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 $4,000,000.00 each occurrence, Aggregate of $4,000,000.00.
Garage Keepers Liability coverage of $4,000,000.00 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.

INTERNET IN-PROCESS SITE

The manufacturer shall post and maintain a website where the Gunnison Fire Department 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.

VEHICLE STABILITY SUPPLIED WITH CAB/CHASSIS

The cab/chassis shall be 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.

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 (O°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:

1) Accelerating from 0 to 35 mph (55 km/hr) within 25 seconds on a 0 percent grade
2) Attaining a speed of 50 mph (80 km/hr) on a 0 percent grade
3) 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

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.

FIRE APPARATUS DOCUMENTATION

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

1) The manufacturers record of apparatus construction details, including the following documents:

   a) Owner's name and address
   b) Apparatus manufacturer, model, and serial number
   c) Chassis make, model, and serial number
   d) GAWR of front and rear axles and GVWR
   e) Front tire size and total rated capacity in pounds (kilograms)
   f) Rear tire size and total rated capacity in pounds (kilograms)
   g) Chassis weight distribution in pounds (kilograms) with water and manufacturer-mounted equipment (front and rear)
   h) 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
   i) Type of fuel and fuel tank capacity
   j) Electrical system voltage and alternator output in amps
   k) Battery make, model, and capacity in cold cranking amps (CCA)
   l) Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio
   m) Ratios of all driving axles
   n) Maximum governed road speed
   o) Pump make, model, rated capacity in gallons per minute (liters per minute where applicable), maximum discharge pressure capability rating, and serial number
   p) Pump transmission make, model, serial number, and gear ratio
   q) Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number
   r) Water tank certified capacity in gallons or liters
   s) Foam tank (if provided) certified capacity in gallons (liters)
   t) Aerial device type, rated vertical height in feet (meters), rated horizontal reach in feet (meters), and rated capacity in pounds (kilograms)
   u) Paint manufacturer and paint number(s)
   v) Company name and signature of responsible company representative
   w) 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 13.8.16)*

3) Siren manufacturer's certification of the siren *(see 13.9.1.1)*
4) Written load analysis and results of the electrical system performance tests *(see 13.14.1 and Section 13.15)*
5) Certification of slip resistance of all stepping, standing, and walking surfaces *(see 15.7.4.5)*
6) If the apparatus has a fire pump, the pump manufacturer's certification of suction capability *(see 16.2.4.1)*
7) If the apparatus is equipped with a fire pump and special conditions are specified by the purchaser, the pump manufacturer's certification of suction capacity under the special conditions *(see 16.2.4.2)*
8) If the apparatus has a fire pump, a copy of the apparatus manufacturer's approval for stationary pumping applications *(see 16.3.1)*
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 16.3.2.2)*
10) If the apparatus has a fire pump, the pump manufacturer's certification of the hydrostatic test *(see 16.5.2.2)*
11) If the apparatus has a fire pump with a maximum discharge pressure capability rating that exceeds the hydrostatic test pressure of 16.5.2.1, the pump manufacturer's certification of the hydrodynamic test
12) If the apparatus has a fire pump, the certification of inspection and test for the fire pump *(see 16.13.1.1.5 or 16.13.1.2.4 as applicable)*
13) If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test *(see Section 17.13)*
14) When the apparatus is equipped with a water tank, the certification of water tank capacity *(see Section 18.6)*
15) If the apparatus has an aerial device, the certification of inspection and test for the aerial device *(see Section 19.24)*
16) If the apparatus has an aerial device, all the technical information required for inspections to comply with NFPA 1911
17) If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy *(see 20.10.4.2)* and the final installer's certification the foam proportioning system meets this standard *(see 20.11.2)*
18) If the system has a CAFS, the documentation of the manufacturer's pre delivery tests *(see Section 21.9)*
19) If the apparatus has a line voltage power source, the certification of the test for the power source *(see 22.15.7.2)*
20) If the apparatus is equipped with an air system, air tank certificates *(see 24.5.1.2)*, the SCBA fill station certification *(see 24.9.6)*, and the results of the testing of the air system installation *(see 24.14.5 and 24.15.4)*
21) Any other required manufacturer test data or reports

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:

1) Manufacturer's name and address
2) Country of manufacture
3) Source for service and technical information
4) Parts replacement information
5) Descriptions, specifications, and ratings of the chassis, pump (if applicable), and aerial device (if applicable)
6) 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

7) Lubrication charts
8) Operating instructions for the chassis, any major components such as a pump or aerial device, and any auxiliary systems
9) Precautions related to multiple configurations of aerial devices, if applicable
10) Instructions regarding the frequency and procedure for recommended maintenance
11) Overall apparatus operating instructions
12) Safety considerations
13) Limitations of use
14) Inspection procedures
15) Recommended service procedures
16) Troubleshooting guide
17) Apparatus body, chassis and other component manufacturer's warranties
18) Special data required by this standard
19) A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus
20) One copy of the latest edition of FAMA's *Fire Apparatus Safety Guide*

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.

NFPA REQUIRED DOCUMENTATION FORMAT - USB FLASH DRIVE

The vehicle construction details and the operations and service documentation as required per NFPA 1901 latest edition shall be provided on a USB Flash Drive. These manuals shall be divided into sections for ease of reference. There shall be two (2) USB flash drives provided with the completed vehicle.

There shall be one (1) printed copies of the manual provided with the apparatus.

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.

STATEMENTOF EXCEPTIONS

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:

1) A separate specification of the section of the applicable standard for which compliance is lacking
2) A description of the particular aspect of the apparatus that is not in compliance therewith or required equipment that is missing
3) A description of the further changes or modifications to the delivered apparatus that must be completed to achieve full compliance
4) 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.

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:

1. The chassis, body and tank(s)
2. Full fuel, lubricant, and other chassis or component fluid tanks or reservoirs
3. Full water and other agent tanks
4. *250 lb (114 kg) in each seating position
5. Fixed equipment such as pumps, aerial devices, generators, reels and air systems as installed
6. Ground ladders, suction hose, designed hose load in their hose beds and on their reels
7. 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.

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.

			Equipment Allowance	
Apparatus Type	**Equip. Storage Area**	**Apparatus Size**	**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

TESTING

ROAD TEST

Road test shall be conducted in accordance with this section to verify that the completed apparatus is capable of compliance with Roadability Section.

The tests shall be conducted at a location and in a manner that does not violate local, state or provincial or federal traffic laws.

The tests shall be conducted on dry, level, paved roads that are in good condition. The apparatus shall be loaded to its estimated in service weight.

The engine shall not operate in excess of the maximum governed speed. Acceleration tests shall consist of two runs in opposite directions over the same route. The fire apparatus shall attain a speed of 35 mph (55 km/hr) from a standing start within 25 seconds. The fire apparatus shall attain a minimum top speed of 50 mph (80 km/hr).

If the apparatus is equipped with an auxiliary braking system, the Body Manufacturer shall road test the system to confirm that the system is functioning as intended by the auxiliary braking system manufacturer.

If the apparatus is equipped with an air brake system, the service brakes shall bring the apparatus, when loaded to its GVWR, to a complete stop from an initial speed of 20 mph (32.2 km/hr) in a distance not exceeding 35 ft (10.7 m) by actual measurement on a paved, level, dry surface road that is free of loose material, oil or grease.

If the apparatus is equipped with a hydraulic brake system, the service brakes shall bring the apparatus, when loaded to its GVWR, to a complete stop from an initial speed of 30 mph (48.2 km/hr) in a distance not exceeding 88 ft (26.8 m) by actual measurement on a paved, level, dry surface road that is free of loose material, oil or grease.

LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST

The vehicles low voltage electrical system shall be tested and certified by the manufacturer. 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 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:

1) Documentation of the electrical system performance tests
2) A written electrical load analysis, including the following:
   a) The nameplate rating of the alternator
   b) The alternator rating
   c) Each of the component loads specified that make up the minimum continuous electrical load
   d) Additional electrical loads that, when added to the minimum continuous electrical load, determine the total continuous electrical load
   e) Each individual intermittent electrical load

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 Gunnison Fire Department on all warranty work.

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.

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.

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.

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.

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.**

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.

CONSTRUCTION PERIOD

The completed vehicle shall be delivered within four hundred (400) days after receipt of a purchase order or contract.

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 immediate written notice to Gunnison Fire Department as to delays and to what extent these delays have in completing vehicle within the stated construction time period.

OVERALL HEIGHT REQUIREMENT

The overall height (OAH) of the vehicle shall be less than 96" from the ground. This measurement shall be taken on flat ground with the tires properly inflated, in the unloaded condition, at that highest point of the vehicle.

OVERALL LENGTH

The overall length (OAL) of the vehicle shall be less than 316" (26' - 4")

OVERALL WIDTH

The overall width (OAW) of the body at drip rails shall be 98" (8' - 2"), and body shall be 96" (8' - 0").

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 1901.

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 1901.

PRE-CONSTRUCTION CONFERENCE

A pre-construction conference shall be required at the Contractor's factory for three (3) personnel from the Gunnison Fire Department to finalize all construction details prior to manufacturing.

The Contractor shall at his/her expense, shall provide lodging, and meal expenses during the pre-construction conference. Travel expenses will be responsibility of Gunnison Fire Department.

PRE-PAINT CONFERENCE

A pre-paint conference shall be required at the Contractor's factory for three (3) personnel from the Gunnison Fire Department to inspect the vehicle and construction details prior to the painting process.

The Contractor shall at his/her expense, shall provide lodging, and meal expenses during the pre-construction conference. Travel expenses will be responsibility of Gunnison Fire Department.

FINAL INSPECTION CONFERENCE

A final inspection conference shall be required at the Contractor's factory for three (3) personnel from the Gunnison Fire Department to inspect the vehicle and construction details prior to shipment of the completed vehicle. This inspection shall take place after any specified striping and lettering is installed.

The Contractor shall at his/her expense, shall provide lodging, and meal expenses during the pre-construction conference. Travel expenses will be responsibility of Gunnison Fire Department.

DELIVERY AND DEMONSTRATION

The Contractor shall be responsible for the delivery of the completed unit to the Gunnison Fire Department's location. On initial delivery of the apparatus, the Contractor shall supply a qualified representative to demonstrate

the apparatus and provide initial instruction to representatives of the Gunnison Fire Department regarding the operation, care and maintenance of the apparatus and equipment supplied at Gunnison Fire Department location.

The Delivery Engineer shall set delivery and instruction schedule with the person appointed by Gunnison Fire Department.

After delivery of the apparatus, the Gunnison Fire Department shall be responsible for ongoing training of its personnel to proficiency regarding the proper and safe use of the apparatus and associated equipment.

CAB CHASSIS SPECIFICATIONS

MANUFACTURER: Ford

Model: 2018 (OR LATEST MODEL YEAR) F550 Super Duty, 4-Door Crew Cab, 4 x 4

G.V.W.R.: 19,500 lbs.

FRONT AXLE:

Rating: 7,500 lbs.

Type: Dana Super 60 mono beam drive axle, or equal

Shocks: Heavy duty

Front Springs: Mono-beam non-independent and Anti-Roll bar, 7,500 lb. capacity

Steering: Power

REAR AXLE:

Rating: 14,700 lbs.

Type: Dana S130 or equal full floating with 4.88 ratio, Limited-slip, and Anti-Roll bar

Rear Springs: Two-stage, 14,700 lb. capacity

Shocks: Heavy duty

BRAKES:

Type: Four-wheel power vented disc brakes with ABS and Traction Control Systems

Parking Brake: Cable actuation, foot operated, hand release

TIRES AND WHEELS:

Front Tires: (2) LT225/70R 19.5, Traction Tread

Rear Tires: (4) LT225/70R 19.5, Traction Tread

Wheels: 19.5", 10-hole steel disc, Argent Painted

FRAME:

Type: Single channel

Rating: 36,000 PSI steel, 10.1 section modulus

CHASSIS SPECIFICATIONS

ENGINE:

Manufacturer: Ford

Model: 6.7 L Power Stroke Turbo Diesel

Rating: 330 GHP @ 2,600 RPM, 750 GT @ 2,000 RPM

Engine Equipment: Operator Command Regeneration, 50 State Emissions with Clean Idle Decal, Heavy duty dry type air cleaner, fuel filter, horizontal muffler and exhaust, block heater.

TRANSMISSION:

Manufacturer: Ford HD TorqShift

Type: Automatic with PTO provisions

Speeds: 6 - speed forward with overdrive
1 - speed reverse

Transfer Case: New Venture 273 or equal, electric shift, manual hubs

ELECTRICAL:

Alternator: 377 amp, Dual

Battery: Dual maintenance free 78 amp/hr, 750 CCA each

FUEL TANK:

Size: 40 total gallons

Location: Mid ship mounted aft of rear axle

Upfitter Interface Module

DEF TANK:

Size: 6 total gallons

Location: Mid ship frame mounted

CAB SPECIFICATIONS

Cab Type: Standard Cab with XL trim group

Cab Equipment: Fire/Rescue Prep Package, Heater and defroster, air conditioning, dome light, sun visor, electric horn, all clearance lights and identification lights required by State and Federal Department of Transportation and all standard equipment, Speed control, Tilt steering wheel, Manual door locks, Manual windows, AM/FM stereo/clock, Dual front air bag SRS system.

Cab Instruments and Gauge: Fuel, Odometer, Tachometer, Engine oil pressure, Engine water temperature, Volt meter.

Seats: Front high back 40/20/40 cloth bench seats with 3-point seat belts, Rear bench seat with outer 3-point, and center lap seat belts.

Cab Mirrors: Door mounted manual telescopic, manual glass, black camper tow mirrors

Cab Glass: Tinted glass

Bumper: Black painted

Grille: Black

Windshield Wipers: 2-speed electric with washers

Cab Color: Ford Black

Cab Interior Color: Medium Earth Gray

Floor Mats: Rubber floor mats in lieu of carpet

WARRANTY:

Bumper to Bumper: 3 years / 36,000 miles
Powertrain: 5 years / 60,000 miles
Corrosion (Perforation only): 5 years / Unlimited miles
Roadside Assistance Program: 5 years / 60,000 miles
Diesel: 5 year / 100,000 miles

CAB TO AXLE DIMESION

Cab to axle will be 84”.

CHASSIS

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
- 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 fire apparatus in feet and inches, the length of the completed fire apparatus in feet and inches, and the GVWR in pounds.

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.

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

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.

FRONT BUMPER

FRONT BUMPER REPLACMENT

The factory Ford bumper shall be removed and replaced with a custom fabricated front bumper with integral Winch.

There shall be the following items located in the front bumper:

- 16.5Ti Winch
- QTB Siren
- Siren Speaker
- Air Horns
- Rigid 20" Light
- Warning lights front and intersection

- 2" Receiver

FRONT MOUNTED WINCH

The bumper extension shall be equipped with a Warn 16.5 ti, 12 volt electric, 16,500 lb. capacity winch.

The control of the winch shall be with a plug-in remote control unit. The unit shall have 12' of control cable, with forward, neutral, and reverse dead man type hand control.

The winch shall be equipped with 90' of 7/16" galvanized cable. The cable shall end with a clamped type loop and a drop forged heavy duty hook. The cable shall feed through a full captive type 4-way roller and guide assembly.

TOW HOOKS/EYES

AIR INTAKE SYSTEM

AIR INTAKE SYSTEM

An air filter shall be provided in the engine's air intake system by the body builder. 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:

1. 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.
2. 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.

EXHAUST

EXHAUST

The exhaust system shall be as provided by cab/chassis manufacturer. The tailpipe may require some modifications for proper ground clearances and fit with body.

The exhaust piping and discharge outlet shall be located or shielded so as not to expose any portion of the vehicle or equipment to excessive heating.

Exhaust pipe discharge shall be directed away from any operator's position or entry doors on body.

Where parts of the exhaust system are exposed so that they are likely to cause injury to operating personnel, protective guards shall be provided.

RADIO WIRING

All purchaser provided or vendor supplied radios, if specified shall be powered from the battery master switch, unless specified otherwise.

RADIO/ANTENNA INSTALLATION

There shall be two (2) Gunnison Fire Department supplied radio(s) with antenna installed in the cab within easy reach of driver, one (1) VHF, and one (1) DTR. The location of radio shall be determined by the Gunnison Fire Department at the pre-construction meeting. All required radio programming shall be responsibility of Gunnison

Fire Department. Radio(s) may not be fully tested if no radio program is provided with radio and will be responsibility of Gunnison Fire Department after delivery.

Radio shall be installed per Manufacturer's requirements and wired for proper 12 volt power and ground.

Motora Apex 4500 and Bendex King Radio

CAB SEATS AND SCBA BRACKETS

SEATING MODIFICATION

The center portion of the 40/20/40 split bench seat shall be removed to accommodate the installation of the specified console.

SEAT BELT AND VDR SYSTEMS

SEAT BELT COLOR AND MOUNTING

Section 14.1.3.3 of the NFPA 1901 Standards, requires all seat belt webbing in cab to be bright red or bright orange in color, and 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.

The seat belt webbing color requirement of 14.1.3.3 shall not apply to vehicles with a GVWR of 19,500 lb (8,845 kg) or less.

SEAT BELT WEB LENGTH - COMMERCIAL CAB

Sections 14.1.3.2 and 14.1.3.3 of the NFPA 1901 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 14.1.3.2 and 14.1.3.3.

SEAT BELT MONITORING SYSTEM - COMMERCIAL CAB

Section 14.1.3.9 of the NFPA 1901 Standards, requires that a seat belt warning system be provided. The seat belt warning device is intended to assist the driver or officer in determining whether all occupants are seated and belted before the vehicle is driven.

Per Gunnison Fire Department specification for a commercial chassis, this emergency vehicle may not have a seat belt monitoring system. Without this device, the driver must manually determine that all occupants are seated and belted before the apparatus is placed in motion. This specification for an emergency fire apparatus for the seat belt monitoring system shall be non-compliant to NFPA 1901 standards, effective at the time of order.

MISC COMPONENTS

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.

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.

HELMET STORAGE

No helmet storage is required in the cab driving area.

HELMET STORAGE

No helmet storage is required in the cab crew area.

Cab Integrity Certification: Commercial, NFPA Compliant

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:

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

CAB MIRRORS, DRIVER ADJUSTABLE

Section 14.3.5 of the NFPA 1901 Standards, 2009 edition, requires all primary rear view mirrors used by the driver to be adjustable from the driver's position.

CHASSIS PAINT

ADD LOWER SECOND COLOR

The cab exterior (door jambs not painted unless specified otherwise) shall be re-painted with a second color over the main cab color from the bottom of the glass down with PPG Delfleet Evolution paint.

Color: Red

Paint Number: To match current Gunnison Fire Department fleet.

PAINT WHEELS

Four (4) chassis wheels shall be removed and painted BLACK.

CHASSIS PAINT WARRANTY

The portion of the cab re-painted shall be provided with a ten (10) year, non-prorated paint warranty to the original owner. The warranty shall be provided by PPG Inc. A warranty sheet with all conditions and maintenance procedures shall be provided with the delivered vehicle.

CAB TRIM AND OVERLAY

MUDFLAPS

There shall be 1/4" rubber mudflaps provided and installed behind each set of tires to prevent throwing road debris and lower road spray.

CHASSIS MISCELLANEOUS

AUTOMATIC TIRE CHAINS

The apparatus chassis shall be provided with Insta-Chain" air operated automatic tire chains at the rear driving axle. Tire chains shall offer the traction of a single set of conventional snow chains at the touch of a button on the dash, without having to stop the vehicle.

TIRE CHAINS ACTIVATION

The tire chain system shall be activated by a dashboard switch so that the operator may engage the chains from the driver's seat. The switch shall be lighted to indicate when the chains are engaged. The switch shall be complete with a switch guard to avoid accidental engagement of the automatic chains. The switch guard must be properly labeled with a sticker with operating instructions provided.

The tire chains shall be interlocked with the transmission and shall engage only if the vehicle is traveling 30 MPH or less. After traveling over 30 MPH, the vehicle must be reduced to a speed below 5 MPH for the tire chains to be engaged or re-engaged.

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.

FUEL FILL LOCATION

FUEL FILL

There shall be one (1) chassis supplied fuel fill mounted in the streetside exterior wheel well panel, behind the rear axle. The fill shall have a permanent label with the text "DIESEL FUEL ONLY".

DEF FILL LOCATION

DEF FLUID FILL

The DEF fluid fill shall be as supplied by commercial cab/chassis manufacturer and located on the curbside fender panel.

FRONT BUMPER

AIR HORNS

AIR HORNS

Two (2) Grover 24" Stuttertone chrome plated air horns shall be recess mounted in the front bumper, one (1) on each side outboard of the frame rails. An emergency air shut off valve shall be provided in the cab.

AIR HORN ACTIVATION

The air horn(s) shall be operated by the steering wheel horn button and a switch on the cab console.

AIR HORN / ELECTRIC HORN SWITCH

There shall be a switch which allows the driver to select the steering column horn ring operation. This switch shall allow the driver to select either the air horn or electric horn activation.

BODY TYPE

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 Gunnison Fire Department to have the body repaired locally in the case where any object has struck the body and caused damage. The use of proprietary extrusions will prevent the Gunnison Fire Department from such repair and shall NOT be used.

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.

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.

All exterior seams in sheet metal below frame, and around the rear wheel well area shall be welded and caulked to prevent 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.

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.

ROOF CONSTRUCTION

The roof structure shall be integral with the body sheet metal construction and shall be an all welded assembly. The body roof structure shall be overlaid with not less than 3/16" aluminum 3003H-14 alloy tread plate and welded to roof structure and body sheet metal. All seams in roof material shall be fully and continuously welded to prevent entry of moisture.

There shall be a total of four (4) 2" x 2" x 1/4" 6061-T6 alloy aluminum "C" channels running the length of body, two (2) on each outboard side. These "C" channels shall be used for roof support and in addition shall be used for mounting of any specified reels. This open "C" channel design along with special reel mounting clips allows for a universal location of any specified reels within each compartment.

In between the two (2) center "C" channels running the length of body shall be 2" x 2" x 1/4" 6061-T6 alloy aluminum tubing running in between and welded in place on approximate 16" centers to support roof and/or walkway structure if specified.

A 2" formed radius shall be provided along the body sides and utilized as a wiring trough. The use of aluminum extrusions in this area shall not be acceptable, .

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 4" x 1/4" aluminum tubes minimum, the same width as the chassis frame rails. Welded to this tubing shall be cross members of 2" x 4" x 1/4" aluminum. Smaller dimension, lighter gauge tubing or angle material subframe shall not be accepted.

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.

BODY MOUNTING

For optimum chassis frame and body life, the body subframe shall be fastened to the chassis frame with a minimum of four (4) 1/2" x 2" strap mounts, welded to the body subframe. The straps shall be bolted to the chassis frame work utilizing 1/2" Grade 8 bolts.

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.

REAR TOW EYES

There shall be two (2) heavy duty rear mounted tow eyes securely attached to the chassis frame and mounted above the rear bumper. The tow eyes shall be fabricated from 1" thick steel plate with a 3" diameter opening. Tow eyes shall have a black powder coat finish.

No Trailer Hitch Receiver

GROUND LIGHTS

There shall be two (2) OnScene 8" Access 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.

WHEEL WELL EXTERIOR PANEL

The exterior panel of the body wheel well enclosure shall be constructed from 1/8" aluminum smooth plate.

DIEFORMED BEADED EDGE BODY FENDERS

A die formed beaded edge shall be provided along the radius of the wheel well opening for a finished appearance.

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.

SCBA CYLINDER COMPARTMENTS

Two (2) SCBA cylinder storage compartments shall be provided, one (1) each side of the body in rear wheel well area. Each compartment shall have a stainless steel hinge with brushed stainless steel door assembly with a positive catch latch. Each compartment shall have a 8" diameter tube behind the wheel well panel attached to the door assembly. Each compartment shall allow the storage of an SCBA cylinder or a fire extinguisher up to 7-3/4" in diameter x 22" deep. The door shall activate the "Hazard Warning Light" in the cab when not in the closed position.

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;

1) Clean bare metal with a wax and grease remover using low lint rags.
2) 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.
3) Re-clean bare metal using a wax and grease remover and low lint rags.
4) 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.
5) Inspect, putty fill, and dry guild coat entire body surface and DA sand using 180-400 grit dry paper.
6) Re-clean bare metal using a wax and grease remover using low lint rags.
7) 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.
8) 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.
9) 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.).
10) 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.
11) 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 all current State (his) regulations concerning paint operations. Pollution control 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.

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 prevent 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 - TWO COLOR

The body shall be painted with a two-tone color of PPG Delfleet® Evolution paint per approved customer spray-out.

Touch-up paint shall be provided with completed vehicle.

Top for body to be chassis color. Lower to be red.

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

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 prevent corrosion under the vehicle.

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.

PAINT WARRANTY

The vehicle shall be provided with a ten (10) year non-prorated warranty to the original owner. Warranty is provided by PPG Inc. A warranty sheet with all conditions and maintenance procedures shall be provided with the delivered vehicle. **Pro-rated warranties will not be acceptable.**

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.

REFLECTIVE STRIPING

REFLECTIVE STRIPE REQUIREMENTS

Material

All retroreflective materials shall conform to the requirements of ASTM D 4956, *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 D 4956, 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 D 4956, 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 apparatus.

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.

GRAPHICS PROOF

A color graphics proof of the reflective striping layout shall be provided for approval by Gunnison Fire Department prior to installation. The graphics proof shall be submitted to Gunnison Fire Department 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.

Reflective Stripe: Cab, Scotchcal

REFLECTIVE STRIPE - CAB SIDE

The reflective stripe material shall be 6" wide, 3M Scotchcal 680 series.

- This reflective stripe shall be black in color.

There shall be a 1/2" wide 22K gold leaf stripe located 1/2" above, and a second 1/2" wide 22K gold leaf stripe located 1/2" below the main stripe.

Reflective Stripe: Cab Bumper, Chevron Not Provided

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 stripe material shall be 3M Scotchlite 680.

- This reflective stripe shall be black in color.

REFLECTIVE STRIPE - BODY SIDES

The reflective stripe material shall be 6" wide, 3M Scotchcal 680 series.

- This reflective stripe shall be black in color.

There shall be a 1/2" wide 22K gold leaf stripe located 1/2" above, and a second 1/2" wide 22K gold leaf stripe located 1/2" below the main stripe.

The stripe shall extend from the front of cab in a straight line, then just ahead of the rear wheels the stripe shall angle up and extend straight back to the rear of the body.

MURALS

Cab Mural: Not Provided

Body Mural: Not Provided

CHEVRON STRIPING

CHEVRON REFLECTIVE STRIPE - REAR SIDES 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 of the body on each side of a rear stairway or compartment shall have a chevron style reflective stripe, extending from bumper height up to side compartment drip rail height. Each chevron panel shall be a full sheet and shall have a 3M UV over laminate to protect from UV rays, scene damage, and everyday use. Chevron panel shall have a minimum 10 year warranty for material failure, and colorfastness.

The stripe material shall be 3M Diamond Grade.

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

CAB STRIPE - 22K GOLD LEAF

The cab shall have a 1/2" wide 22K gold leaf stripe provided on each side of cab on the two-tone cab paint line. Stripe shall have a black outline.

LETTERING

LETTERING

GRAPHICS PROOF

A color graphics proof of the lettering layout shall be provided for approval by Gunnison Fire Department prior to installation. The graphics proof shall be submitted to Gunnison Fire Department 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;

SIDE CAB DOOR LETTERING

There shall be sixteen (16) 4" high 22K gold letters provided and installed on the vehicle. Lettering shall have a clear 3M UV protective overlaminate applied before installation

"GUNNISON"

There shall be forty six (46) 3" high 22K gold letters provided and installed on the vehicle. Lettering shall have a clear 3M UV protective overlaminate applied before installation.

"VOLUNTEER"
"FIRE DEPARTMENT"

UPPER BODY SIDE LETTERING

There shall be twenty eight (28) 6" high 22K gold letters provided and installed on the vehicle. Lettering shall have a clear 3M UV protective overlaminate applied before installation.

"CITY OF GUNNISON"

REAR BODY LETTERING

There shall be NO lettering applied in this area.

FRONT OF CAB LETTERING

There shall be NO lettering applied in this area.

ART AND DECALS

Decal: Not Provided

DOORS

EXTERIOR COMPARTMENT DOORS

ROLL-UP DOOR CONSTRUCTION - ROBINSON (ROM)

The vehicle shall be equipped with R•O•M Series IV roll-up exterior compartment doors. The R•O•M roll-up doors shall be complete with the following features;

Each shutter slat, track, bottom rail, and drip rail shall be constructed from anodized 6063 T6 aluminum. Shutter slats shall feature a double wall extrusion 0.315” thick with a concave interior surface to minimize loose equipment jamming the shutter door closed. Shutter slats shall feature an interlocking end shoe to prevent side to side binding of the shutter door during operation. Slats must have interlocking joints with an inverted locking flange. Slat inner seal shall be a one piece PVC extrusion; seal design will be such to prevent metal to metal contact while minimizing dirt and water from entering the compartment.

Shutter door track shall be one piece design with integral overlapping flange to provide a clean finished look without the need of caulk. Door track shall feature an extruded Santoprene rubber double lip low profile side seal with a silicone co-extruded back to reduce friction during shutter operation.

Shutter bottom rail shall be a one piece double wall extrusion with integrated finger pull. Finger pull shall be curved upward with a linear striated surface to improve operator grip while operating the shutter door. Bottom rail

shall have a smooth contoured interior surface to prevent loose equipment from jamming the shutter door. Bottom rail seal shall be made from Santoprene; it will be a double “V” seal to prevent water and debris from entering compartment. Bottom rail lift bar shall be a one piece “D” shaped aluminum extrusion with linear striations to improve operator grip during operation. Lift bar shall have a wall thickness of 0.125”. Lift bar shall be supported by no less than two pivot blocks; pivot blocks shall be constructed from Type 66 Glass filled reinforced nylon for superior strength. Bottom rail end blocks shall have incorporated drain holes which will allow any moisture that collects inside the extrusion to drain out.

Shutter door shall have an enclosed counter balance system. Counter balance system shall be 4” in diameter and held in place by two (2) heavy duty 18 gauge zinc plated plates. Counter balance system shall have two (2) over-molded rubber guide wheels to provide a smooth transition from vertical track to counter balance system; no foam material of any kind shall be permitted or used in this area.

ROM DOOR BOTTOM RAIL

All exterior compartment doors shall have the standard 3.0" tall bottom rail extrusion for easy one (1) hand opening and closing.

The specified retroreflective stripe material shall be applied on the roll-up compartment doors. The stripe shall be precision machine cut for each door slat of the roll-up doors. Under no circumstance will the stripe material be cut on roll-up door surface.

BODY HEIGHT

BODY WIDTH

BODY WIDTH DIMENSIONS

The body shall be 96.0" wide, and 98.0" wide at drip rails. Interior compartment depth dimensions shall be approximately:

Area Description	Dimension
Transverse above subframe	91.0"
Compartment depth below subframe	21.0"

STREETSIDE FORWARD

STREETSIDE COMPARTMENT - FRONT (S1)

The interior useable compartment width shall be approximately 56.5" wide.

The compartment door opening shall be approximately 49.2" wide.

This compartment shall have a R•O•M series IV roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.

- One (1) nylon strap shall be provided to assist in closing the door.

Drip Pan/Door Guard: Not Provided

- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- 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.

- There shall be two (2) slide-out smooth aluminum vertical tool board(s) approximately 24" deep. Each tool board(s) vertical exterior edge shall have a double 90 degree formed edge to provide an easy grip handle. The top and bottom of tool board(s) shall be provided with Accuride 9300 series slide tracks. Each board shall be rated for a maximum 200 lbs. evenly distributed load. Each tool board shall utilize a pneumatic cylinder to hold the tool board in both the opened and closed positions.

  - The vertical tool board material shall be 3/16" (.188) 3003H-14 aluminum alloy sheet.

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

  - Each tool board will be bolted to compartment floor.
  - Shall be mounting for customer supplied 42's

- There shall be one (1) transverse module fabricated from 3/16” (.188) 3003H-14 aluminum alloy smooth sheet. The module will be designed for the following long tools and equipment:

  - The list of items to be stored in the transverse module shall be determined at the pre-construction meeting.

  - One (1) Gunnison Fire Department supplied stokes basket(s). Manufacturer, model number and dimensions of the stokes basket(s) shall be provided during the pre-construction meeting.

Dimensions of the Stokes Basket: ___" l x ___" w x ___" h

  - There shall be one (1) OnScene Solutions Velcro cargo straps provided to secure the stored equipment.

Compartment Components: Front Full Height [LR]

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

Compartment Components: VDC

- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.

- The controls for the specified light tower(s).

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

STREETSIDE WHEELWELL

STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S2)

The interior useable compartment width shall be approximately 45.0" wide x 22" deep.

The compartment door opening shall be approximately 38.0" wide.

This compartment shall have a R•O•M series IV roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) nylon strap shall be provided to assist in closing the door.

Drip Pan/Door Guard: Not Provided

- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- 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.
- There shall be one (1) adjustable shelf/shelves approximately 20" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edge.
  - The above component(s) shall have a smooth un-painted finish.

Compartment Components: VDC (ORW)

- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.

STREETSIDE REAR

STREETSIDE COMPARTMENT - REAR (S3)

The interior useable compartment width shall be approximately 35.5" wide x 22" deep.

The compartment door opening shall be approximately 28.2" wide.

This compartment shall have a R•O•M series IV roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.

- There shall be NO keyed lock on this roll-up compartment door.

- One (1) nylon strap shall be provided to assist in closing the door.

Drip Pan/Door Guard: Not Provided

- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- 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.

- There shall be one (1) adjustable shelf/shelves approximately 20" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edge.

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

- There shall be one (1) 400 lbs. slide-out tray(s) approximately 16" deep and as wide as the compartment layout or door opening permits. The tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.

  The sides of the 400# tray shall be approximately 12" deep with a lid incorporated on the top. The tray shall be used to store floor dry!

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

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

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

Compartment Components: Rear Full Height [LR]

- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.

Compartment Components: VDC (BRW)

- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.

- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

CURBSIDE FORWARD

CURBSIDE COMPARTMENT - FRONT (C1)

The interior useable compartment width shall be approximately 56.5" wide.

The compartment door opening shall be approximately 49.2" wide.

This compartment shall have a R•O•M series IV roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) nylon strap shall be provided to assist in closing the door.

Drip Pan/Door Guard: Not Provided

- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- 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.
- There shall be one (1) OnScene Solutions 81 series aluminum tray base with 100% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be approximately 70" deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails. Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed and full extension positions. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".
- There shall be Two (2)- Fire Extinguishers located on the Tray. The fire extinguishers shall be located in individual modules towards the back of the truck.
  - The above component(s) shall have a smooth un-painted finish.
- There shall be one (1) module fabricated from 3/16" (.188) 3003H-14 aluminum alloy smooth sheet. The module will be designed for the following long tools and equipment: Gin Pole Storage.
  - The list of items to be stored in the transverse module shall be determined at the pre-construction meeting.
  - There shall be one (1) OnScene Solutions Velcro cargo straps provided to secure the stored equipment.
- There shall be one (1) air bag storage module(s). The module shall be fabricated from 1/8" (.125) 3003H-14 aluminum alloy sheet. Circular notches shall be provided along the front edge to ease the access to the air bags. Each bay shall be sized to hold the air bag and a matching piece of 1/2" plywood (plywood not provided). The make, model, qty and exact dimensions of the air bags shall be provided by the department prior to or during the pre-construction meeting.
  - There shall be four (4) OnScene Solutions Velcro cargo straps provided to secure the stored equipment.

Compartment Components: Front Full Height [LR]

- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.

Compartment Components: VDC

- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.

Compartment Components: VAC

- One (1) 120/240 VAC load center.
- The generator gauge panel.
- The 12 volt electrical distribution panel shall be located in a different location.

CURBSIDE WHEELWELL

CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C2)

The interior useable compartment width shall be approximately 45.0" wide x 22" deep.

The compartment door opening shall be approximately 38.0" wide.

This compartment shall have a R•O•M series IV roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) nylon strap shall be provided to assist in closing the door.

Drip Pan/Door Guard: Not Provided

- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- 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.
- There shall be one (1) adjustable shelf/shelves approximately 20" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edge.
  - The above component(s) shall have a smooth un-painted finish.

Compartment Components: VDC (ORW)

- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.

Compartment Components: VAC

120/240 VAC Compartment Outlets

- There shall be two (2) 120 VAC outlet(s) located in compartment on the forward wall.
  - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
  - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.

CURBSIDE REAR

CURBSIDE COMPARTMENT - REAR (C3)

The interior useable compartment width shall be approximately 35.5" wide x 22" deep.

The compartment door opening shall be approximately 28.2" wide.

This compartment shall have a R•O•M series IV roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) nylon strap shall be provided to assist in closing the door.

Drip Pan/Door Guard: Not Provided

- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- 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.
- There shall be one (1) adjustable shelf/shelves approximately 20" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edge.
  - The above component(s) shall have a smooth un-painted finish.
    - Mountings shall be provided for Gunnison Fire Department supplied Hurst eDraulic tools. Model of tools shall be provided prior to or during pre-construction meeting.

Compartment Components: Rear Full Height [LR]

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

Compartment Components: VDC (BRW)

- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

REAR CENTER

REAR COMPARTMENT - CENTER (RC1)

The rear center compartment shall be closed to both side rear compartments.

The rear center compartment shall start at the top of the body sub-frame and be as high as the side compartments, unless specified otherwise.

The interior useable compartment width shall be approximately 49.5" wide x 80" deep.

The compartment door opening shall be approximately 42.2" wide.

This compartment shall have a R•O•M series IV roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) nylon strap shall be provided to assist in closing the door.

Drip Pan/Door Guard: Not Provided

- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- 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.
- There shall be one (1) OnScene Solutions 82 series aluminum tray base with 70% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be approximately 80" deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails. Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed and full extension positions. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray surface with an internal depth of approximately 3 ½”.

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

Compartment Components: VDC

- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.
- One (1) OnScene Access LED, full width compartment light, horizontally mounted.

Compartment: Fire Suppression Options

- The specified pump and water tank skid unit shall be located in center rear compartment on specified slide-out tray. Access and handrail(s) shall be provided as needed for filling water tank and providing maintenance to engine and pump system.

MISC BODY OPTIONS

Additional Body Options, 12' Light Rescue

ROPE TIE OFF - WINCH RECEIVER

ROPE ANCHOR OR PORTABLE WINCH RECEIVERS

The completed unit shall have an integrated receiver or anchor system for use with removable rope anchor point and/or a portable electric winch, when specified.

Receivers or anchors installed at any location on the apparatus for use as removable winch anchors shall be designed and affixed to provide at least a 2.0 to 1 straight line pull no-yield safety factor over the load rating of the removable winch.

Receivers or anchors installed at any location on the apparatus for use with rope operations shall be designed and affixed to the apparatus to provide at least a 9,000 lbf (40,000 N) no-yield condition with a straight line pull.

A safety sign FAMA28 shall be located on or near each receiver or anchor stating the maximum straight line pull rating.

Side receiver(s) (if specified) shall have the following load rating:

	STRAIGHT PULL	SAFETY FACTOR
Rope Tie Off:	600 Lbs.	15:1
Winch:	5,000 Lbs.	2:1

Front and/or rear receiver(s) (if specified) shall have the following load rating:

	STRAIGHT PULL	SAFETY FACTOR
Rope Tie Off:	600 Lbs.	15:1
Winch:	Winch Load Rating (9,000 Lbs. Max)	2:1

The following items shall be provided to accomplish rope rescue and/or portable winch operation;

- Four (4) rope anchor point receiver(s) shall be provided and located on outboard edges of body roof area. The receiver(s) shall be manufactured using 2" x 2" x 1/4" wall steel trailer style receiver tube welded to 6" x 4" x 1/2" thick steel plate base and bolted to body structure. Anchor point will add 3-1/4" to body height and does not extend beyond body (without anchor point). The receiver assembly shall have a black hammertone

powder coat paint finish. Each receiver location shall have a stainless steel scuff plate to protect paint on upper body. Reinforcements to body shall be added as necessary to increase the structural integrity and to provide a working weight rating of 600 lbs., with a 9,000 lbs. maximum load based upon using a 15:1 safety factor to match typical 1/2" rescue rope ratings.

They shall be located at each corner of the body facing outward.
SHOP NOTE
New Style To Accept Rope Accessory Tube

- Four (4) removable rope anchor(s) shall be provided with completed vehicle. Each rope anchor shall be fabricated from 3/4" steel, 2" high x 11.5" long with a 3" OD/2" ID eyelet. Eyelet end shall have radiused edge to prevent damage to rope or carabineer. Each rope anchor shall have a black hammertone powder coat paint finish. A steel 5/8" x 3" hitch pin shall lock the rope anchor into the receiver tube.

- Two (2) removable rope anchor(s) shall be provided with completed vehicle. Each rope anchor shall be fabricated from 3/4" steel, 2" high x 11.5" long with a 3" OD/2" ID eyelet. Eyelet end shall have radiused edge to prevent damage to rope or carabineer. Each rope anchor shall have a black hammertone powder coat paint finish and a steel 5/8" hitch pin to lock it in place. An aluminum mounting bracket shall be provided to store rope anchor(s) inside a body compartment as close to receiver location as possible.

Portable Winch: Not Provided

- There shall be one (1) 2" x 2" x 1/4" wall steel receiver tube(s) with a black hammertone powder coat paint finish located at the front bumper for use with removable rope anchor point and/or a portable electric winch (if specified).
  - The receiver(s) shall have one (1) rubber cover(s) provided.

- There shall be one (1) 2" x 2" x 1/4" wall steel receiver tube(s) with black hammertone powder coat paint finish located on the streetside of the body in the forward wheel well panel area for use with removable rope anchor and/or a portable electric winch (when specified).
  - The receiver(s) shall have one (1) rubber cover(s) provided.

- There shall be one (1) 2" x 2" x 1/4" wall steel receiver tube(s) with black hammertone powder coat paint finish located on the curbside of the body in the forward wheel well panel area for use with removable rope anchor and/or a portable electric winch (when specified).
  - The receiver(s) shall have one (1) rubber cover(s) provided.

- There shall be one (1) 2" x 2" x 1/4" wall steel receiver tube(s) with black hammertone powder coat paint finish located at the rear bumper for use with removable rope anchor point and/or a portable electric winch (when specified).
  - The receiver(s) shall have one (1) rubber cover(s) provided.

RUBRAILS

NO Lower Side Body Protection

BODY PROTECTION PANELS

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.

HANDRAILS

REAR BODY HANDRAILS

There shall be two (2) 24" vertical handrails (1) on rear body, (1) on roof. Handrails shall be NFPA compliant 1-1/4" knurled 304 stainless steel with welded end stanchions.

Handrails: Stainless Finish

LADDERS AND STEPS

FOLDING STEP(S)

There shall be four (4) Innovative Controls polished cast aluminum folding step(s) provided and installed on completed vehicle. Each step shall be heavy duty with stainless steel spring and textured step surface meeting NFPA standards.

Location(s): _____

VDC

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 13.

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.

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.

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:

1) SAE J156, *Fusible Links*
2) SAE J553, *Circuit Breakers*
3) SAE J554, *Electric Fuses (Cartridge Type)*
4) SAE J1888, *High Current Time Lag Electric Fuses*
5) 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:

1) The propulsion engine and transmission
2) All legally required clearance and marker lights, headlights, and other electrical devices except windshield wipers and four-way hazard flashers
3) 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)

4) 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
5) The minimum optical warning system, where the apparatus is blocking the right-of way
6) The continuous electrical current required to simultaneously operate any fire pumps, aerial devices, and hydraulic pumps
7) 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.

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.

VDC CONTROL CENTER

12 VOLT DIAGNOSTIC RELAY CONTROL CENTER

The 12 volt power distribution shall be conveniently located with easy access for service. All relays and circuit breakers shall be plug-in type allowing for removal for repairs without necessitating soldering or tools. The sockets mounts for both the relays and circuit breakers shall be of a design that permits the use of standard automotive type components.

The 12 volt distribution panel shall utilize printed circuit boards mounted in high strength enclosure. Each printed circuit board shall be provided with twelve (12) heavy duty independent switching relays. Each relay shall have the ability to be configured either normally open or normally closed and be protected by a 20 amp automatic reset breaker. Each circuit will be provided with a LED for visual diagnostic.

Power distribution panel shall be located in apparatus body within a protected enclosure with removable or hinged cover.

CAB CONSOLE

A center cab console shall be provided between the Driver's and Officer's seats. 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.

The rear portion of the console shall be provided with open top storage for notebooks or maps. Two (2) adjustable dividers shall be provided in the storage area. The forward portion of console shall be slanted for mounting of siren head, radio or 12 volt control panel, and etc, with easy access to both Driver and Officer. Two (2) cup holders shall be provided in console.

The final design of console shall be determined by the Gunnison Fire Department at the pre-construction meeting.

ROCKER SWITCH PANEL

The control of the 12 volt equipment installed on chassis and body shall be centrally located in the cab. The individual rocker style switches shall be located on a separate electrical panel, complete with backlit name tags describing function of each individual switch. The back lighting shall have two (2) levels of intensity, low level lights activated when the vehicle lights or ignition switch is turned "On", and high level lights activated when individual switch is turned "On". An internally lighted rocker switch shall be furnished to the left of specified emergency lighting switches, and identified as "MASTER EMERGENCY SWITCH".

Switch circuitry shall be on a printed circuit board. The lights shall be solid state type and have a 100,000 hour life span.

The following options shall be provided in specified console. Final layout to be determined by Gunnison Fire Department at pre-construction meeting.

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

ELECTRICAL SYSTEM MANAGER

LOAD MANAGEMENT

If the total continuous electrical load exceeds the minimum continuous electrical output rating of the installed alternator(s), an Innovative Controls automatic electrical load management system shall be required. The minimum continuous electrical loads shall not be subject to automatic load management.

The apparatus 12 volt electrical system shall be provided with a system manager for:

- Monitoring chassis battery voltage
- Shedding pre-determined electrical circuits
- Sequencing pre-determined electrical circuits
- Automatically controlling chassis engine fast-idle
- Monitor master switch and parking brake applications
- Automatically control warning light modes ("Calling-For" and "Blocking Right of Way")
- Provide low voltage alarm
- Programmable control circuits
- Remote system status indicator panel

System manager shall perform all electrical functions required by current NFPA 1901 Standards.

BATTERY MONITORING

The system manager shall monitor the vehicle battery voltage. When electrical loads exceed the alternator output and the voltage drops, the load manager shall start shutting down electrical outputs. The system shall shut down only as many outputs required to maintain the system voltage. A special indicator to show different states of the electrical system by flashing at rate proportional to the battery discharge.

LOAD SEQUENCING AND SHEDDING

The system shall be capable of sequentially switching and shedding 12 volt loads. The Master light switch starts the sequential switch when it is turned "On". Likewise turning the Master Switch "Off" will sequentially de-energize the loads.

VDC BATTERY SYSTEM

BATTERY SYSTEM

The battery connectors 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.

Batteries shall be of the high-cycle type. With the engine off, the battery system shall be able to provide the minimum continuous electrical load for 10 minutes without discharging more than 50 percent of the reserve capacity and then to restart the engine. The battery system cold cranking amps (CCA) rating shall meet or exceed the minimum CCA recommendations of the engine manufacturer. The batteries shall be mounted to prevent movement during fire apparatus operation and shall be protected against accumulations of road spray, snow, and road debris. The batteries shall be readily accessible for examination, testing, and maintenance.

A means shall be provided for jump-starting the engine if the batteries are not accessible without lifting the cab of a tilt-cab apparatus.

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.

An onboard battery conditioner or charger or a polarized inlet shall be provided for charging all batteries. Where an onboard conditioner or charger is supplied, the associated line voltage electrical power system shall be installed in accordance with Chapter 22.

One of the following master disconnect switches shall be provided:

1) A master body disconnect switch that disconnects all electrical loads not provided by the chassis manufacturer
2) A master load disconnect switch that disconnects all electrical loads on the apparatus except the starter

Electronic control systems and similar devices shall be permitted to be otherwise connected if so specified by their manufacturer.

The alternator shall be wired directly to the batteries through the ammeter shunt(s), if one is provided, and not through the master load disconnect switch.

A green “battery disconnect on” indicator light that is visible from the driver’s position shall be provided.

Rechargeable hand lights, radios, and other similar devices shall be permitted to be connected to the electrical system ahead of the master disconnect switch.

A sequential switching device shall be permitted to energize the optical warning devices and other high current devices required in minimum continuous electrical load, provided the switching device shall first energize the electrical devices required in minimum continuous electrical load within 5 seconds.

VDC BATTERY SYSTEM

BATTERY SWITCH

The chassis ignition key shall activate a heavy duty relay to provide 12 volt battery power to the vehicle. There shall be a green "BATTERY ON" pilot light that is visible from the driver's position.

BATTERY SOLENOID

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

BATTERY CONDITIONER

BATTERY CHARGER

One (1) Kussmaul EV Series Model #445-5399-0, Low Profile 20 amp battery charger shall be provided. The unit shall have 2-step charging, with bulk-float, and no overcharging feature. A remote single bar graph display Model #023-5353-1 shall be installed. This display shall include a "charger on" LED light and bar graph, which operates when charger is not in operation.

The charger shall have the following operational specifications:

a) 120/240 volts AC input at 3.1 amps
b) 12 volts DC output at 20 amps
c) Dimensions of: 2.32" high x 6.8" wide x 13.12" deep and weighs 5 lbs.

The lightweight and low profile battery charger shall supply a 'single battery system' and with a red powder coat aluminum enclosure. The unit shall include an auxiliary 15 amp output circuit with power source selector for operating accessory loads. The unit shall include front panel connections for a remote display and auxiliary loads. Charger output shall pose no interference with other electronic systems on the vehicle.

SHORE POWER INLET

One (1) manual 120 VAC, 20 amp shore power inlet with weather resistant snap cover shall be provided. The protective ground from the shoreline inlet shall be bonded to the vehicle frame.

- The shore power plug shall be located near the Driver door area.

VDC STANDARD OPTIONS

12 VDC: Commercial, Standard and Optional Equipment

ENGINE COMPARTMENT LIGHTS

ENGINE COMPARTMENT LIGHT

There shall be one (1) OnScene Severe Service LED light(s) mounted in the engine compartment with integral switch with a light output of at least 20 candlepower (250 lumens). The engine compartment light(s) shall operate only when the master battery switch is turned "On".

MISC 12 VDC ELECTRICAL

REAR SCENE LIGHTS (BACK-UP LIGHTS)

There shall be a switch on the left side rear to convert backup lights and rear step lights to scene lights during night operations. The switch shall be of momentary style and shall be connected to a bi-stable relay, allowing multiple switching locations. The scene/reverse lights shall automatically shut off when the parking brake is disengaged.

HAZARD WARNING LIGHT

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 ft3 (0.1 m3).
- The compartment has an opening less than or equal to 144 in.2 (92,900 mm2).
- 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".

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

BACKUP ALARMS AND STOPS

BACK-UP ALARM

The body manufacturer shall furnish and install one (1) 107 dB(A) electronic back-up alarm. Back-up alarm to actuate automatically when the transmission gear selector is placed in reverse.

12 VDC BODY INTERIOR LIGHTS

INTERIOR CAB CEILING LED LIGHTS

Two (2) 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, one (1) in front crew area, and one (1) in rear crew area. 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.

TAIL LIGHTS

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 privided;

- Two (2) Whelen C6T amber LED sequential arrow turn signal lights, amber lens
- Two (2) Whelen C6BTT red LED brake, tail, and turn lights, red lens

Each of the lights above shall be mounted in a C6FC, chrome finish bezels.

MIDSHIP AND CLEARANCE MARKER

MARKER LIGHTS

The body shall be equipped with all necessary clearance lights and reflectors in accordance with Federal Motor Vehicle Safety Standards (FMVSS) and Canadian Motor Vehicle Safety Standards (CMVSS) regulations. All body clearance lights shall be Truck-Lite Model 18 LED to reduce the need for maintenance and lower the amp draw. Clearance lights shall be wired to the headlight circuit of the chassis.

GROUND/UNDERBODY LIGHTS

CAB STEP LIGHTS / GROUND LIGHTS

There shall be four (4) OnScene 8" Access 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.

LICENSE PLATE

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.

ELECTRONIC SIRENS

ELECTRONIC SIREN

One (1) Federal PA300-012MSC, 100 watt electronic siren with standard microphone shall be provided and installed in cab within easy reach of Driver. Siren power shall be wired through the master warning light switch. Siren shall have priority tone in-place-of hi/lo tone.

SIREN SPEAKER

SIREN SPEAKER

One (1) Cast Products Inc. model SAD3815-17FSD-1 siren speaker shall be provided, recessed in the front bumper.

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

VDC SCENE LIGHT / LIGHT TOWER

FRONT LED FLOODLIGHT

One (1) Rigid Industries E-Series model 130312, 30" combination spot/flood LED light(s) with black housing color and cradle mount brackets shall be provided on front of vehicle. The E-Series 30" LED light(s) shall have 13,800 lumen output each.

Each light shall be wired directly to the 12 VDC electrical system with stranded copper wire. The floodlights shall be protected with circuit breakers rated at the proper amperage and wire size.

The lights shall be controlled at the switch panel in cab.

SIDE LED SCENE LIGHTS

There shall be four (4) Whelen 600 Series Super-LED® model 6SC0ENZR, 6" x 4" surface mounted scene lights provided on the upper body. Light quantity shall be divided equally per side. The 600 configuration shall consist of 12 clear Super-LEDs and a clear gradien optic polycarbonate lens with chrome flange. The scene light is covered by a five year factory warranty.

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

The lights shall be controlled at the switch panel in cab.

No Light Tower or Directional VDC Lights

REAR LED SCENE LIGHTS

Two (2) Whelen 600 Series Super-LED® model 6SC0ENZR, 6" x 4" surface mounted scene lights provided on the upper rear body to light the work area immediately behind the vehicle. The 600series light configuration shall consist of 12 clear Super-LEDs and a clear gradien optic polycarbonate lens with chrome flange. The scene light is covered by a five year factory warranty.

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.

The lights shall be controlled at the switch panel in cab.

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

WARNING LIGHT SYSTEM

WARNING LIGHT PACKAGE

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 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.

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.

ZONE A - FRONT WARNING LIGHTS

There shall be one (1) Whelen Justice JE0NFPA LED 62" lightbar permanently mounted to the cab roof.

The lightbar configuration (streetside to curbside) shall be:

SECTION	INTERNAL COMPONENTS	LENS COLOR
1	Red Rear Corner Linear LED	Clear
2	Red Front Corner Linear LED	Clear
3	Red Linear LED	Clear
4	Clear Linear LED	Clear
5	Red Linear LED	Clear
6	Blank	Clear

7	Blank	Clear
8	Red Linear LED	Clear
9	Clear Linear LED	Clear
10	Red Linear LED	Clear
11	Red Front Corner Linear LED	Clear
12	Red Rear Corner Linear LED	Clear

All clear lights shall shut down when the parking brake is set to comply with "Blocking" mode requirements as outlined in NFPA 1901.
SHOP NOTE
Add MK8H lightbar mount on Wecad program if there is a brow light on cab

The lightbar(s) shall be separately controlled at switch panel in the cab.

ZONES B AND D - SIDE WARNING LIGHTS

UPPER REAR CORNER WARNING LIGHTS

There shall be two (2) Whelen C6 SurfaceMax series (6" x 4") red Linear Super-LED with full-fill optic lights provided, one (1) each side. The self-contained flashing light shall have 75 Scan-Lock™ flash patterns including steady burn with hi/low power and covered by a five year factory warranty. Each light shall have a red lens and black flange.

The lights shall be controlled at the switch panel in cab.

ZONE C - REAR WARNING LIGHTS

There shall be two (2) Whelen C6 SurfaceMax series (6" x 4") red Linear Super-LED with full-fill optic lights provided, one (1) each side. The self-contained flashing light shall have 75 Scan-Lock™ flash patterns including steady burn with hi/low power and covered by a five year factory warranty. Each light shall have a red lens and black flange.

The lights shall be controlled at the switch panel in cab.

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.

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.

ZONE A - FRONT WARNING LIGHTS

There shall be two (2) Whelen ION Wide Series (6" x 1 3/4") red Super-LED surface mount lights (WIONSMCR) provided, one (1) on each side. The wide angle warning light shall incorporate six red Super-LEDs. The self-contained flashing light shall have 75 Scan-Lock™ flash patterns including steady burn with hi/low power and covered by a five year factory warranty. Each light shall have a clear lens and black flange.

The lights shall be controlled at the switch panel in cab.

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

There shall be two (2) Whelen ION Wide Series (6" x 1 3/4") red Super-LED surface mount lights (WIONSMCR) provided, one (1) on each side. The wide angle warning light shall incorporate six red Super-LEDs. The self-contained flashing light shall have 75 Scan-Lock™ flash patterns including steady burn with hi/low power and covered by a five year factory warranty. Each light shall have a clear lens and black flange.

The lights shall be controlled at the switch panel in cab.

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

There shall be two (2) Whelen ION Wide Series (6" x 1 3/4") red Super-LED surface mount lights (WIONSMCR) provided, one (1) on each side. The wide angle warning light shall incorporate six red Super-LEDs. The self-contained flashing light shall have 75 Scan-Lock™ flash patterns including steady burn with hi/low power and covered by a five year factory warranty. Each light shall have a clear lens and black flange.

The lights shall be controlled at the switch panel in cab.

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

There shall be two (2) Whelen ION Wide Series (6" x 1 3/4") red Super-LED surface mount lights (WIONSMCR) provided, one (1) on each side. The wide angle warning light shall incorporate six red Super-LEDs. The self-contained flashing light shall have 75 Scan-Lock™ flash patterns including steady burn with hi/low power and covered by a five year factory warranty. Each light shall have a clear lens and black flange.

The lights shall be controlled at the switch panel in cab.

ZONE C - REAR WARNING LIGHTS (LOWER REAR CORNERS)

There shall be two (2) Whelen C6 SurfaceMax series (6" x 4") red Linear Super-LED with full-fill optic lights provided, one (1) each side. The self-contained flashing light shall have 75 Scan-Lock™ flash patterns including steady burn with hi/low power and covered by a five year factory warranty. Each light shall have a clear lens and black flange.

The lights shall be controlled at the switch panel in cab.

FIRE PUMP SYSTEM

The following equipment shall be furnished and installed to supply water to the emergency scene:

Pump Type: Slip-In Rear Mount Pump (LR)(UT)

SKID PUMPS

SUPRESSION SYSTEM

Suppression system configuration:

Conventional LP system:

- 1 ¼ “conventional hose with a standard Akron pistol grip nozzle capable of fog and straight stream. 95 – 150 GPM @ 125 psi centrifugal pump

HMA UHP system:

- Positive Displacement Piston pump at 20 GPM @ 1,100 psi with a UHP ¾” hose combined with an Elkhart Brass UHP pistol grip nozzle with both fog and straight stream. In testing at Tyndall Air Force Base on a JP-8 fire, accomplished in a 3,500 sq ft, 380-gallon test pit, the HMA Hydrus™ system (20 GPM, 1,200 psi at the nozzle) extinguished 100% of the fire in 31.5 seconds using 13.6 gallons of water. Low pressure systems (ranging from 95 - 150 GPM, @125 psi) and other ultra-high pressure systems (ranging from 8 to 30 GPM at 1,100 psi) were also tested in the identical conditions. The best low pressure system (95 GPM at 125 using a 1¾” hose) extinguished 90% of the fire in 59 seconds using 95 gallons of water.

FLOW RATE and PRESSURE EXTINGUISHMENT TIME PERCENT OF FIRE EXTINGUISHED SUPPRESSANT CONSUMED

150 GPM @ 125 psi 72.5 seconds 80% 187.50 gallons
100 GPM @ 125 psi 65.2 seconds 85% 152.0 gallons
95 GPM @ 125 psi 58.8 seconds 90% 94.9 gallons
30 GPM @ 1200 psi 48.3 seconds 100% 24.8 gallons
20 GPM @ 1200 psi 31.5 seconds 100% 13.6 gallons
14 GPM @ 1200 psi 68.5 seconds 100% 15.9 gallons
10 GPM @ 1200 psi 105.2 seconds 90% 17.5 gallons

SYSTEM FEATURES
The skid unit will utilize the HMA Hydrus™ ultra-high pressure suppression system. The Hydrus® system will operate at 20 GPM @1200 to 1400 psi at the pump and nozzle. The skid unit is made of polypropylene plastic.

SYSTEM OPERATIONS
The HMA Fire Hydrus™ system is designed for ease of use and low maintenance. Below is the sequence of operations for start-up.

- Make sure the Fill/Drain valve is in the “closed” position.
- Verify the tank is full of water.
- Verify the START/RUN valve is in the START position.
- Verify the hand line bail is closed.
- Pull out engine choke and crank engine.
- If cold, let engine idle for 3-4 minutes.
- When warm/hot, move START/RUN valve to the RUN position.
- Extend hose line to desired length.
- Assume proper stance to brace yourself before beginning suppression.
- Begin fire suppression by opening the hand line bail.

Engine/pump automatically achieves the full pressure and flow when the nozzle bail is moved to the open position. The Hydrus™ 20 UHP system utilizes the following components.

PUMP

The fire pump shall be a HMA 'Run Dry' Piston - Plunger Pump or equivalent integrally mounted with an HMA UHP Suppression system or equivalent. The system shall include pressure relief valves for both high and low-pressure settings. The high-pressure relief valve shall be pre-set at 1750 psi max for both system and end user safety. The low-pressure relief valve shall be preset 75 psi to prevent pump inlet over pressurization and damage to the pump. The fire pump shall have an operating range of 19-23GPM at 1200 to 1350 psi and shall be provided with a manifold dampening pressure accumulator. Low level water and foam tank sensors with audio and LED lamp alerts shall be provided with a solid-state auto shut down system to prevent damage to the fire pump in the event of loss of water supply.

All plumbing and fittings shall be fabricated of type 304/316 stainless steel, brass or corrosion resistant plated material.

The pump is fully capable of pump and roll operations.

A standard operating and maintenance manual shall be provided for all system components at the time of final inspection of each vehicle. Each manual is generic and may cover items not on your particular unit.

FIRE PUMP POWER SYSTEM

The fire pump motor shall be a Honda model V-twin gasoline powered unit, or equivalent unit, rated at a minimum of 21 horsepower at 3600 rpm. The fuel supply for the pump engine shall be piped from a separate plastic fuel tank. The fuel tank capacity is 5 gallons and is 2017 EPA and CARB compliant. Fuel consumption will be 1.6 gallon per hour at full throttle. Idle fuel consumption rates are not available. To provide noise attenuation, fuel savings, and lower maintenance costs, the fire pump motor shall have a throttle control: while the nozzle bale is closed, engine will run at idle, when the nozzle bale is opened, engine will run at full throttle. As a safety feature, if a catastrophic failure was to occur within the plumbing, the throttle control will bring the engine to idle, thus immediately reducing the line flow and pressure. The pump and engine shall be installed at the rear of the truck, behind the water tank.

PLUMBING AND MISCELLANOUS COMPONENTS HOUSING

The plumbing and miscellaneous components will be housed in a steel enclosure coated with black powder paint as requested by the customer.

PUMP PANEL

The standard pump panel will consist of the following elements: system start/run valve, system pressure gauge, low water warning (visual and audio), foam controls and warnings, water fill/drain valve and connection, engine controls and hose rewind. The rear pump panel area shall be illuminated by an LED strip light that turns on with the engine power switch.

TANK TO PUMP

The water tank shall be connected to the intake side of the pump with heavy duty stainless fittings and rubber reinforced hoses for vibration control. The control shall be within easy reach of the operator.

BOOSTER HOSE REEL AND NOZZLE

Mounted at the rear of the body shall be a Hannay or equivalent high pressure hose reel. The reel shall be red and equipped with captive stainless steel rollers to protect the hose during deployment and rewinding. Mounting options may be considered at time of pre-build meeting. The hose reel shall be provided with 150 feet of ¾ inch ID UHP booster hose in a single length.

The hand line shall be capable of flowing 20 GPM at 1250 - 1300 psi operating pressure at the nozzle.

The hose reel will include an electric rewind feature. A weatherproof rewind switch shall be located within easy reach to the reel and properly labeled A manual rewind crank will be supplied.

An Elkhart pistol-grip nozzle designed for ultra-high pressure will be supplied. The nozzle will be capable of both straight stream and fog patterns with a throw distance of 40-60 feet. Each nozzle will have a flush setting.

AUTOMATIC COOLING / RECIRCULATION LINE

An automatic cooling and recirculation line shall be provided. When the discharge system is pressurized, water will flow from the pump back and through a closed loop within the plumbing, not allowing foam to flow into the water tank.

THERMAL RELIEF VALVE

A thermal relief valve for HMA UHP fire pumps shall be provided and installed. The thermal relief valve shall dump water at a pre-determined temperature of 140ºF and introduce fresh water from the water tank maintain a safe water temperature.

PUMP HOUR METER

A weatherproof hour meter indicating pump hours, with “Power Off” and a tachometer while the engine is running, shall be located at the rear pump control panel.

PRESSURE GAUGE

A pressure gauge will be provided on the pump panel to show the system pressure.

ELECTRICAL SYSTEM

A 12V DC gel cell battery will be provided, making the system completely self-contained, with no connections to the chassis necessary. A solid-state control system will be provided with the system. Elements of the system include:

- Low water sensing: the use of passive water sensors will allow the system to activate audio and visual warnings to indicate a low water level. For protection of the pump, after 30 seconds of audio and visual warnings, the engine will automatically shut-down until more water is added to the system.
- Low water sensing, start-up: through the use of passive water sensors, the system will not start if a low water situation is present.
- Low foam sensing: Through the use of a passive foam sensor, the system will activate a visual warning to indicate a low foam condition exists. The sensor reads through the tank wall, thus avoiding direct contact with foam, which can be corrosive to the sensors and components.

TESTING AND COMPLIANCY
Solid State controls have been designed and tested to the following specifications:

- MIL-STD 883, Method 105, Condition F (Burn-in of electronics) +125ºC, 160 hours
- MIL-STD 810, Method 501, Procedure I (Altitude) Storage and Transportation at 25,000 feet for 60 minutes
- MIL-STD-810, Method 501, Procedure I and II (High Temp Storage). Storage at 71ºC for 24 hours, Operation at +49ºC powered exposure for 24 hrs.
- MIL-STD-810, Method 502, Procedure I and II (Low Temperature Storage). Storage at -56ºC for 24 hours, operated at -40ºC powered exposure for 24 hrs.
- MIL-STD-810, Method 503, Procedure I (Temperature Shock) -55ºC to +85ºC, 10 cycles.
- MIL-STD-883, Method 1010, condition A (Temperature Cycling) -55ºC to +85ºC, 10 cycles.
- MIL-STD-810, Method 514, Category 20 (Vibration). This test is designed for rough terrain military vehicles.
- MIL-STD-810, Method 516 Procedure I, Functional Shock.
- MIL-STD-810, Method 510, Procedure I, Sand and Dust. Particle size < 149µm, 6-hour exposure
- MIL-STD-506, Procedure I, Rain and Blowing Rain. Steady state, 2-hour exposure
- IPC-610D, Acceptability of Electronics Assemblies. Dimensional inspection (60X microscope) per design specifications. System Testing

The fire suppression system will be tested to the following standards:

- Engine Start up and run capability will be accomplished and recorded
- Pressure reading at the manifold will meet a range of 1200 to 1400. Reading will be recorded and provided to the customer.
- Pressure reading at the nozzle will meet a range of 1100 to 1450. Reading will be recorded and provided to the customer.
- Flow rate reading at the nozzle will meet a range of 19-21 GPM. Reading will be recorded and provided to the customer. Compliancy
- The HMA HYDRUS™ UHP system is NFPA 1906 compliant with respect to pump system minimum discharge of flow and pressures.
- The Honda power system will be 2017 EPA and CARB compliant.

INCLUDED OPTIONS

UHP FOAM PROPORTIONING SYSTEM
The fire pump system shall be provided with a HMA vacuum based Venturi foam proportioner. The system shall be provided with an ON/OFF ball value and have graduated adjustments to allow proportioning between 0.5 percent and 6.0 percent settings. The system is capable of utilizing Class A or Class B foams.

FOAM TANK
A 5-gallon (minimum) polypropylene foam tank cell shall be supplied as an integral part of the water tank. A pressure/ vacuum vent shall be installed in the lid of the tower.

MISC.
1.5" Intake, 2” adapter
Low Water Shutdown
System Automatic Throttle

WATER TANK LEVEL INDICATOR

There shall be one (1) Whelen Strip-Lite model PSTANK LED lights provided on rear of truck to indicate the water tank level and connected to tank level sensor in water tank. The four tank levels to be indicated as follows;

Green = “Full”
Blue = “3/4”
Amber = “1/2”

Red = “1/4”

The red “1/4” level light shall flash when the tank level drops below "1/4" of the tank capacity. Each light will be installed in a vertical orientation and be de-activated whenever the parking brake is released.

FREEZE PROTECTION

Air from the 12 VDC compressor shall be provided in UHP system system plumbing with valve to protect from freezing.

VAC GENERATOR

ONAN PTO GENERATOR

The vehicle shall be equipped with an Onan Protec PTO generator system with a capacity of 15,000 watts at 120/240 VAC, 125/62 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.

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 Onan's written instructions, Onan warrants that the Protec YDCR series 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.

GENERATOR SPLASH GUARD

A powder coat painted splash cover shall be installed to reduce the amount of road spray on the frame mounted PTO generator. A V-ring seal shall also be installed in the cover to provide additional protection against contaminates reaching the generator front seals.

GENERATOR CONTROL

The generator shall be engaged at the switch panel in the cab.

VAC GENERATOR MOUNTING

GENERATOR MOUNTING

The generator shall be mounted between the chassis frame rails. The generator mounting brackets shall be fabricated using heavy duty steel tubing, or structural channel. The generator mounting shall be bolted 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.

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.

VAC GENERATOR DRIVES

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.

Model part number shall be Chelsea 280 series.

Double check the model number and ratio with engineering before ordering the PTO on the chassis.

VAC GENERATOR GOVERNOR

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.

VAC DISTRIBUTION

LOADCENTER

The loadcenter shall be an Eaton BR Series specifically designed for protection and distribution of AC line voltage such as lighting and small motor branch circuits. The loadcenter enclosure is made of 16 gauge galvanized sheet steel with a galvanized coating provided for corrosion protection. All trims used on BR loadcenters are chromate sealed and finished with an electro-disposition epoxy paint (ANSI-61) which exceeds requirements for outdoor and indoor applications. A combination surface/flush cover with integral door is supplied with indoor loadcenters rated from 100 through 400 amperes. All plug-in loadcenters are CSA listed to file LL98266. CSA Certified to C22.2 No.29, to loadcenter type and CSA listing.

GENERATOR MONITORING PANEL

An Accuvim CL digital meter package shall be provided to properly monitor the generator performance and load demand during operation. The electrical parameters can be viewed on a backlit LCD screen. The 15 screens are accessible via four buttons on the front panel allowing the user to scroll between various screens. The following shall be displayed full-time;

- Generator frequency in hertz
- Line 1 current in amperes
- Line 2 current in amperes
- Generator voltage in volts

In addition, an elapsed generator hours gauge shall be provided near the digital meter.

VAC SHORE POWER INLETS

SHORE POWER INLET - BATTERY CHARGER

The above mentioned shore power inlet, and battery conditioner shall be specified in the 12 volt section.

VAC CIRCUITS AND OUTLETS

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:

- Two (2) 120 volt exterior outlets, one (1) each side near rear wheel well area.
  - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).

COMMAND AND KNIGHT LIGHT

Light Tower Floodlights

The Command Light model KL415D-W2 shall be equipped with the following bank of floodlights:

Floodlight manufacturer:	Whelen Engineering
Number of lamp heads:	Four (4) Pioneer Plus PFP2 LED
Voltage:	12 VDC
Watts of each lamp head:	150 watt
Total watts of light tower:	600 watts
Total lumens of light tower:	64,000
Configuration:	The light heads shall be mounted with two (2) on each side of the light tower, giving two (2) vertical lines of two (2) when the lights are in the upright position.

Light Tower: No Backlight Option

NFPA EQUIPMENT ALLOWANCE

Special Service Equipment

EQUIPMENT PAYLOAD WEIGHT ALLOWANCE

In compliance with NFPA 1901 standards, the special service vehicle shall be designed for an equipment loading allowance of 2,500 lbs. of Gunnison Fire Department provided equipment based on a 15,001 - 20,000 pound gross vehicle weight rating.

MINOR EQUIPMENT LIST

EQUIPMENT

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

EQUIPMENT MOUNTING

The Gunnison Fire Department equipment list from pre-construction meeting shall be mounted on completed unit, locations per pre-cosntruction meeting. Transportation of all tools to SVI shall be responsibility of Gunnison Fire Department.

- 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.

WHEEL CHOCKS

- There shall be two (2) Zico AC-32, NFPA approved aluminum wheel chocks provided for 32" 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.
  - The wheel chock(s) shall be mounted behind rear wheels, below body on streetside.

RECHARGABLE LIGHTS

- Two (2) Streamlight FireBox halogen flashlight(s) with shoulder strap shall be provided. Each flashlight shall be orange in color and have a 12 volt DC charger and vehicle mount kit. Each flashlight shall have an 8 watt, 150 lumen halogen spotlight style bulb and reflector with 2 ultra-bright LED taillights. The flashlight(s) shall be wired to battery direct unless otherwise specified by Gunnison Fire Department.

- The flashlight(s) shall be mounted on the completed unit in the lower area of compartment S1.

NFPA EQUIPMENT

REMAINING NFPA MINOR EQUIPMENT BY PURCHASER

All other minor equipment not specified above, but required by NFPA 1901 for special service vehicles, section 10.9.3 shall be supplied and mounted by Gunnison Fire Department before the unit is placed in emergency service.

CLARIFICATIONS AND/OR EXCEPTIONS

Listed below are the clarifications and/or exceptions SVI Trucks is taking to the Gunnison Fire Department's specifications:

Sec.	Description
1.5	Live Drive only required with PTO generator system (see 4.8 below).
2.1	Ford to be painted Ford black, and SVI to paint lower cab required red color.
2.5	Provided a battery charger system.
2.8	Provided brake and controls for specified Q siren.
3.1	Provided two-tone paint on body.
3.10	Price includes shelf and trays and equipment mounting per Gunnison Fire Department supplied equipment list and pre-construction meeting. Gunnison Fire Department must ship or deliver equipment prior to final inspection.
3.11	Provided two (2) SCBA compartments on curbside. DEF and fuels fills on streetside fender.
3.12	Handrailing and fold-down step shall be provided to access roof mounted anchor points.
4.4	Command Light will be recessed into roof for lower profile.
4.8	Did not include a hydraulic generator in proposal. Specified light tower only requires 60 DC amps.
4.15	Provided two (2) male anchor points for lower receivers.

If there are any questions concerning the above items please contact me at the factory 970-485-2006.

SVI TRUCKS

Jason Kline
CO Sales Manager