

# SVI #1322R - 24' Command Unit

Sales Specification  
July 12, 2024



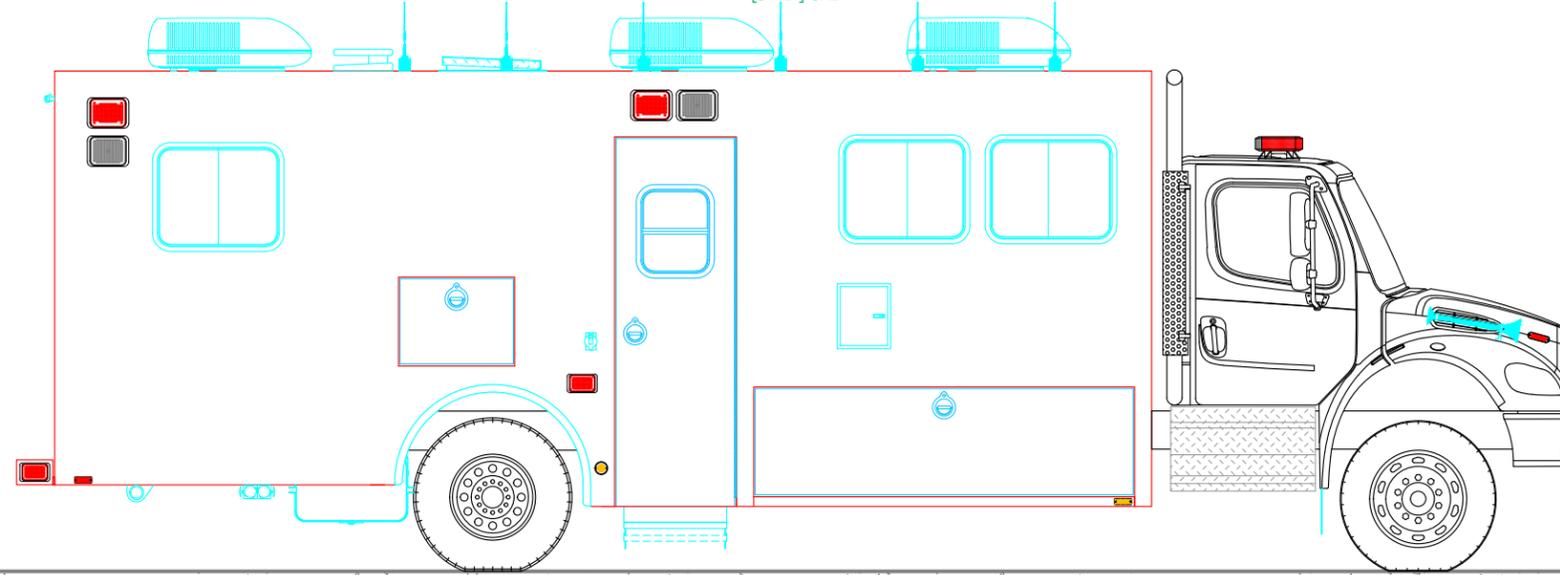
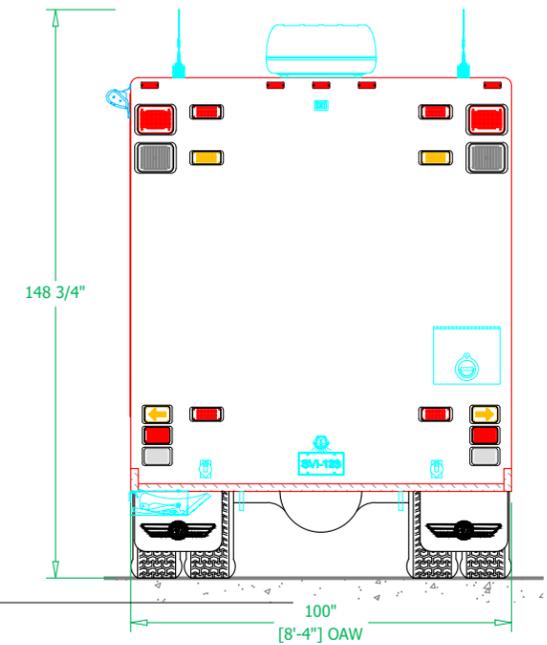
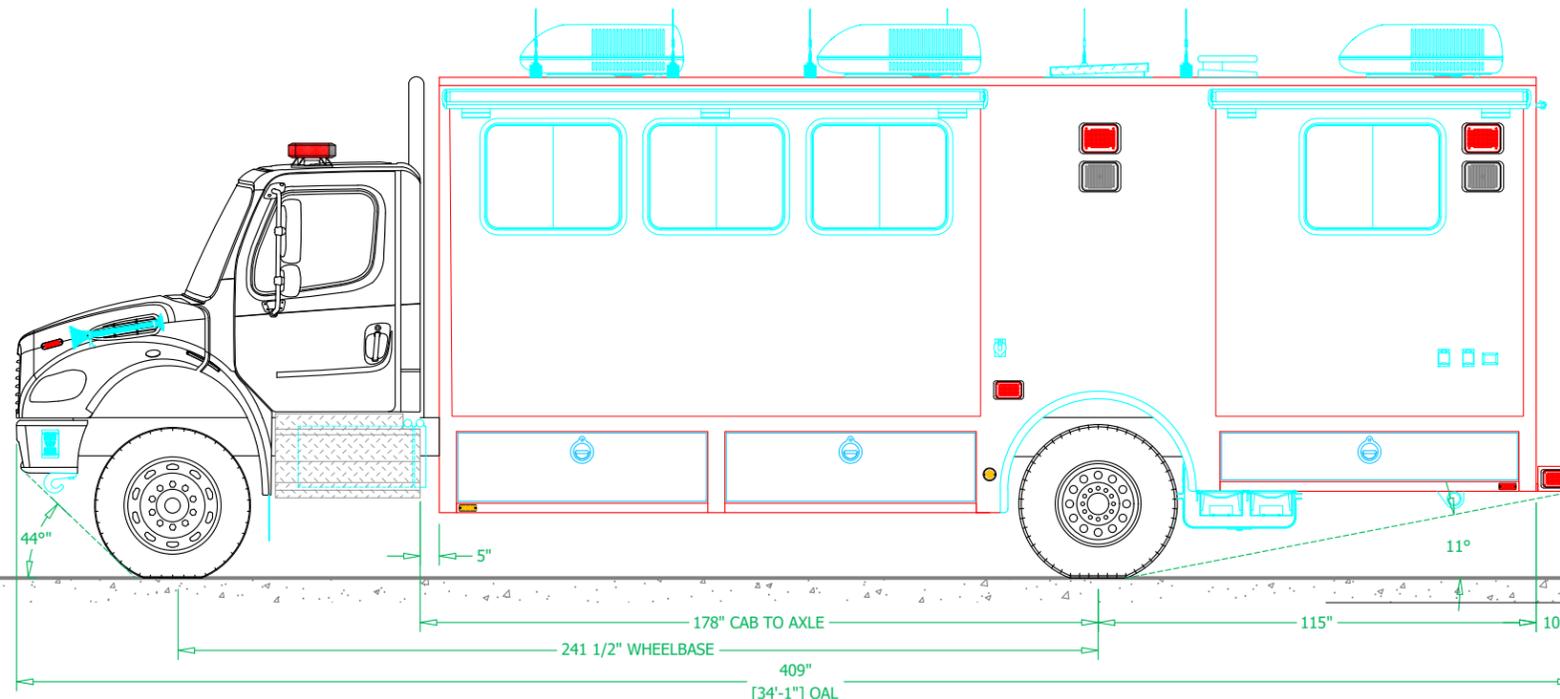
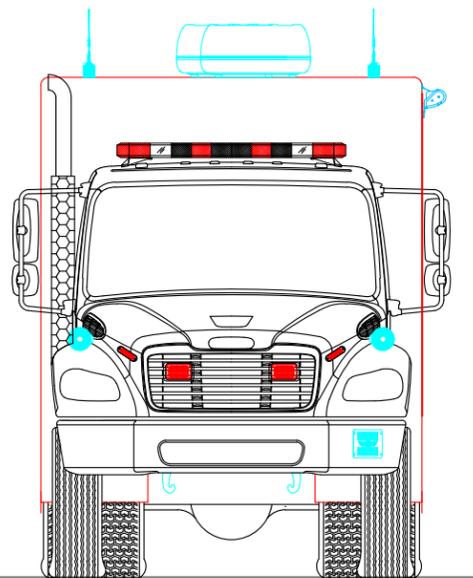
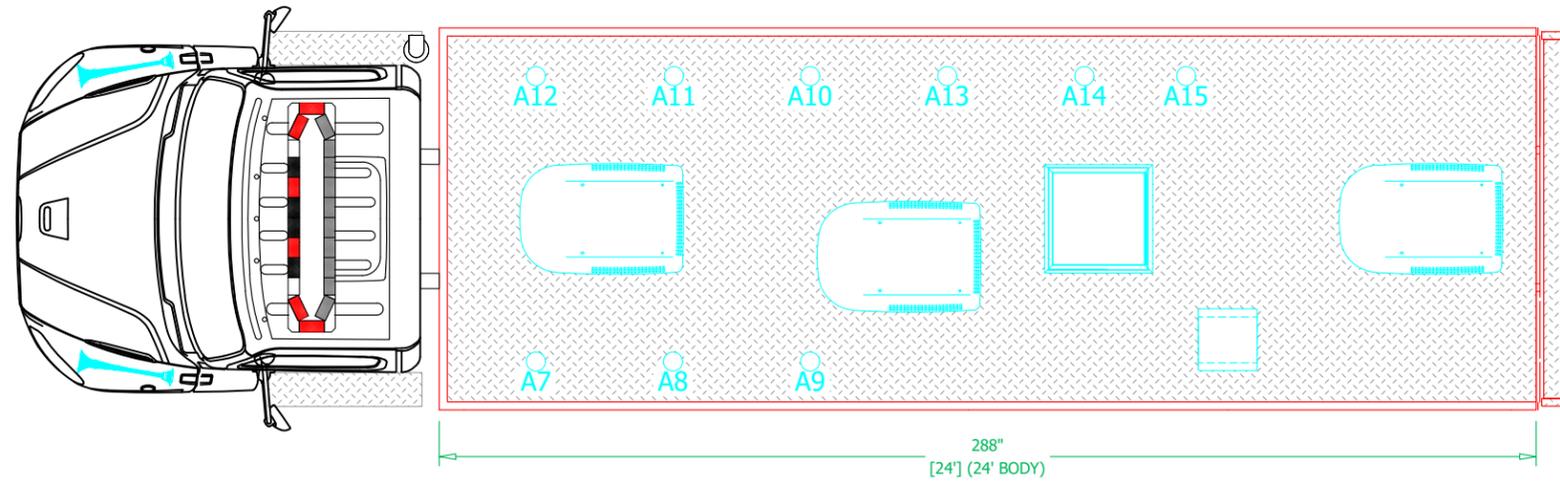
**ROCK SOLID QUALITY**

PRELIMINARY DRAWING - FOR LAYOUT PURPOSES ONLY

REVISIONS			
REV	DESCRIPTION	DATE	BY

NOTE 1: Do not scale drawing. This drawing is for general truck configuration only. All items and dimensions shown are approximate and may vary with final production. The drawing may not provide illustration for all items in the specification. In all situations where the drawing may contradict the specifications, the specifications shall prevail. This drawing and all data herein are provided as confidential materials and shall not be reproduced without written consent of the manufacturer.

NOTE 2: Chassis frame height will change due to axle characteristics, loading and tire dimensions which will effect the overall height dimension shown. Any overall height restrictions should take this into consideration and allow approximately 2-3 inches of tolerance.





**SVI**  
FORT COLLINS COLORADO

SVI FIRE & RESCUE TRUCKS  
3842 REDMAN DRIVE, FORT COLLINS, CO 80524 PHONE 970-297-7100, FAX 970-297-7099

## SVI FREIGHTLINER M2 106 COMMAND REFURB

BODY SIZE: 24' BODY	UNIT TYPE: COMMAND
BODY MATERIAL: 3/16" ALUMINUM	TRUCK NO: SVI #xxx
CHASSIS TYPE: FREIGHTLINER	WHEELBASE: SEE DWG
M2 106	CAB TO AXLE: SEE DWG
-	OVERALL LENGTH (OAL): SEE DWG
-	OVERALL WIDTH (OAW): SEE DWG
TWO DOOR	OVERALL HEIGHT (OAH): SEE DWG

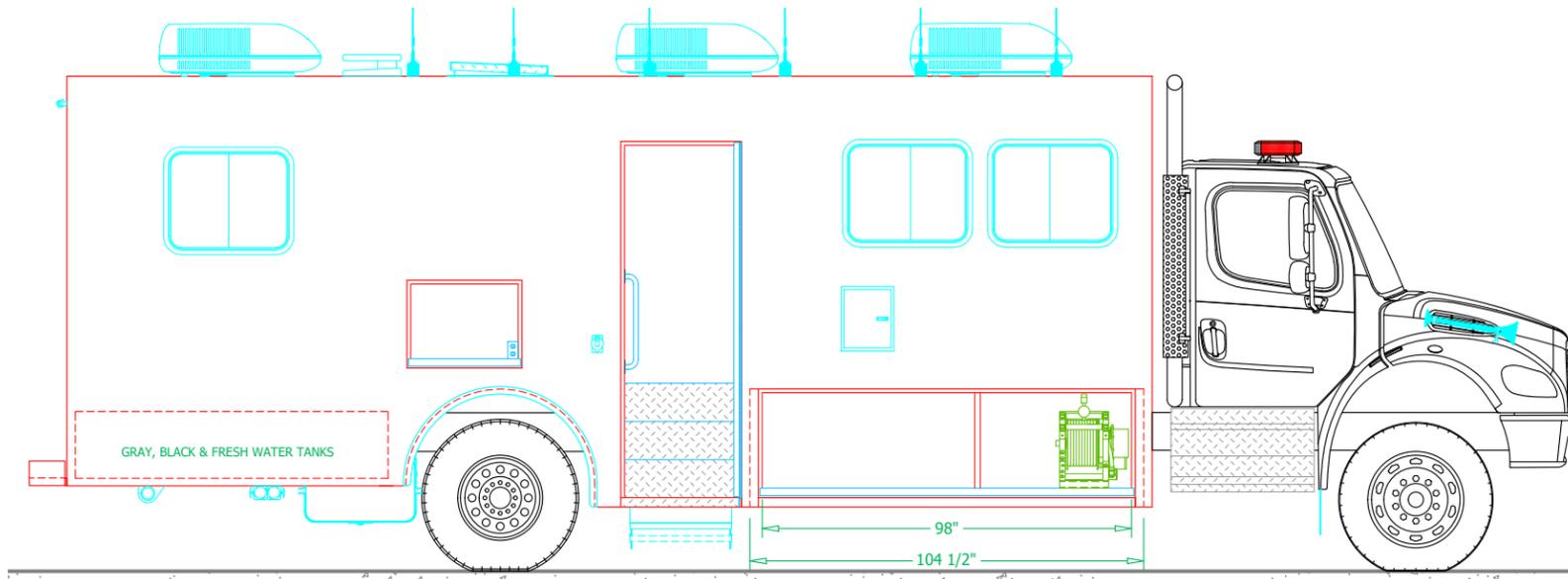
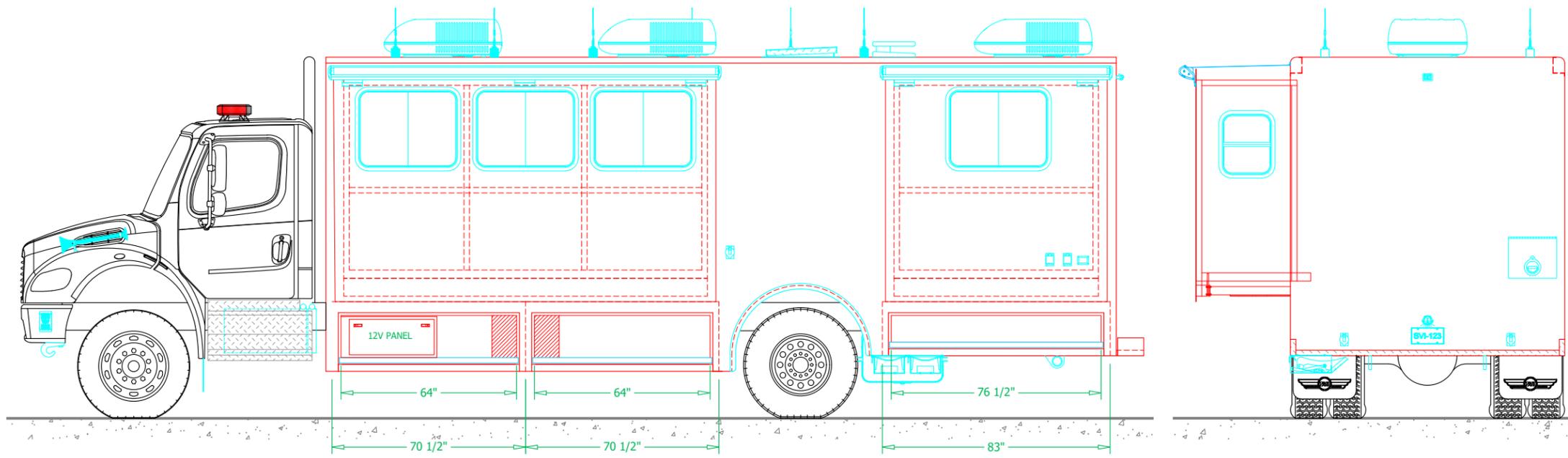
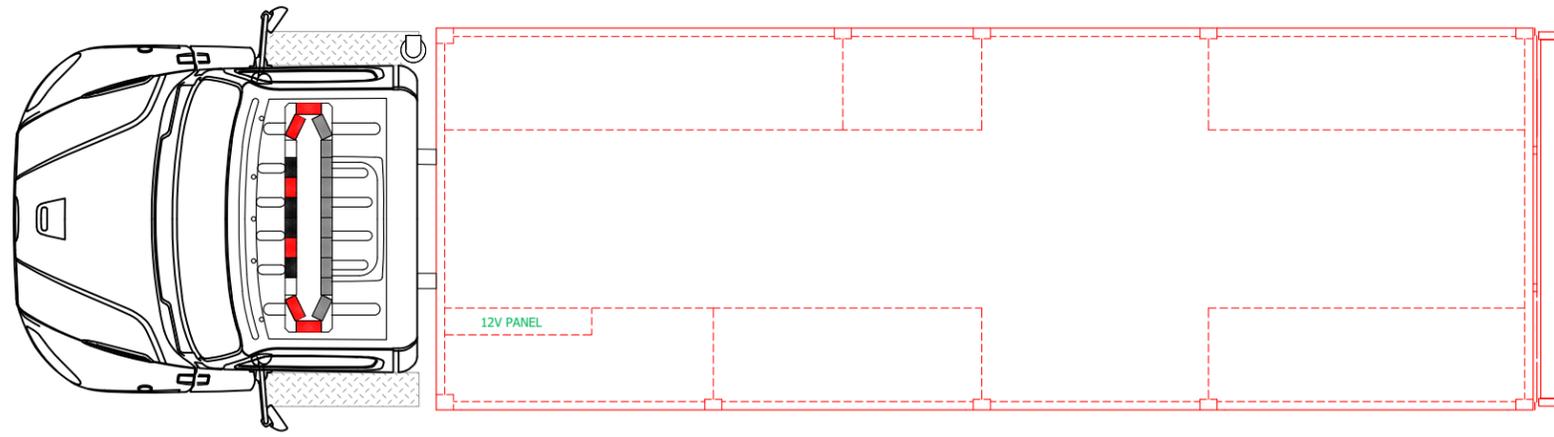
DRAWN BY: RMH    DATE: July 11, 2024    SCALE: 1/4" = 1'-0"

DRAWING NO: SVI Freightliner M2 2DR Command Refurb Prelim2    SHEET 1 OF 3

PRELIMINARY DRAWING - FOR LAYOUT PURPOSES ONLY

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**SVI FREIGHTLINER M2 106  
COMMAND REFURB**

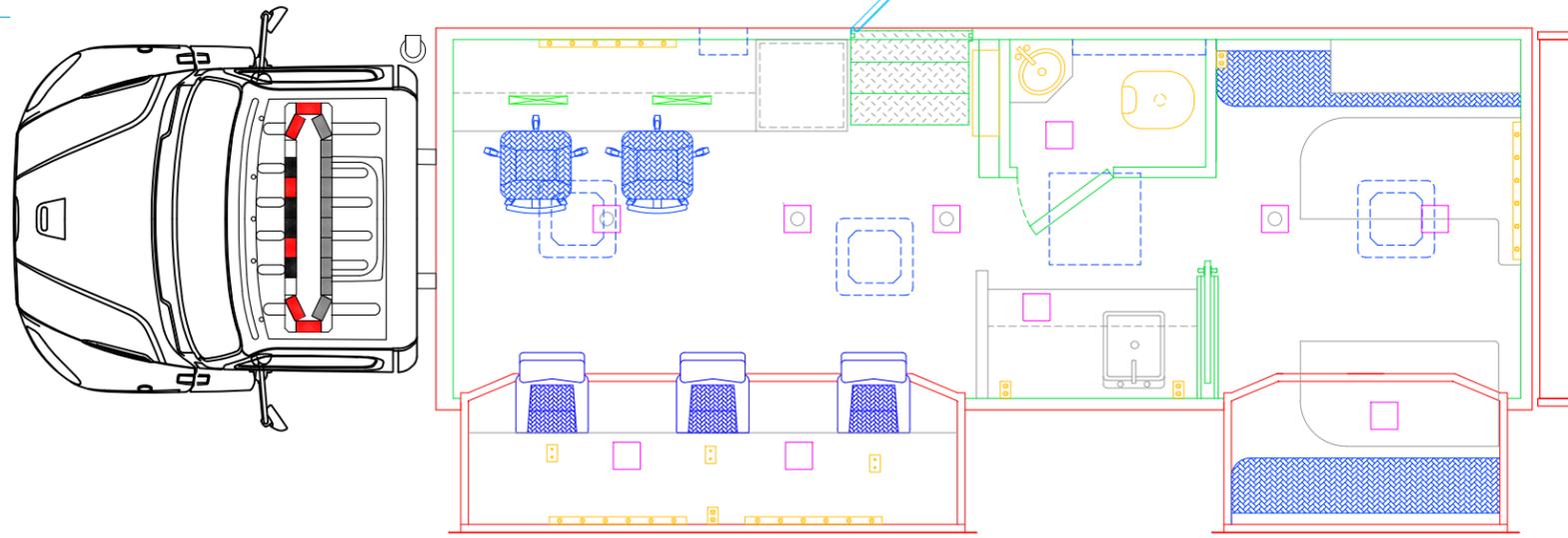
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DRAWING NO: SVI Freightliner M2 2DR Command Refurb PreLim2		SHEET 2 OF 3

PRELIMINARY DRAWING - FOR LAYOUT PURPOSES ONLY

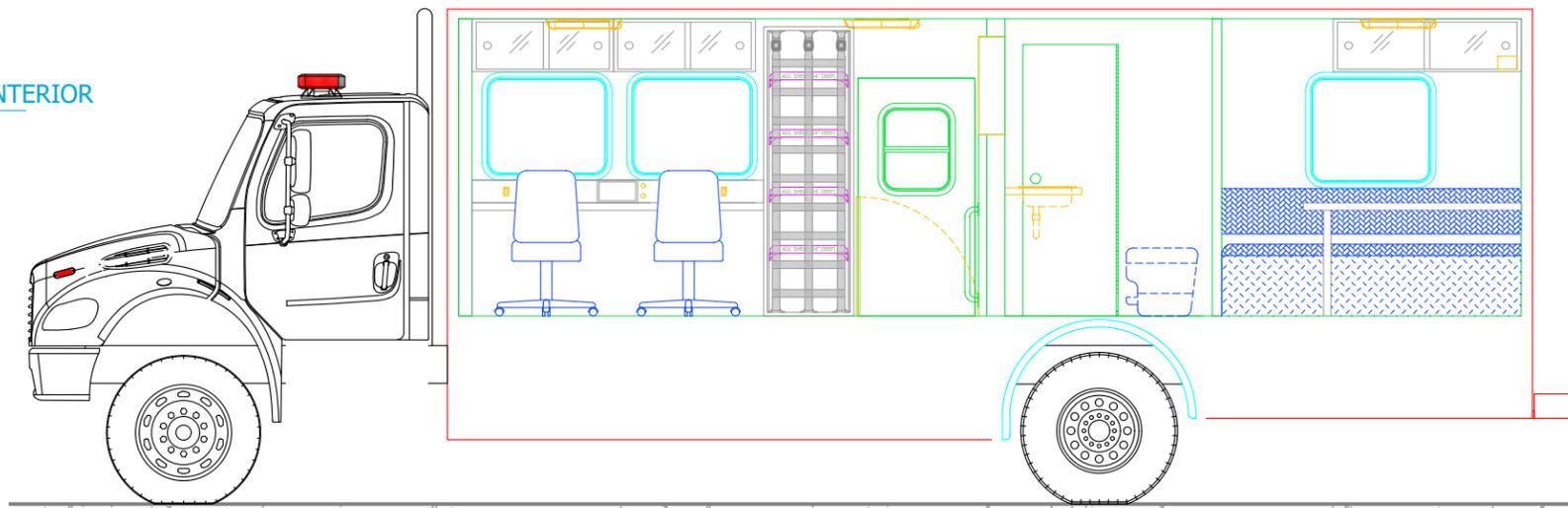
REVISIONS			
REV	DESCRIPTION	DATE	BY

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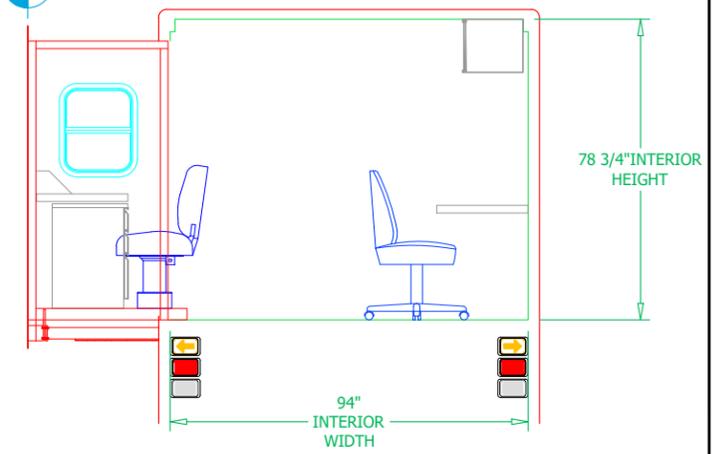
PLAN VIEW



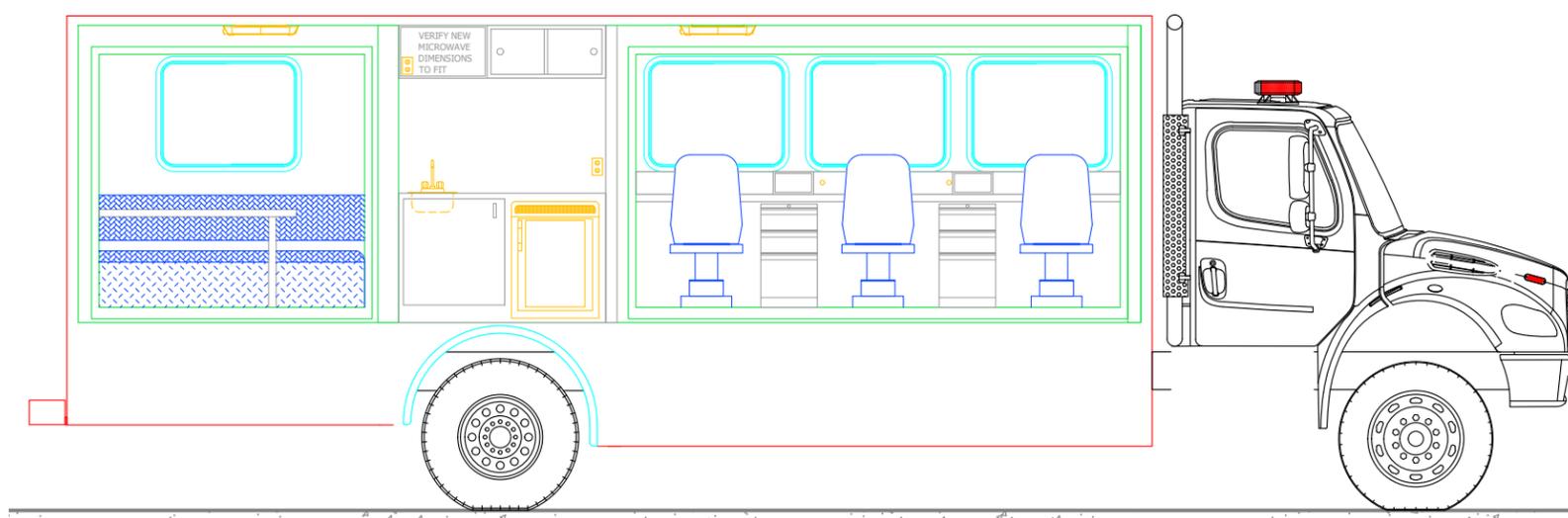
CURBSIDE INTERIOR



REAR VIEW



STREETSIDE INTERIOR



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**SVI FREIGHTLINER M2 106  
COMMAND REFURB**

DRAWN BY: RMH	DATE: July 11, 2024	SCALE: 1/4" = 1'-0"
DRAWING NO: SVI Freightliner M2 2DR Command Refurb PreLim2		SHEET 3 OF 3

# 24' Command Unit

SVI# 1322R

One (1)  
00-38-0300

## **APPARATUS TRAINING VIDEOS**

Manufacturer shall provide basic apparatus training videos accessible on their website. Videos will be of general product knowledge and not necessarily specific to purchaser's apparatus.

One (1)  
01-02-2000

## **LIABILITY INSURANCE**

The manufacturer shall furnish with the bid a certificate of insurance for;

Workman's Compensation and Employer's Liability Insurance covering for all employees.

General Liability (each occurrence) of \$1,000,000.00. General Aggregate coverage of \$2,000,000.00. Products Completed / Operations Aggregate coverage of \$2,000,000.00. Medical Expense coverage of \$5,000 (any one person). Personal Injury of \$1,000,000.00.

Automobile liability of \$1,000,000.00 combined single limit (each accident), including any auto, all owned autos, scheduled autos, hired autos, non-owned autos, and garage liability.

Excess Umbrella Liability coverage of \$6,000,000.00 each occurrence, Aggregate of \$6,000,000.00. Garage Keepers Liability coverage of \$6,000,000.00 combined limit.

All insurance policies must be;

- Maintained for the life of the contract,
- Must provide ten (10) days notice before cancellation,
- Must cover all operations of the contractor, or anyone employed by them.

One (1)  
01-02-3000

## **INTERNET IN-PROCESS SITE**

The manufacturer shall post and maintain a website where the will be able to view digital images of their apparatus as its being built. The digital images shall be posted once a week starting when the body begins production or when the cab/chassis arrives and shall continue until the final completion of unit.

One (1)  
01-04-0110

## **ENGINEERING DRAWINGS**

The evaluation of bids shall also be based on design, engineering reliability, and completeness of drawings. No Bidder's proposal shall be considered unless complete engineering drawings to these specifications are submitted with the request for proposal package. Failure to submit factory prepared blueprints with bid shall result in automatic rejection. Submission of "bid drawings" are in addition to "production drawings" which must be submitted for approval prior to construction. Bid drawings shall allow the the ability to fully evaluate required product.

The engineering drawings shall be produced on computer aided design (CAD) equipment to assure critical tolerance and detail only available with CAD equipment. The drawings shall be on "B" size paper, 17" x 11" in size, and views must be 1/4" = 1' - 0" scale. This shall allow the the ability to compare drawings of all manufacturers on an "equal" basis. The drawings shall be completed only by the body manufacturer, and must be exactly to specifications. Submission of "similar to" drawings or "statements

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referring to later submission of drawings after award of contract" shall be automatically rejected.

Since the request for proposal package will require extensive evaluation by , all Bidders must submit exactly the same engineering drawings at the same scale, on the same size paper. For easy comparison of drawings, they must be on a 17" x 11" sheet as follows:

- All bid drawings will be stamped BID DRAWING.
- All items shown on the drawing will be pre-designed with regards to layout and functionality prior to the completion of the BID DRAWING.
- Two (2) 17" x 11" color drawings will be supplied with the bid proposal. Black and white or blue line drawings will not be accepted.
- There shall be five (5) views of the truck with the doors closed (Top, Left, Right, Front, Rear), four (4) views of the truck with the doors open (Top, Left, Right, Rear) and four (4) views of any walk-in area (Top, Left, Right, Rear).
- All compartment door openings and usable space shall be clearly shown in inches.
- The trucks overall length, height, width, wheelbase and cab-to-axle dimensions shall be clearly shown.
- The angles of approach and departure shall be shown in the maximum loaded condition to the nearest degree.
- All lighting packages will be clearly shown on the drawing and verified accurate per the most current NFPA standards (when applicable).
- The exterior view shall show all scene lights, marker lights, speakers, horns, exhaust, tow points, exterior outlets, windows, winch receivers, tow hitches, exterior ladders and any other item important to the function of the vehicle.
- The open view shall show all trays, shelves, air system components, hydraulic components, tool boards, storage modules and any other items important to the function of the vehicle.
- The interior view for all walk-in areas shall show all seating positions, desks, cabinets, windows, tech equipment, radio locations and any other item important to the function of the vehicle.
- Any changes to the BID drawing will require a revision which will be clearly annotated in the upper right hand side of the drawing showing the revision number, reason for the revision, date and who made the changes.

Text Block Items;

- Purchaser's name.
- Body size and material type.
- Chassis manufacturer and model number.
- Unit description.
- Wheelbase (WB) , Cab-to-axle (CA) distance.
- Overall length (OAL), Overall width, (OAW), Overall height (OAH).
- Scale, date, drawn by, drawing number and sheet number.

One (1)  
01-13-1000

### **RESPONSIBILITY OF PURCHASER**

It shall be the responsibility of the purchaser to specify the details of the apparatus in addition to the requirements in NFPA 1900 needed by the manufacturer to build the apparatus, including:

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- 1) Requirements not uniquely specified in NFPA 1900, such as the type of apparatus desired.
- 2) Any features of the apparatus desired in addition to, or in excess of, the requirements in NFPA 1900.

After acceptance of the fire apparatus, the purchaser shall be responsible for ongoing training of personnel to develop and maintain proficiency regarding the proper and safe use of the apparatus and the associated equipment.

One (1)  
01-13-1050

### **RESPONSIBILITY OF CONTRACTOR**

The Contractor shall provide a detailed description of the apparatus, a list of equipment to be furnished, and other construction and performance details to which the apparatus shall conform. The detailed description of the apparatus shall include, but shall not be limited to,

3. Estimated In-Service Weight,
4. Wheelbase, Turning Clearance Radius,
5. Principal dimensions, Angle of Approach, Angle of Departure,
6. Transmission, Axle Ratios.

The Contractor's detailed description shall include a statement specifically describing each aspect of the delivered apparatus that will not be fully compliant with the requirements of this standard.

The purpose of these Contractor specifications shall be to define what the contractor intends to furnish and deliver to the purchaser.

Responsibility for the apparatus and equipment shall remain with the contractor until they are accepted by the purchaser.

One (1)  
01-13-1300

### **VEHICLE STABILITY**

#### **ROLLOVER STABILITY**

The apparatus shall meet the criteria defined below, or it shall be equipped with a stability control system defined below.

The apparatus shall meet the criteria defined in either of the following:

- 7) The apparatus shall remain stable to 26.5 degrees in both directions when tested on a tilt table in accordance with SAE J2180, *A Tilt Table Procedure for Measuring the Static Rollover Threshold for Heavy Trucks*.
- 8) The calculated or measured center of gravity (CG) shall be no higher than 80 percent of the rear axle track width.

Compliance shall be certified by testing, calculating, or measuring the apparatus or by comparing the apparatus to a compliant, substantially similar example apparatus and the certification shall be delivered with the fire apparatus.

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The example apparatus shall be considered substantially similar if it includes a chassis with the same or higher CG height, the same or narrower rear axle track width, the same or greater water tank size and CG height, the same type of front and rear suspension and the same type and size of aerial device.

The apparatus shall be loaded with fuel, fire-fighting agents, hose, ladders, a weight of 250 lb in each seating position and weight equivalent to the Miscellaneous Equipment Allowance as defined in Table 12.1.2.

If the apparatus is designed to meet a specified higher equipment loading or larger hose bed capacity or to carry additional ground ladders, these greater loads shall be included in the testing, calculating or measuring.

The weight added to the fire apparatus for the purpose of test, calculation or measurement shall be distributed to approximate typical in-service use of the fire apparatus while not exceeding the manufacturer's published individual compartment weight ratings.

If the apparatus is equipped with a stability control system, the system shall have, at a minimum, a steering wheel position sensor, a vehicle yaw sensor, a lateral accelerometer and individual wheel brake controls.

One (1)  
01-13-1360

## **FIRE APPARATUS PERFORMANCE**

The fire apparatus shall meet the requirements of this standard at elevations of 2000 ft (600 m) above sea level.

The fire apparatus shall meet all the requirements of this standard while stationary on a grade of 6 percent in any direction.

The fire apparatus shall meet the requirements of this standard in ambient temperature conditions between 32°F (0°C) and 110°F (43°C).

## **HIGHWAY PERFORMANCE**

The apparatus, when loaded to its estimated in-service weight, shall be capable of the following performance while on dry, paved roads that are in good condition:

- 9) Accelerating from 0 to 35 mph (55 km/hr) within 25 seconds on a 0 percent grade
- 10) Attaining a speed of 50 mph (80 km/hr) on a 0 percent grade
- 11) Maintaining a speed of at least 20 mph (32 km/hr) on any grade up to and including 6 percent

The maximum top speed of fire apparatus with a GVWR over 26,000 lb (11,800 kg) shall not exceed either 68 mph (109 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1250 gal (4732 L), or the GVWR of the vehicle is over 50,000 lb (22,680 kg), the maximum top speed of the apparatus shall not exceed either 60 mph (95 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

## **SERVICEABILITY**

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The fire apparatus shall be designed to allow the manufacturer's recommended routine maintenance checks of lubricant and fluid levels to be performed by the operator without lifting the cab of a tilt-cab apparatus or without the need for hand tools.

Where special tools are required for routine service on any component of the apparatus, such tools shall be provided with the apparatus.

Apparatus components that interfere with repair or removal of other major components shall be attached with fasteners, such as cap screws and nuts, so that the components can be removed and installed with ordinary hand tools. These components shall not be welded or otherwise permanently secured into place.

One (1)  
01-13-1400

## **FIRE APPARATUS DOCUMENTATION**

The contractor shall supply, at the time of delivery, at least one (1) copy of the following documents:

- 12) The manufacturer's record of apparatus construction details, including the following documents:
  - m) Owner's name and address
  - n) Apparatus manufacturer, model, and serial number
  - o) Chassis make, model, and serial number
  - p) GAWR of front and rear axles and GVWR
  - q) Front tire size and total rated capacity in pounds (kilograms)
  - r) Rear tire size and total rated capacity in pounds (kilograms)
  - s) Chassis weight distribution in pounds (kilograms) with water and manufacturer-mounted equipment (front and rear)
  - t) Engine make, model, serial number, rated horsepower and related speed, and governed speed; and if so equipped, engine transmission PTO(s) make, model, and gear ratio
  - u) Type of fuel and fuel tank capacity
  - v) Electrical system voltage and alternator output in amps
  - w) Battery make, model, and capacity in cold cranking amps (CCA)
  - x) Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio
  - y) Ratios of all driving axles
  - z) Maximum governed road speed
  - aa) Pump make, model, rated capacity in gallons per minute (liters per minute where applicable), maximum discharge pressure capability rating, and serial number
  - bb) Pump transmission make, model, serial number, and gear ratio
  - cc) Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number
  - dd) Water tank certified capacity in gallons or liters
  - ee) Foam tank (if provided) certified capacity in gallons (liters)
  - ff) Aerial device type, rated vertical height in feet (meters), rated horizontal reach in feet (meters), and rated capacity in pounds (kilograms)
  - gg) Paint manufacturer and paint number(s)
  - hh) Company name and signature of responsible company representative
  - ii) Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall fire apparatus (with the water tank full but without personnel, equipment, and hose)
- 2) Certification of compliance of the optical warning system (see 10.7.17)
- 3) Siren manufacturer's certification of the siren (see 10.8.1.1)

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- 4) Written load analysis and results of the electrical system performance tests (see 10.13.1 and Section 10.14)
- 5) Certification of slip resistance of all stepping, standing, and walking surfaces (see 12.6.4.5)
- 6) If the apparatus has a fire pump, or a wildland fire pump, the pump manufacturer's certification of suction capability (see 13.2.4.1 or 15.2.4.1)
- 7) If the apparatus is equipped with a fire pump or a wildland fire pump and special conditions are specified by the purchaser, the pump manufacturer's certification of suction capacity under the special conditions (see 13.2.4.2 or 15.2.4.2)
- 8) If the apparatus has a fire pump, or a wildland fire pump a copy of the apparatus manufacturer's approval for stationary pumping applications (see 13.3.1 or 15.3.1)
- 9) If the apparatus has a fire pump, the engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed (see 13.3.2.2)
- 10) If the apparatus has a fire pump or a wildland fire pump, the pump manufacturer's certification of the hydrostatic test (see 13.5.2.2 or 15.5.2.2)
- 11) If the apparatus has a fire pump with a maximum discharge pressure capability rating that exceeds the hydrostatic test pressure of 13.5.2.1, the pump manufacturer's certification of the hydrodynamic test
- 12) If the apparatus has a fire pump or a wildland fire pump, the certification of inspection and test for the fire pump (see 13.13.1.1.5 or 13.13.1.2.4 or 15.13.1.2.4 as applicable)
- 13) If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test (see Section 14.13)
- 14) When the apparatus is equipped with a water tank, the certification of water tank capacity (see Section 17.6)
- 15) If the apparatus has an aerial device, the certification of inspection and test for the aerial device (see Section 20.31)
- 16) If the apparatus has an aerial device, all the technical information required for inspections to comply with NFPA 1910
- 17) If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy (see 18.10.4.2) and the final installer's certification the foam proportioning system meets this standard (see 18.11.2)
- 18) If the system has a CAFS, the documentation of the manufacturer's pre delivery tests (see Section 19.9)
- 19) If the apparatus has a line voltage power source, the certification of the test for the power source (see 21.15.7.2)
- 20) If the apparatus is equipped with an air system, air tank certificates (see 23.5.1.2), the SCBA fill station certification (see 23.9.6), and the results of the testing of the air system installation (see 23.14.5 and 23.15.4)
- 21) For wildland fire apparatus, or structural apparatus without stability control, certification of vehicle side slope stability, including the weight distribution assumed for the calculations or as loaded on the vehicle for the tilt table test (see 7.14.3)
- 22) Any other required manufacturer test data or reports

One (1)  
01-13-1450

## **OPERATIONS AND SERVICE DOCUMENTATION**

The contractor shall deliver with the fire apparatus complete operation and service documentation covering the completed apparatus as delivered and accepted.

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

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

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- 23) Manufacturer's name and address
- 24) Country of manufacture
- 25) Source for service and technical information
- 26) Parts replacement information
- 27) Descriptions, specifications, and ratings of the chassis, pump (if applicable), and aerial device (if applicable)
- 28) Wiring diagrams for low voltage and line voltage systems to include the following information:
  - a) Pictorial representations of circuit logic for all electrical components and wiring
  - b) Circuit identification
  - c) Connector pin identification
  - d) Zone location of electrical components
  - e) Safety interlocks
  - f) Alternator–battery power distribution circuits
  - g) Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems
- 29) Lubrication charts
- 30) Operating instructions for the chassis, any major components such as a pump or aerial device, and any auxiliary systems
- 31) Precautions related to multiple configurations of aerial devices, if applicable
- 32) Instructions regarding the frequency and procedure for recommended maintenance
- 33) Overall apparatus operating instructions
- 34) Safety considerations
- 35) Limitations of use
- 36) Inspection procedures
- 37) Recommended service procedures
- 38) Troubleshooting guide
- 39) Apparatus body, chassis and other component manufacturer's warranties
- 40) Special data required by this standard
- 41) A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus

The contractor shall deliver with the apparatus all manufacturer's operations and service documents supplied with components and equipment that are installed or supplied by the contractor.

One (1)  
01-13-1515

## **NFPA REQUIRED DOCUMENTATION FORMAT - Online @ SVI Trucks . com**

The vehicle construction details and the operations and service documentation as required per NFPA 1900 latest edition shall be provided online. These manuals shall be divided into sections for ease of reference and will include two (2) QR codes installed on the apparatus for accessibility, with an additional 2 QR codes shipped loose.

One (1)  
01-13-1710

## **FIRE APPARATUS SAFETY GUIDE**

A Fire Apparatus Safety Guide published by Fire Apparatus manufacturer's Association shall be provided with delivered vehicle. This manual includes essential safety information for fire fighters, fire chiefs, apparatus mechanics, and fire department safety officers. The guide is applicable to municipal, wildland, and airport fire fighting apparatus manufactured on either custom or commercial chassis.

One (1)  
01-13-1750

## **STATEMENT OF EXCEPTIONS**

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The final-stage manufacturer shall deliver with the fire apparatus either a certification that the apparatus fully complies with all requirements of this standard or alternatively, a Statement of Exceptions specifically describing each aspect of the completed apparatus that is not fully compliant with the requirements of this standard at the time of delivery.

The Statement of Exceptions shall contain, for each noncompliant aspect of the apparatus or missing required item, the following information:

- 42) A separate specification of the section of the applicable standard for which compliance is lacking
- 43) A description of the particular aspect of the apparatus that is not in compliance therewith or required equipment that is missing
- 44) A description of the further changes or modifications to the delivered apparatus that must be completed to achieve full compliance
- 45) Identification of the entity that will be responsible for making the necessary post delivery changes or modifications or for supplying and installing any missing required equipment to the apparatus to achieve full compliance with this standard

Prior to or at the time of delivery of the apparatus, the Statement of Exceptions shall be signed by an authorized agent of the entity responsible for final assembly of the apparatus and by an authorized agent of the purchasing entity, indicating mutual understanding and agreement between the parties regarding the substance thereof.

One (1)  
01-13-2025

## **CARRYING CAPACITY**

The GAWR and the GCWR or GVWR of the chassis shall be adequate to carry the weight of the completed vehicle when loaded to its estimated in-service weight. The manufacturer shall establish the estimated in service weight during the design of the vehicle.

The estimated in-service weight shall include the following:

- 46. The chassis, body and tank(s)
- 47. Full fuel, lubricant, and other chassis or component fluid tanks or reservoirs
- 48. Full water and other agent tanks
- 49. \*250 lb (114 kg) in each seating position
- 50. Fixed equipment such as pumps, aerial devices, generators, reels and air systems as installed
- 51. Ground ladders, suction hose, designed hose load in their hose beds and on their reels
- 52. An allowance for miscellaneous equipment that is the greatest of the following:
  - a) The values shown for items 1 - 7
  - b) A purchaser-provided list of equipment to be carried with weights
  - c) A purchaser-specified miscellaneous equipment allowance

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

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

The fire apparatus manufacturer shall permanently affix a high-visibility label in a location visible to the driver while seated.

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The label shall show the height of the completed unequipped fire apparatus in feet and inches (meters), the length of the completed fire apparatus in feet and inches (meters), and the GVWR in tons (metric tons).

Wording on the label shall indicate that the information shown was current when the apparatus was manufactured and that, if the overall height changes while the vehicle is in service, the fire department must revise that dimension on the plate.

One (1)  
01-13-2050

Apparatus Type	Equip. Storage Area	Apparatus Size	Equipment Allowance	
			lb.	kg.
Special Service Fire Apparatus	Minimum of 120 cu ft (3.4 cu mt) of enclosed compartmentation.	10,000 lb to 15,000 lb (4,500 kg to 7,000 kg) GVWR	2,000	910
		15,001 lb to 20,000 lb (7,001 kg to 9,000 kg) GVWR	2,500	1,135
		20,001 lb to 30,000 lb (9,001 kg to 14,000 kg) GVWR	3,000	1,350
		30,001 lb to 40,000 lb (14,001 kg to 18,000 kg) GVWR	4,000	1,800
		40,001 lb to 50,000 lb (18,001 kg to 23,000 kg) GVWR	6,000	2,700
		50,001 lb to 60,000 lb (23,001 kg to 27,000 kg) GVWR	8,000	3,600
		60,001 lb and up (27,001 kg) GVWR	10,000	4,500

One (1)  
01-14-0100

**TESTING**

One (1)  
01-14-0160

**ROAD TEST**

Each apparatus shall be tested by the manufacturer before delivery to verify that it meets the following criteria;

Tests shall be conducted at a location and in a manner that does not violate local, state or provincial, or federal traffic laws. Tests shall be conducted on a dry, level, paved surface that is free of loose material, oil, or grease. Tests shall be conducted with the water and foam tanks full (water or product).

The apparatus shall accelerate from 0 to 35 mph (55 km/hr) within 25 seconds. The apparatus shall attain a speed of 50 mph (80 km/ hr).

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The auxiliary braking system, if so equipped, shall function as intended by the auxiliary braking system manufacturer.

The air service brakes shall bring the apparatus to a complete stop from a speed of 20 mph (32.2 km/hr) in a distance not exceeding 35 ft (10.7 m).

The hydraulic service brakes shall bring the apparatus to a complete stop from a speed of 30 mph (48.2 km/hr) in a distance not exceeding 88 ft (26.8 m).

One (1)  
01-14-1100

## **LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST**

The vehicles low voltage electrical system shall be third-party, independent, audit-certified through Underwriters Laboratory (UL) to the current edition of NFPA 1900 standard. The certified test results shall be delivered with the completed vehicle. Tests shall be performed when the air temperature is between 0°F and 110°F (-18°C and 43°C).

### **TEST SEQUENCE**

The following three (3) tests shall be performed in the order in which they appear below. Before each test, the batteries shall be fully charged until the voltage stabilizes at the voltage regulator set point and the lowest charge current is maintained for ten (10) minutes. Failure of any of these tests shall require a repeat of the sequence.

#### **1. RESERVE CAPACITY TEST**

The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load shall be activated for ten (10) minutes.

All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a test failure of the battery system.

#### **2. ALTERNATOR PERFORMANCE TEST**

##### **TEST AT IDLE**

The minimum continuous electrical load shall be activated with the engine running at idle speed. The engine temperature shall be stabilized at normal operating temperature. The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure.

##### **TEST AT FULL LOAD**

The total continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed. The test duration shall be a minimum of two (2) hours. Activation of the load management system shall be permitted during this test.

An alarm sounded by excessive battery discharge, as detected by the warning system required in 13.3.4 or a system voltage of less than 11.8 V dc for a 12 V nominal system, 23.6 V dc for a 24 V nominal

# 24' Command Unit

## SVI# 1322R

system, or 35.4 V dc for a 42 V nominal system for more than 120 seconds shall be considered a test failure.

### **3. LOW VOLTAGE ALARM TEST**

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

With the engine shut off, the total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates. The battery voltage shall be measured at the battery terminals.

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

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

### **LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST**

#### **DOCUMENTATION**

The manufacturer shall deliver the following with the fire apparatus:

- 53) Documentation of the electrical system performance tests
- 54) A written electrical load analysis, including the following:
  - h) The nameplate rating of the alternator
  - i) The alternator rating
  - j) Each of the component loads specified that make up the minimum continuous electrical load
  - k) Additional electrical loads that, when added to the minimum continuous electrical load, determine the total continuous electrical load
  - l) Each individual intermittent electrical load

One (1)  
01-14-2100

#### **UL 120/240 VAC CERTIFICATION**

The 120/240 volt electrical system shall be third-party, independent, audit-certified through Underwriters Laboratory (UL) to the current edition of NFPA 1900 to perform as listed below;

The prime mover shall be started from a cold start condition, and the unloaded voltage and frequency shall be recorded.

The line voltage electrical system shall be loaded to at least 100% of the continuous rated wattage stated on the power source specification label. Testing with a resistive load bank shall be permitted.

The power source shall be operated in the manner specified by the apparatus manufacturer as documented on instruction plates or in operation manuals. The power source shall be operated at a minimum of 100% of the continuous rated wattage as stated on the power source specification label for a minimum of two (2) hours.

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The load shall be adjusted to maintain the output wattage at or above the continuous rated wattage during the entire 2-hour test.

The following conditions shall be recorded at least every 1/2 hour during the test:

- 55) The power source output voltage, frequency and amperes
- 56) The prime mover's oil pressure, water temperature and transmission temperature, if applicable
- 57) The power source hydraulic fluid temperature, if applicable
- 58) The ambient temperature and power source air inlet temperature

The following conditions shall be recorded once during the test for power sources driven by dedicated auxiliary internal combustion engines:

- 1) Altitude
- 2) Barometric pressure
- 3) Relative humidity

If the generator is driven by the chassis engine and the generator allows for operation at variable speeds, the chassis engine speed shall be reduced to the lowest rpm allowed for generator operation and the voltage and frequency shall be recorded.

The load shall be removed and the unloaded voltage and frequency shall be recorded.

Voltage shall be maintained within  $\pm 10\%$  of the voltage stated on the power source specification label during the entire test. Frequency shall be maintained within  $\pm 3$  Hz of the frequency stated on the power source specification label during the entire test.

The total continuous electrical loads, excluding those loads associated with the equipment defined in NFPA 21.15.7.3.11.2, shall be applied during the testing unless an auxiliary engine drives the power source.

If the apparatus is equipped with a fire pump, the 2-hour certification test of the power source shall be completed with the fire pump pumping at 100% capacity at 150 psi (1000 kPa) net pump pressure. The test shall be permitted to be run concurrently with the pump certification test.

### **DOCUMENTATION**

The results of each test shall be recorded on an appropriate form and provided with the delivery of the fire apparatus.

One (1)  
01-14-2300

### **DIELECTRIC VOLTAGE WITHSTAND TEST**

The line voltage wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900 volts for one (1) minute. The testing shall be performed after all body work has been completed.

The test shall be conducted as follows:

- 4) Isolate the power source from the panel board and disconnect any solid state low voltage components
- 5) Connect one lead of the dielectric tester to all the hot and neutral buses tied together
- 6) Connect the other lead to the fire apparatus frame or body

# 24' Command Unit

## SVI# 1322R

- 7) Close any switches and circuit breakers in the circuit(s)
- 8) Apply the dielectric voltage for one (1) minute in accordance with the testing equipment manufacturer's instructions

The electrical polarity of all permanently wired equipment, cord reels and receptacles shall be tested to verify that wiring connections have been properly made.

Electrical continuity shall be verified from the chassis or body to all line voltage electrical enclosures, light housings, motor housings, light poles, switch boxes and receptacle ground connections that are accessible to fire fighters in normal operations.

If the apparatus is equipped with a transfer switch, it shall be tested to verify operation and that all non grounded conductors are switched.

Electrical light towers, floodlights, motors, fixed appliances and portable generators shall be operated at their full rating or capacity for 30 minutes to ensure proper operation.

One (1)  
01-40-0100

### **WARRANTY**

A full statement shall be provided of the warranties for the vehicle(s) being bid. Warranties should clearly describe the terms under which the vehicle manufacturer accepts responsibility for the cost to repair defects caused by faulty design, quality of work or material and for the applicable period of time after delivery.

Cost of repairs refers to all costs related thereto including, but not limited to, the cost of materials and the cost of labor.

The Body Manufacturer shall warrant all materials and accessories used on the vehicle(s), whether fabricated by manufacturer or purchased from an outside source and will deal directly with the on all warranty work.

One (1)  
01-40-1100

### **GENERAL LIMITED WARRANTY - TWO (2) YEARS**

The vehicle shall be free of defects in material and workmanship for a period of two (2) years or 36,000 miles (or 57,936 kilometers), whichever occurs first starting thirty (30) days after the original invoice date.

The Contractor must be the "single source" coordinator of all warranties on the vehicle.

One (1)  
01-40-2000

### **LOW VOLTAGE ELECTRICAL WARRANTY - FIVE (5) YEARS**

The vehicle low voltage electrical system shall be free of defects in material and workmanship for a period of five (5) years or 60,000 miles (or 96,561 kilometers), whichever occurs first, starting thirty (30) days after the original invoice date.

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One (1)  
01-40-2100

## **STRUCTURAL WARRANTY - TEN (10) YEARS**

The body shall be free of structural or design failure or workmanship for a period of ten (10) years, or 100,000 miles (or 160,934 kilometers), whichever occurs first, starting thirty (30) days after the original invoice date.

One (1)  
01-40-2350

## **UNDERCOAT WARRANTY**

The body undercoating shall have a warranty provided by the manufacturer for the lifetime of the vehicle or twenty (20) years, whichever occurs first. The warranty shall be transferable between vehicle owners. Should the undercoating material applied to the underside of the body and wheel wells of the vehicle ever flake off, peel, chip or crack due to drying out, the damaged area shall be re-sprayed without charge to the vehicle owner.

One (1)  
01-40-3300

## **PAINT LIMITED WARRANTY - TEN (10) YEARS**

The body shall be free of bubbling or peeling as a result of a defect in the method of manufacture for a period of ten (10) years or 100,000 miles (or 160,934 kilometers), whichever occurs first, starting thirty (30) days after the original invoice date. **Pro-rated warranties will not be acceptable.**

One (1)  
01-40-3410

## **GRAPHICS LIMITED WARRANTY**

The 3M graphics installation shall be warranted for a period of two (2) years. The 3M materials installed on completed vehicle shall be warranted for seven (7) years. The 3M Diamond grade film (if specified) shall be warranted for ten (10) years.

**All Warranties are as New**

01-43-0050

## **CONSTRUCTION PERIOD**

The completed vehicle shall be delivered within two hundred fifty (250) days after pre-construction meeting and receipt and approval of any signed change orders from .

Contractor shall not be held liable for delays of chassis delivery due to accidents, strikes, floods or other events not subject to their control. Contractor shall provide written notice to as to delays and to what extent these delays have in completing vehicle within the stated construction time period.

Fourteen (14)  
01-43-0060

## **DEALER MAKE READY PERIOD**

The completed vehicle shall be delivered after fourteen (14) days for dealer preparation after completed apparatus delivered to dealer location.

One (1)  
01-43-0100

10023-0002

07/03/24

# 24' Command Unit

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## OVERALL HEIGHT REQUIREMENT

There is no overall height (OAH) restriction for this vehicle.

One (1)  
01-43-0200

## OVERALL LENGTH REQUIREMENT

There is no overall length (OAL) restriction for this vehicle.

One (1)  
01-43-0400

## ANGLE OF APPROACH

The angle of approach for this vehicle shall not be less than eight (8) degrees when it is loaded to the estimated in-service weight as specified by the current edition of NFPA 1900.

## ANGLE OF DEPARTURE

The angle of departure for this vehicle shall not be less than eight (8) degrees when it is loaded to the estimated in-service weight as specified by the current edition of NFPA 1900.

One (1)  
02-10-0150

## INSPECTION TRIPS

All required inspection trips shall be the financial responsibility of the customer, including but not limited to transportation, food and lodging.

One (1)  
02-10-2000

## DELIVERY AND DEMONSTRATION

The Contractor {will/shall} be responsible for the delivery of the completed unit to the customer's location. On initial delivery of the apparatus, the Contractor {will/shall} supply a qualified representative to demonstrate the apparatus and provide initial instruction to representatives of the customer regarding the operation, care and maintenance of the apparatus and equipment supplied at customer's location.

The Delivery Engineer {will/shall} set delivery and instruction schedule with the person appointed by customer.

After delivery of the apparatus, the customer {will/shall} be responsible for ongoing training of its personnel to proficiency regarding the proper and safe use of the apparatus and associated equipment.

# 24' Command Unit

SVI# 1322R

One (1)  
03-SV-0032

## CAB CHASSIS SPECIFICATION

## **FREIGHTLINER SPECIFICATION PROPOSAL**

### **Vehicle Configuration**

M2 106 PLUS CONVENTIONAL CHASSIS  
2025 MODEL YEAR SPECIFIED  
SET BACK AXLE - TRUCK

### **General Service**

DOMICILED, USA 50 STATES (INCLUDING CALIFORNIA AND CARB  
OPT-IN STATES)  
RESCUE AND EMERGENCY SERVICE  
MEDIUM TRUCK 2 YEAR WARRANTY  
EXPECTED FRONT AXLE LOAD: 12000 lbs  
EXPECTED REAR DRIVE AXLE LOAD: 24000 lbs  
EXPECTED GROSS VEHICLE CAPACITY: 36000 lbs

### **Engine**

CUM L9 360EV HP @ 2200 RPM, 2200 GOV RPM, 1150 LB-FT @  
1200 RPM, FIRE/EMERGENCY

### **Engine Equipment**

EPA 2010/GHG 2024 CONFIGURATION  
NFPA COMPLIANT EMBER SCREEN AND FIRE-RETARDANT  
DONALDSON AIR CLEANER  
DR 12V 300 AMP 40-SI BRUSHLESS PAD MOUNT ALTERNATOR  
WITH REMOTE BATTERY VOLTAGE SENSE  
(2) DTNA GENUINE, FLOODED STARTING, MIN 2000CCA, 370RC,  
THREADED STUD BATTERIES WITH POSITIVE JUMP START POST  
BATTERY BOX FRAME MOUNTED  
WIRE GROUND RETURN FOR BATTERY CABLES WITH  
ADDITIONAL FRAME GROUND RETURN  
POSITIVE LOAD DISCONNECT WITH CAB MOUNTED CONTROL  
SWITCH MOUNTED OUTBOARD DRIVER SEAT  
CUMMINS TURBOCHARGED 18.7 CFM AIR COMPRESSOR WITH  
INTERNAL SAFETY VALVE  
C-BRAKE BY JACOBS WITH HIGH MED LOW BRAKE DASH  
SWITCH  
RH MTD HORIZONTAL AFTERTREATMENT WITH RH HORIZONTAL  
TAILPIPE  
AIR POWERED ON/OFF ENGINE FAN CLUTCH  
AUTOMATIC FAN CONTROL WITHOUT DASH SWITCH  
CUMMINS SPIN ON FUEL FILTER  
COMBINATION FULL FLOW/BYPASS OIL FILTER  
1100 SQUARE INCH ALUMINUM RADIATOR

# 24' Command Unit

## SVI# 1322R

ANTIFREEZE TO -34F, OAT (NITRITE AND SILICATE FREE)  
EXTENDED LIFE COOLANT  
GATES BLUE STRIPE COOLANT HOSES OR EQUIVALENT  
CONSTANT TENSION HOSE CLAMPS FOR COOLANT HOSES  
ELECTRIC GRID AIR INTAKE WARMER  
DELCO 12V 38MT HD STARTER WITH INTEGRATED MAGNETIC SWITCH

### Transmission

ALLISON 3000 EVS 6 SPD AUTOMATIC TRANSMISSION WITH PTO PROVISION

### Transmission Equipment

MAGNETIC PLUGS, ENGINE DRAIN, TRANSMISSION DRAIN, AXLE(S) FILL AND DRAIN  
ELECTRONIC ALLISON TRANSMISSION SHIFT CONTROL, COLUMN MOUNTED  
TRANSMISSION PROGNOSTICS - ENABLED 2013  
TRANSMISSION OIL CHECK AND FILL WITH ELECTRONIC OIL LEVEL CHECK  
SYNTHETIC TRANSMISSION FLUID (TES-295 COMPLIANT)

### Front Axle and Equipment

DETROIT DA-F-12.0-3 12,000# FF1 71.5 KPI/3.74 DROP SINGLE FRONT AXLE  
MERITOR 16.5X5 Q+ CAST SPIDER CAM FRONT BRAKES, DOUBLE ANCHOR, FABRICATED SHOES  
FIRE AND EMERGENCY SEVERE SERVICE, NON-ASBESTOS FRONT LINING  
FRONT OIL SEALS  
MERITOR AUTOMATIC FRONT SLACK ADJUSTERS  
TRW THP-60 POWER STEERING  
SYNTHETIC 75W-90 FRONT AXLE LUBE

### Front Suspension

12,000# DUAL TAPERLEAF FRONT SUSPENSION  
MAINTENANCE FREE RUBBER BUSHINGS  
FRONT SHOCK ABSORBERS

### Rear Axle and Equipment

CUMMINS-MERITOR 24,000 LB FIRE/EMERGENCY SERVICE SINGLE REAR AXLE  
IRON REAR AXLE CARRIER WITH STANDARD AXLE HOUSING  
MXL 17T MERITOR EXTENDED LUBE MAIN DRIVELINE WITH HALF ROUND YOKES  
DRIVER CONTROLLED TRACTION DIFFERENTIAL  
MERITOR 16.5X7 Q+ CAST SPIDER HEAVY DUTY CAM REAR BRAKES, DOUBLE ANCHOR, FABRICATED SHOES  
FIRE AND EMERGENCY SEVERE SERVICE NON-ASBESTOS REAR BRAKE LINING  
REAR OIL SEALS  
MERITOR AUTOMATIC REAR SLACK ADJUSTERS

# 24' Command Unit

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SYNTHETIC 75W-90 REAR AXLE LUBE

## Rear Suspension

AIRLINER 24,000# REAR SUSPENSION WITH CHAIN CLEARANCE  
DUAL AIR REAR SUSPENSION LEVELING VALVES  
TRANSVERSE CONTROL RODS  
REAR SHOCK ABSORBERS - ONE AXLE (AIR RIDE SUSPENSION)

## Brake System

AIR BRAKE PACKAGE  
WABCO 4S/4M ABS WITH TRACTION CONTROL AND ESC  
STANDARD AIR SYSTEM PRESSURE PROTECTION SYSTEM  
BW AD-9 BRAKE LINE AIR DRYER WITH HEATER  
CUSTOM STEEL AIR BRAKE RESERVOIRS  
BW DV-2 AUTO DRAIN VALVE WITH HEATER - WET TANK,  
PETCOCKS ALL OTHERS

## Wheelbase & Frame

(244 INCH) WHEELBASE / (178.5 INCH) CA  
7/16X3-9/16X11-1/8 INCH STEEL FRAME 120KSI  
(115 INCH) REAR FRAME OVERHANG

## Chassis Equipment

THREE-PIECE 14 INCH CHROME STEEL BUMPER WITH  
COLLAPSIBLE ENDS AND CUTOUT FOR SPEAKER  
FRONT TOW HOOKS - FRAME MOUNTED  
FENDER AND FRONT OF HOOD MTD FRONT MUDFLAPS  
GRADE 8 THREADED HEX HEADED FRAME FASTENERS

## Fuel Tanks

50 GALLON RECTANGULAR ALUMINUM FUEL TANK - LH  
6 GALLON DIESEL EXHAUST FLUID TANK  
FUEL/WATER SEPARATOR WITH WATER IN FUEL SENSOR AND  
12 VOLT PREHEATER

## Tires

MICHELIN XZE2 11R22.5 14 PLY RADIAL FRONT TIRES  
MICHELIN X MULTI D+ 11R22.5 16 PLY RADIAL REAR TIRES

## Hubs

CONMET PRESET PLUS PREMIUM IRON FRONT HUBS  
CONMET PRESET PLUS PREMIUM IRON REAR HUBS

## Wheels

22.5X8.25 10-HUB PILOT POLISHED ALUMINUM DISC FRONT  
WHEELS  
22.5X8.25 10-HUB PILOT POLISHED ALUMINUM DISC REAR  
WHEELS

## Cab Exterior

106 INCH BBC FLAT ROOF ALUMINUM CONVENTIONAL AIR RIDE  
CAB WITH EXTERIOR SUN VISOR  
NFPA COMPLIANT LH AND RH EXTERIOR GRAB HANDLES

# 24' Command Unit

## SVI# 1322R

HOOD MOUNTED CHROMED PLASTIC GRILLES  
FIBERGLASS HOOD & FIREWALL INSULATION  
DUAL 25 INCH ROUND STUTTER TONE HOOD MOUNTED AIR  
HORNS WITH DUAL FOOT SWITCHES  
DUAL ELECTRIC HORNS  
LED HEADLIGHT ASSEMBLY AND INCANDESCENT MARKER/TURN  
LAMP WITH CHROME BEZELS & DAYTIME RUNNING LIGHTS  
LED AERODYNAMIC MARKER LIGHTS  
DUAL 102" WEST COAST BRIGHT FINISH HEATED MIRRORS WITH  
LH AND RH REMOTE  
LH AND RH 8 INCH BRIGHT FINISH CONVEX MIRRORS MOUNTED  
UNDER PRIMARY MIRRORS  
REAR WINDOW DELETE  
TINTED DOOR GLASS LH AND RH WITH TINTED NON-OPERATING  
WING WINDOWS  
RH AND LH ELECTRIC POWERED WINDOWS & DOOR LOCKS  
1-PIECE SOLAR GREEN GLASS WINDSHIELD  
2 GALLON WINDSHIELD WASHER RESERVOIR WITH FLUID LEVEL  
INDICATOR, FRAME MOUNTED

### Cab Interior

GRAY & CARBON VINYL INTERIOR  
MOLDED PLASTIC DOOR PANELS WITH ALUMINUM KICKPANELS  
LOWER DOORS  
BLACK MATS WITH PREMIUM INSULATION  
FORWARD ROOF MOUNTED CONSOLE  
AM/FM/WB WORLD TUNER RADIO WITH BLUETOOTH, USB AND  
AUXILIARY INPUTS  
(2) CUP HOLDERS LH AND RH DASH  
M2 DASH WITH DUAL USB CHARGING PORTS (2) IN DASH  
HEATER, DEFROSTER AND AIR CONDITIONER  
MAIN HVAC CONTROLS WITH RECIRCULATION SWITCH  
SOLID-STATE CIRCUIT PROTECTION AND FUSES  
12V NEGATIVE GROUND ELECTRICAL SYSTEM  
LED PREMIUM CAB LIGHTING  
H.O. BOSTROM SIERRA AIR-50 HIGH BACK AIR SUSPENSION  
DRIVER SEAT WITH ADJUSTABLE RECLINE, FIXED LUMBAR NFPA  
COMPLIANT  
H.O. BOSTROM SIERRA FX HIGH BACK NON-SUSPENSION  
PASSENGER SEAT WITH UNDERSEAT STORAGE, RECLINING  
BACK AND FORE/AFT ADJUSTMENT, NFPA COMPLIANT  
BLACK DURAWEAR FABRIC SEAT COVERS, SEAT BOLSTERS  
AND INSERTS  
NFPA 1901-2009 HIGH VISIBILITY ORANGE SEAT BELTS  
ADJUSTABLE TILT AND TELESCOPING STEERING COLUMN  
4-SPOKE 18 INCH BLACK STEERING WHEEL  
DRIVER AND PASSENGER INTERIOR SUN VISORS

### Instruments & Controls

BRIGHT ARGENT FINISH GAUGE BEZELS

# 24' Command Unit

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LOW AIR PRESSURE INDICATOR LIGHT AND AUDIBLE ALARM  
 DUAL NEEDLE PRIMARY AND SECONDARY AIR PRESSURE GAUGE  
 ELECTRONIC AIR RESTRICTION INDICATOR DISPLAYED IN DRIVER DISPLAY  
 87 DECIBELS TO 112 DECIBELS AUTOMATIC SELF-ADJUSTING BACKUP ALARM  
 ELECTRONIC CRUISE CONTROL WITH CONTROLS ON STEERING WHEEL SPOKES  
 PREMIUM INSTRUMENT CLUSTER WITH 5.0 INCH TFT COLOR DISPLAY  
 FIRE AND EMERGENCY SERVICE VEHICLES ENGINE WARNING  
 2 INCH ELECTRIC FUEL GAUGE  
 ELECTRICAL ENGINE COOLANT TEMPERATURE GAUGE  
 DIGITAL TRANSMISSION OIL TEMPERATURE IN DRIVER DISPLAY  
 ENGINE AND TRIP HOUR METERS INTEGRAL WITHIN DRIVER DISPLAY  
 ELECTRIC ENGINE OIL PRESSURE GAUGE  
 ELECTRONIC MPH SPEEDOMETER WITH SECONDARY KPH SCALE  
 ELECTRONIC 3000 RPM TACHOMETER  
 IGNITION SWITCH CONTROLLED ENGINE STOP  
 DIGITAL VOLTAGE DISPLAY INTEGRAL WITH DRIVER DISPLAY  
 SINGLE ELECTRIC WINDSHIELD WIPER MOTOR WITH DELAY  
 ROTARY HEADLAMP SWITCH, MARKER LIGHTS/HEADLIGHTS SWITCH  
 ONE VALVE PARKING BRAKE SYSTEM WITH DASH VALVE  
 SELF CANCELING TURN SIGNAL SWITCH WITH DIMMER, HEADLAMP FLASH, WASH WIPE /INTERMITTENT  
 INTEGRAL ELECTRONIC TURN SIGNAL

### Paint Design

ONE SOLID CUSTOM BASE/CLEAR COAT CAB COLOR  
 BLACK, HIGH SOLIDS POLYURETHANE FRAME/CHASSIS PAINT

### Weight Summary

	Weight Front	Weight Rear	Total Weight
Factory Weight <sup>+</sup>	7272 lbs	4639 lbs	11911 lbs

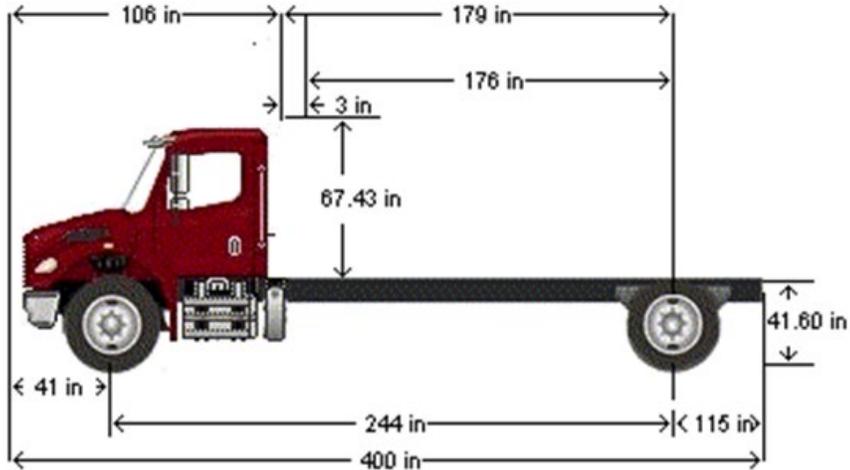
(+) Weights shown are estimates only. If weight is critical, contact Customer Application Engineering.

**(\*\*\*) All cost increases for major components (Engines, Transmissions, Axles, Front and Rear Tires) and government mandated requirements, tariffs, and raw material surcharges will be passed through and added to factory invoices.**

# 24' Command Unit

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## DIMENSIONS



One (1)  
10-00-0012

### CHASSIS MODIFICATIONS

### LUBRICATION AND TIRE DATA PLATE

A permanent label in the driving compartment shall specify the quantity and type of the following fluids used in the vehicle and tire information:

- Engine oil
- Engine coolant
- Chassis transmission fluid
- Pump transmission lubrication fluid . . (if applicable)
- Pump priming system fluid, if applicable . . (if applicable)
- Drive axle(s) lubrication fluid
- Air conditioning refrigerant . . (if applicable)
- Air conditioning lubrication oil . . (if applicable)
- Power steering fluid
- Cab tilt mechanism fluid . . (if applicable)
- Transfer case fluid . . (if applicable)
- Equipment rack fluid (if applicable)
- CAFS air compressor system lubricant . . (if applicable)
- Generator system lubricant . . (if applicable)
- Front tire cold pressure

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- Rear tire cold pressure
- Maximum tire speed ratings

## **VEHICLE DATA PLATE**

A permanent label in the driving compartment which indicates the following:

- Filter part numbers for the;
  - Engine
  - Transmission
  - Air
  - Fuel
- Serial numbers for the;
  - Engine
  - Transmission
- Delivered Weights of the Front and Rear Axles
- Paint Brand and Code(s)
- Sales Order Number

## **OVERALL HEIGHT, LENGTH DATA PLATE (US)**

The fire apparatus manufacturer shall permanently affix a high-visibility label in a location visible to the driver while seated.

The label shall show the height of the completed unequipped vehicle in feet and inches (meters), the length of the completed vehicle in feet and inches (meters to nearest 1/10th), and the GVWR in tons (metric tons).

Wording on the label shall indicate that; "The information shown was current when the apparatus was manufactured. If the overall height changes while the vehicle is in service, the fire department must revise that dimension on the plate".

## **PERSONNEL CAPACITY**

A label that states the number of personnel the vehicle is designed to carry shall be located in an area visible to the driver.

## **SEAT BELT WARNING - FAMA06/07**

A safety sign FAMA06 shall be visible from each seat that is not equipped with occupant restraint and therefore not intended to be occupied while the vehicle is in motion.

A safety sign FAMA07, which warns of the importance of seat belt use, shall be visible from each seat that is intended to be occupied while the vehicle is in motion.

## **EQUIPMENT MOUNTING FAMA10**

A safety sign FAMA10, which warns of the need to secure items in the cab, shall be visible inside the cab.

## **FIRE SERVICE TIRES - FAMA12**

# 24' Command Unit

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A safety sign FAMA12, which warns of the special requirements for fire service-rated tires, shall be visible to the driver entering the cab of any apparatus so equipped.

## **HELMET WARNING - FAMA15**

A safety sign FAMA15, which warns not to wear helmets while the vehicle is in motion, shall be visible from each seat that is intended to be occupied while the vehicle is in motion.

## **CLIMBING METHOD - FAMA23**

A safety sign FAMA23, which warns of the proper climbing method, shall be visible to personnel entering the cab and at each designated climbing location on the body.

## **REAR STEP CROSSWALK WARNING - FAMA24**

A safety sign FAMA24, which warns personnel not to ride on the vehicle, shall be located at the rear step areas and at any cross walkways.

## **FINAL STAGE MANUFACTURER VEHICLE CERTIFICATION**

A final stage manufacturer vehicle certification label shall be provided and installed in the driver cab door jamb area.

One (1)  
10-00-0050

## **SAE Labels**

All labels shall use SAE units, including inches (in) and feet (ft) for dimensions, pounds (lbs) for weight, gallons (gal) for volume, and pounds per square inch (psi) for pressure. All labels shall use dual units, with dimensions including both inches (in) and meters (m), weight in both pounds (lbs) and kilograms (kg), volume in both gallons (gal) and liters (L), and pressure in both pounds per square inch (psi) and kilopascals (kPa).

One (1)  
10-10-1110

## **FRONT BUMPER**

The front bumper shall be as provided by the cab/chassis manufacturer.

One (1)  
10-10-1310

## **BUMPER GRAVELSHIELD**

The bumper extension gravel shield if specified shall be provided by the cab/chassis manufacturer.

One (1)  
10-11-1110

## **AIR HORN(S)**

Air horn(s) if specified shall be supplied and installed by the cab/chassis manufacturer.

One (1)  
10-18-1100

## **FRONT TOW PROVISIONS**

The front tow provisions if specified shall be supplied and installed by the cab/chassis manufacturer.

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One (1)  
N2-A3-1120

## **SIREN SPEAKER**

One (1) Whelen model SA314A 100 watt aluminum, 6.4" x 6.1" x 3.1" deep siren speaker shall be provided and located behind grill or front bumper with natural aluminum finish.

The solid state siren speaker shall be vibration resistant. The SA314A shall comply with California Title XIII, Class A, and SAE J1849 requirements and with OSHA 1910.95 Guidelines regarding "Permissible Noise Exposure". All mounting hardware shall be stainless steel and covered by a two year factory warranty.

One (1)  
N2-A0-0105

The siren speaker shall be located on the streetside of front bumper.

## **New Siren Speaker**

One (1)  
10-23-1012

## **AIR INTAKE SYSTEM**

An air filter shall be provided in the engine's air intake system by the commercial cab/chassis manufacturer. Air inlet restrictions shall not exceed the engine manufacturer's recommendations.

The air inlet shall be equipped with a means of separating water and burning embers from the air intake system.

This requirement shall be permitted to be achieved by either of the following methods:

- 9. Provision of a device such that burning particulate matter larger than 0.039 in. (1.0 mm) in diameter cannot reach the air filter element.
- 10. Provision of a multi screen ember separator capable of meeting the test requirements defined in the Parker Hannafin, Racor Division, publication LF 1093-90, *Ember Separation Test Procedure*, or an equivalent test.

One (1)  
10-25-1110

## **EXHAUST**

The exhaust system shall be as provided by cab/chassis manufacturer.

Chassis Supplied Vertical Exhaust

One (1)  
10-25-1A00

- The tail pipe(s) shall terminate in a standard straight cut pipe.

One (1)  
10-50-0000

WARNING LIGHT: CHASSIS CAB

One (1)  
10-50-2010

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**CAB WARNING LIGHT PACKAGE**

One (1)  
N5-20-2010

**ZONE A - FRONT WARNING LIGHTS, UPPER**

One (1)  
N5-20-2410

There shall be one (1) Whelen Freedom F4N0VLED LED 60" lightbar permanently mounted to the cab roof.

The lightbar configuration (streetside to curbside) shall be:

<u>SECTION</u>	<u>INTERNAL COMPONENTS</u>	<u>LENS COLOR</u>
1	Red Rear Corner LED	Clear
2	Red Front Corner LED	Clear
3	Blank	Clear
4	White Long Super-LED	Clear
5	Blank	Clear
6	Red Long Super-LED	Clear
7	Blank (Opticom if specified)	Clear
8	Blank (Opticom if specified)	Clear
9	Red Long Super-LED	Clear
10	Blank	Clear
11	White Long Super-LED	Clear
12	Blank	Clear
13	Red Front Corner LED	Clear
14	Red Rear Corner LED	Clear

All clear lights shall shut down when the parking brake is set to comply with "Blocking" mode requirements as outlined in NFPA 1900.

One (1)  
N4-20-0043

The lightbar(s) shall be separately controlled at multiplex display(s) in the cab.

One (1)  
N6-20-2000

**ZONE A - FRONT WARNING LIGHTS, LOWER**

One (1)  
N3-05-H201

There shall be two (2) Whelen 600 Series, linear super-LED Light(s) with full-fill optic provided, one (1) each side.

Each light shall have:

- Red LED's
- Red Lens

Two (2)

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N3-10-1221

Each light shall have a chrome flange.

One (1)

N3-15-H131

Flash Pattern shall be (factory default) Whelen ACTION SCAN

One (1)

N4-20-0033

The lights shall be controlled at the multiplex display(s) in the cab.

One (1)

N6-20-3015

ZONES B AND D - CAB INTERSECTOR LIGHT (CAB FRONT CORNERS)

One (1)

N3-05-I001

There shall be two (2) Whelen surface mount ION Series LED light(s) with wide angle optic provided, one (1) each side. The light head shall include an integral flasher with programmable flash patterns.

Each light shall have:

- Red LEDs
- Clear Lens
- Chrome Flange

One (1)

N4-20-0033

The lights shall be controlled at the multiplex display(s) in the cab.

## **New Lightbar and chassis warning lights**

One (1)

10-A8-0322

### **CAB HAZARD WARNING LIGHT**

A Truck-Lite red LED flashing light shall be provided and located in the driving compartment and be illuminated automatically whenever the vehicles parking brake is not fully engaged and any of the following conditions exist:

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

Compartments and equipment meeting all of the following conditions shall be permitted to be exempt from being wired to the hazard light:

- The volume is less than or equal to 4 ft<sup>3</sup> (0.1 m<sup>3</sup>).
- The compartment has an opening less than or equal to 144 in.<sup>2</sup> (92,900 mm<sup>2</sup>).
- The open door does not extend sideways beyond the mirrors or up above the top of the fire apparatus.
- All equipment in the compartment is restrained so that nothing can fall out if the door is open while the apparatus is moving.
- Manually raised pole lights with an extension of less than 5 ft (1.5 m).

The hazard light shall be labeled; "Do not move apparatus when light is on."

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In addition, label shall be in both English/French for units built for Canada; "*Ne pas déplacer l'engin lorsque la lumière est allumée.*"

## **New Hazard Warning Light**

One (1)  
N0-24-1110

An audible alarm shall be provided for the door ajar light.

One (1)  
10-B0-2000

## **SCBA SEAT AIR PACK BRACKETS**

No SCBA air pack bracket(s) shall be provided in specified commercial cab SCBA seats. will provide and install necessary bracket(s) after delivery.

One (1)  
10-B0-B010

## **SEAT BELT COLOR**

Section 11.1.3.3 of the NFPA 1900 Standards, requires all seat belt webbing in cab to be bright red or bright orange in color, and section 11.1.3.4 the buckle portion of the seat belt shall be mounted on a rigid or semi rigid stalk such that the buckle remains positioned in an accessible location.

One (1)  
10-B0-B020

## **SEAT BELT WEB LENGTH - COMMERCIAL CAB**

Sections 11.1.3.1 and 11.1.3.2 of the NFPA 1900 standards, require the effective seat belt web length for a Type 1 lap belt for pelvic restraint to be a minimum of 60", and a Type 2 pelvic and upper torso restraint-style seat belt assembly to be a minimum of 110".

The chassis seat belt web length as supplied by the commercial chassis manufacturer shall be compliant to NFPA Standards 11.1.3.1 and 11.1.3.2.

One (1)  
10-B0-B201

## **SEAT BELT MONITORING AND VEHICLE DATA RECORDER (VDR) SYSTEMS**

### **SEAT BELT MONITORING**

A Weldon 6444 series gateway interface module shall be integrated into V-MUX multiplex system display to allow the driver to know if all persons seated in the vehicle are secured with seat belts before moving the vehicle. Built-in smart seating logic shall detect if the correct sit and buckle sequence is not followed for all seats. System shall also provide an output for an external alarm. Weldon diagnostic port will be located under dash on driver side. System shall include the following features;

### **New Seat Belt Monitor**

### **VEHICLE DATA RECORDER (VDR)**

The vehicle data recorder shall have the following features;

- Recorded Data Includes: Vehicle Speed, Acceleration, Deceleration, Engine Speed, Engine Throttle Position, ABS Event, Seat Occupied Status, Seat Belt Status, Master Optical Warning Switch, Park Brake, Service Brake, Time, Date and Engine Hours.

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- Password Protected by the customer
- Six (6) seat position inputs for occupied and belts buckled. Additional six (6) seat expansion module available.
- Easily interfaces with V-MUX™ or other multiplexing systems
- Data is extracted by a standard, mini USB cable

## **OCCUPANT RESTRAINT INDICATOR**

The occupant restraint indicator shall have the following features;

- Will be displayed on Vista IV panel.
- Supports commercial and custom cab seating layouts; up to 12 seats
- Built-in audible alarm
- Use in conjunction with Vehicle Data Recorder (VDR)

### **New Occupant Restraint Indicator**

One (1)  
10-B3-1002

## **IGNITION KEY**

If the vehicle is specified to have an ignition key it will be attached to steering column or dash with vinyl covered steel cable.

One (1)  
10-B3-1006

## **SIX (6) – LED TIRE PRESSURE VISUAL INDICATORS**

Each tire valve stem shall be equipped with an LED Tire Alert (or equal), heavy duty valve cap LED indicator that indicates proper tire pressure. The LED Tire Alert valve cap is self-calibrating. When the cap is mounted on the valve stem the first time, it will memorize that tire pressure, and can be set to recognize a drop in pressure as little as 6 psi. It can be checked for functionality and battery condition by simply unscrewing the cap. If it is in working condition, it will immediately start blinking.

### **New LED Tire Pressure Indicators**

One (1)  
10-B3-1082

## **HELMET STORAGE**

One (1)  
10-B3-1103

## **HELMET STORAGE, DRIVER POSITION**

One (1)  
10-B3-1051

Helmet storage shall be the responsibility of the customer in specified cab area.

A safety sign FAMA15, which warns not to wear helmets while the vehicle is in motion, shall be visible from each seat that is intended to be occupied while the vehicle is in motion.

One (1)  
10-B3-1105

# 24' Command Unit

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## HELMET STORAGE, OFFICER POSITION

One (1)  
10-B3-1051

Helmet storage shall be the responsibility of the customer in specified cab area.

A safety sign FAMA15, which warns not to wear helmets while the vehicle is in motion, shall be visible from each seat that is intended to be occupied while the vehicle is in motion.

One (1)  
10-B4-1010

## CAB CRASH TEST CERTIFICATION

A cab crash test certification from the fire apparatus manufacturer shall be provided with the equipment. A copy of this certification shall be included with the bid.

NOTE: There shall be no exception to any portion of the cab integrity certification requirements. Nonconformance shall lead to immediate rejection of bid.

The certification shall state that the cab does meet or exceed the requirements below:

- 11) European Occupant Protection Standard ECE Regulation No. 29.
- 12) SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks.

One (1)  
10-C0-0100

## CAB PAINT

The finish paint and color as provided from the cab/chassis manufacturer shall be provided. Cab shall not be repainted.

(Note: Most departments do NOT find that the fleet paint finish from a commercial cab/chassis manufacturer is acceptable. The Body Builder will NOT be responsible for paint quality and finish issues.)

One (1)  
10-C0-9022

## REFLECTIVE STRIPE - CAB DOOR INTERIOR

Any door of the apparatus designed to allow persons to enter or exit the apparatus shall have at least 96 in.2 (62,000 mm2) of retroreflective material affixed to the inside of the door.

The inside of each cab door shall have 4" Chevron style 3M Scotchlite 680 series graphic film.

This reflective chevron stripe shall alternate red and yellow in color.

One (1)  
10-C1-0010

## CAB INTERIOR COMPONENT PAINT COLOR, OEM SUPPLIED

One (1)

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P1-99-1020

Powder coat shall be hammertone silver/grey. Cardinal T064-GR05

One (1)  
10-C5-3100

## **CAB STEP COVER AND BATTERY COMPARTMENT**

The stock cab upper and lower entry steps shall be overlaid with 1/8" NFPA compliant aluminum treadplate.

The maximum stepping height shall not exceed 18", with the exception of the ground to first step, which shall not exceed 24" when the vehicle is loaded to its estimated in-service weight. All steps shall have a minimum area of 35 sq in and shall be of such a shape that a 5" diameter disk does not overlap any side when placed on the step, and shall be arranged to provide a t least 8" of clearance between the leading edge of the step and any obstruction. All platforms shall have a minimum depth of 8" from the leading edge of the platform to any obstruction.

The following options will be cut into the step cover:

### **New Cab Step and Overlay**

One (1)  
N1-12-3132

## **CAB STEP LIGHTS**

Two (2) (one each side) OnScene 10" Access Pro white LED light(s) installed on the vehicle capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.

Lighting designed to provide illumination on areas under the driver and crew riding area exits shall be switchable but activated automatically when the exit doors are opened.

### **New Cab Step Lights**

One (1)  
10-C5-5B10

## **HUB AND NUT COVERS**

Front and rear wheels shall be provided with stainless steel hub caps and wheel nut covers.

### **New Hub and Nut Covers**

One (1)  
10-C6-1000

## **MUDFLAPS**

There shall be 1/4" rubber mudflaps with logo provided and installed behind rear axle tires to prevent throwing road debris and lower road spray.

### **New / Replace Mudflaps**

One (1)  
10-C7-1010

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## **AIR BRAKE SYSTEM QUICK BUILD-UP - STYLE 'M' / INDUSTRIAL INLET CONNECTION**

There shall be one (1) male, quick connect type inlet to provide air to the chassis air tanks from a station/external compressed air shoreline in order to maintain full operating air pressure while the vehicle is not running. The system shall include a one-way check valve to prevent accidental release of chassis air pressure and be labeled "AIR INLET".

- Air inlet shall be located near driver's door.
- The fitting will be of style 'M' / Industrial design.

The inlet shall eliminate the need for a quick build up system and the 60 second buildup time.

The female end of the connector shall be supplied by the .

One (1)  
10-C7-1204

## **CHASSIS AIR TANK DRAINS**

The cab/chassis air brake system tank drains shall remain as provided by cab/ chassis manufacturer.

One (1)  
10-HA-2102

## **ROAD EMERGENCY SAFETY KIT**

The completed unit shall be supplied with one (1) set of three (3) dual faced reflective triangles, and three (3) warning flares complete with storage case per DOT requirements.

One (1) 2.5 lb. ABC type vehicle fire extinguisher with bracket per DOT requirements shall be provided and mounted inside cab area.

## **New Road Emergency Kit**

One (1)  
A0-82-B075

## **DEF FLUID FILL**

The DEF fluid fill shall be as supplied by commercial cab/chassis manufacturer.

One (1)  
A0-12-1180

## **BODY DESIGN**

The importance of public safety associated with emergency vehicles requires that the construction of this vehicle meet the following specifications. These specifications are written to establish the minimum level of quality and design. All Bidders shall be required to meet these minimum requirements.

It is the intent of these specifications to fully describe the requirements for a custom built emergency type vehicle. In order to extend the expected service life of this vehicle, the body module shall be removable from the chassis frame and be capable of being installed on a new chassis.

The sheet metal material requirements, including alloy and material thickness, throughout the specifications are considered to be a minimum. Since such materials are available to all Manufacturers, the material specifications shall be strictly adhered to.

The fabrication of the body shall be formed sheet metal. Formed components shall allow the to have the body repaired locally in the case where any object has struck the body and caused damage. The use of

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proprietary extrusions will prevent the from such repair and shall NOT be used. All fabricated body components to be cut by a laser or water-jet for superior cut edge quality.

Following construction of the subframe, which supports the apparatus body, the sheet metal portion of the body shall be built directly on the subframe. The joining of the subframe and body shall be of a welded integral construction.

The sheet metal fabrication of the body shall be performed using inert gas continuous feed welders only. The entire body shall be welded construction. The use of pop rivets in any portion of structural construction may allow premature failure of the body structure. Therefore, pop rivets shall NOT be used in the construction of the structural portions of the body. This includes side body sheets, inner panels of compartment doors, and any other structural portions of the body.

One (1)  
03-SV-9470

## **CAB TO AXLE DIMENSION**

Cab to axle will be 178".

One (1)  
A0-21-4100 24

## **EXTERIOR ALUMINUM BODY**

The fabrication of the body shall be constructed from aluminum 3003H-14 alloy smooth plate. This shall include compartment front panel, vertical side sheets, side upper rollover panels, rear panels and compartment door frames.

The body compartment floors and exterior panels shall be constructed with not less than 3/16" (.187) aluminum 3003H-14 smooth plate. Interior compartment dividing walls shall be constructed with not less than 1/8" (.125) aluminum 3003H-14 smooth plate. Lighter gauge sheet metal will not be acceptable in these areas, No Exceptions.

The front and rear corners of body shall be formed as part of the front or rear body panels. This provides a stronger body corner and finished appearance. The use of extruded corners, or caps will not be acceptable, No Exceptions.

The door side frame openings shall be formed "C" channel design. An electrical wiring conduit raceway running the full length of exterior compartments shall be provided. This raceway shall contain all 12 volt wiring running to the rear of the apparatus, permitting easy accessibility to wiring.

Individual compartment modules, with dead air space voids between compartments, will not be an acceptable method of compartment construction.

The compartments shall be an integral part of the body construction. Compartment floors from front of body to ahead of rear axle, also from rear axle to rear of body shall be single one-piece sections. Compartment floors shall be preformed, then positioned in body and welded into final position.

Compartment floors shall have a "sweep-out" design with door opening threshold positioned lower than compartment floor, permitting easy cleaning of compartments. Angles, lips, or door moldings are not acceptable in the base of compartment door opening. One-way rubber drain valves shall be provided in compartment floors so that a water hose may be used to flush-out compartment area.

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All exterior seams in sheet metal below frame, and around the rear wheel well area shall be welded and caulked to resist moisture from entering the compartments. All other interior seams and corners shall be sealed with silicone based caulk prior to painting.

Only stainless steel bolts, nuts, and sheet metal screws shall be used in mounting exterior trim, hardware and equipment.

Exterior compartments shall have louvers in lower back wall of compartment for ventilation.

## **DRIP RAILS**

The body shall have drip rails over the side full height compartments. The drip rails shall be formed into the upper body panels providing a ridged lower panel and a flat upper body panel surface. The use of mechanically fastened, taped or glued on drip rails will not be acceptable, No Exceptions.

One (1)  
A0-26-3200 24

## **ROOF CONSTRUCTION**

The roof shall be integral with the body and shall be all welded construction. The roof of the body shall not be less than 3/16" aluminum 3003H-14 alloy NFPA nonskid compliant tread plate, fully and continuously welded. The roof shall be reinforced with 2" x 2" x 1/4" aluminum tubing running the full width of the body. A 2" rounded radius shall be provided along the body sides.

One (1)  
A0-31-1100 24

## **BODY SUBFRAME**

The chassis frame rails shall be fitted with 1/4" custom extruded UHMW polyethylene rail cap to isolate the body frame members from direct contact with chassis frame rails.

The body subframe shall be constructed from 6061T6 aluminum alloy tubing. Subframe shall consist of two (2) 2" x 6" x 1/4" aluminum tubes, the same width as the chassis frame rails, NO EXCEPTION. Welded to this tubing shall be cross members of 2" x 6" x 1/4" aluminum. These cross members shall extend the full width of the body to support the compartments. Cross members shall be located at front and rear of the body, below compartment divider walls, and in front and rear of wheel well opening. Additional aluminum cross members shall be located on 16" centers, or as necessary to support walkway or heavy equipment.

To form the frame, the tubing shall be beveled and welded at each joint using 5356 aluminum alloy welding wire.

Six (6)  
A0-40-1120

## **BODY MOUNTING**

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

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prevent frame side rail or body damage caused by unevenly distributed stress and strains due to load and chassis movement.

Body mountings that do not allow relief from chassis movement will not be acceptable.

## **New SVI Body Warranty**

One (1)  
A0-61-1220

### **10" REAR STEP BUMPER**

The full width rear bumper shall be constructed from 2" x 2" x 1/4" aluminum tubing frame and covered with 3/16" NFPA compliant aluminum tread plate. The bumper shall extend from the rear vertical body panel 10" and provide a rear step with a minimum of 1/2" space at body for water drainage.

One (1)  
A0-6A-1110

### **REAR TOW EYES**

There shall be two (2) heavy duty rear mounted tow eyes securely attached to the body subframe, below body. The tow eyes shall be fabricated from 3/4" thick steel plate with a 3" diameter opening. Tow eyes shall have a black powder coat finish.

One (1)  
A0-6D-1106

### **GROUND LIGHTS**

There shall be two (2) OnScene 10" Access Pro white LED lights installed below bumper capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.

Lighting shall be switchable but activated automatically when the vehicle park brake is set.

## **New Rear Bumper Ground Lights**

One (1)  
A0-80-1300

### **WHEEL WELL EXTERIOR PANEL**

The exterior panel of the body wheel well enclosure shall be constructed from 3/16" smooth aluminum panels.

One (1)  
A0-81-1020

### **STAINLESS STEEL BODY FENDERETTES**

The body wheel well openings shall be provided with round radius, polished stainless steel fenderettes. The fenderettes shall be bolted and easily replaceable if damaged. The fenderettes shall be installed using a rubber gasket to reduce buildup of moisture and/or debris.

## **New Fenderettes**

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One (1)  
A0-81-2020

### **WHEEL WELL LINERS**

The wheel wells shall be provided with an easily removable polymer, circular inner fender liner. The inner liner shall be bolted to the wheel well with stainless steel bolts and spaced away from the wheel well so the liner will not accumulate dirt or water.

One (1)  
P1-10-0200

### **BODY PAINT SPECIFICATIONS**

#### **BODY PAINT PREPARATION**

After the body and components have been fabricated they shall be disassembled so when vehicle is complete there shall be finish paint beneath the removable components. The body shall be removed from chassis during the paint process to insure proper paint coverage. The body and components shall be metal finished as follows to provide a superior substrate for painting.

The exterior (and interior, if painted) body shall undergo a thorough cleaning process starting with a biodegradable phosphoric acid solution to begin the etching process followed by a complete clear water rinse. The next step shall consist of a chemical conversion coating applied to seal the metal substrate and become part of the metal surface for greater film adhesion.

All bright metal fittings, if unavailable in stainless steel or polished aluminum, shall be chrome plated. Iron fittings shall be copper under plated prior to chrome plating.

#### **PAINT PROCESS**

The paint process shall follow the strict standards set forth by PPG Industries guidelines. Painters applying PPG products will be PPG Certified Commercial Technicians, and re-certified every two (2) years. The body shall go through the following paint process;

- 13) Clean bare metal with a wax and grease remover using low lint rags.
- 14) Inspect, straighten, and hammer high points, grind all seams, sharp edges, and welds. DA sand entire paintable surfaces using 24-180 grit dry paper. Plastic fill all low spots and DA sand fill areas using 36-180 grit dry paper. Apply pinhole filler and DA sand areas using 80-180 grit dry paper.
- 15) Re-clean bare metal using a wax and grease remover and low lint rags.
- 16) Within 24 hours, a PPG Delfleet® epoxy color primer with proper hardener for corrosion resistance using a pressure pot spray gun and applying 2-5 full wet coats or 1.5-8.0 dry mils max. achieving full hiding and allow to air dry 60 minutes @ 70°F or bake for 45 minutes @ 140°F degree.
- 17) Inspect, putty fill, and dry guild coat entire body surface and DA sand using 180-400 grit dry paper.
- 18) Re-clean bare metal using a wax and grease remover using low lint rags.
- 19) A PPG Delfleet® primer sealer with proper hardener and thinner shall be sprayed using a pressure pot spray gun and applying 1 full wet coat or 1.0-2.0 dry mils achieving full hiding and allow to flash off in spray booth for minimum of 60 minutes @ 70°F.
- 20) A PPG Delfleet® FBCH basecoat (color) with proper hardener and dry additive shall then be sprayed using a pressure pot set @ 45-60 PSI and achieving full hiding or 1.5-2.0 wet mils and allow to flash off in spray booth 45-60 minutes before applying clearcoat.

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- 21) A PPG Delfleet® clearcoat with proper hardener and thinner shall be sprayed using a pressure pot spray gun and applying 2-3 full wet coats or 5.0 wet mils for a uniform gloss and allow to flash off in spray booth 10 minutes and bake for 120-140 minutes @ 125°F (surface temp.).
- 22) After cooling, DA sand heavy orange peel or runs using 1000 grit dry sand paper and final DA sand using 1500-2000 grit dry sand paper. Wipe off all surfaces to remove dust and debris. Buff unit as needed using 3M rubbing compound and a white wool pad and inspect until all sand scratches are removed.
- 23) Polish as needed using 3M Perfect-It-Polish and a black foam pad, repeat as necessary and inspect until all sand scratches are removed.

## **PAINT - ENVIRONMENTAL IMPACT**

The contractor shall meet or exceed their current State regulations concerning paint operations pollution control and shall include measures to protect the atmosphere, water and soil. PPG Delfleet® Evolution paint shall be free of all heavy metal (lead & chromate) components. Paint emissions from sanding and painting shall be filtered and collected. All paint wastes shall be disposed of in an environmentally safe manner. Solvents used in cleanup operations shall be collected, sent off-site for distillation and returned for reuse.

One (1)  
P1-10-1100 24

## **FASTENERS**

Prior to the assembly and reinstallation of exterior components; i.e. warning and DOT lights, handrails, steps, door hardware, and miscellaneous items, a Mylar isolation tape, or gasket shall be used to prevent damage to the finish painted surface. These components shall be fastened to body using either a plastic insert into body metal with stainless steel screws or zinc coated nut-surts into body surface using stainless steel bolts to resist corrosion from dissimilar metals.

## **ELECTROLYSIS CORROSION CONTROL**

The vehicle shall be assembled using ECK brand or similar corrosion control compound on all high corrosion potential areas.

ECK protects aluminum and stainless steel against electrolytic reaction, isolates dissimilar metals and gives bedding protection for hardware and fasteners. ECK contains anti-seizing lubricant for threads. ECK is dielectric and perfect for use with electrical connectors.

## **PAINT FINISH - SINGLE COLOR**

The body shall be painted with a single color of PPG Delfleet® Evolution per approved paint spray out provided.

**New Body was disassembled and repainted – New SVI Paint Warranty**

One (1)  
P1-21-1000

- Paint Color: Match cab/chassis supplied paint color.

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One (1)  
P1-A0-1100 24

## **BODY UNDERCOATING**

The entire underside of body shall be sprayed with black automotive undercoating. Undercoating shall cover all areas underside of body and wheel well area to help resist corrosion under the vehicle.

## **New Body Undercoat Warranty**

One (1)  
P1-30-1100 24

## **COMPARTMENT INTERIOR FINISH**

The interior of all exterior body compartments shall be a "Maintenance Free" smooth unpainted finish. All body seams shall be finished with a caulk sealant for both appearance and moisture protection.

One (1)  
P2-01-1110 24

## **REFLECTIVE STRIPE REQUIREMENTS**

### Material

All retroreflective materials shall conform to the requirements of ASTM D4956, *Standard Specification for Retroreflective Sheeting for Traffic Control*, Section 6.1.1 for Type I Sheeting.

All retroreflective materials used that are colors not listed in ASTM D4956, Section 6.1.1, shall have a minimum coefficient of retro-reflection of 10 with observation angle of 0.2 degrees and entrance angle of -4 degrees.

Any printed or processed retroreflective film construction used shall conform to the standards required of an integral colored film as specified in ASTM D4956, Section 6.1.1.

### Minimum Requirements

A retroreflective stripe(s) shall be affixed to at least 50 percent of the cab and body length on each side, excluding the pump panel areas, and at least 25 percent of the width of the front of the vehicle, not including mirrors or other protrusions.

The stripe or combination of stripes shall be a minimum of 4 in. (100 mm) in total width.

The 4 in. (100 mm) wide stripe or combination of stripes shall be permitted to be interrupted by objects (i.e., receptacles, cracks between slats in roll up doors) provided the full stripe is seen as conspicuous when approaching the apparatus.

A graphic design shall be permitted to replace all or part of the required striping material if the design or combination thereof covers at least the same perimeter length(s).

## **GRAPHICS PROOF**

A color graphics proof of the reflective striping layout shall be provided for approval by prior to installation. The graphics proof shall be submitted to on 8.5" x 11" sheets with front, sides, rear and plan views, each on one (1) sheet. In addition if there is any special art work an additional sheet shall be provided showing all details. **Note:** The graphics color proof may not reflect the correct paint break lines

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on the chassis and body please refer to the paint section of your specifications for correct paint break lines.

One (1)  
P2-05-2120

## **REFLECTIVE STRIPE - CAB SIDE**

The reflective stripe material shall be 4" wide, 3M Scotchlite 680 series graphic film.

One (1)  
P2-01-2010

- This reflective stripe shall be white in color.

One (1)  
P2-07-1100

## **REFLECTIVE STRIPE - CAB FRONT**

The reflective stripe material shall be 4" wide, 3M Scotchlite 680 series graphic film.

One (1)  
P2-01-2010

- This reflective stripe shall be white in color.

One (1)  
P2-10-1100 24

## **REFLECTIVE STRIPE - BODY SIDES**

The reflective stripe material shall be 4" wide, 3M Scotchlite 680 series graphic film.

One (1)  
P2-01-2010

- This reflective stripe shall be white in color.

One (1)  
P2-C0-1010

The stripe shall remain in a straight line from the front of the front of cab to the rear body.

One (1)  
P2-65-1030

## **CHEVRON REFLECTIVE STRIPE - REAR CENTER/SIDE PANELS**

At least 50 percent of the rear-facing vertical surfaces, visible from the rear of the apparatus, excluding any pump panel areas not covered by a door, shall be equipped with retroreflective striping in a chevron pattern sloping downward and away from the centerline of the vehicle at an angle of 45 degrees. Each stripe shall be 6" width.

The rear side panels and center of the body shall have a chevron style reflective stripe, extending from bumper height up to side compartment drip rail height. Chevron panels shall have a 3M UV over laminate to protect from UV rays, scene damage, and everyday use.

The stripe material shall be 3M Diamond Grade.

## **New Reflective striping and Chevron on rear of body – New SVI Graphics Warranty**

One (1)  
P2-65-A040

This reflective chevron stripe shall alternate red and fluorescent yellow-green in color.

One (1)  
P3-00-0100

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## LETTERING

**A Graphics contingency fund is included any additional lettering and graphics may be added for an additional cost.**

## GRAPHICS PROOF

A color graphics proof of the lettering layout shall be provided for approval by prior to installation. The graphics proof shall be submitted to on 8.5" x 11" sheets with front, sides, rear and plan views, each on one (1) sheet. In addition if there is any special art work an additional sheet shall be provided showing all details.

The following lettering shall be provided and installed on the completed unit as follows;

One (1)  
P3-10-0500

## SIDE CAB DOOR LETTERING

One Hundred (100)  
P3-10-1200

There shall be one hundred (100) 4" high reflective letters furnished and installed on the vehicle.

Provide details.

One Hundred (100)  
P3-05-1A10

- This reflective lettering shall be white in color.

One (1)  
P3-10-0510

## UPPER BODY SIDE LETTERING

One Hundred (100)  
P3-10-1800

There shall be one hundred (100) 10" high reflective letters furnished and installed on the vehicle.

Provide details.

One Hundred (100)  
P3-05-1A10

- This reflective lettering shall be white in color.

One (1)  
P3-10-0520

## REAR BODY LETTERING

Fifty (50)  
P3-10-1800

There shall be fifty (50) 10" high reflective letters furnished and installed on the vehicle.

Provide details.

Fifty (50)  
P3-05-1A10

- This reflective lettering shall be white in color.

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One (1)  
P3-10-0530

## **FRONT OF CAB LETTERING**

One (1)  
P3-12-1030

## **CUSTOM DECAL LOGO - 12" -18"**

One (1) custom designed 12" - 18" 3M Scotchlite type retroreflective logo shall be provided and located on the completed vehicle. The exact design and/or artwork shall be provided by the prior to construction.

One (1)  
P3-12-1040

One (1) copy of the above custom logo shall be provided and located on the completed vehicle as directed by .

One (1)  
P3-11-0010

## **SVI Manufacturer Badge:**

The truck shall be provided with the SVI Winged Logo including all badges, QR Codes, and Mudflaps.

One (1)  
A0-A0-1010

## **EXTERIOR COMPARTMENT DOORS**

One (1)  
A0-A0-1110

## **FLUSH FITTING HINGED DOOR CONSTRUCTION**

The exterior compartment doors shall be a flush style, custom manufactured and built for each compartment. The compartment doors must be able to withstand years of rugged service and wear. For this reason, the compartment door design, metal thickness, and attachments must be strictly adhered to.

The compartment doors shall be all aluminum 3003H-14 alloy construction. The exterior panel shall be of 1/8" thickness smooth plate aluminum and the interior panel shall be of 1/8" thickness smooth plate aluminum. Lighter gauge material will NOT BE ACCEPTABLE in these areas. The double panel doors shall be 1-3/4" thick to completely enclose the door latching assembly. Doors shall have drain hole openings for drainage and ventilation.

The doors shall be flush mounted so that the outer surface is in line with the side body surface. Lap or bevel type constructed doors, doors framed with extrusions, or doors requiring rubber bumpers to prevent unnecessary contact are NOT ACCEPTABLE.

Compartment door openings shall be sealed with closed cell automotive type rubber molding to provide a weather resistant seal around door. Open cell foam type rubber moldings are NOT ACCEPTABLE.

Hinged compartment doors shall have 14 gauge stainless steel hinge, with 1/4" stainless steel pin. The hinge shall be bolted to the door and body with stainless steel machine screws. A polyester barrier film gasket shall be placed between stainless steel hinge and any dissimilar metals as necessary.

Each door shall be capable of being opened or closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door. Door checks that require unlatching by hand will NOT BE ACCEPTABLE.

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Vertically hinged door openings up to 32" wide shall be single door construction. Door openings over 32" shall be double door construction with the forward first opening door overlapping the second opening door.

One (1)  
A0-V1-8100

## BODY HEIGHT MEASUREMENTS

The vertical body dimensions shall be as follows:

### AHEAD OF REAR AXLE

	<u>Description</u>	<u>Dimension</u>
A	Bottom of Subframe to Top of Body	88.7"
B	Bottom of Subframe to Bottom of Body	22.5"
C	Total Body Height	111.2"
D	Compartment Height Above Frame	48.0"
E	Compartment Height Below Frame	25.0"
F	Vertical Door Opening - (Full Height Compartment):	
	-with roll-up door	65.0"
	-with hinged door	68.5"
G	Vertical Door Opening (Below Frame Compartment):	
	-with hinged door	19.0"

### ABOVE REAR AXLE

	<u>Description</u>	<u>Dimension</u>
H	Vertical Door Opening - Above Rear Wheel	
	-with roll-up door	34.0"
	-with hinged door	37.5"

### BEHIND REAR AXLE

	<u>Description</u>	<u>Dimension</u>
I	Bottom of Subframe to Bottom of Body	20.0"
J	Compartment Height Above Frame	48.0"
K	Compartment Height Below Frame	22.5"
L	Vertical Door Opening - (Full Height Compartment):	
	-with roll-up door	62.0"
	-with hinged door	65.5"
M	Vertical Door Opening - (Below Frame Compartment):	
N	-with hinged door	16.5"

### GENERAL

	<u>Description</u>	<u>Dimension</u>
O	Bottom of Drip Rail to Top of Body	38.5"
P	Walk-in Interior Height	78.0" (min.)

(Dimensions are approximate and subject to change during construction or design process.)

One (1)  
A0-W0-4010

## BODY WIDTH DIMENSIONS

The walk thru body shall be 100.0" wide, and 102.0" wide at drip rails. Interior compartment depth dimensions shall be approximately:

<u>Area Description</u>	<u>Dimension</u>
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- Transverse above subframe: 95.0" (If specified.)
- Compartment depth above subframe: 31.0" (To walkway wall, if specified.)
- Compartment depth below subframe: 24.5"
- Walkway width: 34" (If specified.)

One (1)  
A1-30-1100 24

## **STREETSIDE COMPARTMENT - FRONT (S1)**

One (1)  
CZ-10-2910 10

The interior useable compartment space shall be approximately 70.5" wide.

One (1)  
CZ-30-5200 66

- This compartment shall have a flush fitting horizontally hinged, drop-down style compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 64.5" wide.

### **New Weatherstrip**

One (1)  
CZ-40-1030

- The interior door panel shall have a smooth un-painted aluminum panel.

One (1)  
CZ-42-1110

- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

One (1)  
CZ-42-1230

- The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

One (1)  
CZ-40-2021

- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior to activate compartment lighting and door ajar signal in cab when door is opened.

### **New Door Switch**

One (1)  
CZ-A5-1148

- One (1) 6" x 7-1/16" large air vent shall be provided in lower compartment wall for air displacement.

One (1)  
CZ-A0-0190 66

# 24' Command Unit

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## COMPARTMENT LAYOUT

One (1)  
CZ-91-1120

- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).

One (1)  
CZ-B0-1130

- The 12 volt electrical distribution panel shall be located in the front lower compartment.

One (1)  
CZ-B0-2632

- One (1) OnScene Access PRO white LED mounted at the top of the compartment toward the door opening.

### **New Compartment Light**

One (1)  
A2-30-1100 24

## STREETSIDE COMPARTMENT - AHEAD OF REAR WHEELS (S2)

One (1)  
CZ-10-2910 20

The interior useable compartment space shall be approximately 70.5" wide.

One (1)  
CZ-30-5200 66

- This compartment shall have a flush fitting horizontally hinged, drop-down style compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 64.5" wide.

### **New Weatherstrip**

One (1)  
CZ-40-1030

- The interior door panel shall have a smooth un-painted aluminum panel.

One (1)  
CZ-42-1110

- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

One (1)  
CZ-42-1230

- The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

One (1)  
CZ-40-2021

- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior to activate compartment lighting and door ajar signal in cab when door is opened.

### **New Door Switch**

# 24' Command Unit

SVI# 1322R

One (1)  
CZ-A0-0190 67

## COMPARTMENT LAYOUT

One (1)  
CZ-91-1120

- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).

One (1)  
CZ-B0-2632

- One (1) OnScene Access PRO white LED mounted at the top of the compartment toward the door opening.

## **New Compartment Light**

One (1)  
A5-30-1100 22

## STREETSIDE COMPARTMENT - REAR (S3)

One (1)  
CZ-10-2910 20

The interior useable compartment space shall be approximately 83.0" wide.

The approximate compartment door opening shall be 76.0" wide.

One (1)  
CZ-30-5200 66

- This compartment shall have a flush fitting horizontally hinged, drop-down style compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 64.5" wide.

## **New Weatherstrip**

One (1)  
CZ-40-1030

- The interior door panel shall have a smooth un-painted aluminum panel.

One (1)  
CZ-42-1110

- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

One (1)  
CZ-42-1230

- The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

One (1)  
CZ-40-2021

- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior to activate compartment lighting and door ajar signal in cab when door is opened.

## **New Door Switch**

One (1)  
CZ-A0-0190 67

## COMPARTMENT LAYOUT

One (1)

# 24' Command Unit

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CZ-91-1120

- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).

One (1)

CZ-B0-2632

- One (1) OnScene Access PRO white LED mounted at the top of the compartment toward the door opening.

## **New Compartment Light**

One (1)

B1-30-1100 24

## **CURBSIDE COMPARTMENT - FRONT (C1)**

One (1)

CZ-10-2910 20

The interior useable compartment space shall be approximately 104.0" wide.

The approximate compartment door opening shall be 98.0" wide.

One (1)

CZ-30-5200 66

- This compartment shall have a flush fitting horizontally hinged, drop-down style compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 64.5" wide.

## **New Weatherstrip**

One (1)

CZ-40-1030

- The interior door panel shall have a smooth un-painted aluminum panel.

One (1)

CZ-42-1110

- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

One (1)

CZ-42-1230

- The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

One (1)

CZ-40-2021

- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior to activate compartment lighting and door ajar signal in cab when door is opened.

## **New Door Switch**

One (1)

CZ-A0-0190 67

## **COMPARTMENT LAYOUT**

One (1)

CZ-91-1120

- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).

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One (1)  
CZ-A0-1230

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.

One (1)  
CZ-A4-1322

- There shall be one (1) vertical compartment partition(s) provided dividing the compartment into fore and aft sides. The vertical partition(s) shall be 3/16" (.188) 3003H-14 alloy smooth aluminum sheet.

One (1)  
CZ-A4-1321

- Partition shall be bolted in position at base and top of partition.

One (1)  
P1-80-1100

- The above component(s) shall have a smooth un-painted finish.

One (1)  
CZ-C0-0110 30

Reel Mounting: Reel #1

One (1)  
CZ-C0-3320

- One (1) Hannay ECR1618-17-18 electric cable reel(s) capable of storing 200' of 10/3 electric cable. Reel(s) shall be designed to hold 110% of the capacity of cord length, with fully enclosed 45 amp, three (3) conductor collector rings. Reel(s) shall be mounted to channel structure that allows for side-to-side adjustment of reel position.
- Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator's standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.
- A label shall be provided in a visible location adjacent to reel with following information: Current rating, Current type, Phase, Voltage, and Total cord length.

One (1)  
CZ-C0-3B32

- The cable reel shall equipped with 200' of 10/3 SEOWW black cable, a molded plastic ball clamp, and a single heavy duty L5-30 twist-lock female plug at the end.

One (1)  
CZ-FA-1110

- The fairlead roller shall be mounted directly to the reel.

One (1)  
CZ-B0-2632

- One (1) OnScene Access PRO white LED mounted at the top of the compartment toward the door opening.

### **New Compartment Light**

One (1)  
CZ-B0-7110

- The cab chassis supplied cab tilt control pendant shall be re-located to lower forward wall.

One (1)  
CZ-C0-1108

- A 100 ampere, 240 VAC, single phase shore power receptacle shall be located in this compartment.

One (1)

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R2-39-0100

- A hinged pass thru hatch shall be provided located at compartment floor to allow cabling to be run without compartment door to have to be left open.

One (1)

K0-B0-1110

## **SIDE ENTRY DOOR**

Access shall be provided to the interior through a single side entry door with a clear door opening width of approximately 28.5".

Construction of the side entry door shall be with 1/8" aluminum exterior smooth plate and painted exterior body color choice. The interior door pan shall be constructed from 1/8" aluminum treadplate.

The door shall be hung on full height 14 gauge stainless steel hinge, with a 1/4" stainless steel pin. The hinge shall be bolted to the door and body with stainless steel machine screws at offset 5" centers. A polyester barrier film gasket shall be placed between the stainless steel hinge and door.

Full width padded foam cushion head bumper shall be provided above door opening. The head bumper shall be covered with matching interior vinyl and bolted to interior of door way.

The door latch mechanism shall include a stainless steel paddle type handle on interior. A polyester barrier film gasket shall be placed between the stainless steel handles and the aluminum door panels. The door latch shall be a double catch two-point safety slam latch recessed inside the double panel door with strike plate mounted top and bottom of door frame complying with FMVSS requirements.

## **New Weatherstrip**

One (1)

CZ-42-1110

- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

One (1)

CZ-42-1420

## **WINDOW(S)**

There shall be one (1) 18" wide x 22" high, double-paned insulated, vertical sliding window(s) installed in the entrance door. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish.

## **New Window**

One (1)

CZ-L0-2140

- One (1) OnScene 10" Access Pro white LED ground light(s) shall be provided below the body. Light(s) shall be switchable but activated automatically when the park brake is set.

## **New Under Body Light**

One (1)

EF-A0-1410

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## ENTRY HANDRAILS

There shall be two (2) handrails provided at entry door; one (1) 24" vertical on exterior of body on door handle side, and one (1) 30" on inside of door. The interior handrail shall be angled for optimum use when entering or exiting the interior body area.

Handrails shall be NFPA compliant 1-1/4" knurled 304 stainless steel with welded end stanchions.

A safety sign FAMA23, which warns of the proper climbing method, shall be visible to personnel entering the cab and at each designated climbing location on the body.

One (1)  
EF-G0-1210

## ELECTRIC STEP

There shall be one (1) Kwikiee 39 Series 12 VDC, electric step(s) that automatically extends when you open entry door(s) and retracts when you close entry door(s). The power step will automatically stop if it strikes an obstacle. The Kwikiee electric step components uses weatherproof wiring and connectors to prevent shorts and corrosion in the system.

The distance from the ground to the first step shall be no more than 24" per in accordance with NFPA 1900 guideline. The top surface of each step shall be covered with an NFPA 1900 nonskid compliant aluminum tread plate.

One (1)  
K0-H0-1010

## BODY ENTRANCE STEP COVER

A swing down type step cover fabricated from 3/16" NFPA approved treadplate will be provided at the side entrance to the apparatus body. The hinged step cover will be securely fasten up to allow access to the body and when manually swung down, provide a flush cover over the body entrance steps to provide a safe walking surface when the entrance door is close.

One (1)  
P2-09-1100

## REFLECTIVE STRIPE - CAB DOOR INTERIOR

Any door of the apparatus designed to allow persons to enter or exit the apparatus shall have at least 96 in. sq. (62,000 mm<sup>2</sup>) of retroreflective material affixed to the inside of the door.

The stripe material shall be 3M Scotchlite 680 series graphic film.

### **New Entry door Reflective Striping.**

One (1)  
P2-01-2010

- This reflective stripe shall be white in color.

One (1)  
B5-30-1100 22

## CURBSIDE MONITOR COMPARTMENT - REAR (C3)

One (1)  
CZ-10-2910 20

The interior useable compartment space shall be approximately 28-1/2" wide.

The approximate compartment door opening shall be 19-3/4" wide (with bottom hinged doors).

One (1)

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CZ-30-5200 66

- This compartment shall have a flush fitting horizontally hinged, drop-down style compartment door. The door exterior shall be painted job color.

Monitor is not included.

## **New Weatherstrip**

One (1)

CZ-40-1030

- The interior door panel shall have a smooth un-painted aluminum panel.

One (1)

CZ-42-1120

- The hinged door(s) shall have a stainless steel 6" offset bent D-ring non-locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

One (1)

CZ-42-1230

- The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

One (1)

CZ-A0-0190 67

## **COMPARTMENT LAYOUT**

- Monitor is not included.

One (1)

R2-A0-2000

## **120/240 VAC COMPARTMENT OUTLETS**

One (1)

R2-BC-1100

- There shall be One (1) 120 VAC outlet(s) located in compartment.

One (1)

R2-D0-1210

- The outlet receptacle(s) {will/shall} be 20 amp, straight-blade (NEMA 5-20R).

One (1)

CZ-B0-2632

## **REAR COMPARTMENT (COMMUNICATION ACCESS)**

### **COMPARTMENT LAYOUT**

All Communication equipment has been removed and is available for future use.

One (1)

C1-10-A110

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## HINGED DOOR

This compartment shall have a hinged box pan style door fabricated of 1/8" thick smooth aluminum. The inner liner of the door shall be 1/8" thick smooth aluminum with an unpainted finish. The door exterior shall be painted job color.

**Note:** The bottom of the door shall have a slot designed into it to allow phone and video cables enter the compartment without having the door open. A weather resistant seal will be furnished over slot.

### **New Weatherstrip**

One (1)  
CZ-40-1030

- The interior door panel shall have a smooth un-painted aluminum panel.

One (1)  
CZ-42-1110

- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

One (1)  
CZ-A0-0190 20

## COMPARTMENT LAYOUT

One (1)  
E0-00-0502

## BODY OPTIONS AND UPGRADES

Twenty Four (24)  
E1-10-1112

## PLASTIC FLOOR AND SHELF TILE

Dri-Dek 12" x 12" x 9/16", self-draining plastic inter-locking material shall be cut to size and cover all compartment floors, shelves, and trays.

### **New Driдек in all compartments, Shelves, Trays.**

Twenty Four (24)  
E1-10-1211

- The plastic floor tile shall be black.

Twenty Four (24)  
E1-10-1212

- The plastic edge trim shall be black.

One (1)  
EC-10-1110

## FRONT GRAVEL GUARDS

Gravel guards shall be provided on front lower body corners. Guards shall be 12" high, extend from behind cab or step and wrap around to the front compartment door opening fabricated from 20 gauge brushed stainless steel.

### **New gravel guards.**

K0-10-1130

## WALK-IN INTERIOR FINISH DETAILS

## DESK, CABINET, CONSOLE FINISH

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All specified interior desks, cabinets, overhead cabinets, or consoles shall be fabricated from formed 1/8" 3003 H14 alloy smooth aluminum.

The use of wood materials or laminated surfaces in the construction of desks, cabinets, overhead cabinets, or consoles will not be allowed. There will be **No Exceptions** allowed on specified ruggedized finish.

One (1)  
K0-10-1402

## **INTERIOR COMPONENT FINISH**

After fabrication is completed all specified desk(s) or cabinet(s) shall be painted with a hammer tone powder coat paint finish for a hard durable surface.

One (1)  
P1-99-1020

Powder coat shall be hammertone silver/grey. Cardinal T064-GR05

One (1)  
K0-E0-A010

## **ROOF HATCH**

The roof of body shall be reinforced for the installation of a roof hatch with skylight. Per NFPA 1900, any interior area to be occupied by personnel shall have a minimum of two means of escape. The opening shall be a minimum of 24" x 24" in size, suitable for use as an escape hatch, for ventilation, The roof hatch shall have One (1) compression type door checks to hold door in open position, and a nylon strap to assist in closing hatch. Roof hatch shall be connected to the cab hazard warning light in cab to indicate when open.

**New Weather Strip on Hatch door.**

One (1)  
MA-01-0320

## **INTERIOR SPECIFICATIONS**

### **INTERIOR INSULATION**

Following the sheet metal fabrication the roof area, upper exterior walls and the entry door of the apparatus body shall be insulated with Dow Thermax, or equal 1-1/2" glass-fiber reinforced polyisocyanurate foam core laminated between 1.0 mil smooth, reflective aluminum foil facers on both sides, with an R9.8 value. The reinforcement, along with chemical modifications, contributes to fire resistance and dimensional stability. This insulation shall be the type that will not absorb moisture, move once in place or deteriorate. Mat type fiberglass or spray in foam insulation is not acceptable.

### **INTERIOR FINISH**

The interior of the apparatus body shall have a fully maintenance free and durable finish. The interior finish shall be installed on the ceiling, front wall, and interior side walls from top of exterior compartments to ceiling height.

The interior panels shall be installed with sheet metal screws with gray plastic plugs covering the screws. The seams between FRP panels, interior corners, and exterior corners shall be trimmed with gray plastic molding.

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The interior finish shall be pearl gray pebble grain FRP.

One (1)  
MA-22-2320

## **INTERIOR WALKWAY FLOOR**

There shall be Lonseal, Loncoin-II Flecks installed on the floor substrate. Loncoin II Flecks is a heterogeneous resilient sheet vinyl with a decorative raised coin texture, breathtaking color, and intriguing style. The fleck coloration provides camouflage for simpler maintenance while the raised coin embossing provides enhanced traction. Excellent for interior, retail, commercial, or institutional use where design parameters call for a high performance, sophisticated flooring solution.

Loncoin II Flecks is composed of polyvinyl chloride (PVC) resin, plasticizers, fillers, and pigments. The co-calendared wear layer is formulated to provide maximum resistance to foot traffic and most commercial and healthcare chemicals.

The middle layer provides dimensional stability, sound-absorbing properties, and resiliency under foot. The backing layer provides strength and stability of the flooring and enhances the bonding strength of the adhesive.

The material shall be black in color (Loncoin-II Flecks - Onyx).

Lonseal, Inc. warrants that Lonseal flooring products shall be free from manufacturing defects for a period of one (1) year from the date of purchase and that, when properly installed and maintained, shall not wear through as a result of normal foot traffic for a period of 7 years from the date of installation.

One (1)  
MA-10-1320

## **INTERIOR SUB-FLOOR**

Above the body sub frame walk in areas shall be an isolation sheet to prevent outside elements from permeating the acoustic and thermal barrier. The isolation sheet shall be fabricated from the same type of material as is used in the subframe, and flanged on sides with a 1" high vertical break.

3/4" thick plywood shall be placed between the isolation sheet and finished floor for its structural, acoustic and thermal values.

One (1)  
MD-70-1010

## **INTERIOR WATER SYSTEM**

One (1)  
MD-70-2130

There shall be one (1) 20-gallon plastic fresh water holding tank(s) located below the apparatus body. A freshwater fill shall be provided at the exterior apparatus body with a household hose type connection. A 12 volt self-priming, flow-controlled water pump (minimum of 3 GPM) with built-in check valve shall be provided and plumbed to water system.

One (1)  
MD-70-2161

A manifold will be included for water intake.

One (1)  
MD-70-2190

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An Integrity RV tank level monitor system (or equal) shall be provided and installed on completed unit. The monitor shall be located in practical location for monitoring and include a 2 x16 LCD backlit screen to monitor the on-board water tank(s) level.

One (1)  
MD-70-2230

There shall be one (1) 30-gallon plastic "Black water" holding tank(s) located below the apparatus body. There shall be an RV type wastewater drain system installed using flexible tube. There shall be a valve located below the apparatus body to drain the retention tank.

One (1)  
MD-70-2220

There shall be one (1) 25-gallon plastic "Gray water" holding tank(s) located below the apparatus body. There shall be an RV type wastewater drain system installed using flexible tube. There shall be a valve located below the apparatus body to drain the retention tank.

One (1)  
MD-70-2824

A 120 VAC electric "On-Demand" type tankless water heater shall be provided and installed to supply heated water to the interior water system. The heater shall be a 3,000-watt, 25 amp, tankless water heater.

### **New water heater**

Three (3)  
MD-80-2000

### **AIR CONDITIONER - HEATER**

Three (3) Coleman Mach 3 PS, 120 VAC, 60 cycle, 11.2/15.6 cooling/heat amps, single phase air conditioner(s) shall be provided and installed on roof of vehicle. The unit(s) shall be a roof top integral evaporator/condenser type with built-in heating element.

Each unit shall be rated at 13,500 BTU cooling capacity with a heating element rated at 5,600 BTU.

A two-speed fan shall supply a maximum of 320 CFM air flow capacity.

The roof mounted air conditioner shall be approximately 13" high x 29" wide x 43" long and weigh approximately 85 pounds. The opening in roof shall be properly reinforced to support the air conditioner.

### **New RV HVAC Units**

Three (3)  
MD-80-200A

- The above rooftop Air Conditioning units shall be powered by generator only.

One (1)  
K0-20-1130 24

### **STREETSIDE INTERIOR AREA (IS1/IS2)**

One (1)  
K0-51-1140

### **SLIDE-OUT ROOM EXTENSION**

A slide-out room extension with floor level the same as the main walk-in floor shall be provided. The slide-out room shall extend approximately 32". The slide-out extension shall be up to up to 136" in width depending on body configuration. The interior height shall be approximately 11" less than the interior

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height of the main walk-in floor. The slide-out room shall have a water resistant seal in both the fully extended and the retracted positions. The flooring specified on main walk-in floor shall be provided on floor of slide-out room.

The slide-out section shall utilize two (2) PowerGear rail assemblies, and two (2) 12 VDC actuators for positive seal when room is extended or retracted. The floor is suspended above main floor which eliminates the possibility of damage to floor coverings. Systems that don't provide a flat floor when fully extended will NOT BE ACCEPTABLE. A manual override shall be provided in the event of a system failure. The touch pad control for slide-out system shall be mounted on wall near main entry door.

The slide-out section shall be framed with 2" x 2" x 1/4" 6061-T6 alloy aluminum. The frame structure shall be covered with no less than 1/8" thick 3003-H14 smooth aluminum.

A full width padded foam cushion head bumper shall be provided along ceiling of slide-out. Head bumper shall be covered with matching interior vinyl.

There shall be two (2) flashing LED warning lights with red lenses, one (1) at each end of the slide-out section. The lights shall activate and be visible when the unit is extended.

All electrical wiring installed in the slide-out wall shall run through a boxed type conduit at the lower corner of the system. All wiring shall be enclosed in a flexible, moisture resistant, reinforced conduit, with proper seal tight connectors and hardware. Access shall be provided for inspection of all wiring and the slide-out mechanisms.

The slide-out room extension must be able to withstand years of rugged service and wear. For this reason, this design, metal thickness and attachments must be strictly adhered to. RV type slide-outs using light weight metal or fiberglass shall not be acceptable.

## **New Weather Strip**

One (1)  
EJ-50-1110

### **SLIDE-OUT AWNING Carefree Kover III**

A Slide-Out Awning Cover shall be provided and work automatically with slide-out for increased protection of the slide-out from the elements. Helps keep leaves, debris and rain off the roof and out of the vehicle and keeps the roof cooler by blocking the sun from the roof.

The Slide-Out Awning Cover comes with a built-in wind deflector to prevent the billowing of the slide out fabric. The full-enclosure aluminum case protects the slide out fabric from dirt and debris while traveling.

One (1)  
EJ-20-1150

- The Firesist HUV awning fabric color shall be red (#88003-000).

One (1)  
EJ-50-1115

### **SLIDE-OUT AWNING**

The Slide-Out Awning standard white housing color shall be re-painted to match upper body color.

## **New Awning over slide out**

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One (1)  
R2-A0-5000

## **120 VAC INTERIOR OUTLETS**

One (1)  
R2-BC-2110

- There shall be one (1) 120 VAC outlet(s) located in the interior area of the body.

One (1)  
R2-D0-1215

- The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).

Three (3)  
R2-BF-1000

- There shall be three (3) approximate 2' long 120 VAC outlet strip(s) with straight blade household type outlets provided.

One (1)  
R2-D1-2400

- Outlet(s) shall be powered through the on-board generator system.

One (1)  
R2-D3-0482

- The outlet shall be located on interior area wall, centered below deck.

Three (3)  
K0-E0-0520

## **WINDOW(S)**

There shall be three (3) 36" wide x 28" high, double-paned insulated, horizontal sliding window(s) installed. The window shall slide open towards the front of the vehicle such that wind pressure would tend to shut the window. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish. Sliding style windows shall be complete with a sliding screen.

### **New windows**

Two (2)  
K0-E0-0710

## **WINDOW(S)**

There shall be two (2) 18" wide x 22" high, double-paned insulated, high non-sliding window(s) installed, one (1) on each side of the slide-out. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish.

### **New windows**

Five (5)  
K0-G0-1010

## **INTERIOR BODY WINDOW COVERS**

An interior window cover shall be provided on five (5) windows in the apparatus body.

The window covers shall be of Cover Lite Select, 22 oz material. Snap type fasteners shall be installed around each window in the body to allow each window to be covered.

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Two (2)  
MB-20-2120

## **INTERIOR CABINET - 3 DRAWER**

- Two (2) 3-drawer Metal Pedestal cabinet(s) (or equal) shall be provided and installed. Each cabinet shall have a keyed lock and shall be painted charcoal. Each filing cabinet shall be 15" wide x 27.75" high x 20" deep. The bottom drawer of the cabinet shall be capable of storing 8-1/2" x 11" file folders.

Two (2)  
MD-20-3000

## **SLIDE-OUT AREA - FULL WIDTH DESK**

The slide-out area shall be provided with a full width desk which shall be 24" deep and located approximately 30" from floor.

The desk top surface shall be fabricated of 3/16" smooth finish aluminum. There shall be 2-1/2" diameter holes with plastic edge grommet provided at each rear corner for wiring of future equipment located on the desk top. The desk shall be painted with a dark gray hammer tone powder coat paint finish for a hard and durable surface.

Three (3)  
MC-10-1110

## **COMMUNICATION AND ELECTRONICS CONSOLE**

There shall be three (3) 26" wide communication and electronics console(s) provided at back of specified desk or counter top. The console(s) shall provide mounting locations for any specified radios, phones, network jacks, 120 VAC outlets, 12 VDC power points, or any required control switches. A six (6) circuit 12 VDC fuse block with cover shall be provided inside console for wiring needs.

Each console shall be rectangular in shape with a sloped hinged access cover constructed of 1/8" smooth finish aluminum and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.

A hinged access cover shall be provided on front to access equipment mounting and wiring with 1/4 turn knobs to secure cover closed. Two (2) 12 VDC cooling fans shall be provided on ends for proper ventilation of radio and electrical equipment.

The following communications and/or electrical equipment shall be provided for;

Three (3)  
N0-14-2620

The following options shall be provided in specified desktop console;

Three (3)  
10-S5-0120

- There shall be three (3) communications radio and/or siren 3" recess mount(s) with black powdercoat paint finish in specified console.

Three (3)  
10-S5-0122

- There shall be three (3) communications radio and/or siren 3" filler plate(s) with black powdercoat paint finish provided for future radio/siren location in specified console.

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Three (3)  
10-S5-0155

- There shall be three (3) USB dual port(s) provided in specified console. Dual USB charging ports come with one USB-C port and one USB-A port.

## **New USB Receptacle**

Three (3)  
MD-50-8002

### **INTERIOR PEDESTAL SEATS**

Three (3) Bostrom Sierra "Low Back" #3329-3000 gray Imperial 1200, pedestal type seat(s) with 6" fore/aft adjustment shall be provided on apparatus. Each seat shall be mounted on a swivel style pedestal base and securely bolted to reinforced floor structure. Seats shall closely match the Driver and officer Seat colors.

Each seating position shall be provided with approximately 33" wide open leg room.

One (1)  
K0-20-1320 02

### **STREETSIDE INTERIOR AREA (IS3)**

One (1)  
MD-60-0001

### **GALLEY AREA**

The apparatus interior shall be provided with a galley area. The galley shall be furnished with the following features as detailed below.

One (1)  
MD-60-0010

### **GALLEY CABINET - COUNTER HEIGHT**

There shall be one (1) interior counter height cabinet(s) provided in the galley. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.

One (1)  
MB-21-1100

- The above cabinet(s) shall have a 4" x 4" toe kick area at the base to allow for the top surface to be used as a working surface.

One (1)  
MB-22-1300

- The above cabinet(s) shall have double vertically hinged aluminum door(s) with a Southco push-release style latches and painted with a hammer tone powder coat paint finish to match cabinet color choice.

One (1)  
MB-23-1100

- Each cabinet shall be provided with vertically mounted shallow aluminum Shelf-Trac for specified component installation.
- There shall be one (1) vertically adjustable shelf in each of the above cabinets. It shall have a 1.25" lip to contain items while minimizing space used.

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One (1)  
MD-60-0110

## GALLEY INTERIOR SINK

A stainless steel sink shall be provided in the galley compartment. The sink shall be provided with chrome plated faucet and individual control valves for hot or cold water. It shall be countertop recessed into custom built cabinetry as required by the design of the apparatus interior.

One (1)  
MD-60-0220

## WATER HEATER

There shall be one (1) 120 volt electric "On-Demand" water heater(s) installed to supply heated water to the interior water system. The heater shall be a 3,000 watt, 25 amp, tankless water heater.

### **New water heater**

One (1)  
MD-60-0410

## GALLEY REFRIGERATOR

There shall be one (1) Norcold DE105 120 VAC/12 VDC refrigerator/freezer(s) furnished and installed in the galley. The unit shall be a flush mount style box with body manufacturer fabricated custom enclosure. Refrigerator shall operate from both 12 VDC and 120 VAC power. The built-in dimensions are 30-7/8" high x 23-1/4" wide x 23-1/2" deep.

### **New Refrigerator**

One (1)  
MD-60-0020

## INTERIOR CABINET - OVERHEAD

There shall be one (1) overhead cabinet(s) provided in the galley. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.

One (1)  
MB-22-1450

- The above cabinet(s) shall have sliding Smoked Lexan doors.

One (1)  
MD-60-0310

## GALLEY MICROWAVE

There shall be one (1) commercial grade microwave oven furnished and installed in the upper storage compartment. The unit shall be a 1000-watt minimum with stainless steel cabinet. The built-in dimensions shall be 12" high x 20-1/2" wide x 16" deep.

### **New Microwave**

One (1)  
N0-AA-C110

## INTERIOR UNDER CABINET LED LIGHTS

One (1) OnScene Solution model #70152, 10" x 6" x 7/8", 10-30 VDC, surface mount dual red and white LED light(s) with clear lens shall be provided under cabinet. Each light shall be individually switched with a high/low intensity setting. In addition light(s) will be capable of a five (5) second delay after switching off.

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## **New Interior LED lights**

One (1)  
MD-60-0510

### **GALLEY OUTLETS**

The following 120 volt outlets shall be provided in the galley area:

One (1)  
MD-60-0520

- One (1) 120 volt, 20 amp, straight blade outlet behind the microwave.

One (1)  
MD-60-0530

- One (1) 120 volt, 20 amp, straight blade outlet with 12 volt wiring behind the refrigerator.

One (1)  
MD-60-0540

- One (1) 120 volt, 20 amp, GFI straight blade outlet on the counter back splash.

One (1)  
MD-60-0550

- One (1) 120 volt, 20 amp, GFI straight blade outlet in the overhead cabinet.

One (1)  
K0-20-1420 24

### **STREETSIDE INTERIOR AREA (IS4)**

One (1)  
K0-50-1110

### **SLIDE-OUT ROOM EXTENSION**

A slide-out room extension with floor offset approximately 3" from main walk-in floor shall be provided. The slide-out room shall extend approximately 32". The slide-out extension shall be up to up to 96" in width depending on body configuration. The interior height shall be approximately 9" less than the interior height of the main walk-in floor. The slide-out room shall have a water resistant seal in both the fully extended and the retracted positions. The flooring specified on main walk-in floor shall be provided on floor of slide-out room.

The slide-out section shall utilize two (2) PowerGear smooth operating, quiet gear and rack system. Systems using hydraulic components will NOT BE ACCEPTABLE. There shall be only two (2) serviceable items - the 12 VDC motor and the electric control switch. The system shall use a heavy duty, positive, 100% synchronized gear and rack system to prevent binding during the extend or retract cycle. The rack system shall be rated for up to 1,500 pounds. A manual override shall be provided in the event of a system failure. The touch pad control for slide-out system shall be mounted on wall near main entry door.

The slide-out section shall be framed with 2" x 2" x 1/4" 6061-T6 alloy aluminum. The frame structure shall be covered with no less than 1/8" thick 3003-H14 smooth aluminum.

A full width padded foam cushion head bumper shall be provided along ceiling of slide-out. Head bumper shall be covered with matching interior vinyl.

There shall be two (2) flashing LED warning lights with red lenses, one (1) at each end of the slide-out section. The lights shall activate and be visible when the unit is extended.

All electrical wiring installed in the slide-out wall shall run through a boxed type conduit at the lower corner of the system. All wiring shall be enclosed in a flexible, moisture resistant, reinforced conduit, with proper

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seal tight connectors and hardware. Access shall be provided for inspection of all wiring and the slide-out mechanisms.

The slide-out room extension must be able to withstand years of rugged service and wear. For this reason, this design, metal thickness and attachments must be strictly adhered to. RV type slide-outs using light weight metal or fiberglass shall not be acceptable.

### New Weather Strip

One (1)  
EJ-50-1110

#### SLIDE-OUT AWNING Carefree Kover III

A Slide-Out Awning Cover shall be provided and work automatically with slide-out for increased protection of the slide-out from the elements. Helps keep leaves, debris and rain off the roof and out of the vehicle and keeps the roof cooler by blocking the sun from the roof.

The Slide-Out Awning Cover comes with a built-in wind deflector to prevent the billowing of the slide out fabric. The full-enclosure aluminum case protects the slide out fabric from dirt and debris while traveling.

One (1)  
EJ-20-1150

- The Firesist HUV awning fabric color shall be red (#88003-000).

One (1)  
EJ-50-1115

#### SLIDE-OUT AWNING

The Slide-Out Awning standard white housing color shall be re-painted to match upper body color.

### New Awning over Slide out

One (1)  
K0-E0-0520

#### WINDOW(S)

There shall be one (1) 36" wide x 22" high, double-paned insulated, horizontal sliding window(s) installed. The window shall slide open towards the front of the vehicle such that wind pressure would tend to shut the window. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish. Sliding style windows shall be complete with a sliding screen.

### New Windows

Two (2)  
K0-E0-0710

#### WINDOW(S)

There shall be two (2) 18" wide x 22" high, double-paned insulated, high non-sliding window(s) installed, one (1) on each side of the slide-out. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish.

### New Windows

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Three (3)  
K0-G0-1010

## **INTERIOR BODY WINDOW COVERS**

An interior window cover shall be provided on three (3) windows in the apparatus body.

The window covers shall be of Cover Lite Select, 22 oz material. Snap type fasteners shall be installed around each window in the body to allow each window to be covered.

One (1)  
MD-20-2020

## **REAR CONFERENCE AREA SPLIT INTERIOR CONFERENCE TABLE**

The interior of the streetside, rear Conference Area shall be provided with a split table top approximately 36" - 72" wide. The desk shall be 24" deep and located approximately 30" from floor to desk top. Front edge of desk top shall be reinforced with 2" x 2" tubing to support a person sitting on edge of desk.

Table top surface shall be fabricated of 1/8" smooth finish aluminum. Table surface shall have a 2" vertical back splash along back edge and a 2" vertical downward edge along front to cover the 2" x 2" reinforcement. Table top shall be painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.

The streetside portion of the split table will be mounted on the rear, streetside slide-out. When the slide-out is in the retracted position the streetside portion of the table shall match up with the curbside desktop and provide a 1-piece conference table.

Three (3)  
MD-50-1022

## **INTERIOR BENCH SEAT**

The interior body walkway shall be provided with a squad bench seat for three (3) personnel along the side wall. The seat cushion shall be approximately 3" thick with a 3/4" plywood platform for stability. The seat backrest shall be approximately 12" high x 2" thick and constructed the same as the seat cushion.

Three (3)  
MD-50-1062

The cushion and seat back shall be covered with Duraware heavy duty fabric material.

Three (3)  
MD-50-1091

Seat material color shall be black.

Three (3)  
MD-50-1100

## **INTERIOR BENCH SEAT STORAGE**

The bench seat base shall be fabricated of aluminum tread plate to form a under seat storage compartment.

Three (3)  
MD-50-1156

A hinged seat cushion shall be provided for access to seat storage.

Three (3)  
MD-50-8105

The above specified seat(s) shall not be provided with automotive seat belts and therefore will not be considered a riding position.

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One (1)  
K0-30-1122 24

## **CURBSIDE INTERIOR AREA (IC1)**

One (1)  
10-S9-0110

## **MAGNETIC WHITEBOARD**

There shall be one (1) magnetic whiteboard(s), approximately (insert actual dimensions) located on wall, location per .

Two (2)  
K0-E0-0430

## **WINDOW(S)**

There shall be two (2) 32"wide x 26" high, double-paned insulated, horizontal sliding window(s) installed. The window shall slide open towards the front of the vehicle such that wind pressure would tend to shut the window. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish. Sliding style windows shall be complete with a sliding screen.

## **New Windows**

Two (2)  
K0-G0-1010

## **INTERIOR BODY WINDOW COVERS**

An interior window cover shall be provided on two (2) windows in the apparatus body.

The window covers shall be of Cover Lite Select, 22 oz material. Snap type fasteners shall be installed around each window in the body to allow each window to be covered.

One (1)  
MD-20-2000

## **INTERIOR DESK**

The interior of body shall be provided with a desk top which shall be 24" deep and located approximately 30" from floor.

The desk top surface shall be fabricated of 3/16" smooth finish aluminum. There shall be 2-1/2" diameter holes with plastic edge grommet provided at each rear corner for wiring of future equipment located on the desk top. The desk top shall be painted dark gray with a hammer tone powder coat paint finish for a hard and durable surface.

Two (2)  
10-S2-0440

## **PENCIL DRAWER**

The desk shall be provided with two (2) Hafele model HA-429.59.340, or equal 3 compartment pencil drawer(s) with steel ball bearing slides, and both hold-in and hold-out detents. Drawer will be 15" wide x 13" deep x 1 3/4" high.

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Two (2)  
MC-10-1120

## COMMUNICATION AND ELECTRONICS CONSOLE

There shall be two (2) 34" wide communication and electronics console(s) provided at back of specified desk or counter top. The console(s) shall provide mounting locations for any specified radios, phones, network jacks, 120 VAC outlets, 12 VDC power points, or any required control switches. A six (6) circuit 12 VDC fuse block with cover shall be provided inside console for wiring needs.

Each console shall be rectangular in shape with a sloped hinged access cover constructed of 1/8" smooth finish aluminum and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.

A hinged access cover shall be provided on front to access equipment mounting and wiring with 1/4 turn knobs to secure cover closed. Two (2) 12 VDC cooling fans shall be provided on ends for proper ventilation of radio and electrical equipment.

The following communications and/or electrical equipment shall be provided for;

Two (2)  
N0-14-2620

The following options shall be provided in specified desktop console;

Two (2)  
10-S5-0120

- There shall be two (2) communications radio and/or siren 3" recess mount(s) with black powdercoat paint finish in specified console.

Two (2)  
10-S5-0122

- There shall be two (2) communications radio and/or siren 3" filler plate(s) with black powdercoat paint finish provided for future radio/siren location in specified console.

Two (2)  
10-S5-0155

- There shall be two (2) USB dual port(s) provided in specified console. Dual USB charging ports come with one USB-C port and one USB-A port.

### **New USB Receptacle**

Two (2)  
MD-50-9050

## INTERIOR ROLL-AROUND CHAIRS

There shall be two (2) Hon model HPN1 roll-around, folding seat bottom nesting style office chair(s) provided. Chair(s) shall have a dark gray upholstered finish with no arms. The chair(s) shall have provisions to be fully secured under the desk when not in use and the vehicle is in motion.

Note: These chairs are not NFPA compliant, and can not be occupied while vehicle is in motion.

### **New roll around chairs**

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Four (4)  
MD-50-9200

## **INTERIOR ROLL-AROUND CHAIR TRAVEL PROVISIONS**

There shall be travel provisions for four (4) specified roll-around office chairs. The provisions shall include a bungee strap for each chair and a means to secure the strap to the underside of the desktop.

One (1)  
MY-10-0010

Interior Equipment Options

One (1)  
R2-A0-5000

## **120 VAC INTERIOR OUTLETS**

One (1)  
R2-BC-2110

- There shall be one (1) 120 VAC outlet(s) located in the interior area of the body.

One (1)  
R2-D0-1215

- The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).

One (1)  
R2-D1-2400

- Outlet(s) shall be powered through the on-board generator system.

One (1)  
R2-D3-0490

- The outlet shall be located on interior area wall, centered above deck/desk.

One (1)  
R2-BC-2112

- There shall be one (1) 120 VAC outlet(s) located in the interior area of the body.

One (1)  
R2-D0-1215

- The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).

One (1)  
R2-BF-1100

- There shall be one (1) approximate 4' long 120 VAC outlet strip(s) with straight blade household type outlets provided.

One (1)  
R2-D1-2400

- Outlet(s) shall be powered through the on-board generator system.

One (1)  
R2-D3-0482

- The outlet shall be located on interior area wall, centered below deck.

One (1)  
K0-30-1222 24

## **CURBSIDE INTERIOR AREA (IC2)**

One (1)  
MB-20-1210 24

## **INTERIOR CABINET - FULL HEIGHT**

- There shall be one (1) full height cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum. Each cabinet shall be approximately 24" wide x full height x 24" deep.

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## **New Interior Cabinet**

One (1)  
CZ-B0-2315

- One (1) OnScene Access white LED, full height compartment light, vertically mounted.

One (1)  
MB-22-1812

- Cargo netting of 1" - 2" nylon webbing shall be provided over cabinet opening with automotive seatbelt style latches.

One (1)  
10-S8-0380

- The compartment light(s) shall be controlled by a latching, black rocker switch with amber indicator light. The switch shall be labeled as "COMPARTMENT LIGHTS" with a black and chrome label bezel.

One (1)  
MB-23-1400

- Cabinet(s) shall be provided with vertically mounted shallow aluminum Shelf-Trac for specified component installation.
- There shall be four (4) vertically adjustable shelves in each of the above cabinets. It shall have a 1.25" lip to contain items while minimizing space used.

One (1)  
K0-30-1320 02

## **CURBSIDE INTERIOR AREA (IC3)**

One (1)  
MD-70-2410

### **LAVATORY COMPARTMENT**

This vehicle shall be provided with an enclosed lavatory compartment with full height hinged entry door. The compartment walls and ceiling shall be covered with gray pebble grain FRP panels. A toilet paper roll dispenser shall be provided in the compartment.

One (1)  
MD-70-2422

### **LAVATORY TOILET**

There shall be one (1) RV style, permanent toilet(s) installed in the lavatory compartment. The toilet shall be a porcelain base model. The toilet shall be plumbed to the water system, providing fresh water for the flush cycle and a gray water tank for disposal.

## **New Toilet**

One (1)  
MD-70-2510

### **LAVATORY SINK**

The lavatory sink design shall be small and compact. Countertop and sink enclosure shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.

A stainless steel sink shall be provided and recessed into countertop. The sink shall be provided with chrome plated faucet with individual control valves for cold or hot (if specified) water.

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One (1)  
MD-70-2820

No water heater system shall be provided with specified sink system.

One (1)  
N0-AA-C106

## INTERIOR LED LIGHTS

One (1) OnScene Solution model #70154, 10" x 10" x 7/8", 10-30 VDC, surface white LED light(s) with clear lens shall be installed on the ceiling. In addition light(s) will be capable of a five (5) second delay after switching off.

The light(s) shall be switched with high/low intensity setting at the entry door(s). An Innovative Controls black back-lit switch panel shall be provided to control specified lighting or other control switching.

### **New Interior LED ceiling lights**

One (1)  
K0-30-1420 24

## CURBSIDE INTERIOR AREA (IC4)

One (1)  
K0-E0-0430

## WINDOW(S)

There shall be one (1) 32" wide x 22" high, double-paned insulated, horizontal sliding window(s) installed. The window shall slide open towards the front of the vehicle such that wind pressure would tend to shut the window. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish. Sliding style windows shall be complete with a sliding screen.

### **New Window**

One (1)  
K0-G0-1010

## INTERIOR BODY WINDOW COVERS

An interior window cover shall be provided on one (1) windows in the apparatus body.

The window covers shall be of Cover Lite Select, 22 oz material. Snap type fasteners shall be installed around each window in the body to allow each window to be covered.

Two (2)  
MB-20-1330

## INTERIOR CABINET - OVERHEAD

- There shall be two (2) approximately 42" wide x 14" high x 14" deep overhead cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface.

Two (2)  
MB-22-1450 26

- The above cabinet(s) shall have sliding Smoked Lexan doors.

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One (1)  
MD-20-2020

## **REAR CONFERENCE AREA SPLIT INTERIOR CONFERENCE TABLE**

The interior of the rear Conference Area shall be provided with a split table top approximately 36" - 72" wide. The desk shall be 24" deep and located approximately 30" from the stationary floor to the top of the desk. This table is an extension of the table located in the streetside slide-out.

One (1) 2-1/2" diameter holes with plastic edge grommet shall be provided at center back edge of table for future equipment to be located on desk top.

Three (3)  
MD-50-1022

## **INTERIOR BENCH SEAT**

The interior body walkway shall be provided with a squad bench seat for three (3) personnel along the side wall. The seat cushion shall be approximately 3" thick with a 3/4" plywood platform for stability. The seat backrest shall be approximately 12" high x 2" thick and constructed the same as the seat cushion.

Three (3)  
MD-50-1062

The cushion and seat back shall be covered with Duraware heavy duty fabric material.

Three (3)  
MD-50-1091

Seat material color shall be black.

Three (3)  
MD-50-1100

## **INTERIOR BENCH SEAT STORAGE**

The bench seat base shall be fabricated of aluminum tread plate to form a under seat storage compartment.

Three (3)  
MD-50-1156

A hinged seat cushion shall be provided for access to seat storage.

Three (3)  
MD-50-8105

The above specified seat(s) shall not be provided with automotive seat belts and therefore will not be considered a riding position.

One (1)  
K0-32-1110

## **REAR INTERIOR AREA (IR1)**

One (1)  
K0-B0-1122

- There shall be a rear entry door located in this area.

One (1)  
R2-A0-5000

## **120 VAC INTERIOR OUTLETS**

One (1)  
R2-BC-2110

- There shall be one (1) 120 VAC outlet(s) located in the interior area of the body.

One (1)  
R2-D0-1215

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- The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).  
One (1)  
R2-BF-1000
  - There shall be one (1) approximate 2' long 120 VAC outlet strip(s) with straight blade household type outlets provided.
- Outlet(s) shall be powered through the on-board generator system.  
One (1)  
R2-D1-2400
- Outlet(s) shall be powered through the on-board generator system.  
One (1)  
R2-D3-0270
  - The outlet shall be located on rearward wall, lower left area.
- Outlet(s) shall be powered through the on-board generator system.  
One (1)  
R2-D1-2400
- Outlet(s) shall be powered through the on-board generator system.  
One (1)  
R2-D3-0090
  - The outlet location shall be determined prior to fabrication.
- One (1)  
N0-10-A100 24

## **LOW VOLTAGE ELECTRICAL SYSTEM- 12 VDC**

### General

Any low voltage electrical systems or warning devices installed on the fire apparatus shall be appropriate for the mounting location and intended electrical load.

Where wire passes through sheet metal, grommets shall be used to protect wire and wire looms. Electrical connections shall be with double crimp water-tight heat shrink connectors.

All 12 VDC wiring running from front to back of vehicle body shall be run in full length electrical wiring raceway down each side of body.

### Wiring

All electrical circuit feeder wiring supplied and installed by the fire apparatus manufacturer shall meet the requirements of NFPA Chapter 10.

The circuit feeder wire shall be stranded copper or copper alloy conductors of a gauge rated to carry 125% of the maximum current for which the circuit is protected. Voltage drops in all wiring from the power source to the using device shall not exceed 10%. The use of star washers for circuit ground connections shall not be permitted.

All circuits shall otherwise be wired in conformance with SAE J1292, *Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring*.

### Wiring and Wire Harness Construction

All insulated wire and cable shall conform to SAE J1127, *Low Voltage Battery Cable*, or SAE J1128, *Low Voltage Primary Cable*, type SXL, GXL, or TXL.

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All conductors shall be constructed in accordance with SAE J1127 or SAE J1128, except where good engineering practice dictates special strand construction. Conductor materials and stranding, other than copper, shall be permitted if all applicable requirements for physical, electrical, and environmental conditions are met as dictated by the end application. Physical and dimensional values of conductor insulation shall be in conformance with the requirements of SAE J1127 or SAE J1128, except where good engineering practice dictates special conductor insulation. The overall covering of conductors shall be moisture-resistant loom or braid that has a minimum continuous rating of 194°F (90°C) except where good engineering practice dictates special consideration for loom installations exposed to higher 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.

All wiring connections and terminations shall use a method that provides a positive mechanical and electrical connection. The wiring connections and terminations shall be installed in accordance with the device manufacturer's instructions. All ungrounded electrical terminals shall have protective covers or be in enclosures. Wire nut, insulation displacement, and insulation piercing connections shall not be used.

Wiring shall be restrained to prevent damage caused by chafing or ice buildup and protected against heat, liquid contaminants, or other environmental factors.

Wiring shall be uniquely identified at least every 2 ft (0.6 m) by color coding or permanent marking with a circuit function code. The identification shall reference a wiring diagram.

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Circuits shall be provided with properly rated low voltage over-current protective devices. Such devices shall be readily accessible and protected against heat in excess of the over-current device's design range, mechanical damage, and water spray. Circuit protection shall be accomplished by utilizing fuses, circuit breakers, fusible links, or solid state equivalent devices.

If a mechanical-type device is used, it shall conform to one of the following SAE standards:

- SAE J156, *Fusible Links*
- 24) SAE J553, *Circuit Breakers*
- 25) SAE J554, *Electric Fuses (Cartridge Type)*
- 26) SAE J1888, *High Current Time Lag Electric Fuses*
- 27) SAE J2077, *Miniature Blade Type Electrical Fuses*

Switches, relays, terminals, and connectors shall have a direct current (dc) rating of 125% of maximum current for which the circuit is protected.

### Power Supply

A 12 V or greater electrical alternator shall be provided. The alternator shall have a minimum output at idle to meet the minimum continuous electrical load of the vehicle, at 200°F (93°C) ambient temperature within the engine compartment, and shall be provided with full automatic regulation.

### Minimum Continuous Electrical Load

The minimum continuous electrical load shall consist of the total amperage required to simultaneously operate the following in a stationary mode during emergency operations:

- 28) The propulsion engine and transmission
  - 1) All legally required clearance and marker lights, headlights, and other electrical devices except windshield wipers and four-way hazard flashers
  - 2) The radio(s) at a duty cycle of 10 percent transmit and 90% receive (for calculation and testing purposes, a default value of 5 A continuous)
  - 3) The lighting necessary to produce 2 fc (20 lx) of illumination on all walking surfaces on the apparatus and on the ground at all egress points onto and off the apparatus, 5 fc (50 lx) of illumination on all control and instrument panels, and 50 percent of the total compartment lighting loads
  - 4) The minimum optical warning system, where the apparatus is blocking the right-of way
  - 5) The continuous electrical current required to simultaneously operate any fire pumps, aerial devices, and hydraulic pumps
  - 6) Other warning devices and electrical loads defined by the purchaser as critical to the mission of the apparatus

If the apparatus is equipped to tow a trailer, an additional 45 A shall be added to the minimum continuous electrical load to provide electrical power for the federally required clearance and marker lighting and the optical warning devices mounted on the trailer.

The condition of the low voltage electrical system shall be monitored by a warning system that provides both an audible and a visual signal to persons on, in, or near the apparatus of an impending electrical system failure caused by the excessive discharge of the battery set.

The charge status of the battery shall be determined either by direct measurement of the battery charge or indirectly by monitoring the electrical system voltage.

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If electrical system voltage is monitored, the alarm shall sound if the system voltage at the battery or at the master load disconnect switch drops below 11.8 V for 12 V nominal systems, 23.6 V for 24 V nominal systems, or 35.4 V for 42 V nominal systems for more than 120 seconds.

A voltmeter shall be mounted on the driver's instrument panel to allow direct observation of the system voltage.

## Electromagnetic Interference

Electromagnetic interference suppression shall be provided, as required, to satisfy the radiation limits specified in SAE 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)*.

## Wiring Diagram

A complete electrical wiring schematic of actual system shall be provided with finished apparatus. Similar or generic type electrical schematics shall NOT BE ACCEPTABLE.

## Low Voltage Electrical System Performance Test

A low voltage electrical system test certification shall be provided with delivered apparatus.

One (1)  
N0-11-2120

## **12 VOLT MULTIPLEX CONTROL CENTER**

The apparatus shall be equipped with a Weldon V-MUX multiplexed 12 volt electrical system that will provide complete diagnostic capability, No Exception. The system shall have the capability of delivering multiple signals via a CAN bus, utilizing specifications set forth by SAE J1939. The system shall be node based to maximize stability so that failure of one node does not affect the operation of the other nodes. The system shall use shielded twisted-pair wire for transmission of system function signals. The shielded wire shall provide protection against EMI and RFI noise interruptions.

The multiplex system shall be responsible for providing power management functions as well as load shedding. The warning light system shall be controlled by the multiplex system. The system shall be capable of displaying text and/or graphic messages on a display module. The system shall be based on solid-state technology and shall include self-contained diagnostic indicators.

### **Outputs:**

The outputs shall perform all the following items without added modules to perform any of the tasks;

1. **Load Shedding:** The system shall have the capability to load shed with 8 levels any output. This means you can specify which outputs (barring NFPA restrictions) you would like load shed. Level 1 12.9v, Level 2 12.5V, Level 3 - 12.1V, Level 4 - 11.7V, Level 5 11.3V, Level 6 10.9V, Level 7 10.5, Level 8 10.1. Unlike conventional load shedding devices you can assign a level to any or all outputs.
2. **Load Sequencing:** The system shall be able to sequence from 0 8 levels any output. With 0 being no delay and 1 being a 1 second delay, 2 being a 2 second delay and so on. Sequencing reduces the amount of voltage spikes and drops on your vehicle, and can help limit damage to your charging system.
3. **Output Device:** The system shall have solid-state output devices. Each solid-state output shall be a MOS-FET (Metal Oxide Semiconductor - Field Effect Transistors); MOS-FETs are solid-state devices with no

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moving parts to wear out. A typical relay when loaded to spec has a life of 100,000 cycles. The life of a FET is more than *100 times* that of a relay.

4. **Flashing Outputs:** The system shall be able to flash any output in either A or B phase, and logic is used to shut down needed outputs in park, or any one of several combined interlocks. The flash rate can be selected at either 80, 160 or 200 FPM. This means any light can be specified with a multiplex truck with no need to add flashers. Flashing outputs can also be used to warn of problems or other unique idea you may come up with.
5. **PWM:** The modules shall have the ability to PWM at some outputs so that a headlight PWM module is not needed.
6. **Diagnostics:** An output should be able to detect either a short or open circuit. The system should be able report in "real time" a text based message that points the maintenance person to a specific output.

## **Inputs:**

1. The inputs shall have the ability to switch by a ground or vbatt signal.
2. The inputs shall be filtered for noise suppression via hardware and software so that RF or dirty power will not trick an input into changing its status.

## **Auto-Throttle:**

The multiplex system shall be able to perform automatic high idle via a network gateway or by using an existing output on a module to provide the proper signals to an OEM Engine ECU. This task should be handled with existing inputs and outputs.

## **Displays:**

Displays shall be able to provide real time information regarding load shedding and system status, such as network traffic/errors or shorts and open circuits.

## **System Network:**

The multiplex system shall contain a Peer-to-Peer network. A Master Slave Type network is not suitable for this type of unit. A Peer-to-Peer network means that all the modules are equal on the network; a Master is not needed to tell other nodes when to talk, **No Exceptions.**

## **System Reliability:**

The multiplex system shall be able to perform in extreme temperature conditions, from 40° to +85° C (-40° to +185° F.) The system shall be sealed against the environment, moisture, humidity, salt or fluids such as diesel fuel, motor oil or brake fluid. The enclosures shall be rugged to withstand being mounted in various locations or compartments around the vehicle. The modules shall be protected from over voltage and reverse polarity.

## **WELDON CERTIFICATION**

A letter shall be provided with bid submittal that the Contractor has successfully completed the Weldon training requirements for Level 1 of the V-MUX Certified Supplier Program and is authorized to design, build, and service V-MUX electrical systems.

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**Original body was on custom chassis, refurbished body will be installed on a New Commercial M2 106 Plus**

One (1)  
N0-12-0005

## CAB CONSOLE

A center cab console shall be provided between the Driver's and Officer's seats extending to rear wall of cab. Console shall be as large as possible and fabricated of 1/8" smooth aluminum. A textured powder coat paint finish shall be provided for durability and finished appearance.

Console shall include;

One (1)  
N0-12-0012

- 7) Forward section of cab console shall include;

One (1)  
N0-11-6115

- 8) **MULTIPLEX SYSTEM INTERFACE DISPLAY** Weldon V-MUX Vista IV multiplex system interface display(s) with push-button control shall be provided in cab easily accessible to driver and/or passenger. The full-color Vista interface display allows the user to control warning and scene lighting, HVAC controls (when specified), and view on-board diagnostics including service information. This display has a wide operating temperature range, automatic screen switching in response to current conditions, and a sleep mode option to eliminate night glare. The following features shall be included;
- 800 x 480 resolution
  - = Four video ports
  - Flash updates with USB memory stick
  - Display inside and outside temperature (when specified)
  - Automatic climate control (when specified)
  - 100% Configurable (OEM Level)
  - Field re-programmable
  - Peer to peer network
  - On-board diagnostics / service information
  - Colors change to indicate button status
  - Video Ready for: Backup camera, Thermal camera, DVD, GPS...

## **New Weldon Vista IV Display**

One (1)  
N0-12-0020

- Forward section, driver side of cab console shall include;

One (1)  
N0-14-6001

- No components provided at this position.

One (1)  
N0-12-0022

- Forward section, officer side of cab console shall include;

One (1)  
N0-14-6001

- No components provided at this position.

One (1)  
N0-12-0030

10023-0002

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- One (1)  
10-S5-0122
- Cab console, panel position forward shall include;
- There shall be one (1) communications radio and/or siren 3" filler plate(s) with black powdercoat paint finish provided for future radio/siren location in specified console.

One (1)  
N2-22-1100

## **ELECTRONIC SIREN**

One (1) Whelen model 295SLSA1 electronic siren control with selectable 100 or 200 watt output, hands-free operation, user selectable siren tones, park kill, and standard hard wired microphone shall be provided and installed in cab within easy reach of Driver. Siren power shall be wired through the master warning light switch.

### **New electronic siren**

One (1)  
10-S5-0120

- There shall be one (1) communications radio and/or siren 3" recess mount(s) with black powdercoat paint finish in specified console.

One (1)  
N2-30-1010

The specified siren functions shall be controlled by siren mounted switches.

One (1)  
N0-12-0032

- Cab console, panel position center shall include;

One (1)  
10-S5-0122

- There shall be one (1) communications radio and/or siren 3" filler plate(s) with black powdercoat paint finish provided for future radio/siren location in specified console.

One (1)  
N0-12-0034

- Cab console, panel position rearward shall include;

One (1)  
10-S5-0122

- There shall be one (1) communications radio and/or siren 3" filler plate(s) with black powdercoat paint finish provided for future radio/siren location in specified console.

One (1)  
N0-18-1100

## **BATTERY SYSTEM**

Any body builder supplied battery connections shall be heavy duty type with cables terminating in heat shrink loom. Heavy duty battery cables shall provide maximum power to the electrical system. Where required, the cables shall be shielded from exhaust tubing and the muffler. Large rubber grommets shall be provided where cables enter the battery compartment.

Where an enclosed battery compartment is provided, it shall be ventilated to the exterior to prevent the buildup of heat and explosive fumes. The batteries shall be protected against vibration and temperatures that exceed the battery manufacturer's recommendation.

One (1)  
N0-18-2300

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## **BATTERY SWITCH**

One (1) battery "On/Off" switch shall be provided and located in cab within easy reach of Driver.

One (1)  
N0-18-2390

- A green "BATTERY ON" pilot light shall be visible from the driver's position.

One (1)  
N0-18-3100

## **BATTERY SOLENOID**

Battery switch shall consist of a minimum 200 ampere, constant duty solenoid to feed from positive side of battery.

One (1)  
N0-19-2110

## **BATTERY CHARGER**

One (1) Newmar model PT-80 battery charger shall be provided ideal for charging multiple battery bank systems. The Newmar Phase Three "Smart" battery charging technology provides significant benefits over traditional float chargers whose output voltage droops under heavy loads, and fails to attain proper voltage levels recommended by battery manufactures as part of a proper charge cycle. These issues are particular significant in Emergency Vehicle applications where rapid recharge is required while powering DC loads, and reliable service life of batteries is critical. PT Series chargers feature multiple isolated outputs to charge independent battery banks.

Features;

- "Smart" circuitry provides three stage charging—bulk, absorption, float
- Gel-Cell/Flooded Lead-acid/AGM battery type switch selects optimum charge/float voltages
- Multiple isolated outputs - charge independent battery banks\*
- Optional sensor adjusts output voltage based on battery temperature\*
- Current limiting - charges dead batteries without overload
- Use as a power supply; can power Radios/MDT's without a battery in line
- Built to last—rugged stainless steel case with circuitry hardened for hostile environments
- Remote meter included

## **New Battery Charger**

One (1)  
N0-19-A130

## **SHORE POWER INLET**

One (1) Kussmaul 120 VAC, 30 amp Super Auto-Eject shore power inlet(s) shall be provided. The shore power connection shall automatically disengage from vehicle when chassis ignition is engaged.

The protective ground from the shoreline inlet shall be bonded to the vehicle frame.

- The outlet cover shall be yellow.

## **New Auto Eject**

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One (1)  
N0-19-A30A

- Auto eject inlet cover color shall be yellow.

### **New Auto Eject cover**

One (1)  
N0-19-A330

- The shore power inlet shall be located on the streetside rear of the body.

One (1)  
N0-25-B110

### **REAR VIEW CAMERA**

There shall be one (1) ASA Voyager rear observation camera system provided and installed on completed unit. The system shall include one (1) model VCMS155 high resolution box style camera with white housing installed on rear of body.

### **New Rearview Camera**

One (1)  
N0-25-C130

The camera(s) shall be wired to the cab/chassis supplied single multiplex display. The rear camera shall activate when the transmission is placed in reverse. If a right camera is provided it shall activate with the right side turn signal and if a left camera is provided it shall activate with the left side turn signal. All camera(s) shall also be activated by a button on the display(s).

Eight (8)  
N0-AA-C105

### **INTERIOR LED LIGHTS**

Eight (8) OnScene Solution model #70154, 10" x 10" x 7/8", 10-30 VDC, surface white LED light(s) with clear lens shall be provided throughout the vehicle. In addition light(s) will be capable of a five (5) second delay after switching off.

The light(s) shall be switched with high/low intensity setting at the entry door(s). An Innovative Controls black back-lit switch panel shall be provided to control specified lighting or other control switching.

### **New Ceiling LED Lighting**

One (1)

N0-AA-C107

### **UNDER CABINET 120V LIGHTING**

### **New 120v LED equivalent bulb**

One (1)  
N1-10-1605

### **TAIL LIGHTS**

Rear body tail lights shall be vertically mounted and located per Federal Motor Vehicle Safety Standards, FMVSS and Canadian Motor Vehicle Safety Standards CMVSS. The following lights shall be provided;

- Two (2) Whelen 604T amber LED sequential arrow turn signal lights, amber lens
- Two (2) Whelen 60BTT red LED brake and tail lights, red lens
- Two (2) Whelen 604BU white LED back-up lights, clear lens

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## **New LED Tail Lights**

Six (6)  
N3-10-1221

Each light shall have a chrome flange.

One (1)  
N1-12-1110

## **MIDSHIP MARKER/TURN SIGNAL**

Two (2) Whelen model T0A00MAR 2" round amber LED midship body clearance marker/turn signal lights shall be provided and installed, one (1) light on each side of the body, in forward wheel well of rear axle. Midship marker/turn lights shall be wired to the headlight circuit of the chassis.

## **New LED side marker/turn signal and reflectors.**

One (1)  
N1-12-2100

## **MARKER LIGHTS**

The body shall be equipped with all necessary side and rear clearance lights and reflectors in accordance with Federal Motor Vehicle Safety Standards (FMVSS) and Canadian Motor Vehicle Safety Standards (CMVSS). Clearance lights on body shall be connected to the clearance light circuit of the chassis.

## **New Marker Lights**

One (1)  
N1-12-4200

## **LICENSE PLATE LIGHT**

One (1) Arrow #437 chrome plated LED license plate light shall be installed on the rear of the body. License plate light shall be wired to the headlight circuit of chassis. A fastener system shall be provided for license plate installation.

## **New LED License Plate Light**

Four (4)  
N4-20-2102

## **SIDE SCENE LIGHTS**

There shall be four (4) Whelen model 900 Super-LED® , 9" x 7" surface mounted scene lights provided on the upper body. Light quantity shall be divided equally per side. Each light shall have a chrome flange.

Two (2) switches shall be provided, one (1) for the streetside scene lights, and one (1) for the curbside scene lights.

## **New Side Scene Lights**

Four (4)  
N4-20-0033

The lights shall be controlled at the multiplex display(s) in the cab.

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One (1)  
N4-20-B102

## **REAR LED SCENE LIGHTS**

Two (2) Whelen model 900 Super-LED®, 9" x 7" surface mounted scene lights shall be provided on the upper rear body to light the work area immediately behind the vehicle. Each light shall have a chrome flange.

The above scene lights shall light to a level of at least 3 fc (30 lx), measured at 25 equally spaced points on a 2.5 ft (750 mm) grid with in a 10 ft x 10 ft (3 m x 3m) square to the rear of vehicle.

## **New Rear Scene Lights**

One (1)  
N4-20-0033

The lights shall be controlled at the multiplex display(s) in the cab.

One (1)  
N4-23-1100

The rear scene lights shall also be activated when the apparatus is in reverse.

One (1)  
N5-05-1600

## **WARNING LIGHT PACKAGE**

One (1)  
N5-09-1100

Each apparatus shall have a system of optical warning devices that meets or exceeds the requirements of this section.

The optical warning system shall consist of an upper and a lower warning level. The requirements for each level shall be met by the warning devices in that particular level without consideration of the warning devices in the other level.

For the purposes of defining and measuring the required optical performance, the upper and lower warning levels shall be divided into four (4) warning zones. The four zones shall be determined by lines drawn through the geometric center of the apparatus at 45 degrees to a line drawn lengthwise through the geometric center of the apparatus. The four (4) zones shall be designated A, B, C, and D in a clockwise direction, with zone A to the front of the apparatus.

Each optical warning device shall be installed on the apparatus and connected to the apparatus's electrical system in accordance with the requirements of this standard and the requirements of the manufacturer of the device.

A master optical warning system switch that energizes all the optical warning devices shall be provided.

The optical warning system on the fire apparatus shall be capable of two (2) separate signaling modes during emergency operations. One (1) mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right-of-way. One (1) mode shall signal that the apparatus is stopped and is blocking the right-of-way. The use of some or all of the same warning lights shall be permitted for both modes provided the other requirements of this chapter are met.

A switching system shall be provided that senses the position of the parking brake or the park position of an automatic transmission. When the master optical warning system switch is closed and the parking brake is released or the automatic transmission is not in park, the warning devices signaling the call for

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the right-of-way shall be energized. When the master optical warning system switch is closed and the parking brake is on or the automatic transmission is in park, the warning devices signaling the blockage of the right-of-way shall be energized. The system shall be permitted to have a method of modifying the two (2) signaling modes.

The optical warning devices shall be constructed or arranged so as to avoid the projection of light, either directly or through mirrors, into any driving or crew compartment(s). The front optical warning devices shall be placed so as to maintain the maximum possible separation from the headlights.

Steadily burning, non flashing optical sources shall be permitted to be used.

One (1)  
N5-09-1201

Control System: Whelen

One (1)  
N5-20-1000

## UPPER LEVEL OPTICAL WARNING DEVICES

The upper-level optical warning devices shall be mounted as high and as close to the corner points of the apparatus as is practical to define the clearance lines of the apparatus. The upper-level optical warning devices shall not be mounted above the maximum height, specified by the device manufacturer.

One (1)  
N5-20-2000

## ZONE A - FRONT WARNING LIGHTS

See Chassis Modification section for cab mounted warning lights.

One (1)  
N5-20-3000

## ZONES B AND D - SIDE WARNING LIGHTS

## UPPER REAR CORNER WARNING LIGHTS

One (1)  
N3-05-H401

There shall be two (2) Whelen 900 Series, linear super-LED Light(s) with full-fill optic provided, one (1) each side. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities.

Each Light shall have:

- Red LEDs
- Red Lens

**New**

Two (2)  
N3-10-1241

Each light shall have a chrome flange.

**New**

One (1)  
N3-15-H131

Flash Pattern shall be (factory default) Whelen ACTION SCAN

One (1)  
N4-20-0033

The lights shall be controlled at the multiplex display(s) in the cab.

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One (1)  
N5-20-3500

## UPPER FORWARD CORNER WARNING LIGHTS

One (1)  
N3-05-H401

There shall be two (2) Whelen 900 Series, linear super-LED Light(s) with full-fill optic provided, one (1) each side. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities.

Each Light shall have:

- Red LEDs
- Red Lens

**New**

Two (2)  
N3-10-1241

Each light shall have a chrome flange.

**New**

One (1)  
N3-15-H131

Flash Pattern shall be (factory default) Whelen ACTION SCAN

One (1)  
N4-20-0033

The lights shall be controlled at the multiplex display(s) in the cab.

One (1)  
N5-20-4000

## ZONE C - REAR WARNING LIGHTS

One (1)  
N3-05-H401

There shall be two (2) Whelen 900 Series, linear super-LED Light(s) with full-fill optic provided, one (1) each side. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities.

Each Light shall have:

- Red LEDs
- Red Lens

**New**

Two (2)  
N3-10-1241

Each light shall have a chrome flange.

**New**

One (1)  
N3-15-H131

Flash Pattern shall be (factory default) Whelen ACTION SCAN

One (1)  
N4-20-0033

The lights shall be controlled at the multiplex display(s) in the cab.

One (1)  
N3-05-H701

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There shall be two (2) Whelen 700 linear super-LED Light(s) with full-fill optic provided, one (1) each side. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities.

Each Light shall have:

- Red LEDs
- Red Lens

**New**

Two (2)  
N3-10-1231

Each light shall have a chrome flange.

**New**

One (1)  
N3-15-H131

Flash Pattern shall be (factory default) Whelen ACTION SCAN

One (1)  
N4-20-0033

The lights shall be controlled at the multiplex display(s) in the cab.

One (1)  
N3-05-H705

There shall be two (2) Whelen 700 linear super-LED Light(s) with full-fill optic provided, one (1) each side. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities.

Each Light shall have:

- Amber LEDs
- Amber Lens

**New**

Two (2)  
N3-10-1231

Each light shall have a chrome flange.

**New**

One (1)  
N3-15-H131

Flash Pattern shall be (factory default) Whelen ACTION SCAN

One (1)  
N4-20-0033

The lights shall be controlled at the multiplex display(s) in the cab.

One (1)  
N6-20-1000

## **LOWER LEVEL OPTICAL WARNING DEVICES**

To define the clearance lines of the apparatus, the optical center of the lower-level optical warning devices in the front of the vehicle shall be mounted on or forward of the front axle centerline and as close to the front corner points of the apparatus as is practical.

The optical center of the lower-level optical warning devices at the rear of the vehicle shall be mounted on or behind the rear axle centerline and as close to the rear corners of the apparatus as is practical. The optical center of any lower-level device shall be between 18 in. and 62 in. (460 mm and 1600 mm) above level ground for large apparatus, and 18 in. and 48 in. (460 mm and 1600 mm) above level ground.

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A midship optical warning device shall be mounted right and the left sides of the apparatus if the distance between the front and rear lower-level optical devices exceeds 25 ft (7.6 m) at the optical center. Additional midship optical warning devices shall be required, where necessary, to maintain a horizontal distance between the centers of adjacent lower-level optical warning devices of 25 ft (7.6 m) or less. The optical center of any midship mounted optical warning device shall be between 18 in. and 62 in. (460 mm and 1600 mm) above level ground.

One (1)  
N6-20-2001

## ZONE A - FRONT WARNING LIGHTS, LOWER

See Chassis Modification section for cab mounted warning lights.

One (1)  
N6-20-3040

## ZONES B AND D - BODY LIGHT (BODY WHEELWELL AREA)

One (1)  
N3-05-H201

There shall be two (2) Whelen 600 Series, linear super-LED Light(s) with full-fill optic provided, one (1) each side.

Each light shall have:

- Red LED's
- Red Lens

**New**

Two (2)  
N3-10-1221

Each light shall have a chrome flange.

**New**

One (1)  
N3-15-H131

Flash Pattern shall be (factory default) Whelen ACTION SCAN

One (1)  
N4-20-0033

The lights shall be controlled at the multiplex display(s) in the cab.

One (1)  
N6-20-3060

## ZONES B AND D - BODY INTERSECTOR LIGHT (BODY REAR CORNERS)

One (1)  
N3-05-H201

There shall be two (2) Whelen 600 Series, linear super-LED Light(s) with full-fill optic provided, one (1) each side.

Each light shall have:

- Red LED's
- Red Lens

**New**

Two (2)  
N3-10-1221

Each light shall have a chrome flange.

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**New**

One (1)  
N3-15-H131

Flash Pattern shall be (factory default) Whelen ACTION SCAN

One (1)  
N4-20-0033

The lights shall be controlled at the multiplex display(s) in the cab.

One (1)  
N6-20-4000

**ZONE C - REAR WARNING LIGHTS (LOWER REAR CORNERS)**

One (1)  
N3-05-H701

There shall be two (2) Whelen 700 linear super-LED Light(s) with full-fill optic provided, one (1) each side. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities.

Each Light shall have:

- Red LEDs
- Red Lens

**New**

Two (2)  
N3-10-1231

Each light shall have a chrome flange.

One (1)  
N3-15-H131

Flash Pattern shall be (factory default) Whelen ACTION SCAN

One (1)  
N4-20-0033

The lights shall be controlled at the multiplex display(s) in the cab.

One (1)  
R0-05-1600 24

**LINE VOLTAGE ELECTRICAL SYSTEM**

One (1)  
R0-20-1020

**PTO GENERATOR**

The vehicle shall be equipped with a Marathon PTO generator system with a capacity of 25,000 watts at 120/240 VAC, 208/104 amps, single phase. Current frequency shall be stable at 60 hertz.

The transmission's PTO port and PTO, or the split shaft PTO, and all associated drive shaft components shall be rated to support the continuous duty torque requirements of the generator's continuous duty rating as stated on the power source nameplate.

Where the generator is driven by the chassis engine and transmission through a split shaft PTO, the driving compartment speedometer shall register when the generator drive system is engaged.

Where the generator is driven by the chassis engine and transmission through a split shaft PTO and a chassis transmission retarder is furnished, it shall be automatically disengaged for generator operations.

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The direct drive generator shall be mounted so that it does not change the ramp break over angle, angle of departure, or angle of approach as defined by other components, and it shall not extend into the ground clearance area.

The direct drive generator shall be mounted away from exhaust and muffler areas or provided with a heat shield to reduce operating temperatures in the generator area.

## **GENERATOR BONDING**

A minimum of four (4) 16" x 2 gauge copper ground straps shall be bolted to body sub-frame and chassis sub-frame for proper bonding of high voltage system. The conductor shall have a minimum amperage rating, as defined in 310.15, "Ampacities for Conductors Rated 0–2000 Volts," of *NFPA 70*, of 115 percent of the rated amperage on the power source specification label.

## **GENERATOR ENGAGEMENT**

A "Generator Engaged" indicator shall be provided in the driving compartment to indicate that the generator shift has been successfully completed.

An "OK to Operate Generator" indicator shall be provided in the driving compartment to indicate that the generator is engaged (if not always engaged), the transmission is in the proper gear (if required, automatic transmissions only), and the parking brake is engaged (if applicable).

An interlock system shall be provided to prevent advancement of the engine speed in the driving compartment or at any operator's panel unless the parking brake is engaged, and the transmission is in neutral or the output of the transmission is correctly connected to a pump or generator instead of the drive wheels.

## **WARRANTY PERIOD**

Provided such goods are operated and maintained in accordance with written instructions, this generator warrants that the PTO generators shall be free from defects in material and workmanship for a period of five (5) years or one thousand (1,000) hours, whichever comes first, from the date of delivery to the first purchaser.

## **New Generator**

One (1)  
R0-40-0030

## **GENERATOR CONTROL**

The generator shall be engaged at the multiplex display(s) in the cab.

One (1)  
R1-10-1110

## **GENERATOR MOUNTING**

The generator shall be mounted below the chassis frame rails. The generator mounting brackets shall be fabricated using steel plate and/or tubing and powder coat primed and painted black. The generator mounting shall be bolted to the side of the chassis frame rail and removable so that the generator can be lowered from under apparatus for service, if necessary. The generator case shall not extend below the bottom edge of the apparatus body.

One (1)

10023-0002

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R1-15-1610

## **MANUALS AND SCHEMATICS**

Two (2) complete manuals on parts list, maintenance, wiring schematics, hydraulic schematics, circuit boards, voltage regulator board and other components shall be provided on delivery.

One (1)  
R1-20-1101

## **POWER-TAKE-OFF GENERATOR DRIVE**

There shall be a "Hot Shift" power-take-off (PTO) installed on the transmission PTO opening of the chassis. The "Hot Shift" PTO is provided to allow the engagement of the PTO at higher engine RPM speeds. The PTO output shall be connected to the generator through hollow tube type driveline with heavy duty universals.

The engagement of the PTO shall be in the chassis cab with a rocker switch and red pilot light to note engagement of the PTO or via the V-Mux screen if so equipped.

The power supply to the PTO engagement control shall be wired to the parking brake and a neutral position transmission switch to prevent engagement unless the vehicle is stopped and transmission has been placed in neutral.

The installation of the engine, transmission, driven accessories (power takeoffs (PTO), etc.) shall meet the engine and transmission manufacturers' installation recommendations for the service intended.

One (1)  
R1-21-1012

Model part number shall be Chelsea 280 series.

## **New PTO**

One (1)  
R1-25-1120

## **ENGINE SPEED CONTROL**

An engine speed auxiliary control device (high idle switch or throttle) shall be installed to maintain a stable cycle output from generator when the apparatus is parked.

An interlock shall prevent the operation of the engine speed auxiliary control device unless the parking brake is engaged and the transmission is in neutral or park, or the parking brake is engaged and the engine is disengaged from the drive wheels.

The engine shall be prevented from regulating its own engine speed during times when engine rpm control is critical for consistent apparatus functions such as generator, water pump, or aerial operation.

One (1)  
R2-20-3110

## **CIRCUIT BREAKER BOX**

There shall be a Newmar 120/240, 100 Amp VAC distribution/breaker panel provided on completed vehicle. All circuit breakers shall be rated to the wire size and load demand of each circuit.

There shall be color coded LED indicator lights provided to indicate the status of each branch breaker.

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Each individual switch and all meters shall be back lit for identification in low light situations.

The panel shall have four (4) meters:

- One (1) to monitor frequency
- One (1) to monitor line voltage
- One (1) to monitor load current (amps)
- One (1) hour meter to register genset run time

Each circuit breaker shall be hydraulic/magnetic trip free style with a manual reset.

Shore power shall be wired to the vehicle main circuit breaker in the circuit breaker distribution panel and feed all 120/240 electrical circuits.

To protect both the generator and external shore power source from back feed, a 3-way manual switch shall be provided with specified Newmar generator distribution panel to cut-off the connection between the vehicle circuits and the generator when the external shore power source plug is in use. Switch shall be labeled "SHIP" - "OFF" - "SHORE".

The entire panel shall be mounted via a piano style hinge that allows the front panel to open for access to the breakers.

### **New Circuit Breakers**

One (1)  
R2-38-1100

#### **SHORE POWER INLET - BATTERY CHARGER**

One (1)  
R2-41-1300

Shore power shall be wired to all primary 120 VAC, 20 ampere electrical outlets on apparatus (maximum of two (2) circuits). Circuits shall be provided with circuit breaker protection with either generator or shore power providing power.

One (1)  
R2-38-1300

#### **SHORE POWER INLET - AIR CONDITIONER UNITS**

To protect both the generator and external power source from back feed, two (2) 120 volt, 30 ampere, 4PST auxiliary contact with safety interlock relay shall be installed. Relay shall cut-off the connection between the generator supply circuit and device circuits when shore power is connected.

Transfer equipment, including transfer switches, shall operate such that all ungrounded conductors of one power source are disconnected before any ungrounded conductors of the second power source are connected. The neutral conductor shall be switched through the transfer switch. The apparatus shall have a label permanently affixed at the power inlet that indicates the line voltage, and amperage.

One (1)  
N0-19-A105

#### **SHORE POWER INLET**

The shore power inlet for battery conditioner

One (1)  
N0-19-A330

The shore power inlet for HVAC shall be the rearward most receptacle.

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One (1)  
R2-41-1500

Shore power shall be wired to the specified 120 VAC air conditioning unit(s), (maximum of two (2) units).

One (1)  
R2-A0-1100

## **120/240 VAC OUTLETS AND CIRCUITS**

The generator and or shore power shall supply the 120/240 volt electrical equipment and outlets outlined below. Proper circuit protection shall be installed as noted:

One (1)  
R2-B0-1100

- Two (2) 120 volt exterior outlets, one (1) each side near rear wheel well area.

Two (2)  
R2-D0-1200

- The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).

One (1)  
R2-B0-2100

- Two (2) 120 volt exterior outlets, one (1) each side rear of body.

Two (2)  
R2-D1-1200

- The outlet receptacle(s) shall be 20 amp, twist-lock (NEMA L5-20R).

One (1)  
R0-94-1110

## **INVERTER**

A Newmar model Auto Power 3000, uses 12 volt battery power to produce pure sine wave 120 VAC power in mobile applications, and recharges vehicle batteries when an external AC source is available. The circuitry and construction are field-proven to provide reliable power in harsh environments and in rugged mobile and industrial applications.

- 3000 Watt Continuous / 5500 Watt surge / 150 Amp Max, Pure Sine
- Built - in, high output 3 stage charger for rapid battery bank replenishment - programmable for Gel, lead acid or AGM battery
- Automatic electronic short circuit/overload protection
- Automatic over temperature shutdown, and AC output circuit breaker(s)
- Automatic low battery shutdown at 10.5VDC with in-rush delay
- Auto Sleep Mode when the LED Display Panel is used, the inverter can be programmed to go to sleep after no load is detected over programmed interval
- Heavy duty powder coated aluminum construction and conformal coated circuitry
- 3 year warranty
- Remote LCD Monitor & Control Panel, TQ-DSP-12/24

### **Inverter:**

Output Power: 3000 Watts (Cont.) / 5500 Watts (Surge)

Output Current: 25 Amps AC Cont., 80 Amps Peak

Output Voltage: 120 +/- 3%

Output Frequency: 60 +/- .05%

Output Waveform: Pure Sine < 5% THD

Input Current: Up to 263 Amps DC Cont.

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Input Voltage: 10.5 to 17.0 VDC

**Charger:**

Output Current: 3 Stage, up to 150 Amps DC

Input Current: Up to 22 Amps VAC

**General:**

Operating Temperature: 0 F to 149 F, (-20 C to 65 C)

Efficiency: Up to 88%

Weight: 68 lbs

Warranty: 3 Years

**New Inverter**

Three (3)  
R0-94-1210

**AUXILIARY BATTERY SUPPLY**

There shall be three (3) deep cycle batteries provided as the 12 VDC power source for any auxiliary uses. The batteries shall incorporate Absorbent Glass Mat (AGM) technology for efficient gas recombination of up to 99% and freedom from electrolyte maintenance. The batteries shall be mounted in a stainless steel pan with hold down provisions for mobile application.

**New Deep Cycle Batteries**

One (1)  
R0-94-1310

**INVERTER BATTERY SUPPLY - VSR**

There shall be a BEP model 701-MDVS motorized voltage sensitive relay (VSR) provided with the specified inverter battery system. The VSR allows both the starting and inverter battery systems to be charged at the same time. When the engine is started and the starting batteries reaches 13.7 VDC, the VSR engages allowing both battery banks (starting and inverter) to be charged simultaneously. When the voltage drops below 12.8 VDC (e.g. the engine is stopped), the VSR disengages, separating the batteries.

This system eliminates the possibility of draining the starting batteries and protects sensitive electronic equipment powered from the house battery from harmful engine start up spikes. System shall be protected from overcharging from alternator with a 300 amp fuse. The VSR shall have a limited 5 year warranty.

**New Inverter Display**

One (1)  
R2-38-1200

**SHORE POWER INLET - INVERTER**

A transfer switch shall be required to isolate one power source from the other where a circuit(s) is intended to be supplied from more than one power source. To protect both the generator and external power source from back feed, two (2) 120 volt, 30 ampere, 4PST auxiliary contact with safety interlock relay shall be installed. Relay shall cut-off the connection between the generator supply circuit and device circuits when shore power is connected.

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Transfer equipment, including transfer switches, shall operate such that all ungrounded conductors of one power source are disconnected before any ungrounded conductors of the second power source are connected. The neutral conductor shall be switched through the transfer switch. The apparatus shall have a label permanently affixed at the power inlet that indicates the line voltage, and amperage.

One (1)  
N0-19-A130

## **SHORE POWER INLET**

One (1) Kussmaul 120 VAC, 30 amp Super Auto-Eject shore power inlet(s) shall be provided. The shore power connection shall automatically disengage from vehicle when chassis ignition is engaged.

The protective ground from the shoreline inlet shall be bonded to the vehicle frame.

- The outlet cover shall be yellow.

## **New Auto Eject**

One (1)  
N0-19-A30A

- Auto eject inlet cover color shall be yellow.

## **New Cover**

One (1)  
N0-19-A330

- The shore power inlet shall be located on the streetside rear of the body.

One (1)  
R2-41-1400

Shore power shall be wired to the specified 120 volt inverter.

One (1)  
R2-10-1600 24

## **LINE VOLTAGE ELECTRICAL SYSTEM**

All components, equipment, and installation procedures shall conform to *NFPA 70, National Electrical Code*, except where superseded by the requirements of this chapter. Where the requirements of this chapter differ from those in *NFPA 70*, the requirements in this chapter shall apply.

One (1)  
R2-10-4100

## **Receptacle Label**

Each receptacle shall be marked with a label indicating the nominal line voltage (120 volts or 240 volts) and the current rating in amps of the circuit. If the receptacle is DC or other than single phase, that information shall also be marked on the label.

All receptacles and electrical inlet devices shall be listed to UL 498, *Standard for Safety Attachment Plugs and Receptacles*, or other recognized performance standards.

Receptacles used for DC voltages shall be rated for DC service.

## **New labels**

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One (1)  
R2-10-5100

## Wiring Schematics

An "As-Built" Wiring diagrams for line voltage systems shall be provided to include the following information;

- Pictorial representations of circuit logic for all electrical components and wiring
- Circuit identification
- Connector pin identification
- (i) Zone location of electrical components
- (j) Safety interlocks
- (k) Alternator–battery power distribution circuits
- (l) Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems

One (1)  
T1-06-2000

## VIDEO MONITORS

No video monitors shall be required on completed unit.

One (1)  
T1-06-3300

## VIDEO CONFERENCING

No video conferencing system shall be required on completed unit.

One (1)  
T1-07-4000

## VIDEO/AUDIO RECORDER

No video/audio recording system shall be required on completed unit.

One (1)  
T1-08-1005

## AUDIO/VIDEO CONTROL SYSTEM

No audio/video control system shall be required on completed unit.

One (1)  
T1-09-1000

## RADIO AND COMMUNICATION SYSTEM

One (1)  
T1-10-1500

Radio: 9 Radio Antennas

One (1)  
X0-02-1011

## EQUIPMENT PAYLOAD WEIGHT ALLOWANCE

In compliance with NFPA 1900 standards, the special service vehicle shall be designed for an equipment loading allowance of 4,000 lbs. of provided equipment based on a 30,001 - 40,000 pound gross vehicle weight rating.

One (1)  
X0-03-1010

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## EQUIPMENT

The following equipment shall be furnished with the completed special service vehicle;

One (1)  
X0-05-1100

- One (1) container of assorted stainless steel nuts, bolts, screws and washers used in the construction of the apparatus shall be provided with the completed apparatus.

One (1)  
X0-10-1500

- There shall be two (2) Zico SAC-44-E NFPA approved folding aluminum wheel chocks provided for 44" diameter tires that together will hold the vehicle when loaded to its GVWR or GCWR, on a hard surface with a 20 % grade, with the transmission in neutral, and the parking brake released.

### **New Wheel Chocs**

One (1)  
X0-10-A110

- The wheel chock(s) shall be mounted behind rear wheels, below body on streetside.

Two (2)  
X0-60-1102

- Two (2) Streamlight FireBox LED flashlight(s) with shoulder strap shall be provided be provided with 540/330 lumen output and 7/15 hour run time.. Each flashlight shall be orange in color and have a 12 volt DC charger and vehicle mount kit. Each flashlight shall have a LED E-Spot spotlight style bulbs and reflectors with 2 ultra-bright LED taillights. The flashlight(s) shall be wired to battery direct unless otherwise specified by .

### **New Flashlights**

One (1)  
X1-99-1000

## REMAINING NFPA MINOR EQUIPMENT BY PURCHASER

All other minor equipment not specified above, but recommended by NFPA 1900 for special service vehicles section A.8.4 shall be supplied and mounted by before the unit is placed in emergency service.