both sides of the tractor. The running boards shall be fabricated of 3/16" aluminum tread plate and supported by structural steel angle assemblies bolted to the chassis frame. They shall be approximately 7.50" deep and shall be spaced 1/2" away from rear fender and side apron. The running boards shall serve as steps for access to the turntable platform and shall also act as rub rails to protect the tractor mounted compartments from damage.

An aluminum tread plate skirt shall be installed over the exhaust on the right side of the tractor. A step and handrail shall also be installed to ease access to the turntable.

One (1)  
44-05-01GR

### TRACTOR COMPARTMENT - WITH ACCOMMODATIONS FOR A GENERATOR

Two (2) compartments with exterior dimensions of 37" wide x 40" high x 20" deep shall be mounted to the tractor directly behind the cab, one on each side. The enclosed center area between the compartments shall be provided with a rear-facing removable ventilated panel and a lift up cover on the top to accommodate a generator. The hinged cover must be reinforced to support the weight of a firefighter (300 Lbs. minimum. The current cover on their Seagrave TDA (76396) is not reinforced and the top is concaving into the top of the compartment. The forward, top and rearward exterior surfaces of the compartments shall be covered with aluminum treadplate. Aluminum shutter type roll up doors shall be provided on each side.

One (1)  
44-05-901A

### YELLOW PERIMETER MARKING

In accordance with NFPA 1901 chapter 15.7.1.6, the perimeter of the roof of the tractor compartment shall be marked with a one-inch wide safety yellow line to delineate the designated standing or walking surface area.

One (1)  
44-06-0020

### LADDER PIPE HOSE STORAGE COMPARTMENT

A 22" wide x 59.75" long x 11" high (exterior dimensions) ladder pipe hose storage compartment shall be provided and installed on the top of the tractor compartment directly behind the cab. The compartment shall be constructed of 1/8" aluminum tread plate and shall include a full length hinged cover with gas door props. The bottom of the compartment shall be covered with Dri-Dek® to provide ventilation below the hose.

Two (2) chrome plated grab handles shall be installed on the vertical surface of the opening portion of the lid, one (1) on each end. Ventilation louvers shall be provided on each side and end of the compartment. All abutted corners, edges or seams must be continuously welded.

# Pasadena Fire Department

## Tractor Drawn Aerial

One (1)  
44-06-002A

### FAMA26 NO-STEP SIGN

In accordance with NFPA 1901 chapter 15.7.1.6, a FAMA26 "No-Step" sign shall be located on the ladder pipe hose storage compartment door top. The sign reads: "Fall Hazard-Railings NOT provided. Surface may be slippery - Not intended for stepping, standing or walking. Fall will injure or kill"

One (1)  
44-07-LS20

### SIDE APRON COMPARTMENT

A side apron compartment shall be provided on the left side of the tractor above the running board. The compartment interior shall measure 57" wide x 15" high x 15" deep. The front face and forward exterior of the compartment shall be covered with aluminum tread plate. The compartment shall have an aluminum tread plate drop-down door.

One (1)  
44-07-RS10

There shall be an aluminum tread plate side apron on the right side of the tractor. Side apron shall be constructed of .125" aluminum tread plate to provide kick plate behind the running board and shall be removable to provide for complete access to fuel and hydraulic tanks for service.

One (1)  
44-10-0015

### TOOL BOX

A 14" wide x 15" high x 52" long tool box with lift-up door, constructed of .125" aluminum tread plate shall be transverse mounted on the tractor platform so as to serve as a step for access to the aerial turntable.

One (1)  
44-10-003A

### YELLOW PERIMETER MARKING

In accordance with NFPA 1901 chapter 15.7.1.6, the perimeter of the roof of the tractor toolbox shall be marked with a one-inch wide safety yellow line to delineate the designated standing or walking surface area.

One (1)  
44-10-1010

### HANDRAILS

A 12" shall be installed on each side of the tractor, on the rearward face of the tractor compartment. Handrails shall be 1-1/4" diameter extruded aluminum, knurled, with a bright anodized finish.

# Pasadena Fire Department

## Tractor Drawn Aerial

One (1)  
44-30-0010

### TRAILER FRONT FENDERS

Streamlined front trailer fenders shall be provided. They shall be fabricated of 2.5mm 3CR12 stainless steel. The top of the front fender shall be covered with aluminum tread plate. No exception. The outward, side face of the fender shall be painted job color. The front trailer fenders shall house the "A" frame hydraulic jacks.

One (1)  
44-30-0100

### TRAILER BODY CONSTRUCTION

The body and compartments shall be a modular design and construction, made of heavy duty 3CR12 stainless steel. The compartment floors shall be integral with the compartment and shall be constructed of 2.5 mm 3CR12 stainless steel. Compartments shall be the "sweep out" design with the floor higher than the door sill. All compartment seams shall be caulked with gray adhesive/sealant. Each non-transverse compartment or each side of a transverse compartment shall be rated for 500 pounds of storage.

A bright aluminum tread plate cover shall be installed over the side compartments. Side edges of cover shall have a 45 degree outward bend to provide drip protection over any compartment doors which are immediately below. The rear vertical trailer faces shall also be covered with aluminum tread plate. All tread plate shall be secured with threaded fasteners.

All body components that are covered with aluminum tread plate shall be coated with an anti-corrosive and rust preventative prior to installation. There shall be a coat of an anti-corrosive and rust preventative undercoating placed between any steel and aluminum mating surfaces to isolate the dissimilar metals.

NOTE: Some compartment dimensions may be reduced by customer selected, frame mounted chassis options or small construction details.

One (1)  
44-30-0105

### TRAILER BODY MOUNTING SUBSTRUCTURE

The trailer body shall be supported by 3" x 2" x 0.50" structural angles that shall be welded to the chassis frame (4 angles per each segment of the body). These chassis angles shall be bolted through the lower transverse area of each body compartment into a 3" x 2" x 0.25" angle that is fully transverse and welded into the body assembly (1 body angle at the front and rear of each transverse area). For the compartment behind the rear trailer axle, the same method of mounting shall be used when this compartment is fully transverse. In the instance when this rear compartment is not transverse, the individual compartments shall be supported by heavy 3" x 6 lb. gusseted channel brackets (2 per compartment) that are bolted to the chassis frame.



# Pasadena Fire Department

## Tractor Drawn Aerial

One (1)  
44-30-0107

### YELLOW PERIMETER MARKING

In accordance with NFPA 1901 chapter 15.7.1.6, the perimeter of all horizontal walking surfaces on the top of the trailer body shall be marked near the outside edge with a one-inch wide safety yellow line to delineate the designated standing or walking surface area.

One (1)  
44-31-1800

### COMPARTMENTATION

The compartmentation shall consist of the following:

Two (2) compartments, one on each side of the trailer, in the trailer gooseneck area immediately to the rear of each "A" frame ground jack. Each compartment shall be 16.5" wide x 24" high x 26" deep and shall include a vertically hinged stainless steel door. The gooseneck compartment doors only are to be lap type, double panel construction with two (2) "Z" shaped support rails placed between the panels to stiffen and reinforce the door. 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. The doors shall be mounted on stainless steel piano hinges, bolted to the door framing with 1/4", stainless steel, Phillips oven head bolts. Doors mounted with self-tapping sheet metal screws are not acceptable. Eberhard 206 latches with stainless steel "D" ring handles shall be provided. Isolation tape shall be furnished between the door hinge and door jamb. A rubber gasket shall be provided between the "D" ring handle and the door. All vertical hinged doors shall be provided with stainless steel double spring door stays.

Four (4) full height transverse compartments behind the above compartments, two on each side of the trailer. Each compartment interior shall be 45.75" wide x 54.25" high. A roll-up door shall be provided for each compartment door opening. The upper 28" and the lowest 12" of the compartment shall be open through from side to side, a full 92" deep inside of the doors. The center section of the compartment, where the completely enclosed trailer frame passes through, shall be 25" deep.

Two (2) full height transverse compartments behind the previous compartments, one each side of the trailer. Each compartment interior shall be 45.75" wide x 54.25" high. A roll-up door shall be provided for each compartment door opening. The upper 30" of the compartments shall be 13.75" deep. The lower portion shall be 25" deep with the lowest 12" open from side to side.

Two (2) full height transverse compartments, one on each side of the trailer, behind the above compartments and just forward of the tiller axle. Each compartment interior shall be 45.75" wide and 54.25" high. A roll-up door shall be provided for each compartment door opening. The upper 30" of the compartments shall be 13.75" deep. The lower portion of the compartments shall be 19" deep on the left side of the trailer and 25" deep on the right side, except for the lowest 12". The lowest 12" of the compartments shall have varying depths; the forward 29.75" of the compartments shall be open through from side to side while the rear 15" of the compartments shall be 20" deep on the left side and 48" deep on the right side of the trailer.

In the lower transverse section at the centerline of the compartments there shall be a .19" wide x 46" long

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## Tractor Drawn Aerial

drain. The compartments shall be bolted to the trailer frame with 3" x 2" angle brackets. A minimum of two flex joints shall be provided to allow proper flexing of the trailer body.

All vertical hinged doors shall be provided with stainless steel double spring door stays.

One (1)  
44-36-2005

### VENTS

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

One (1)  
44-41-0015

### TRAILER REAR ALUMINUM INNER LINERS

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

One (1)  
44-41-0030

### TRAILER REAR FENDERETTE

Polished stainless steel fenderettes shall be installed on the rear wheel openings. The fenders shall be wide enough to completely cover the outside rear tire and reduce wheel splash up the sides of the body. They shall be installed with 1/4" hex head bolts, self-tapping sheet metal screws are not acceptable. A full width rubber welt shall be placed between the fenderette and body wheel well opening flange. The outside edge of the welting shall form a "V" bead between the fender and the body side face to prevent moisture from entering. The inside edge shall also have a small raised bead. The outside edge of fenderette, at the wheel opening, shall be rolled inward to eliminate any sharp edges and avoid injury when cleaning the apparatus.

One (1)  
44-41-0060

### TRAILER REAR FENDERS

Streamlined rear trailer fenders shall be provided. They shall be fabricated of 2.5mm 3CR12 stainless steel and painted to match job color.

One (1)  
44-41-016A

### TRAILER COMPARTMENTS - BEHIND TILLER AXLE

Two (2) compartments shall be provided, one (1) each side behind the tiller axle, 33" wide x 24.5" high x 22" deep. Each compartment shall have an aluminum shutter type roll-up door.

One (1)  
44-44-2110

### SIDE PANELS

Stainless steel side panels painted job color shall be provided on each side of the trailer above the fender compartment and to the rear, to protect the ground ladders from the elements and provide a more pleasing

# Pasadena Fire Department Tractor Drawn Aerial

appearance. The edges of the side panels where attached to the ladder stakes, upper and lower catwalks shall be weather-tight to prevent road dirt and moisture from entering the ladder banking compartment.

One (1)  
44-44-2310

## ALUMINUM TREADPLATE DECKING

A .1875" thick aluminum tread plate deck shall be provided over the ground ladder arches to protect the ladders and provide a walking surface along each side of the aerial ladder when it is in the bedded position.

One (1)  
44-45-RR15

## REAR DOOR

There shall be a drop down door with D-ring 2 point positive lock, covering the opening of the rear frame rail area. The door shall be constructed of smooth aluminum in preparation for the installation of reflective chevron striping. The door shall be painted job color PPG 71528 RED.

One (1)  
44-45-RR1S

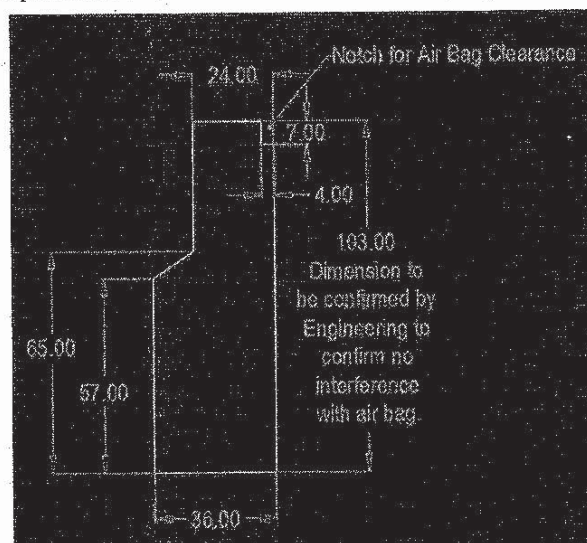
## FRAME COMPARTMENT

There shall be an enclosed, weather-tight compartment installed at the rear of the trailer just below the ground ladder compartment, between the frame rails. The maximum size of the compartment is 28" wide x 11" high x 77" long. The compartment shall be provided with a smooth aluminum door. The door shall be painted job color PPG 71528 RED.

One (1)  
44-45-RR2B

## REAR STEP COMPARTMENT

An open equipment compartment shall be provided at the rear of the trailer on the rear step directly below the frame. The compartment shall be 36.00" wide x 12.00" high x 103.00" deep.



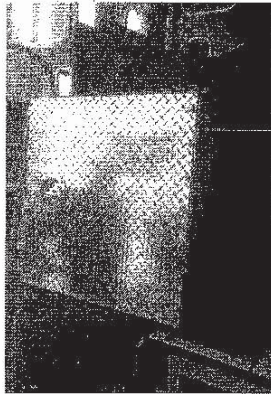
# Pasadena Fire Department Tractor Drawn Aerial

The compartment shall be provided with a drop door with D-ring 2 point positive lock. The door shall be constructed of smooth aluminum in preparation for the installation of reflective chevron striping. A Triton LED light shall be provided. Reference the below drawing for compartment dimensions.

One (1)  
44-45-RR3B

## TILLERMAN'S SCBA COMPARTMENT

An aluminum treadplate compartment for the storage of the tillerman's SCBA shall be provided on the right rear of the trailer, just forward of the tiller access ladder. The compartment will sit above the compartment to the rear of the tiller wheelwell. The compartment shall be 28.50" wide x 29.00" high x 16.00" deep. A Triton LED light shall be provided. The compartment shall be provided with a single vertically hinged door with D-ring 2 point positive lock. Reference the below drawing for compartment dimensions.



One (1)  
44-45-RR4B

## TILLERMAN'S SCBA COMPARTMENT

An aluminum treadplate equipment storage compartment shall be provided on the right rear of the trailer, behind the tiller access ladder. The compartment will be installed on the aluminum treadplate rear step. The compartment shall be 8.00" wide at the top/11.00" wide at the bottom x 20.00" high x 25.00" deep. The compartment shall be provided with a single vertically hinged door with D-ring 2 point positive lock. A Triton LED light shall be provided. Access to the compartment shall be from the rear of the apparatus.



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## Tractor Drawn Aerial

One (1)  
44-45-T010

### ACCESS LADDER

One access ladder shall be provided on the curb side of the tiller cab. The ladder shall be constructed of two (2) aluminum side rails with aluminum Grip Strut® steps. Ladder to be sloped inward a minimum of 6 degrees for easier access to the tiller cab. Ladder to be bolted to the body for easy replacement if damaged.

One (1)  
44-45-T800

### HANDRAILS

A set of handrails shall be provided for one (1) access ladder(s) to the tiller cab. A set of handrails shall consist of a "swimming pool" style handrails and a 27" straight handrail.

The vertically mounted "swimming pool" style handrail shall be installed on the rearward side of the access ladder to tiller. The handrails shall be 1-1/4" diameter extruded aluminum, knurled, with a bright anodized finish.

The 27" handrail shall be provided on the forward beam of each tiller access ladder, opposite to the swimming pool style handrail.

One (1)  
44-45-U010

### REAR ACCESS LADDER SUPPORT STEP

A cross step shall be provided on the back of the trailer body, recessed under the ladder banking. The step shall be constructed of .1875" thick aluminum tread plate and supported by a channel assembly that is bolted to the trailer chassis frame. The step shall be 58" deep x 96" wide and shall be spaced 0.50" off the back of the body to allow proper drainage. The tiller access ladder(s) shall be supported by this step and the step may serve as one of the steps of the access ladder(s). The lower DOT required marker lights and reflectors shall also be installed on this step.

One (1)  
44-46-0200

### COMPARTMENT DOORS

R.O.M. / Robinson aluminum shutter roll-up type doors made in the U.S.A. shall be provided for the above compartments unless otherwise stated. A magnetic door ajar and compartment light system designed within the door to conceal moving parts and prevent parts exposure in the compartment shall be provided. Slats shall be double-wall box frame extrusion and must be anodized to eliminate oxidation and rusting. Exterior surface shall be flat and interior surface to be concave to help loose equipment from jamming the door. The latch system shall be a full width, one piece, lift bar, enabling operation with one hand. Manufacturer's standard door frame design may be altered or modified to accommodate the roll-up doors.

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## Tractor Drawn Aerial

Twelve (12)  
44-46-0710

### REMOVABLE PROTECTIVE SHIELD(S)

Twelve (12) removable protective shield(s) shall be provided. Each shield shall be installed in the upper portion of the designated compartment to protect the roll-up door when in the open position. The shield shall be fabricated of 18 gauge brushed stainless steel.

Tractor: LT1 / RT1

Trailer: LS2, LS3, LS4, LS5, LS6, RS2, RS3, RS4, RS5, RS6

The slats on twelve (12) roll-up doors shall be painted the same color as the apparatus. The side rails, drip rail, and the bottom rail shall not be painted but shall have an anodized finish.

Twelve (12)  
44-46-1010

The slats on twelve (12) roll-up doors shall be painted the same color as the apparatus. The door frames shall not be painted; they shall remain a satin finish.

Specific terms and conditions of the warranty are as provided by the door manufacturer.

Twelve (12)  
44-46-1030

### LOCKING COMPARTMENT DOOR(S)

Twelve (12) roll-up door(s) shall be equipped with a model 1250 cam style lock. The locking mechanism shall consist of 2 locking rods that shall slide into pre-drilled holes in each of the door tracks. All locks shall be keyed alike (to use the same key).

All roll-up compartments.

One (1)  
44-46-3030

### TRAILER DOOR HINGES

All piano hinges on the trailer doors shall be polished.

One (1)  
44-50-0100

### TILLER CAB

A permanently mounted, fully enclosed tiller cab shall be provided, mounted to the rear of the trailer behind the aerial ladder. The tiller cab shall be 70.50" from the rear axle center line to the front skin of the tiller cab. The cab shall have a tubular stainless steel framework with stainless steel skin. The tiller cab shall have a minimum width of 36" and a minimum height of 54". The vehicle overall height at the tiller cab shall be 135". The floor of the cab shall be aluminum tread plate with a forward area angled up to provide foot support for the tillerman.

The windshield shall consist of a flat piece of tinted automotive laminated safety glass, 31" wide by 24" high. The windshield shall be installed and held in place by an extruded rubber molding with a chrome

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## Tractor Drawn Aerial

plated, decorative, locking bead. Non-opening, vent-style windows shall be provided on each side of the cab, forward of the doors, to increase the tillerman's field of vision. The tiller cab shall be finish painted prior to windshield glass being installed.

The rear cab window shall be a minimum of 29" wide by 19" high and shall be a tinted, tempered, double slide type window. An open/close vent shall be located on the rear cab panel below the rear cab window.

Two (2) sliding doors with side windows shall be provided, one each side of the tiller cab. The doors shall be mounted on slides, top and bottom, and shall slide open towards the rear of the apparatus. The sliding doors shall be lockable in either the open or closed position. When locked in the open position, a minimum door opening width of 21.5" shall be provided for easy entrance into the cab.

There shall be a switch installed in each door that shall be integrated with the door ajar/hazard warning system. The "Do Not Move Apparatus" light in the cab shall activate when a tiller cab door is open. A momentary disable switch shall be provided between the driver and officer, which is monitored by the Info II Center. The momentary switch shall disable the "open door" alarm, which shall not "reset" until the vehicle is re-started. Activation of the disable switch shall be recorded in the data logger.

The tiller cab shall comply with SAE J2422.

One (1)  
44-50-0310

### TILLER CAB ROOF

The tiller cab roof shall be covered with aluminum tread plate.

One (1)  
44-50-5010

### TILLER DOOR WINDOWS

Sliding glass windows shall be provided in the tiller cab doors.

One (1)  
44-50-5200

### VENTS

An open/close vent shall be installed on each side of the tiller cab in the lower front corner panels.

One (1)  
44-50-5900

### WINDSHIELD WIPER

One windshield wiper shall be installed above the front windshield. It shall be a two speed electric with automatic park position and intermittent wiping feature. The wiper shall be controlled by a knob type switch that combines the off/intermittent/low/high selection and washer functions in one control. Turning the switch shall activate the wipers and control the speed. Pushing the switch shall operate the washer nozzle, which shall be installed below the front windshield.

A two (2) quart windshield washer reservoir shall be located in the kick plate of the tiller cab and shall be accessed from the inside of the cab.

# Pasadena Fire Department

## Tractor Drawn Aerial

One (1)  
44-50-7000

### TILLER MIRROR

A Velvac #708192-5, 6.5" x 10" flat glass mirror shall be installed on each side of the tiller cab.

One (1)  
44-50-7910

### MICRO PIONEER LIGHTHEAD WITH HORIZONTAL BAIL BRACKET

Two (2) Whelen Micro Pioneer™ Model # MPBW shall be provided and installed one (1) each side to the front of the tiller wheelwell. The 45 watt +12 DC Micro Pioneer lighthead configuration shall incorporate 12 white Super-LED® with a TIR reflector installed in a white die-cast powder coated aluminum housing. The MPBW shall have a 40 degree x 8 degree flood light pattern lenses provided with the Micro Pioneer. The MPB4B shall include a white powder coated bail bracket with a 3/8" stainless steel stud carriage bolt and stainless steel mounting hardware. The Micro Pioneer light shall have 4,100 usable lumens.

The lights shall be controlled by one (1) Linemaster #491 footswitch (labeled) located to the left of the steering column.

One (1)  
44-50-8000

### TILLER CAB HANDRAIL

A 45" knurled aluminum handrail shall be vertically mounted in front of the tiller cab access door on each side of the tiller cab.

A 12" long knurled aluminum handrail shall be vertically mounted in front of the tiller cab access door on each side of the tiller cab near the ATP decking. There shall also be a knurled handrail mounted at an angle as long as possible above the upper forward window.

One (1)  
44-55-000C

### TILLER CAB INTERIOR DECOR

The following tiller cab components shall be black in color:

Headliner  
Vinyl visors, if selecting vinyl

The following tiller cab components shall always be black in color:

Seat risers  
Headliner trim  
Electrical panels  
Heater components  
Seat belt retractor covers  
Rubber covered grab handles, if present  
Plastic snap plugs for wire access holes



# Pasadena Fire Department

## Tractor Drawn Aerial

One (1)  
44-55-0010

### HEADLINER WITH INSULATION

The tiller cab shall be painted and provided with a removable headliner for ease of servicing the electrical wiring placed in the cab roof. The headliner shall consist of two layers of materials: ¼" thick Luan and ¼" foam/perforated acoustical vinyl. Between the headliner and the roof shall be installed 1.25" thick acoustical polyurethane.

The headliner shall have multiple sections (minimum of two (2) sections) so that the entire headliner does not have to be removed for service.

One (1)  
44-55-0110

### INTERIOR CAB DOME LIGHT

One (1) Whelen model 60CREGCS red/clear lights with push button shall be mounted in the cab ceiling. The light shall be controlled with a switch by the lens.

One (1)  
44-55-0300

### SUN VISOR

One (1) approximately 8" x 28" padded sun visor shall be provided for the front windshield of the tiller cab. The visor shall be supported at both ends to prevent drooping.

One (1)  
44-55-0500

### TILLER STEERING WHEEL AND COLUMN

The upper steering column shall tilt and telescope. The steering wheel shall be 18" in diameter.

One (1)  
44-55-1000

### TILLER CAB DASH AND INSTRUMENTS

The tiller cab dash shall be horizontal, constructed of 3CR12 stainless steel and painted to match the tiller cab interior. A non-glare switch panel, custom designed to accommodate the appropriate functions, shall be provided. Rocker style switches with integral indicator lights shall be provided to advise that the switch has been energized. The panel shall be back lit with a dimmer switch for night operations.

The following instrumentation shall be provided on the dash:

- Green turn signal indicator lights installed one (1) each side in the tiller overhead, above the windshield.
- A two-way signal buzzer system from the tiller cab to the tractor cab, with the buzzer button mounted in the center of the steering wheel and a Linemaster #491 footswitch (labeled) located to the right of the steering column, interlocked for engine starting.
- An audible and visual warning system to warn both the front cab and tiller driver when the maximum allowable jackknife position approaches.

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One (1)  
44-55-1010

### AUTOMATIC DOOR SWITCHES

Automatic door switches shall be provided for the tiller cab dome light. The switches shall be wired to permit the tiller cab doors to remain in the open position with the dome lights OFF.

One (1)  
44-55-3010

### TILLER CAB HEATER

A 110/12 volt tiller cab heater shall be installed. The blower is off of the 12 volt system and the heating element run off of the 110 volt generator.

One (1)  
44-55-3210

### TILLER CAB DEFROSTER FANS

Two (2) adjustable 6" defroster fans shall be provided for the tiller cab windshield. One shall be mounted on the left side and one on the right side of the windshield. Each fan shall have a two (2) speed control on the mounting pedestal.

One (1)  
44-55-52AL

### TILLERMAN'S SEAT

The tillerman's seat shall be an H.O. Bostrom Sierra Air 50FX non-reclining low back seat with a 3" air suspension. This seat shall have 5" of fore and aft adjustment. The distance from the H-Point to the ceiling shall meet NFPA 1901 current edition requirements.

One (1)  
44-55-600E

### TILLER SEAT BELT

The tiller seat shall have a 3-point vertically adjustable D Loop style shoulder harness, to meet FMVSS and NFPA 1901 current edition requirements. The seat belt shall be red in color.

An IMMI ReadyReach shall be attached to the seat belt. The ReadyReach positions the seat belt forward making the seat belt easier to reach.

One (1)  
44-55-8000

### TILLER SEAT & WINDOW GUARD

A metal bar shall be installed across the rear window which shall protect the seat and the window when the seat is moved fully rearward.

Four (4)  
57-05-5015

### PAC TRAC

Pac Trac assemblies consisting of extruded aluminum tool mounting tracks and "Z" shaped mounting brackets shall be located on the back wall of four (4) compartment(s). Pac Trac shall be 25.88" in height

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and as wide as the compartment door opening (maximum of minus 2.5"). Pac Trac in the full height compartments shall be located in the upper portion only.

LS4, RS4, LS5, RS5

One (1)  
57-05-5016

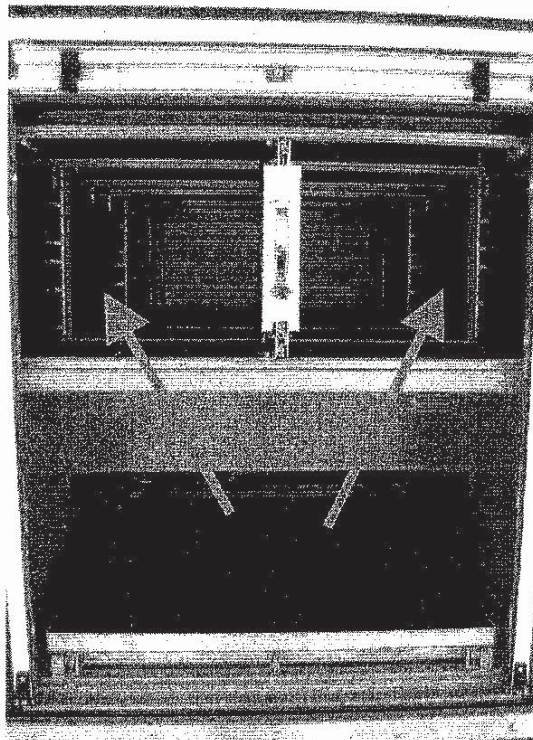
## PAC TRAC

There shall be PAC Trac mounted in the following compartments:

LS2-RS2 on the forward and rearward wall in the upper transverse section full width.

LS3-RS3 on the forward and rearward wall in the upper transverse section full width.

(Ref picture for concept only)



59-00-0200

## TURTLE TILE

Thirty One (31) black Turtle Tile mat(s) shall be provided and installed on compartment floors and/or in shelves/trays as specified.

All compartments, shelves, and trays.

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One (1)  
59-05-2TP4

### AIR BOTTLE COOMPARTMENTS

There shall be four (4) wheel well enclosures provided to accommodate four (4) air bottles. The single round air bottle compartments shall be located, two (2) each side, with one (1) fore and one (1) aft of the rear axle. The compartments shall be fabricated of high impact polyethylene material. They shall be a minimum of 26.00" usable depth, and an 8.00" inside diameter.

Four (4)  
59-05-5550

### AIR BOTTLE COMPARTMENT DOOR(S)

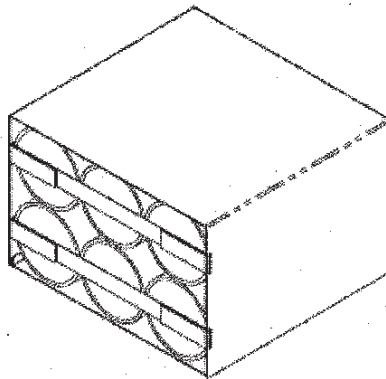
Four (4) compartment door(s) shall be constructed of 12 gauge brushed stainless steel secured by a full length stainless steel hinge and a push button lever latch.

One (1)  
59-15-210X

### AIR BOTTLE STORAGE RACKING

Air bottle storage racking shall be provided in the driver's side compartment aft of the tiller axle. There will be Velcro straps across the front to secure the bottles.

The racking will hold (6) PVC tubes with a 7.00" I.D.



ISOMETRIC VIEW

Four (4)  
59-15-2200

### ADJUSTABLE SHELVES

Four (4) adjustable shelves (with fully welded corners) made from 12 gauge 304 stainless steel shall be provided in the body compartment(s). Each shelf shall be supported by four (4) stainless steel angles bolted to Aluma-Strut tracks for adjustability.

Tractor: Two (2) - LT1 and Two (2) RT1.

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Four (4)  
59-15-220X

## FIXED SHELVE(S)

Provide a fixed shelf at frame height with the lip facing down to the following compartments:

LS2, LS3, RS2, RS3.

The shelves shall have a D/A finish.

Six (6)  
59-17-1700

## ROLL OUT TRAY(S)

Six (6) roll out tray(s) constructed of 12 gauge 304 stainless steel shall be provided in the body compartment(s). Each tray shall have edges on all four sides for added strength and be mounted on heavy duty rollers able to support a 500 lbs. load. Corners shall be open. Trays shall extend 70% of the slide length and shall be vertically adjustable on Aluma-Strut attached to the side walls of the compartment.

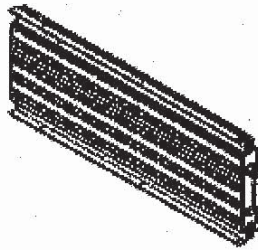
Location of the trays shall be located at the pre-construction meeting.

Six (6)  
59-19-0300

## ADJUSTABLE ALUMINUM SLIDE-OUT TOOLBOARDS

Six (6) heavy duty adjustable slide-out tool boards shall be provided in the body compartments. Full extension slides shall be provided at both top and bottom of the tool boards along with a locking mechanism to hold tool boards securely in place.

Adjustable full depth tool boards with PAC Trac installed on both sides. The tool boards shall be approx. 45" deep.



Location of the tool board(s) shall be:

LS2 / RS2 (1) one each side.

LS3 / RS3 (2) two each side.

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## Tractor Drawn Aerial

Fifteen (15)  
59-20-0300

### COMPARTMENT DOOR SILL PROTECTORS

Fifteen (15) brushed stainless steel sill protector(s), approximately .50" wide, shall be provided on the body compartment door sill(s) to protect the painted finish.

Brushed sill protectors shall be located on the following body compartment doors:

Tractor: LT1, RT1, LS running board

Trailer: LS1, LS2, LS3, LS4, LS5, LS6, RS1, RS2, RS3, RS4, RS5, RS6

Two (2)  
59-20-0550

### COMPARTMENT DOOR SCUFF PLATES

Brushed stainless steel scuff plates shall be provided on the inside two (2) body compartment door(s) to protect the painted finish.

LS1, RS1

Ten (10)  
59-20-4030

### RUB RAIL - BODY SIDES

Brushed 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. The rub rails shall be a minimum of 2-3/8" wide x 1" deep and shall be mounted on rubber supports. Rub rails shall have a 1" x 1" chamfer at the front and rear of the rails. The rails shall protrude 1.60" from the face of the body.

One (1)  
91-01-0710

### FINISH – TRACTOR COMPARTMENT INTERIOR(S)

One (1) tractor compartment interior(s) shall have no finish applied.

Two (2)  
91-01-0735

### FINISH – TRACTOR COMPARTMENT INTERIOR(S)

Two (2) tractor compartment interior(s) shall be finished with gray Zolatone type paint following the Zolatone Coat application process.

One (1)  
91-01-0750

### FINISH – TRACTOR APRON COMPARTMENT INTERIOR

The tractor apron compartment interior shall be finished with gray Zolatone type paint following the Zolatone Coat application process.

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One (1)  
91-01-0810

FINISH – TRAILER COMPARTMENT INTERIOR(S)

One (1) trailer compartment interior(s) shall have no finish applied.

One (1)  
91-01-0810

FINISH – TRAILER COMPARTMENT INTERIOR(S)

One (1) trailer compartment interior(s) shall have no finish applied.

Ten (10)  
91-01-0830

FINISH – TRAILER COMPARTMENT INTERIOR(S)

Ten (10) trailer compartment interior(s) shall be finished with gray Zolatone type paint following the Zolatone Coat application process.

Two (2)  
91-01-4510

FINISH –TRACTOR COMPARTMENT INTERIOR(S)

The interior of two (2) tractor compartment(s) shall be clear coated following the Zolatone Clear Coat application process in the same components that received a Zolatone application.

One (1)  
91-01-4510

FINISH –TRACTOR COMPARTMENT INTERIOR(S)

The interior of one (1) tractor compartment(s) shall be clear coated following the Zolatone Clear Coat application process in the same components that received a Zolatone application.

Ten (10)  
91-01-4520

FINISH –TRAILER COMPARTMENT INTERIOR(S)

The interior of the ten (10) trailer compartment(s) shall be clear coated following the Zolatone Clear Coat application process in the same components that received a Zolatone application.

Four (4)  
91-01-5300

FINISH - ADJUSTABLE SHELF (OR SHELVES)

Four (4) adjustable shelf (or shelves) shall have a DA finish on the outside edge of the shelf.

Six (6)  
91-01-6300

FINISH - ROLL OUT TRAY(S)

Six (6) roll out tray(s) shall have a DA finish applied to the outside edge of the tray.

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## Tractor Drawn Aerial

One (1)  
60-00-1300

### AERIAL LADDER DESIGN AND PERFORMANCE

A 100 foot, 250 lb. tip load telescoping steel aerial ladder shall be mounted on the apparatus. The ladder structure shall be of an open truss design and shall meet or exceed the requirements of all applicable sections of the current edition of NFPA 1901. The aerial ladder and turntable design shall provide continuous egress for civilians and firefighters through any angle of elevation to the ground as defined by NFPA 1901.

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

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

The aerial ladder shall be comprised of four (4) sections and extend to a nominal working height of 100 feet above the ground as measured by NFPA 1901 recommendations. The aerial ladder shall have a rated horizontal reach of 91 feet measured in the horizontal plane at zero (0) degrees from the centerline of the turntable rotation, as defined by NFPA 1901. The aerial ladder shall be capable of continuous operation through 360 degrees of rotation and from minus five (-5) degrees to plus eighty (+80) degrees elevation.

One (1)  
60-00-2100

### AERIAL LADDER CERTIFIED RATED CAPACITY

The rated capacity of the aerial ladder, with the ladder below 45 degrees elevation, shall be based on a 250 pound tip load or a maximum flow of 1000 GPM of water. With the ladder above 45 degrees, the capacity shall be based on a 250 pound tip load while flowing a maximum of 1000 GPM of water, in accordance with NFPA 1901, current edition. There shall be no nozzle orientation restrictions while flowing 1000 GPM of water.

All aerial ladder certifications shall be based on the ladder being properly deployed in an unsupported configuration. The capacities shall be based upon 360 degree rotation, up to full extension, and from -5 degrees to + 80 degrees.

One (1)  
60-00-4000

### OPERATION ON GRADES

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



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## Tractor Drawn Aerial

One (1)  
60-10-0AFR

### OUTRIGGERS

Outrigger jacks shall be "A" frame type and fully capable of retraction on any angle without undue binding. The cylinders shall be equipped with integral (on the cylinder) holding valves which shall hold it either in the stowed position or the working position should a pressurized hydraulic line be severed at any point within the system.

The jacks shall be fitted with swivel base pads with a ground contact area of 132 square inches. Ground jack spread shall be a maximum of 150 inches.

One (1)  
60-10-1A22

### OUTRIGGER CONTROLS

An electric outrigger control for each outrigger shall be provided on both sides of the trailer frame near the outriggers. The controls shall be in an enclosed compartment with a drop-down door having a trigger latch. The outrigger controls on the officer's side shall be on a fixed panel. The controls on the driver's side shall be on a hinged panel which opens up for access to the manual override. An automatic high idle switch and indicator shall be provided so that automatic engine RPM ramp up from hydraulic requests can be disabled.

An electric safety diverter valve shall also be provided in conjunction with the outrigger controls. The diverter valve shall allow the hydraulic fluid to flow either to the outrigger hydraulic circuit or the turntable and aerial circuit but not simultaneously. The valve shall be located on the driver's side of the trailer.

A bubble type level shall be furnished to aid in leveling the unit side to side. Each outrigger shall have an indicator light that illuminates when proper ground jack placement has been achieved.

One (1)  
60-10-2010

### OUTRIGGER ALARM

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

One (1)  
60-10-3L20

### OUTRIGGER LIGHTING - LED

Two (2) Whelen 60R02FRR Super-LED® red flashing lights with clear lens and flange shall be mounted, one (1) on each side adjacent to each outrigger.

All flashing lights shall be automatically activated if any outrigger leaves its nested position and shall not be switched off until all ground jacks are once again in their stowed position.

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## Tractor Drawn Aerial

One (1)  
60-10-415A

### OUTRIGGER PADS AND BRACKETS

A set of two (2) auxiliary outrigger pads shall be installed on the apparatus. The pads shall be 18" x 18" and shall be made of 3/8" steel with a carrying handle. There shall be installed one (1) each side below trailer compartments RS2 and LS2.

One (1)  
60-10-6000

### LADDER CRADLE

A heavy-duty rest shall be provided to support the aerial in the travel position. Wear strips shall be attached to the aerial base section to protect the aerial when the unit is in the travel position. The cradle pivots to conform to the nested ladder, providing support over the full width of the cradle.

One (1)  
60-10-7010

### LADDER CRADLE INTERLOCK SYSTEM

A ladder cradle interlock system shall be provided which automatically prevents the operator from lifting the aerial device from the cradle unless all outriggers are fully extended and placed in a load supporting configuration. An additional interlock shall be provided that prevents outrigger operation when the aerial device is not fully stowed in the cradle.

One (1)  
60-10-7220

### MANUAL OVERRIDES

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

One (1)  
60-20-001T

### AERIAL HYDRAULIC SYSTEM

#### HOSE

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

#### FILTER

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

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## Tractor Drawn Aerial

### RESERVOIR

The hydraulic oil tank shall have sufficient capacity to operate the aerial while allowing the oil to cool and shall be located behind the tractor 5th wheel and between the frame rails. There shall be a means provided to remove the tank, if needed. The connection points to the tank shall be easily accessible, with internal baffles separating the intake and return. There shall be shut-off valves at these points to isolate the tank, if needed. A filtered breather cap and a basket strainer shall be located in the filler neck. A dip stick shall verify the oil level. There shall be a plaque mounted next to the fill cap labeled "Hydraulic Fluid Only".

### PUMP

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

### HOUR METER

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

One (1)  
60-20-0200

### EMERGENCY PUMP

The apparatus shall be equipped with an emergency hydraulic pump. The pump shall be driven by a 12 volt electric motor with power from the truck batteries. It shall be capable of providing hydraulic power for limited (slower) ladder functions and for stowage of the unit in case of prime power failure. A control switch for the emergency pump shall be located at the outrigger control station and at the aerial control. The control switch shall be a spring loaded momentary type to prevent prolonged operation of the emergency pump.

One (1)  
60-20-0300

### HOT SHIFT POWER TAKE/OFF FOR AERIALS

The apparatus shall be equipped with a power (hot) shift PTO driven by the chassis transmission. An indicator shall be located in the cab to indicate when the PTO is engaged.

The following conditions apply for use of the PTO:

If the PTO is used to power the generator only, then the PTO can be engaged by the generator switch when the truck is in motion.

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

If the PTO is used to power the generator and the aerial, then the generator can be used while the truck is in motion by activating the generator switch. A hydraulic valve, controlled by the aerial enable switch,

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shall prevent aerial operation until the transmission is in neutral and the parking brake has been set or in pump mode with the parking brake set.

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

One (1)  
60-20-0500

### HOIST SYSTEM

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

The lift cylinders shall be painted job color RED.

One (1)  
60-20-1100

### EXTENSION-RETRACTION SYSTEM

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

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

One (1)  
60-30-5030

### ROTATION INTERLOCK SYSTEM

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

The rotation interlock system box/module shall be located in a junction box under the fifth wheel or gooseneck.

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One (1)  
60-35-36NW

### AERIAL SWIVEL

The aerial device shall be equipped with a swivel installed within the axial centerline of the turntable to allow 360 degree rotation of the aerial device. The swivel shall have passages for the hydraulic lines from the hydraulic pump and oil reservoir to the aerial control valve bank. The swivel shall also maintain electrical continuity of all necessary electrical circuits while ladder is rotating or when it is immobile. A minimum of thirty-six (36) collector rings shall be provided.

One (1)  
60-40-0075

### ROTATION SYSTEM

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

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

One (1)  
60-40-1003

### TURNTABLE

The turntable shall consist of aluminum tread plate to provide a slip resistant surface while operating the ladder. It shall have a minimum of 12 sq. ft. of useable walking surface.

The turntable swing bearing bolts shall be accessible from the topside of the platform. This shall allow fire department service personnel to easily perform the required periodic bolt torque tightness check. There shall be no exceptions to this maintenance requirement as it shall eliminate extended labor cost and excessive down time.

Three 1-1/4" 12 gauge stainless steel tubing guardrails, with slip resistant poly elastomer material, shall be furnished. One shall be located near the control console, one opposite the control console, and one directly behind the aerial ladder. All shall be a minimum of 42" high. The guardrails shall have safety connecting chains with clasps between them.

The turntable steel assembly shall be painted job color RED.

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One (1)  
60-40-901A

## YELLOW PERIMETER MARKING

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

One (1)  
60-41-000R

## AERIAL CONTROL CONSOLE

The aerial control console shall be located on the right side of the turntable facing the ladder tip.

One (1)  
60-41-0010

## PEDESTAL COVER

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

One (1)  
60-41-001L

## PEDESTAL COVER LATCH

There shall be a latch installed on the pedestal cover to assist in holding the cover closed.

One (1)  
60-41-0110

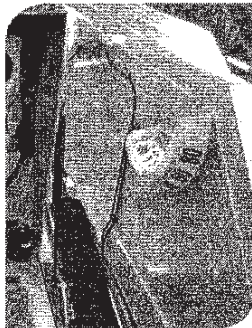
## CONTROL PEDESTAL INTERIOR WORKLIGHT

The interior of the turntable control pedestal shall have a TecNiq EON LED work light for control valve service visibility. It shall have a stand-alone toggle switch with label.

One (1)  
60-41-011X

## ANGLE INDICATOR

A Base mounted and lighted aerial angle indicator shall be placed on the side of the aerial next to the aerial operator's position.



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## Tractor Drawn Aerial

One (1)  
60-41-0220

### PEDESTAL COVER LIGHT

There shall be a TecNiq Eon LED lamp installed in the pedestal cover. The light shall be activated when the PTO is engaged.

One (1)  
60-41-1P00

### AERIAL CONTROL CONSOLE

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

- Aerial overload chart
- Emergency override rotation switch with protective cover
- Throttle switch
- Emergency pump switch with protective cover
- Intercom system - allows communication between pedestal and end of aerial
- Three directional control handles for aerial functions

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

The display located in the pedestal shall include the following information:

- 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
- Lower system pressure
- All warning information
- Aerial status
- Truck status
- Elevation indicator

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One (1)  
60-41-2000

### AERIAL OVERLOAD ALARM

An alarm horn and warning light shall be provided on the control pedestal that shall sound to alert the operator should the load capacity of the aerial be exceeded. The alarm shall in no way restrict the further operation of the aerial. There will be no exception to this safety requirement.

One (1)  
60-41-2010

### STARTER BUTTON

A remote engine start button shall be provided on the aerial control console.

One (1)  
60-41-2020

### PUSH BUTTON SWITCH F/AIR HORNS ON AERIAL PEDESTAL

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

One (1)  
60-45-1205

### AERIAL INTERCOM SYSTEM

The intercom shall be a Fire Research Model ICA-900 2 station with ACT clear voice sound system. The master shall be a push-to-talk station with 5-LED volume indicator lights and push button, arrow-up and arrow down, controls. The master unit shall be mounted on the turntable control pedestal. The hands free voice transmission slave unit shall be installed at the aerial tip or platform control console and always in transmit mode until interrupted by transmission from the master unit. The system stations shall be interconnected with shielded cable for static free operation in normal conditions.

One (1)  
60-50-0125

### AERIAL LADDER CONSTRUCTION

The aerial ladder shall be constructed of welded, high-strength steel throughout. Each section shall be trussed diagonally, vertically and horizontally and be reinforced at critical points for extra rigidity. The ladder rungs shall be round. They shall extend through the web of each ladder section rail and be fully welded at both the inside and outside of the beam faces to provide excellent torsional rigidity. The rungs shall also be "K" braced. All rungs shall be covered with deeply serrated, replaceable, heavy-duty rubber sheaths, glued and clamped securely to the rungs.

The main ladder section beams or rails shall be a hollow I-beam design for superior lateral rigidity (as compared to a hollow rectangle) and a high strength-to-weight ratio. They shall be roll formed in the factory of the bidder and be welded together by a continuous-feed automatic welding machine. Holes in the rails for the rungs shall be punched through the entire web of the I-beam. The holes shall be formed outward in a "dish" shape to obtain the widest separation between the two weld points on the rung. Prior to final assembly, the interior of the I-beam shall have an under coating primer to prevent corrosion.

The ladder shall use greaseless bushings on all pivot points and sheaves. Greaseless wear strips shall be used between the ladder sections. The ladder shall include a safety guard panel located at the turntable



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## Tractor Drawn Aerial

end of the base section and mounted on both sides of the ladder to prevent personnel from placing hands, elbows, etc. in the path of the aerial ladder extension or retraction.

Ladder construction shall complement the support of heavy or unbalanced loads at horizontal or low angle positions. To allow the passing of personnel on the ladder, the minimum inside width dimensions of the four ladder sections shall be as follows: Base - 31"; Lower Mid - 28"; Upper Mid - 24" and Fly - 21". To allow for safe climbing and good "handhold" positioning at any climbing angle, the minimum height of the handrails above the center line of the rungs of the four ladder sections shall be as follows: Base - 21.75"; Lower Mid - 18.5"; Upper Mid - 15.38" and Fly - 12.19".

One (1)  
60-50-1000

### AERIAL LADDER SLIDES & ROLLERS

The aerial ladder shall have a combination of wear pads and rollers between each section. The slides and rollers shall be provided to reduce the frictional forces between the individual sections of the ladder. No exceptions to this requirement.

One (1)  
60-50-9810

### FOLDING STEPS - LIGHTED

One (1) pair of extreme duty cast aluminum folding steps with cam locking feature shall be installed to provide substantial footing for a firefighter stationed at the tip of the fly section. Each step area shall be a minimum of 7" x 7" square. An aggressive serrated tread shall be provided to keep a foot from sliding off the top of the step. Each step shall come standard with a LED light built into the base of the step right above the stepping surface. The steps shall not protrude more than 1.50" into the climbing area of the ladder when in the stowed position.

Two (2)  
60-80-1450

### AERIAL LADDER BASE LIGHT(S)

Two (2) Whelen Pioneer Plus™ model PFP1, 12 volt 6.5 amp, Super-LED® 8,100 lumen floodlight(s) shall be installed on the base section of the ladder near the turntable.

Two (2)  
60-80-1920

Ladder base lights shall be mounted on the both sides of the ladder.

Two (2)  
60-80-2450

### AERIAL LADDER FLY LIGHT(S)

Two (2) Whelen Pioneer Plus™ model PFP1, 12 volt 6.5 amp, Super-LED® floodlight(s) shall be installed on the fly section of the ladder near the tip. The light(s) shall be controlled by the same controls as the light(s) on the base.

Two (2)  
60-80-2920

Ladder fly lights shall be mounted on the both sides of the ladder.

# Pasadena Fire Department Tractor Drawn Aerial

One (1)  
60-80-7520

## 120 VOLT SYSTEM ON LADDER

120 volt wiring shall be provided to the tip of the fly section of the aerial device. The wiring shall run from a junction box mounted below the turntable through the collector ring assembly. 12 gauge, type SJO, 3 conductor cable shall be run up the aerial.

One (1)  
60-80-7810

## TWIST-LOCK RECEPTACLE(S)

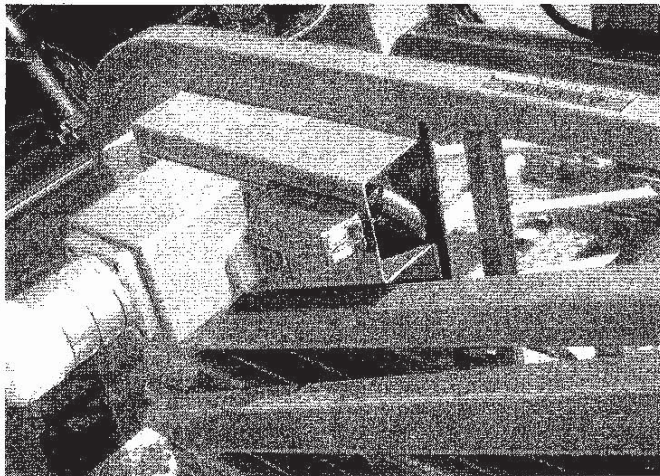
One (1) 120 volt 3-wire twist lock receptacle(s) shall be provided and mounted on the aerial in a weatherproof box with spring loaded cover, on the right side of the ladder tip, opposite to the intercom.

L5-20R (20 Amp) Twist-lock

Two (2)  
60-80-856A

## AERIAL LIGHT(S)

Two (2) Whelen #RSAO3ZCR amber flashing TIR3 series Super-LED light(s) with chrome plated flange(s) shall be installed on the aerial.



Two (2)  
60-80-8910

The lens color shall be clear.

Two (2)  
60-80-8950

The aerial light shall be mounted on the fly section of the ladder at the tip.

The light shall be located on both sides.

# Pasadena Fire Department

## Tractor Drawn Aerial

Two (2)  
60-80-9110

Two (2) aerial light(s) shall be switched at the turntable pedestal.

Two (2)  
60-80-9110

Two (2) aerial light(s) shall be switched at the turntable pedestal.

One (1)  
60-89-0020

Additional Cat Track for 100'/105' Aerials

One (1)  
60-95-0020

### DETACHABLE AERIAL LIFTING DEVICE

A detachable aerial lifting device for rescue lifting will be supplied. The lifting device can be easily and quickly attached to the tip of the ladder fly section and allows the load to be centered between the ladder rails. The device has a dual pulley (sheave) for use with a 1/2" rope. The sheave (pulley) has been designed for 1/2" rescue rope. This carries a rating not to exceed the tip load rating of the ladder.

Lifting device shall be painted same as the aerial tip.

One (1)  
60-95-0030

### AERIAL DEVICE LIFTING ANCHOR POINTS

A steel eye shall be welded to the bottom of each aerial ladder tip bottom rail and shall provide a lifting capacity of 125 pounds each. A removable crossbar shall be provided to center the load when necessary, providing a combined anchor point lifting capacity of 250 pounds. The removable crossbar shall be held in place with quick pins on the outside of each eye. The aerial device lifting anchor points and removable crossbar are designed and rated to be used with a single strand of rope or webbing. Using these anchor points in conjunction with any type of mechanical advantage system may overload the aerial device, and is not recommended.

One (1)  
60-95-2530

### LADDER BRACKET ON FLY

A ladder bracket shall be mounted to the inside of the aerial fly section, for one (1) Alco-Lite Series FL-12 12 Ft. Folding Ladder.

One (1)  
60-95-4100

### LADDER SIGN

Two (2) 132" x 12" painted metal placards for department identification signs shall be provided. One shall be installed on each side of the bed section of the ladder. Placards shall be made of smooth aluminum sheet metal and be securely fastened to the ladder.

Color of sign shall be job color.

# Pasadena Fire Department

## Tractor Drawn Aerial

One (1)  
00-05-330S

### GENERATOR/INVERTER TEST AND CERTIFICATION

The generator/inverter shall be third party tested at the manufacturer's facility and shall conform to NFPA requirements and standards. Copies of all tests shall be provided with the delivery documentation.

One (1)  
70-00-0200

### PTO EXTENSION SHAFT FOR GENERATORS

An extension shaft shall be installed on the PTO that allows for mounting of the generator pump behind the transmission.

One (1)  
70-00-4200

### HYDRAULIC GENERATOR

An Onan 15.0 kW model 15CMHG Genset hydraulic generator system shall be provided and installed on the apparatus. There shall be a generator enable switch installed on the cab dash. The generator weighs 225 lbs. and has dimensions of 39.2" long x 16" wide x 13.8" high and is encased in a silver powder-coated steel housing. The Genset system shall be capable of producing the nominal output power of 15.0 kW, 120V/240V, 60 Hz. The Genset shall be installed per the manufacturer recommendations and shall be capable of supplying full power during all engine speeds or operation modes. The Genset shall be capable of being switched on or off at any time, with or without electrical loads applied. The Genset shall be capable of continuous operation in 120°F ambient conditions.

The hydraulic pump shall be mounted directly to the vehicle PTO when possible. An extension shaft shall be installed when it is tandem mounted to the aerial pump or if there is a 3000EVS transmission. The PTO ratio shall be selected to allow Genset operation throughout the entire engine RPM range; idle to full throttle. The hydraulic pump shall have a standard SAE mounting flange and splined shaft.

The hydraulic system reservoir shall be mounted at least 2' above the pump and shall have access for fluid filling, draining and viewing the sight glass fluid level indicator. Clearance of at least 10" above the reservoir shall be provided for hydraulic fluid filter service. The reservoir shall be equipped with a remote drain and valve below the frame rails. The system reservoir shall be labeled with the type and approximate amount of fluid required.

All connecting hydraulic hoses and fittings shall be of the size and pressure rating specified by the manufacturer. The hoses shall be adequately protected from chafing or abrasion during operation.

A display meter consisting of 4 numeric LED displays shall be provided. The meter shall simultaneously display system voltage, frequency and amperage in each of the two 120V legs. The meter shall also have provisions for toggling to total hours run and oil temp via a mode switch. A high temperature visual indicator and audible alarm shall be provided and installed.

The display meter shall be located in close proximity to the breaker box.

# Pasadena Fire Department

## Tractor Drawn Aerial

One (1)  
70-02-0060

The hydraulic generator shall be located in the tractor compartment.

One (1)  
70-02-0300

### CAB GENERATOR START/STOP SWITCH AND LIGHT

A remote start/stop switch and amber running light for the generator shall be provided on the cab dash.

One (1)  
70-02-0400

### PUMP PANEL GENERATOR START/STOP SWITCH AND LIGHT

A remote start/stop switch and amber running light for the generator shall be provided on the aerial pedestal.

One (1)  
70-05-0400

### BREAKER BOX

A twenty (20) place Square D brand, or approved equal, gray colored circuit breaker box shall be provided and installed in the front upper left hand side compartment. Manual reset circuit breakers, matching the rated output of each specific outlet or device shall be provided. All power supply assembly conductors, including neutral and grounding conductors from the line voltage power source to the circuit breaker box shall have an equivalent amperage rating and shall be sized to carry not less than 115 percent of the amperage of the nameplate current rating of the power source. Power supply conductors shall be run in nonmetallic liquid tight flexible conduit or type SO/SEO cord with a WA suffix. Conduit shall have a temperature range of -67°F (-55°C) to 221°F (105°C). Wiring from the circuit breaker box to the individual outlets and devices shall be sized in accordance with NFPA 70, *National Electrical Code* requirements. Branch circuit wiring conductors shall be run in (1) metallic or nonmetallic liquid tight flexible conduit rated for use in a temperature range of -67°F (-55°C) to 221°F (105°C) with stranded copper wire rated for wet locations and temperatures not less than 194°F (90°C) or (2) Type SOW, SOOW, SEOW, or SEOOW flexible cord, rated at 600 volts and at temperatures not less than 194°F (90°C). A power source specification label shall be permanently attached to the apparatus near the operators control panel.

The door of the breaker box shall have a side hinge.

Breaker box to be located on the back wall of the left side tractor compartment (LT1) up high and near the front side wall.

One (1)  
70-05-0510

Generator Located Less Than 12 Ft from Load Center - Circuit Protection Not Req

Two (2)  
70-05-3100

### CORD REEL(S)

Two (2) Hannay Model ECR1616-17-18 power rewind cord reel(s) for live electric cable shall be provided. The reel(s) shall be 12 volt electric rewind and be equipped with an electrical collector ring

# Pasadena Fire Department Tractor Drawn Aerial

with a minimum #10 gauge, 3-conductor wiring. Capacity of each reel shall be a minimum of 150 feet 10/3 gauge or 200 feet of 12/3 gauge electric cable.

Two (2)  
70-05-3310

The AN250 motor shall take 60 seconds to rewind 100 feet.

Two (2)  
70-05-332C

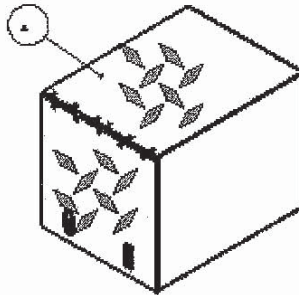
The cord reels shall be located one (1) each side of the trailer gooseneck in the recessed area of the catwalk, just aft the turntable and above Trailer Compartments 'LS1' and 'RS1'.

Two (2)  
70-05-33TE

## CORD REEL ENCLOSURES

There shall be an aluminum treadplate enclosure provided over each reel in the gooseneck area. The entire front face shall be a top hinged lift up door that has two (2) gas stays to hold it open when needed. Door shall be secured with (2) push button style door latches.

(Ref diagram for concept)



Two (2)  
70-05-3400

## HOSE ROLLER ASSEMBLY

Cable 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.

Two (2)  
70-05-4300

## CORD REEL CABLE(S)

Two (2) 200 ft. length(s) of 12/3 type SO electric cable shall be provided and installed on the cord reel.

# Pasadena Fire Department

## Tractor Drawn Aerial

Two (2)  
70-05-5350

### ELECTRICAL JUNCTION BOX

An Akron Brass 4-receptacle junction box shall be provided for distribution of electrical power on the fire ground. The box shall be constructed of aluminum and shall be completely powder coated in high visibility yellow with gray hinged protective receptacle covers and the full length carry handle. Internally lighted faceplates shall provide sufficient light to make connections and alert the crew that the box is in "power-on" status. The junction box shall have dimensions of 9.25" long x 5.5" wide x 8.5" high. The box shall be permanently wired to the cord reel.

A total of four receptacles shall be provided; three (3) NEMA L5-20R Twist Lock and one (1) 5-20R Household, Straight Blade. 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 mounting box shall be placed horizontally.

One (1)  
71-1F-F807

### CAB FRONT BROW MOUNT SCENE LIGHT(S)

One (1) FRC model FCA807 mount(s) shall be installed on the cab front brow.

The FCA807 mount shall be on the center of the cab front brow.

Two (2)  
71-6F-0570

### TELESCOPIC POLE MOUNT SCENE LIGHT(S)

Two (2) FRC model 512, thru-the-roof mounting, push-up, telescopic pole(s) shall be provided.

Model 512 telescopic pole(s) shall be located one (1) each side of the LS5 and RS5 compartments. The poles shall protrude into the compartment.

Two (2)  
71-BF-0000

### BODY REAR SURFACE MOUNT SCENE LIGHTS

Two (2) surface light mounts for Fire Research Spectra 900 lamp heads shall be installed on the rear of the body.

Body rear surface mount shall be located on rear face of tiller cab one (1) each side and slightly above the rear vent.

Two (2)  
71-GF-0530

### TELESCOPIC POLE MOUNT SCENE LIGHTS

Two (2) FRC model 530, side mounting, push-up, telescopic poles shall be provided. Each 530 telescopic pole shall have a grooved grab handle that is NFPA compliant, as standard.

# Pasadena Fire Department

## Tractor Drawn Aerial

Model 530 telescopic pole(s) shall be located one (1) each side on the rear of the cab.

Lighthoods will nest above the roofline allowing for 360 degree rotation when nested.

Two (2)  
71-KF-EV15

Two (2) FRC "Evolution" FCA100-V15, 12 volt, 13.0 amp, 15,000 lumen LED light head(s) shall be provided. The lamp head shall have eight (8) ultra-bright white LEDs. 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 incorporate heat-dissipating fins and be no more than 5-3/16" deep by 3-5/16" high by 11-1/2" wide.

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71-KF-EV15

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Two (2)  
71-KF-EV15

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Two (2)  
71-KF-SQ65

Two (2) FRC "Spectra" SPA900-Q65, 12 volt, 6.0 amp, 4,600 lumen LED light head(s) shall be provided. The lamp head shall have twenty-four (24) ultra-bright white LEDs. The lamp head shall be 6-3/4" high by 9" wide and have a profile of less than 1-3/4" beyond the mounting surface. The lamp head housing shall be aluminum with a chrome colored bezel.

Two (2)  
71-PA-0B03

Provide the standard 20" Outer Tube

Two (2)  
71-PF-0A22

A pair of side mount brackets with a 2.75" offset shall be provided to mount two (2) telescopic pole(s) to the apparatus.

Two (2)  
71-PF-0B05

Two (2) FRC "Steady Rest" bracket(s) shall be installed, as directed by the fire department. The brackets shall provide added bottom support for the inside pole when it is in the retracted position.

Two (2)  
71-PF-0L01

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 position.



# Pasadena Fire Department Tractor Drawn Aerial

Two (2)  
71-PF-0PW0

## LIGHT HEAD AND BRACKETS FINISH

Two (2) FRC light head(s) and light mounting bracket(s) shall have a white powder coat finish.

One (1)  
71-PF-0PW0

## LIGHT HEAD AND BRACKETS FINISH

One (1) FRC light head(s) and light mounting bracket(s) shall have a white powder coat finish.

Two (2)  
71-PF-0PW0

## LIGHT HEAD AND BRACKETS FINISH

Two (2) FRC light head(s) and light mounting bracket(s) shall have a white powder coat finish.

Two (2)  
71-Y0-0010

Two (2) 12 volt light(s) shall be switched at the cab dash.

Two (2)  
71-Y0-0010

Two (2) 12 volt light(s) shall be switched at the cab dash.

One (1)  
71-Y0-0010

One (1) 12 volt light(s) shall be switched at the cab dash.

Two (2)  
71-Y0-0010

Two (2) 12 volt light(s) shall be switched at the cab dash.

One (1)  
77-44-9995

## MOUNTING AND BRACKETING

Mounting and bracketing from South Park, Zico, or PAC shall be provided by the dealer. The mount's and bracket's shall be installed by So. Cal. Fleet as directed by the Pasadena Fire Department. Mounts, brackets, and installation not to exceed \$3,200.00.

One (1)  
89-99-0030

## NFPA REQUIRED EQUIPMENT

NFPA requires that the purchasing authority supply a detailed list of furnished equipment that identifies who will be providing that equipment. The list shall be provided at the time of bid submittal to the manufacturer.

# Pasadena Fire Department Tractor Drawn Aerial

One (1)  
90-00-0150

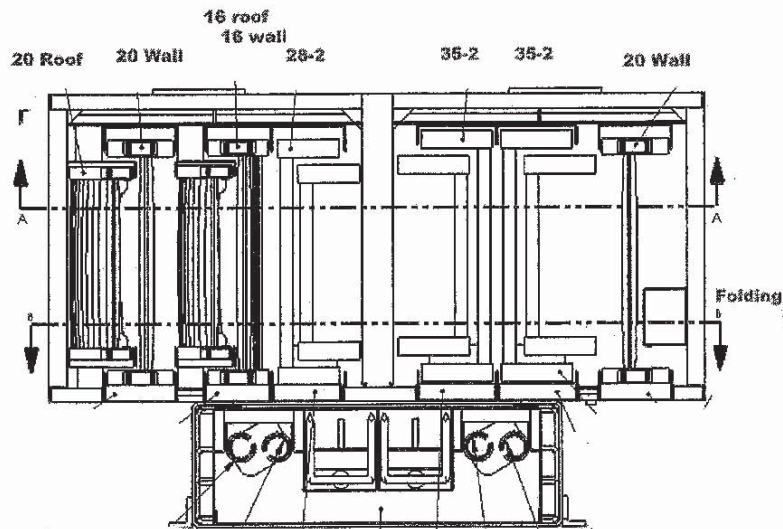
## GROUND LADDERS

Ladders shall be provided in full compliance with NFPA 1901 requirements for aerial trucks. Ladders shall be individually mounted under the aerial ladder and tiller cab and properly labeled. Two Hundred (200) Feet of ALACO wooden ladders shall be provided as follows:

- Two (2) 35 Ft, Two Section, Wood
- One (1) 28 Ft., Two Section, Wood
- Two (2) 20 Ft Wall, Wood
- One (1) 16 Ft Wall, Wood
- One (1) 20 Ft Roof, Wood
- One (1) 16 Ft Roof, Wood
- One (1) 10 Ft Folding, Wood

Ladders shall be shipped to Seagrave to insure proper fit.

(Ref diagram for concept only)



One (1)  
90-00-6700

## GROUND LADDER(S)

One (1) Alco-Lite 12 ft. aluminum folding ladder(s), Series FL-12

Shall be located inside fly section of the aerial ladder.

# Pasadena Fire Department

## Tractor Drawn Aerial

One (1)  
90-01-9000

### GROUND LADDERS MOUNTED VERTICALLY

The wood ground ladders shall be stored on fiberglass or composite slide tracks mounted top and bottom in the ladder bay. The slides shall have radiused corners to prevent damage. Delrin rollers set at the rear floor area shall assist crew in unloading and reloading ladders. Storage shall permit any ladder to be individually removed without necessity of moving any other ladder.

One (1)  
90-01-9210

### LADDER COMPARTMENT DOORS

Vertically hinged aluminum double doors shall be provided at the rear of the ground ladder compartment. The doors shall be constructed of smooth aluminum, to accommodate the installation of chevron striping. The doors shall be double panel construction, shall include gas operated door stays and shall be held shut with a "D" ring positive lock. The compartment lights shall automatically be activated by a door switch when door is opened. The door switch shall be integrated with the door ajar/hazard warning system.

The interior of the doors to be covered with aluminum treadplate.

One (1)  
90-01-9500

### GROUND LADDER SPLASH SHIELD

A splash shield shall be provided below the ground ladders to shield the ladders from road splash. The shield shall be made of 3CR12 stainless steel and painted the same color as the ladder stakes. The ladder banking compartment shall be as weather-tight as possible. Two (2) drain holes shall be installed in the bottom of the splash shield, one (1) each side at the rear. A fitting in each hole with hose extended to below the rear step shall be provided.

One (1)  
90-01-9930

### LADDER BAY LIGHTS

The ladder bay opening shall be illuminated by two (2) LED lights from Triton, model TLPC. Each weatherproof light shall have 15 LED bulbs and a lens that measures 1.125" in diameter. The lights shall be activated by opening the ladder bay doors. The door switch shall be integrated into the door ajar hazard warning system.

One (1)  
90-05-0500

### PIKE POLES AND MISCELLANEOUS EQUIPMENT

The following pike poles shall be mounted in PVC tubing:

**Jomsky, Mark**

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**Sent:** Monday, July 11, 2016 4:34 PM  
**To:** Jomsky, Mark  
**Subject:** Ladder truck for Station #31 on agenda today -for the attention of Mayor Tornek & Pasadena City Council

We would like to voice our support for the proposed purchase of a ladder truck for station #31. Our firemen deserve at the very least good equipment. Their current truck is decades old and produces excessive diesel smoke making hot days like today even more unbearable for our firemen as they do their job to protect our community. Perhaps the suggestion to follow the truck for a day while on calls for those considering this agenda item is in order if there is any doubt as to the veracity of our concern for the necessity of this updating of equipment for our station #31 firemen and the Pasadena neighborhood they serve.

Sincerely,  
Dayton St. property owners and residents

07/11/2016  
Item 13