

Platteville-Gilcrest Fire Protection  
District  
Platteville, Co  
Type 6 SVI#1261  
Production Specification



## **LIABILITY INSURANCE**

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

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

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

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

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

All insurance policies must be;

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

## **INTERNET IN-PROCESS SITE**

The manufacturer shall post and maintain a website where the Platteville Gilcrest FPD 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.

## **RESPONSIBILITY OF PURCHASER**

It shall be the responsibility of the purchaser to specify the details of the apparatus in addition to the requirements in NFPA 1906 needed by the manufacturer to build the apparatus, including:

- 1) Requirements not uniquely specified in NFPA 1906, such as the type of apparatus desired.
- 2) Any features of the apparatus desired in addition to, or in excess of, the requirements in NFPA 1906.

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

## **RESPONSIBILITY OF CONTRACTOR**

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

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

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

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

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

## **VEHICLE STABILITY**

### **ROLLOVER STABILITY**

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

- (1) The apparatus shall remain stable in both directions when tested on a tilt table in accordance with SAE J2180, *A Tilt Table Procedure for Measuring the Static Rollover Threshold for Heavy Trucks*.
- (2) The calculated or measured vertical center of gravity (VCG) divided by the rear axle track width shall not exceed the criteria in Table

<b>Vehicle GVWR</b>	<b>Tilt Criteria (degrees)</b>	<b>VCG/Track (percentage)</b>
< 33,000 lb (14,969 kg)	30	75
> 33,000 lb (14,969 kg)	27	80

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

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

The apparatus shall be loaded with fuel, fire-fighting agents, hose, ladders, a weight of 250 lb (114 kg) in each seating position, and weight equivalent to the required miscellaneous equipment allowance. *In addition, if the apparatus is designed to accommodate SCBA, an additional 25 lb (11.4 kg) per seating position shall be added to the miscellaneous equipment allowance.*

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

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

## **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 10 percent in any direction.

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

## **HIGHWAY PERFORMANCE**

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

- 1) From a standing start, the apparatus shall be able to attain a speed of 35 mph (55 km/hr) within 25 seconds on a level road.
- 2) The apparatus shall be able to attain a minimum top speed of 50 mph (80 km/hr) on a level road.
- 3) The apparatus shall be able to maintain 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 33,000 lb (11,800 kg) shall not exceed 68 mph (105 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 (85 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

The vehicle shall be capable of maneuvering across a 20 percent grade and up and down a 25 percent grade.

## **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.

## **WILDLAND DOCUMENTATION**

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

1. The manufacturer's record of apparatus construction details, including the following information:
  - (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) For each 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) For each pump: make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number
- (p) For each pump transmission: make, model, serial number, and gear ratio
- (q) Reserved
- (r) Water tank certified capacity in gallons or liters
- (s) Reserved
- (t) Paint manufacturer and paint number(s)
- (u) Company name and signature of responsible company representative
- (v) Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall fire apparatus (with water tank full but without personnel, equipment, and hose)

2. Certification of compliance of the optical warning system
3. Siren manufacturer's certification of siren
4. Written load analysis and results of the electrical system performance tests
5. Certification of slip resistance of all stepping, standing, and walking surfaces
6. The wildland fire pump manufacturer's certification of suction capability
7. If special conditions are specified by the purchaser of the wildland fire pump, the pump manufacturer's certification of suction capacity under the special conditions
8. A copy of the apparatus manufacturer's approval for stationary pumping applications of the wildland fire pump
9. For each pump, the pump manufacturer's certification of the hydrostatic test
10. For each pump, the certification of inspection and test for the pump
11. The certification of water tank capacity
12. If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy and the final installer's certification that the foam proportioning system meets this standard
13. If the system has a CAFS, the documentation of the manufacturer's pre delivery tests
14. If the apparatus has a line voltage power source, the certification of the test for the power source (*see NFPA 1901, Standard for Automotive Fire Apparatus, 22.15.7.2*)
15. If the apparatus is equipped with an air system, air tank certificates (*see NFPA 1901, 24.5.1.2*), the SCBA fill station certification (*see NFPA 1901, 24.9.7*), and the results of the testing of the air system installation (*see NFPA 1901, 24.14.5 and NFPA 1901, 24.15.4*)
16. Certification of vehicle side slope stability, including the weight distribution assumed for the calculations or as loaded on the vehicle for the tilt table test
17. 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

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.

#### **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.

#### **STATEMENT OF 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 at least as great as the values shown in table below.
8. If the apparatus is designed to accommodate SCBA, an additional 25 lb. (11.4 kg) per seating position shall be added to the 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.

GVWR	Chassis		Storage Area		Equipment Weight		Ground Clearance	
	Apparatus Type	lb.	kg.	ft.3	m3	lb.	kg.	in.

Wildland Fire Apparatus	15,000	7,000	20	0.56	200	90	12	300
	15,001 - 20,000	7,001 - 9,000	50	1.42	500	225	13	330
	20,001 - 26,000	9,001 - 12,000	50	1.42	500	225	15	380
	>26,000	>12,000	75	2.12	750	340		
Wildland Mobile Water Supply Fire Apparatus	All	All			200	90		

## **TESTING**

### **ROAD TEST**

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

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

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

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

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

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

### **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

## **MANUFACTURER PUMP CERTIFICATION**

The apparatus upon completion shall be tested and certified by the manufacturer. The certification tests shall follow the guide lines outlined in NFPA 1901 "Standard for Fire Apparatus".

If the fire pump has a rated capacity of less than 750 gpm (3000 L/min), the pump shall be tested after the pump and all its associated piping and equipment have been installed on the apparatus.

A fifty (50) minute pumping test from draft shall be completed and results recorded to perform as listed below;

- 100% of rated capacity at 150 psi (1,000 kPa) net pressure, 30 min.
- 70% of rated capacity at 200 psi (1,400 kPa) net pressure, 10 min.
- 50% of rated capacity at 250 psi (1,700 kPa) net pressure, 10 min.

The test shall include at least the pumping test, the pumping engine overload test, the pressure control system test, the priming device tests, and the vacuum test.

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 500 psi (3,400 kPa).

The pump shall comply with the applicable requirements of "Standard for Fire Apparatus 1901, latest edition.

The pump shall be capable of producing fire streams that are free from objectionable pulsation under all normal operating conditions.

If the apparatus is equipped with a pump driven by the chassis engine designed for both stationary pumping and pump-and-roll, the test shall verify that the engine speed control at the pump operator's panel cannot be advanced when either of the following conditions exists:

- (1) The chassis transmission is in neutral, the parking brake is off, and the pump shift status in the driving compartment is disengaged.
- (2) The chassis transmission is in any gear other than neutral, the parking brake is on, and the pump shift in the driving compartment is in the "Pump Engaged" or the "OK to Pump-and-Roll" position.

A test plate shall be provided at the pump operator's panel that gives the rated discharges and pressures together with the speed of the engine as determined by the certification test for each unit, the position of the parallel/series pump as used, and the governed speed of the engine as stated by the engine manufacturer on a certified brake horsepower curve.

## **FOAM SYSTEM TEST**

The apparatus foam system shall be tested and certified by the manufacturer. The certification shall be delivered to the customer with the apparatus.

The test shall be performed with the air temperature between 0 degrees F and 100 degrees F.

The foam system will be tested to comply with requirements of NFPA 1901. The basis for the test is as follows:

A base calibration range is established using water and foam concentrate from the system to be tested. Two (2) standard solutions are made, a minimum allowable foam percent and a maximum allowable foam percent solution for each foam proportioning system foam percent setting to be tested. The minimum allowable and maximum allowable foam percent solution are determined using the criteria given in NFPA 1901, "Foam Proportioning System Accuracy".

After the standard foam solutions are thoroughly mixed the conductivity (a measure of a substances ability to conduct electricity) of each solution is measured. The conductivity of a solution is directly proportional to the percentage of foam in the solution. The reading is recorded on the certificate by the Testing Official. From these two (2) readings a range is established for that particular foam proportioning system's foam percent setting.

The foam system is then operated at the corresponding foam percent setting, flow rate, and pressure as recommended by the foam proportioning system manufacturer. A test sample is the collected at an adequate distance downstream from the foam proportioner being tested. When the test sample has been collected its conductivity is measured and recorded by the Testing Official. The Testing Official then compares the conductivity reading of the test sample to the minimum and maximum allowable conductivity readings taken from the two (2) standard solutions. If it is greater than the minimum allowable conductivity, but less than the maximum allowable conductivity, the foam proportioning system is determined to be accurate at that foam percent setting.

The above procedure is performed at three foam proportioning system foam percent settings. The foam percent settings are:

- 1) The minimum foam percent setting available.
- 2) A mid-range foam percent setting, if available.
- 3) The maximum foam percent setting available.

The foam proportioning system is certified to be accurate if all three foam percent settings produce conductivity, measurements in the range of conductivity' as determined by' the standard solutions for each foam percent setting. The Testing Official makes the final determination of the foam proportioning system accuracy as installed by' the apparatus manufacturer.

Criteria for the following systems:

- Class A foam - .1%, .5%, and 1 .0% settings if available.
- Class B foam - 1.0%. 3.0%, and 6.0% settings if available.
- Class A and Class B foam - .1% and 1.0% using Class A foam and at 3.0% using Class B foam or at .1% using Class A foam and 3.0% and 6.0% using Class B foam.

## **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 Platteville Gilcrest FPD 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.

**LIGHT WARRANTY - FIVE (5) YEARS**

Supplied Whelen warning and scene light components shall be covered by a five year factory warranty.

**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.

**STAINLESS STEEL PLUMBING WARRANTY**

The stainless steel plumbing shall be free of defects in material and 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.

The contractor shall supply details of their warranty information with their bid submission.

**AKRON BRASS TEN YEAR VALVE WARRANTY**

The Akron Brass valves shall be warranted by Akron Brass for a period of ten (10) years from the date of delivery to the Platteville Gilcrest FPD. The warranty for electronics shall be warranted by Akron Brass for a period of five (5) years from date of delivery to the Platteville Gilcrest FPD.

**POLY WATER TANK WARRANTY**

The poly water tank shall be provided with a lifetime material and workmanship limited warranty. The manufacturer shall supply details of their warranty information with their bid submission.

**CONSTRUCTION PERIOD**

The completed vehicle shall be delivered within five hundred ninety (590) days after pre-construction meeting and receipt and approval of any signed change orders from Platteville Gilcrest FPD.

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

**DEALER MAKE READY PERIOD**

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

**OVERALL HEIGHT REQUIREMENT**

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

**OVERALL LENGTH REQUIREMENT**

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

**ANGLE OF APPROACH**

The angle of approach for this vehicle shall not be less than twenty (20) degrees when it is loaded to the estimated in-service weight as specified by the current edition of NFPA 1906.

**ANGLE OF DEPARTURE**

The angle of departure for this vehicle shall not be less than twenty (20) degrees when it is loaded to the estimated in-service weight as specified by the current edition of NFPA 1906.

Inspection Trips, Delivery, Demonstration

**PRE-CONSTRUCTION CONFERENCE**

A pre-construction conference shall be required at the Contractor's factory for four (4) personnel from the Platteville Gilcrest FPD to finalize all construction details prior to manufacturing.

The Contractor shall at his/her expense, provide transportation, lodging, rental car and meal expenses during the pre-construction conference. Any travel distance greater than 250 miles shall be by non-stop commercial air travel.

### **FINAL INSPECTION CONFERENCE**

A final inspection conference shall be required at the Contractor's factory for four (4) personnel from the Platteville Gilcrest FPD 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, provide transportation, lodging, rental car and meal expenses during the final inspection conference. Any travel distance greater than 250 miles shall be by non-stop commercial air travel.

### **DELIVERY AND DEMONSTRATION**

The Contractor shall be responsible for the delivery of the completed unit to the Platteville Gilcrest FPD'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 Platteville Gilcrest FPD regarding the operation, care and maintenance of the apparatus and equipment supplied at Platteville Gilcrest FPD location.

The Delivery Engineer shall set delivery and instruction schedule with the person appointed by Platteville Gilcrest FPD.

After delivery of the apparatus, the Platteville Gilcrest FPD 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**

### **2022 F-550 Chassis 4x4 SD Crew Cab 179" WB DRW XLT (W5H)**

#### **Base Vehicle**

W5H Base Vehicle Price (W5H)

#### **Packages**

663A Order Code 663A

*Includes:*

- *Transmission: TorqShift 10-Speed Automatic 10R140 with neutral idle and selectable drive modes: normal, tow/haul, eco, deep sand/snow and slippery.*
- *Wheels: 19.5" x 6" Argent Painted Steel Hub covers/center ornaments not included.*
- *Radio: AM/FM Stereo w/MP3 Player Includes 7 speakers and auxiliary audio input jack.*
- *SYNC 3 Communications & Entertainment System Includes enhanced voice recognition, 8" LCD capacitive touchscreen in center stack with swipe capability, pinch-to-zoom capability included with available voice-activated touchscreen navigation system, AppLink, 911 Assist, Apple CarPlay and Android Auto and 2 smart-charging USB ports. SYNC AppLink lets you control some of your favorite compatible mobile apps with your voice. It is compatible with select smartphone platforms. Commands may vary by phone and AppLink softwares.*
- *SiriusXM Radio Includes 1 I/P mounted center speaker and a 3-month prepaid subscription. Service is not available in Alaska and Hawaii. Subscriptions to all SiriusXM services are sold by SiriusXM after trial period. If you decide to continue service after your trial, the subscription plan you choose will automatically renew thereafter and you will be charged according to your chosen payment method at then-current rates. Fees and taxes apply. To cancel you must call SiriusXM at 1-866-635-2349. See SiriusXM customer agreement for complete terms at [www.siriusxm.com](http://www.siriusxm.com). All fees and programming subject to change. Sirius, XM and all related marks and logos are trademarks of Sirius XM Radio Inc.*
- *Cloth 40/20/40 Split Bench Seat Includes 20% center under-seat storage, center armrest, cupholder, storage, 2-way adjustable driver/passenger headrests and driver's side manual lumbar.*

#### **Powertrain**

**99T Engine: 6.7L 4V OHV Power Stroke V8 Turbo Diesel B20**

*Includes Diesel Exhaust Fluid (DEF) tank, intelligent oil-life monitor and manual push-button engine-exhaust braking.*

*Includes:*

- *Dual 78-AH 750 CCA Batteries*
  - *Transmission Power Take-Off Provision*
- Includes mobile and stationary PTO modes.*

**44G Transmission: TorqShift 10-Speed Automatic**

*10R140 with neutral idle and selectable drive modes: normal, tow/haul, eco, deep sand/snow and slippery.*

**X8L Limited Slip w/4.88 Axle Ratio**

#### **Code Description**

**68M GVWR: 19,500 lb Payload Plus Upgrade Package**

*Includes upgraded frame, rear-axle and low deflection/high capacity springs. Increases max RGAWR to 14, 706. Note: See Order Guide*

Supplemental Reference for further details on GVWR.

## **Wheels & Tires**

### **TGK Tires: 225/70Rx19.5G BSW Traction (TGK)**

*Includes 4 traction tires on the rear and 2 traction tires on the front. Not recommended for over the road applications; could incur irregular front tire wear and/or NVH.*

### **64Z Wheels: 19.5" x 6" Argent Painted Steel**

*Hub covers/center ornaments not included.*

### **512 Spare Tire, Wheel & Jack**

**Required in Rhode Island.**

*Excludes carrier.*

*Includes:*

- 6-Ton Hydraulic Jack

## **Seats & Seat Trim**

### **3 Cloth 40/20/40 Split Bench Seat**

*Includes 20% center under-seat storage, center armrest, cupholder, storage, 2-way adjustable driver/passenger headrests and driver's side manual lumbar.*

## **Other Options**

### **PAINT Monotone Paint Application**

### **179WB 179" Wheelbase**

### **STDRD Radio: AM/FM Stereo w/MP3 Player**

*Includes 7 speakers and auxiliary audio input jack.*

*Includes:*

- SYNC 3 Communications & Entertainment System

*Includes enhanced voice recognition, 8" LCD capacitive touchscreen in center stack with swipe capability, pinch-to-zoom capability included with available voice-activated touchscreen navigation system, AppLink, 911 Assist, Apple CarPlay and Android Auto and 2 smart-charging USB ports. SYNC AppLink lets you control some of your favorite compatible mobile apps with your voice. It is compatible with select smartphone platforms. Commands may vary by phone and AppLink softwares.*

- SiriusXM Radio

## **Code Description**

*Includes 1 I/P mounted center speaker and a 3-month prepaid subscription. Service is not available in Alaska and Hawaii. Subscriptions to all SiriusXM services are sold by SiriusXM after trial period. If you decide to continue service after your trial, the subscription plan you choose will automatically renew thereafter and you will be charged according to your chosen payment method at then-current rates. Fees and taxes apply. To cancel you must call SiriusXM at 1-866-635-2349. See SiriusXM customer agreement for complete terms at [www.siriusxm.com](http://www.siriusxm.com). All fees and programming subject to change. Sirius, XM and all related marks and logos are trademarks of Sirius XM Radio Inc.*

### **41H Engine Block Heater**

### **41P Transfer Case Skid Plates**

### **61J 6-Ton Hydraulic Jack**

### **62R Transmission Power Take-Off Provision**

*Includes mobile and stationary PTO modes.*

### **98R Operator Commanded Regeneration**

### **67B 397 Amp Alternators**



## 872 Rear View Camera & Prep Kit

*Pre-installed content includes cab wiring and frame wiring to the rear most cross member. Upfitters kit includes camera with mounting bracket, 20' jumper wire and camera mounting/aiming instructions.*

## 153 Front License Plate Bracket

Standard in states requiring 2 license plates and optional to all others.

## 41A Rapid-Heat Supplemental Cab Heater

*Includes:*

*- 397 Amp Alternators*

## Fleet Options

### 47J Fire/Rescue Prep Pkg w/EPA Special Emissions (LPO)

Requires valid FIN code.

*Includes 7,000 lbs. max front springs/GAWR rating for configuration selected. Incomplete vehicle package - requires further manufacture and certification by a final stage manufacturer. Ford urges Fire/Rescue vehicle manufacturers to follow the recommendations of the Ford Incomplete Vehicle Manual and the Ford Truck Body Builders Layout Book (and pertinent supplements). NOTE 1: Stationary Elevated Idle Control (SEIC) has been integrated into the engine control module. NOTE 2: Engine calibration significantly reduces the possibility of depower mode when in stationary PTO operation. NOTE 3: Operator commanded regen allowed down to 30% of DPF filter full, instead of 100%. NOTE 4: Must meet the definition of an emergency vehicle, an Ambulance or Fire Truck per 40 CFR 86.1803.01 in the federal register. NOTE 5: California Code of Regulations allows for the sale of federally certified emergency vehicles in California.*

## Code Description

*Includes:*

*- 397 Amp Alternators*

*- Operator Commanded Regeneration*

### 942 Daytime Running Lamps (DRL) (LPO)

Requires valid FIN code.

*The non-controllable 942 Daytime Running Lamps (DRL) replace the standard Daytime Running Lamps (DRL) on/off cluster controllable.*

### WARANT Fleet Customer Powertrain Limited Warranty

Requires valid FIN code.

*Ford is increasing the 5-year 60,000-mile limited powertrain warranty to 5-years, 100,000 miles. Only Fleet purchasers with a valid Fleet Identification Number (FIN code) will receive the extended warranty.*

*When the sale is entered into the sales reporting system with a sales type fleet along with a valid FIN code, the warranty extension will automatically be added to the vehicle. The extension will stay with the vehicle even if it is subsequently sold to a non-fleet customer before the expiration. This extension applies to both gas and diesel powertrains. Dealers can check for the warranty extension on eligible fleet vehicles in OASIS. Please refer to the Warranty and Policy Manual section 3.13.00 Gas Engine Commercial Warranty. This change will also be reflected in the printed Warranty Guided distributed with the purchase of every new vehicle.*

## Emissions

### 425 50-State Emissions System

## Interior Color

### 3S\_01 Medium Earth Gray w/Cloth 40/20/40 Split Bench Seat

## Exterior Color

Vermillion Red

## Selected Equip & Specs

### Dimensions

• Exterior length: 265.2" • Cab to axle: 60.0" • Exterior width: 80.0" • Exterior height: 81.8" • Wheelbase: 179.0" • Front track: 74.8" • Rear track: 74.0" • Turning radius: 25.6' • Rear tire outside width: 93.9" • Min ground clearance: 8.2" • Front legroom: 43.9" • Rear legroom: 43.6" • Front headroom: 40.8" • Rear headroom: 40.4" • Front hiproom: 62.5" • Rear hiproom: 64.7" • Front shoulder room: 66.7" • Rear shoulder room: 65.9" • Passenger volume: 131.7cu.ft. • Cargo volume: 52.1cu.ft. • Maximum cargo volume: 52.1cu.ft.

### Powertrain

\* **Powerstroke 330hp 6.7L OHV 32 valve intercooled turbo V-8 engine with diesel direct injection** \* **Recommended fuel : diesel** • federal • TorqShift 10 speed automatic transmission with overdrive • Part-time \* **Limited slip differential** • Fuel Economy Cty: N/A • Fuel Economy Highway: N/A \* **Transmission PTO provision**

### Suspension/Handling

• Front Mono-beam non-independent suspension with anti-roll bar, HD shocks \* **Rear rigid axle leaf spring suspension with anti-roll bar, HD shocks** • Firm ride Suspension • Hydraulic power-assist re-circulating ball Steering • Front and rear 19.5 x 6 argent steel wheels \* **LT225/70SR19.5 GBSW AT front and rear tires** • Dual rear wheels

### Body Exterior

• 4 doors • Conventional left rear passenger • Conventional right rear passenger • Driver and passenger power remote heated, manual folding door mirrors with turn signal indicator • Turn signal indicator in mirrors • Black door mirrors • Chrome bumpers • Trailer harness • Clearcoat paint • Front and rear 19.5 x 6 wheels • 2 front tow hook(s)

### Convenience

• Manual air conditioning with air filter \* **Supplemental heater** • Cruise control with steering wheel controls • Power windows • Driver and passenger 1-touch up • Driver and passenger 1-touch down • Remote power door locks with 2 stage unlock and illuminated entry • Manual tilt steering wheel • Manual telescopic steering wheel • Day-night rearview mirror • FordPass Connect 4G internet access • SYNC 3 911 Assist emergency SOS • Wireless phone connectivity • 2 1st row LCD monitors • Front and rear cupholders • Dual visor mirrors • Full overhead console • Driver and passenger door bins • Rear door bins • Upfitter switches

### Seats and Trim

• Seating capacity of 6 • Front 40-20-40 split-bench seat • 4-way driver seat adjustment • Manual driver lumbar support • 4-way passenger seat adjustment • Centre front armrest with storage • 60-40 folding rear split-bench seat • Cloth seat upholstery • Metal-look instrument panel insert

### Entertainment Features

• SiriusXM AM/FM/Satellite radio with radio data system • Auxiliary audio input • SYNC 3 external memory control • Steering wheel mounted radio controls • 7 speakers • Streaming audio • Fixed antenna

### Lighting, Visibility and Instrumentation

• Halogen aero-composite headlights • Delay-off headlights • Auto on/off headlights • Variable intermittent front windshield wipers • Deep tinted windows • Front and rear reading lights • Tachometer • Compass • Outside temperature display \*

**Camera(s) - rear** • Trip computer • Trip odometer • Configurable digital/analog gauges

## Safety and Security

• 4-wheel ABS brakes • Brake assist • 4-wheel disc brakes • Driveline traction control • Dual front impact airbag supplemental restraint system • Dual seat mounted side impact airbag supplemental restraint system • Safety Canopy System curtain 1st and 2nd row overhead airbag supplemental restraint system • Remote activated perimeter/approach lighting • Power remote door locks with 2 stage unlock and panic alarm • Security system with SecuriLock immobilizer • MyKey restricted driving mode • Manually adjustable front head restraints • 3 manually adjustable rear head restraints

## Dimensions

### General Weights

\* **Curb 8,442 lbs.** \* **GVWR 19,500 lbs.**

\* **Payload 11,290 lbs.**

### Front Weights

\* **Front GAWR 7,000 lbs.** \* **Front curb weight 4,946 lbs.**

Front axle capacity 7,000 lbs. \* **Front spring rating 7,000 lbs.**

Front tire/wheel capacity 7,500 lbs.

### Rear Weights

\* **Rear GAWR 14,706 lbs.** \* **Rear curb weight 3,496 lbs.**

\* **Rear axle capacity 14,706 lbs.** \* **Rear spring rating 14,706 lbs.**

Rear tire/wheel capacity 15,000 lbs.

### Trailer Type

Harness **Yes** Brake controller **Yes**

Trailer sway control **Yes**

### General Trailing

\* **5th-wheel towing capacity 23300 lbs.** \* **Gooseneck towing capacity 23300 lbs.**

Towing capacity 18500 lbs. \* **GCWR 32500 lbs.**

### Fuel Tank type

Capacity 40 gal.

### Off Road

Min ground clearance 8 "

### Interior cargo

Cargo volume 52.1 cu.ft. Maximum cargo volume 52.1 cu.ft.

### Rear Frame

Height loaded 29 " Height unloaded 34 "

## Powertrain

### Engine Type

\* **Brand Powerstroke** Block material **Iron**

Cylinders **V-8** Head material **Aluminum**

\* **Ignition Compression** \* **Injection Diesel direct injection**

\* **Liters 6.7L** Orientation **Longitudinal**

\* **Recommended fuel Diesel** \* **Valves per cylinder 4**

Valvetrain **OHV** \* **Forced induction Intercooled turbo**

### *Engine Spec*

\* **Bore 3.90"** \* **Compression ratio 15.8:1**

\* **Displacement 406 cu.in.** \* **Stroke 4.25"**

### *Engine Power*

SAEJ1349 AUG2004 compliant Yes \* **Output 330 HP @ 2,600 RPM**

\* **Torque 825 ft.-lb @ 2,000 RPM**

### *Alternator*

Type Dual Amps 397

### *Battery*

Amp hours 78 Cold cranking amps 750

Run down protection Yes \* **Type Dual**

### *Engine Extras*

\* **Block heater Yes**

### *Transmission*

Electronic control Yes Lock-up Yes

Overdrive Yes Speed 10

Type Automatic

### *Transmission Gear Ratios*

1st 4.615 2nd 2.919

3rd 2.132 4th 1.773

5th 1.519 6th 1.277

7th 1 8th 0.851

9th 0.687 10th 0.632

Reverse Gear ratios 4.695

### *Transmission Torque Converter*

Stall ratio 1.97

### *Transmission Extras*

Driver selectable mode Yes Sequential shift control SelectShift

Oil cooler Regular duty \* **PTO provision Yes**

### *Drive Type*

4wd type Part-time Type Four-wheel

### *Drive Feature*

\* **Limited slip differential Mechanical** Traction control Driveline

\* **Power take-off provision Yes** Locking hub control Auto

Transfer case shift Electronic

### *Drive Axle*

Ratio 4.88

### *Exhaust*

Material Stainless steel System type Single

### *Emissions*

CARB Federal

### *Fuel Economy*

\* **Fuel type Diesel**

*Engine Retarder*

\* **Type Yes**

**Driveability**

*Brakes*

ABS 4-wheel ABS channels 4

Type 4-wheel disc Vented discs Front and rear

*Brake Assistance*

Brake assist Yes

*Suspension Control*

Ride Firm

*Front Suspension*

Independence Mono-beam non-independent Anti-roll bar Regular

*Front Spring*

Type Coil \* **Grade HD**

*Front Shocks*

Type HD

*Rear Suspension*

\* **Independence Rigid axle** Type Leaf

Anti-roll bar Regular

*Rear Spring*

Type Leaf Grade HD

*Rear Shocks*

Type HD

*Steering*

Activation Hydraulic power-assist Type Re-circulating ball

*Steering Specs*

# of wheels 2

**Exterior**

*Front Wheels*

Diameter 19.5" Width 6.00"

*Rear Wheels*

Diameter 19.5" Width 6.00"

Dual Yes

*Spare Wheels*

\* **Wheel material Steel**

*Front and Rear Wheels*

Appearance Argent Material Steel

*Front Tires*

Aspect 70 Diameter 19.5"

Sidewalls BSW Speed S

\* **Tread AT** Type LT

Width 225mm LT load rating G

\* **RPM 645**

### *Rear Tires*

Aspect 70 Diameter 19.5"

Sidewalls BSW Speed S

\* **Tread AT** Type LT

Width 225mm LT load rating G

\* **RPM 645**

### *Spare Tire*

\* **Mount Frame mounted** \* **Type Full-size**

### *Wheels*

Front track 74.8" Rear track 74.0"

Turning radius 25.6' Wheelbase 179.0"

Rear tire outside width 93.9"

### *Body Features*

\* **Front license plate bracket Yes** Front splash guards Yes

\* **Skid plate(s) 1** Body material Aluminum

Side impact beams Yes Front tow hook(s) 2

### *Body Doors*

Door count 4 Left rear passenger Conventional

Right rear passenger Conventional

### *Exterior Dimensions*

Length 265.2" Body width 80.0"

Body height 81.8" Cab to axle 60.0"

Axle to end of frame 47.2" Frame section modulus 12.7cu.in.

Frame yield strength (psi) 50000.0 Frame rail width 34.2"

Front bumper to Front axle 38.3" Cab to end of frame 107.2"

Front bumper to back of cab 158.1"

### **Safety**

#### *Airbags*

Driver front-impact Yes Driver side-impact Seat mounted

Overhead Safety Canopy System curtain 1st

and 2nd row

Passenger front-impact Yes

Passenger side-impact Seat mounted

#### *Seatbelt*

Height adjustable Front

#### *Security*

Immobilizer SecuriLock Panic alarm Yes

Restricted driving mode MyKey

### **Seating**

#### *Passenger Capacity*

Capacity 6

#### *Front Seats*

Split 40-20-40 Type Split-bench

### *Driver Seat*

Fore/aft Manual Reclining Manual  
Way direction control 4 Lumbar support Manual

### *Passenger seat*

Fore/aft Manual Reclining Manual  
Way direction control 4

### *Front Head Restraint*

Control Manual Type Adjustable

### *Front Armrest*

Centre Yes Storage Yes

### *Rear Seats*

Descriptor Split-bench Facing Front  
Folding 60-40 Folding position Fold-up cushion  
Type Fixed

### *Rear Head Restraints*

Control Manual Type Adjustable  
Number 3

### *Front Seat Trim*

Material Cloth Back material Cloth

### *Rear Seat Trim Group*

Material Cloth Back material Carpet

## **Convenience**

### *AC And Heat Type*

Air conditioning Manual Air filter Yes  
Underseat ducts Yes \* **Supplemental heater Yes**

### *Audio System*

Auxiliary audio input Yes Radio SiriusXM AM/FM/Satellite  
Radio data system Yes Radio grade Regular  
Seek-scan Yes External memory control SYNC 3

### *Audio Speakers*

Speaker type Regular Speakers 7

### *Audio Controls*

Speed sensitive volume Yes Steering wheel controls Yes  
Voice activation Yes Streaming audio Bluetooth yes

### *Audio Antenna*

Type Fixed

### *LCD Monitors*

1st row 2 Primary monitor size (inches) 8

### *Cruise Control*

Cruise control With steering wheel controls

### *Convenience Features*

Retained accessory power Yes 12V DC power outlet 3  
Emergency SOS SYNC 3 911 Assist Wireless phone connectivity Bluetooth

120V AC power outlet 2 Smart device integration Mirroring  
Upfitter switches Yes  
*Door Lock Activation*  
Type Power with 2 stage unlock Remote Keyfob (all doors)  
Integrated key/remote Yes  
*Door Locks Extra FOB Controls*  
Remote engine start Smart device only  
*Instrumentation Type*  
Appearance Digital/analog Configurable Yes  
*Instrumentation Gauges*  
Tachometer Yes Engine temperature Yes  
**\* Turbo/supercharger boost Yes** Transmission fluid temp Yes  
Engine hour meter Yes  
*Instrumentation Warnings*  
Oil pressure Yes Engine temperature Yes  
Battery Yes Lights on Yes  
Key Yes Low fuel Yes  
Door ajar Yes Service interval Yes  
Brake fluid Yes  
*Instrumentation Displays*  
Clock In-radio display Compass Yes  
Exterior temp Yes Systems monitor Yes  
**\* Camera(s) - rear Yes**  
*Instrumentation Feature*  
Trip computer Yes Trip odometer Yes  
*Steering Wheel Type*  
Material Urethane Tilting Manual  
Telescoping Manual  
*Front Side Windows*  
Window 1st row activation Power  
*Windows Rear Side*  
2nd row activation Power  
*Window Features*  
1-touch down Driver and passenger 1-touch up Driver and passenger  
Tinted Deep  
*Front Windshield*  
Wiper Variable intermittent  
*Rear Windshield*  
Window Fixed  
**Interior**  
*Driver Visor*  
Mirror Yes  
*Passenger Visor*



Mirror **Yes**

*Rear View Mirror*

Day-night **Yes**

*Headliner*

Coverage **Full** Material **Cloth**

*Floor Trim*

Coverage **Full** Covering **Carpet**

Mats **Carpet front and rear**

*Trim Feature*

Instrument panel insert **Metal-look** Gear shifter material **Urethane**

Interior accents **Chrome**

*Lighting*

Dome light type **Fade** Front reading **Yes**

Illuminated entry **Yes** Rear reading **Yes**

Variable IP lighting **Yes**

*Overhead Console Storage*

Storage **Yes** Type **Full**

*Storage*

Driver door bin **Yes** Front Beverage holder(s) **Yes**

Glove box **Locking** Passenger door bin **Yes**

Seatback storage pockets **2** Illuminated **Yes**

Rear yes **Yes** Instrument panel **Covered** bin

Dashboard **Yes** Rear door bins **Yes**

1st row underseat **Locking**

*Legroom*

Front **43.9"** Rear **43.6"**

*Headroom*

Front **40.8"** Rear **40.4"**

*Hip Room*

Front **62.5"** Rear **64.7"**

*Shoulder Room*

Front **66.7"** Rear **65.9"**

*Interior Volume*

Passenger volume **131.7 cu.ft.**

## **Warranty**

### **Standard Warranty**

#### *Basic*

Distance **36,000 miles** Months **36 months**

#### *Powertrain*

Distance **60,000 miles** Months **60 months**

#### *Corrosion Perforation*

Distance **Unlimited miles** Months **60 months**

### *Roadside Assistance*

Distance 60,000 miles Months 60 months

### **Additional Warranty**

#### *Diesel Engine*

Distance 100,000 miles Months 60 months

16

### **CAB TO AXLE DIMENSION**

Cab to axle will be 60".

Chassis Options: Ford F-550, 4-Door

### **OEM FRONT BUMPER REPLACEMENT**

An SVI Extreme Contoured one-piece, fully welded steel construction front bumper shall be bolted in place of the OEM bumper. Two (2) 3/4" steel tow eyes shall be provided on front with 3/4" opening.

Bumper shall have a two-stage finish using epoxy pre-coating and high-grade textured black powder coating for durability and long lasting corrosion resistance.

**Needs to be as wide as the aftermarket fender flares/super single tires.**

### **FRONT BUMPER PUSH BAR / GRILLE GUARD**

The front bumper shall be provided with a steel push bar / grille guard combination welded to bumper with the following lighting options;

One (1) Rigid Industries E-Series model 110313, 10" combination spot/flood LED light(s) with black housing color and cradle mount brackets shall be provided on front of vehicle. The E-Series 10" LED light(s) shall have 15,000 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.

### **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.

## **SIREN SPEAKER**

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

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

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

## **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**

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

ZONE A - FRONT WARNING LIGHTS, UPPER

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

The lightbar configuration (streetside to curbside) shall be:

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

All clear lights shall shut down when the parking brake is set to comply with "Blocking" mode requirements as outlined in NFPA 1901.

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

**GTT OPTICOM**

A GTT Opticom model 795H Infrared LED emitter light with built-in power supply shall be provided inside the specified light bar. Adding the Opticom LED shall re-configure the standard light(s) in specified light bar. The LED technology uses less power, has a longer life, and non-visible to the human eye.

- Opticom shall be controlled by a virtual switch, labeled "OPTICOM", and interlocked with the parking brake (transmission park position) same as other clear warning.

### ZONE A - FRONT WARNING LIGHTS

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

Each light shall have:

- Red LEDs
- Clear Lens
- Chrome Flange

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

Each light shall have:

- Red LEDs
- Clear Lens
- Chrome Flange

The Lights shall be controlled at the Switch Panel in Cab.

Super Single Tire/Wheel/Lift Package, Ford F450/550

### SUPER SINGLE TIRE CONVERSION – HUTCHINSON RUN FLAT

The chassis shall be provided with four (4) super single front and rear wheels/tires with Hutchinson run flat wheel assemblies with Continental MPT81 335/80R20 tires. Assemblies will include the two (2) piece aluminum wheel, the run flat device

### SPARE TIRE

No spare tire and wheel shall be provided with completed unit.

### GROUND CLEARANCE

A Buckstop Stage 1 (or equal) 3.5" suspension level for Ford front control arms shall be provided to allow for proper wheel well clearance for 41" diameter tires and fender modifications. The components shall be readily available, and not custom built. Payload must not be adversely affected by any changes in the suspension. Drive lines must not be adversely affected by any changes in the suspension.

Package shall include:

- Speedometer Calibration Module
- 3-1/2" Coil Springs
- Radius Arms
- HD Track Bar Mount
- Shock Absorbers Premium Nitrogen, 35mm shaft, 10 Stage Valve QTY 4
- Bump stop drop mounts
- Rear Leaf Spring Blocks and U-Bolts

NOTE: The Platteville Gilcrest FPD is aware that lifting the chassis and adding larger tires will alter the vehicles center of gravity, which will affect the vehicles handling characteristics. In addition, the larger tires will effect the stopping distance. The system is not recommended for vehicles that operate primarily on-road, but for off-road or rough terrain only. Turning radius may be reduced from 1 - 3 degrees to prevent tire rub.

Front steering axle shall be provided with a anti-sway system.

### **FENDER FLARES**

High arc fender flare cut-out kit with 8" tire coverage shall be provided to protect front Ford cab wheel well openings. The fenders shall be finish painted black prior to installation.

### **COMMUNICATION RADIO/ANTENNA INSTALLATION**

There shall be two (2) mobile communication radio(s) with antenna installed in the cab. The location of radio shall be determined by the Platteville Gilcrest FPD at the pre-construction meeting. All required radio programming shall be responsibility of Platteville Gilcrest FPD. Radio(s) may not be fully tested if no radio program is provided with radio and will be responsibility of Platteville Gilcrest FPD after delivery.

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

- Radio shall be Motorola model \_\_\_\_\_.
- Radio shall be mounted in chassis cab center console, exact location provided to Platteville Gilcrest FPD prior to installation.

### **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 COLOR AND MOUNTING**

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.

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.

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

The chassis seat belt web length as supplied by the commercial chassis manufacturer will not be compliant to NFPA Standards 14.1.3.2 and 14.1.3.3.

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".

Per Platteville Gilcrest FPD specification for a commercial chassis, this emergency vehicle may not have seat belts of this required length. These belts may not provide sufficient length for large firefighters in bunker gear. This specification for an emergency fire apparatus for these seat belts shall be non-compliant to NFPA 1901 standards, effective at the time of order.

### **SEAT BELT MONITORING SYSTEM - COMMERCIAL CAB**

Per Platteville Gilcrest FPD 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.

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.

### **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.

### **FOUR (4) – 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, DRIVING AREA**

No helmet storage is required in the cab driving area. A safety sign FAMA15, which warns not to wear helmets while the vehicle is in motion, shall be visible from each seat that is intended to be occupied while the vehicle is in motion.

### **HELMET STORAGE, CREW AREA**

No helmet storage is required in the cab crew area. A safety sign FAMA15, which warns not to wear helmets while the vehicle is in motion, shall be visible from each seat that is intended to be occupied while the vehicle is in motion.

### **CAB TESTING CERTIFICATION**

Section 14.3.2 of the NFPA 1901 standards, 2009 edition, require the cabs on apparatus with a GVWR greater than 26,000 lb. (11,800 kg) shall meet the requirements of one of the following sets of standards:

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

Per Platteville Gilcrest FPD specification for a commercial chassis, this emergency vehicle may not have a cab that has been tested to these standards. This specification for an emergency fire apparatus for the cab testing requirements shall be non-compliant to NFPA 1901 standards, effective at the time of the bid opening.

## **CAB PAINT**

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

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

## **REFLECTIVE STRIPE - CAB DOOR INTERIOR**

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

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

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

## **CAB INTERIOR COMPONENT PAINT COLOR, OEM SUPPLIED**

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

## **MUDFLAPS**

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

## **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.

Front Cab Components: Not Provided

## **FUEL FILL**

There shall be one (1) chassis supplied fuel fill mounted in the streetside exterior wheel well panel, behind the rear axle.

## **DEF FLUID FILL**

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

## **DEF TANK RELOCATION**

The cab/chassis supplied DEF tank shall be re-located as required for installation of specified generator or pump. Kit shall include OEM brackets, fasteners, harness extension, (4) connectors, and installation manual.



## **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 Platteville Gilcrest FPD 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 Platteville Gilcrest FPD from such repair and shall NOT be used. All fabricated body components to be cut by a laser or water-jet for superior cut edge quality.

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

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

## **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 1/8" (.125) 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.

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 resist moisture from entering the compartments. All other interior seams and corners shall be sealed with silicone based caulk prior to painting.

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

### **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 shall be integral with the body and shall be all welded construction. The roof of the body shall be not less than 1/8" aluminum 3003H-14 alloy smooth plate.

All seams in the roof area shall be welded to the radius and supports prior to paint to resist entry of moisture. All roof seams shall be stitch welded and caulked.

A formed radius shall be provided along the body sides. The use of extruded radius will not be acceptable, No Exceptions.

### **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 1/8" aluminum tubes minimum, the same width as the chassis frame rails. Welded to this tubing shall be cross members of 2" x 4" x 1/8" 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 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**

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

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

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

The full width rear bumper shall be constructed from 2" x 2" x 1/8" steel tubing frame and covered with 3/16" aluminum tread plate. Any stepping surface shall have a grip surface insert to meet NFPA requirements. 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 bumper subframe, below body. The tow eyes shall be fabricated from 1/2" thick steel plate with a 3" diameter opening. Tow eyes shall have a black powder coat finish.

### **REAR MOUNTED WINCH**

There shall be a heavy duty winch installed in the rear frame area of the unit. The winch shall be 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.

### **GROUND LIGHTS**

There shall be two (2) OnScene 8" Access white LED lights installed below bumper capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.

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

### **WHEEL WELL EXTERIOR PANEL**

The exterior panel of the body wheel well enclosure shall be constructed from 1/8" aluminum smooth plate and will be bolted on for easy removal and replacement.

### **RUBBER BODY FENDERETTES**

The body wheel well openings shall be provided with round radius, rubber fenderettes. The fenderettes shall be bolted and easily replaceable if damaged. The fenderettes shall be installed using stainless steel fasteners with plastic isolators to help prevent corrosion.

### **WHEEL WELL LINERS**

NO wheel well liners shall be provided.

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

## **FASTENERS**

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

## **ELECTROLYSIS CORROSION CONTROL**

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

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

## **PAINT FINISH - SINGLE COLOR**

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

Touch-up paint shall be provided with completed vehicle.

- 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 resist corrosion under the vehicle.

## **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 STRIPE REQUIREMENTS**

### **Material**

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

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

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

### **Minimum Requirements**

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

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

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

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

## **GRAPHICS PROOF**

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

### **REFLECTIVE STRIPE - CAB SIDE**

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

- This reflective stripe shall be white in color.

### **REFLECTIVE STRIPE - CAB FRONT**

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

- This reflective stripe shall be black in color. **Located on vertical face of bumper.**

### **REFLECTIVE STRIPE - BODY SIDES**

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

- This reflective stripe shall be white in color.

The stripe shall extend straight from front of cab, then ahead of the rear wheels, it shall form a "Z" shape and extend straight back to the rear of the body.

### **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.

The stripe material shall be 3M Diamond Grade.

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

### **LETTERING**

#### **GRAPHICS PROOF**

A color graphics proof of the lettering layout shall be provided for approval by Platteville Gilcrest FPD prior to installation. The graphics proof shall be submitted to Platteville Gilcrest FPD 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 forty (40) 4" high SuperGold letters furnished and installed on the vehicle. Lettering shall have a clear 3M UV Protective Over Laminate applied before installation.

"PLATTEVILLE-GILCREST" arched on front cab door.

There shall be forty four (44) 3" high SuperGold letters furnished and installed on the vehicle. Lettering shall have a clear 3M UV Protective Over Laminate applied before installation.

"Fire Protection District" on front doors

#### **UPPER BODY SIDE LETTERING**

There shall be fourteen (14) 4" high reflective letters furnished and installed on the vehicle.

"CO-PLLX" shall be located on the body rear doors.

- This reflective lettering shall be white in color.

### **REAR BODY LETTERING**

There shall be seven (7) 4" high reflective letters furnished and installed on the vehicle.

"CO-PLLX" shall be located on the rear of the body.

- This reflective lettering shall be white in color.

### **FRONT OF CAB LETTERING**

There shall be seven (7) 2.5" high reflective letters furnished and installed on the vehicle.

"CO-PLLX" shall be located on the front bumper.

- This reflective lettering shall be white in color.



## **EXTERIOR COMPARTMENT DOORS**

### **HINGED DOOR CONSTRUCTION**

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

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

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

Compartment door openings shall be sealed with closed cell automotive type rubber molding to provide a weather resistant seal around door. In addition, rubber molding shall be provided along hinge to resist moisture entry. Open cell foam type rubber moldings are NOT ACCEPTABLE.

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

Drip rails shall be installed above all compartment door openings. Drip rails shall be completely removable for easy replacement if necessary.

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

The door handle type and door check type of hinged compartment doors shall be as specified with each door.

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

### **BODY HEIGHT MEASUREMENTS**

The body height shall be approximately 10" below the cab roof height with vertical body dimensions as follows:

#### **AHEAD OF REAR AXLE**

	<u>Description</u>	<u>Dimension</u>
A	Bottom of Subframe to Top of Body	36.5"
B	Bottom of Subframe to Bottom of Body	12.5"
C	Vertical Door Opening -with hinged door	40.0"

#### **ABOVE REAR AXLE**

	<u>Description</u>	<u>Dimension</u>
D	Vertical Door Opening - Above Rear Wheel -with hinged door	20.5"

**BEHIND REAR AXLE**

	<u>Description</u>	<u>Dimension</u>
E	Vertical Door Opening -with hinged door	40.0"

**GENERAL**

	<u>Description</u>	<u>Dimension</u>
F	Bottom or Drip Rail to Top of Body	4.0"

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

**BODY WIDTH DIMENSIONS**

The body shall be 95.0" wide, and 97.5" wide at drip rails. Interior compartment depth dimensions shall be approximately:

<u>Area Description</u>	<u>Dimension</u>
Transverse above subframe	90.0"
Compartment depth below subframe	19.0"

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

The interior useable compartment width shall be approximately 32.0" wide x 19" deep or transverse depending on depth of compartment RC1.

- This compartment shall have flush style vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 26.5" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

## **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum shelf-Trac for specified component installation.
- There shall be two (2) adjustable shelf/shelves approximately 18" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edges.
  - The above component(s) shall have a smooth un-painted finish.
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.
- One (1) 6" x 7-1/16" large air vent shall be provided in lower compartment wall for air displacement.

## **STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S2)**

The interior useable compartment width shall be approximately 47.0" wide x 19" deep or transverse depending on depth of compartment RC1.

- This compartment shall have a horizontally hinged, lift-up flush style door fabricated of 1/8" thick smooth aluminum. The inner liner of the door shall be 1/8" thick smooth aluminum with an unpainted finish. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 42.5" wide.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly to activate compartment lighting and door ajar signal in cab when door is opened.

## **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum shelf-Trac for specified component installation.
- There shall be one (1) adjustable shelf/shelves approximately 18" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edges.
  - The above component(s) shall have a smooth un-painted finish.
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.

### **STREETSIDE COMPARTMENT - REAR (S3)**

The interior useable compartment width shall be approximately 32.0" wide x 19" deep or transverse depending on depth of compartment RC1.

- This compartment shall have flush style vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 26.5" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

### **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum shelf-Trac for specified component installation.
- There shall be two (2) adjustable shelf/shelves approximately 18" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edges.
  - The above component(s) shall have a smooth un-painted finish.
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.
- One (1) 6" x 7-1/16" large air vent shall be provided in lower compartment wall for air displacement.

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

The interior useable compartment width shall be approximately 32.0" wide x 19" deep or transverse depending on depth of compartment RC1.

- This compartment shall have flush style vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 26.5" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

### **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum shelf-Trac for specified component installation.
- There shall be three (3) "J" style rope or equipment hook(s) for mounting of electrical extension cords or rescue ropes.
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.
- One (1) 6" x 7-1/16" large air vent shall be provided in lower compartment wall for air displacement.

## **CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C2)**

The interior useable compartment space shall be approximately 85.5" wide.

- This compartment shall have a horizontally hinged, lift-up flush style door fabricated of 1/8" thick smooth aluminum. The inner liner of the door shall be 1/8" thick smooth aluminum with an unpainted finish. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 75.0" wide.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly to activate compartment lighting and door ajar signal in cab when door is opened.

## **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum shelf-Trac for specified component installation.
- There shall be one (1) adjustable shelf/shelves approximately 18" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edges.
  - The above component(s) shall have a smooth un-painted finish.
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.

### **CURBSIDE COMPARTMENT - REAR (C3)**

The interior useable compartment width shall be approximately 32.0" wide x 19" deep or transverse depending on depth of compartment RC1.

- This compartment shall have flush style vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 26.5" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

### **COMPARTMENT LAYOUT**

- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- A Viair 20008 (or equal) 200 PSI / 1.86 CFM, 12 VDC air compressor with 2 gallon reservoir shall be provided. Compressor/reservoir unit shall be 20"long x 6" wide x 14" high and weigh 23 lbs.
  - Specified compressor shall provide air source for non-emergency utility functions.
- One (1) OnScene Access PRO white LED, full **width** compartment light, **horizontally** mounted.
- One (1) 6" x 7-1/16" large air vent shall be provided in lower compartment wall for air displacement.



### **REAR COMPARTMENT - CENTER (RC1)**

#### **OPEN REAR STORAGE - CENTER (RC1)**

The center rear of body shall have a 48" wide open rear storage area directly above body sub frame and between the specified side compartments. The floor or deck surface shall be covered with 1/8" (.125) aluminum 3003H-14 NFPA non-skid compliant tread plate.

- The pump operator's panel shall be located in this compartment.
- One (1) booster hose reel(s) shall be located in this compartment area.
- The specified pump and water tank skid unit shall be located in center rear open area. Access and handrail(s) shall be provided as needed for filling water tank and providing maintenance to engine and pump system.

#### **UPPER BODY OPEN STORAGE COMPARTMENT - STREETSIDE**

Above the exterior streetside compartments shall be an upper body storage compartment with sides fabricated from 1/8" (.125) aluminum 3003H-14 tread plate with a 1" lip with a 1" return break formed into upper edges for strength and rigidity. Rows of large diamond pattern holes shall be provided for ventilation.

The floor shall be fabricated from 1/8" (.125) aluminum 3003H-14 smooth plate. The compartment shall be open on the top and bolted to body roof with stainless steel hardware.

The compartment shall be 12" deep x 20 - 24" wide and run from the front to back of the body.

#### **UPPER BODY ENCLOSED STORAGE COMPARTMENT - CURBSIDE**

Above the exterior curbside compartments shall be an upper body storage compartment with sides fabricated from 1/8" (.125) aluminum 3003H-14 tread plate. The compartment shall have a full length outboard hinged lift-up door with a chrome handle. Door shall be fabricated from 1/8" (.125) aluminum 3003H-14 tread plate. Door shall overlap compartment vertical sides to resist entry of moisture and sealed with automotive type rubber molding to provide a weather resistant seal. Compartment shall bolted to body roof with stainless steel hardware.

Two (2) gas cylinder door holders shall assist in holding doors in open position. A polyester barrier film gasket shall be placed between stainless steel hinge and any dissimilar metals as necessary to resist corrosion.

The floor shall be fabricated from 1/8" (.125) aluminum 3003H-14 smooth plate.

Compartments shall have one (1) flush mounted OnScene LED light near door opening that will be automatically activated when door is opened, and wired to compartment door ajar warning light provided in cab.

The compartment shall be 12" deep x 20 - 24" wide and run from the front to back of the body.

## **UPPER BODY ENCLOSED STORAGE COMPARTMENT - CENTER**

Above the exterior forward compartments shall be an upper body storage compartment with sides fabricated from 1/8" (.125) aluminum 3003H-14 tread plate. The compartment shall have a full length outboard hinged lift-up door with a chrome handle. Door shall be fabricated from 1/8" (.125) aluminum 3003H-14 tread plate. Door shall overlap compartment vertical sides to resist entry of moisture and sealed with automotive type rubber molding to provide a weather resistant seal. Compartment shall bolted to body roof with stainless steel hardware.

Two (2) gas cylinder door holders shall assist in holding doors in open position. A polyester barrier film gasket shall be placed between stainless steel hinge and any dissimilar metals as necessary to resist corrosion.

The floor shall be fabricated from 1/8" (.125) aluminum 3003H-14 smooth plate.

Compartments shall have one (1) flush mounted OnScene LED light near door opening that will be automatically activated when door is opened, and wired to compartment door ajar warning light provided in cab.

The compartment shall be **approximately 18" deep (or as deep as possible while making the height match the side upper body compartment)** x 48" wide x 36" front to back.

## **BODY OPTIONS AND UPGRADES**

NO Plastic Grating (LR, WA)

## **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.

## **ROOF ACCESS HANDRAIL**

There shall be one (1) 24" horizontal handrail mounted on top of body to assist in roof access. Handrail shall be NFPA compliant 1-1/4" knurled 304 stainless steel with welded end stanchions.

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

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.

There shall be one (1) located on streetside rear of body and one (1) located on curbside rear of body.

## **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.

There shall be Two (2) located on the streetside rear of body and Two (2) located on the curbside rear of body.

## **REAR STEP**

A pull-out and down (camper style) step shall be installed below the rear bumper step. The step surface, when pulled out from its nested position, shall be approximately 13" below the rear bumper step. This step shall be 20" wide x 8" deep. Slotted side support pieces of the pull-out portion of step to be made out of .25" steel plate.

## **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.

### **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 extending to rear wall of cab. Console shall be as large as possible and fabricated of 1/8" smooth aluminum. A textured powder coat paint finish shall be provided for durability and finished appearance.

Console shall include;

- Forward section of cab console shall include;
  - **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 LED 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.
- Forward section, driver side of cab console shall include;
  - One (1) open storage pocket(s) shall be provided in console.
- Forward section, officer side of cab console shall include;
  - No components provided at this position.
- Cab console, panel position forward shall include;

## **ELECTRONIC SIREN**

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

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

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

- Cab console, panel position center shall include;

## **RADIO INSTALLATION**

There shall be one (1) Platteville Gilcrest FPD supplied radio(s) installed in the cab center console within easy reach of driver and/or officer. The final location of radio shall be determined by the Platteville Gilcrest FPD at the pre-construction meeting.

All required radio programming shall be responsibility of Platteville Gilcrest FPD. Radio(s) may not be fully tested if no radio program is provided with radio and will be responsibility of Platteville Gilcrest FPD after delivery.

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

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

### **RADIO INSTALLATION**

There shall be one (1) Platteville Gilcrest FPD supplied radio(s) installed in the cab center console within easy reach of driver and/or officer. The final location of radio shall be determined by the Platteville Gilcrest FPD at the pre-construction meeting.

All required radio programming shall be responsibility of Platteville Gilcrest FPD. Radio(s) may not be fully tested if no radio program is provided with radio and will be responsibility of Platteville Gilcrest FPD after delivery.

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

- There shall be one (1) communications radio and/or siren 3" recess mount(s) with black powdercoat paint finish in specified console.
- Cab console, center position forward shall include;
  - No components provided at this position.
  - One (1) 12 VDC cigarette style power port(s) shall be provided in cabinet with dust cover.
- Power port shall be wired battery direct.
  - Two (2) 12 VDC USB dual charger port(s) shall be provided in console with dust cover.
- Power port shall be wired battery direct.
- Power port shall be located in the top left interior corner.
- Cab console, center position center shall include;
  - No components provided at this position.
- Cab console, center position rearward shall include;
  - No components provided at this position.

## **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.

### **BATTERY SYSTEM**

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

If 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.

### **BATTERY SWITCH**

The chassis ignition key shall activate a heavy duty relay to provide 12 volt battery power to the vehicle.

- A green "BATTERY ON" pilot light shall be 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**

One (1) Blue Sea model P12 battery charger with 120 VAC input, and 25 amp 12 VDC output shall be provided. The P12 is a four stage, three output, dry mount charger designed for use in harsh environments where reliability, ease of use, and high performance are of primary importance. Backed by a 5-year warranty.

### **Five Critical Features Extend Battery Life**

- User Defined Charge Profiles for setting voltages to match the battery manufacturer's recommendations
- User Defined Absorption Stage Values determine when the charger should exit Absorption Stage in order to prevent overcharging
- Charge Coordination™ integrates with Blue Sea Systems' Automatic Charging Relays to separate battery banks while the P12 is operational
- PreFloat™ Stage prevents over charging by individually moving batteries out of Absorption Stage
- Battery Temperature Compensation adjusts charging voltage up (for colder batteries) or down (for warmer batteries) as recommended by battery manufacturers for proper battery performance

### **Additional Features**

- Rugged finned aluminum case dissipates heat
- Universal line voltage 90–265V AC, 45–65 Hz for worldwide use
- Large bright full graphic control screen with user interface
- Plain-language text in English, French, Italian, German and Spanish
- Intuitive screens provide fault alerts and plain language diagnostics

## **BATTERY CHARGE INDICATOR**

A Blue Sea EV battery charger display shall be provided and located near driver's door area. It can display a graphical representation of voltage with or without connection to a P12 battery charger. When connected to a P12 battery charger it can display the charger's summary screen, displaying voltage, current charging stage, and faults from the charger with other features as follows;

- Drop in replacement for traditional rectangular displays
- Automatically detects 1-3 battery banks
- AC charge indication verifies that power is connected and the battery charger is charging
- Plain language fault indication relays if there is a fault with the battery charger
- Dip switch selectable screen configuration allows the display to show voltage bar graphs or the P12 Battery Charger summary screen
- Displays voltage bar graphs even when AC power is not present
- Optional standby mode shuts off screen after 4 hours of inactivity
- Automatic ON based on motion with integrated knock sensor
- Bright, daylight readable, OLED display

## **SHORE POWER INLET**

One (1) Blue Sea Sure Eject model 7851, 120 VAC, 20 amp shore power inlet(s) shall be provided. The shore power connection shall automatically disengage from vehicle when chassis ignition is engaged. A matching keyed plug shall be shipped loose with completed vehicle.

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

- The outlet cover shall be red.
- The shore power inlet shall be located on the streetside front of body, outboard of the cab.

## **ENGINE COMPARTMENT LIGHT**

Per current NFPA 1901 Standards there shall be an LED engine compartment light installed by the commercial chassis manufacturer or by the body manufacturer.

## **CAB HAZARD WARNING LIGHT**

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

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

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

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

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

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

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

## **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.

**Add a auto reset back up alarm kill switch to the center console.**

## **REAR VIEW CAMERA**

The cab chassis provided rear view box camera shall be installed on the rear of the body.

## **TAIL LIGHTS**

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

- Two (2) Truck Light LED stop/tail/turn lights with red lens
- Two (2) Truck Light LED back-up lights with clear lens

Each light will be separately mounted in a black rubber grommet.

## **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 Mini LED to reduce the need for maintenance and lower the amp draw. Clearance lights shall be wired to the headlight circuit of the chassis.

## **CAB STEP LIGHTS / GROUND LIGHTS**

There shall be two (2) OnScene 8" Access white LED light(s) installed on the vehicle (equally divided per side) 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 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.

## **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 gradient optic polycarbonate lens with chrome flange.

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.

### **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 600 series light configuration shall consist of 12 clear Super-LEDs and a clear gradient optic polycarbonate lens.

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 within 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 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**

See Chassis Modification section for cab mounted warning lights.

### **ZONE C - REAR WARNING LIGHTS**

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

Each light shall have:

- Red LED's
- Red Lens

Each light shall have a chrome flange.

Flash Pattern shall be (factory default) Whelen ACTION SCAN

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.

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

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

Each light shall have:

- Red LEDs
- Clear Lens
- Chrome Flange

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

Each light shall have:

- Red LEDs
- Clear Lens
- Chrome Flange

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 600 Series, linear super-LED Light(s) with full-fill optic provided, one (1) each side.

Each light shall have:

- Red LED's
- Red Lens

Each light shall have a chrome flange.

Flash Pattern shall be (factory default) Whelen ACTION SCAN

The Lights shall be controlled at the Switch Panel in Cab.

### CUSTOM SLIP-IN SYSTEM

#### **Pump:**

The pump shall be a Darley model 1.5 AGE, 18 Horsepower Briggs & Stratton Vanguard (**1.5AGE18V**). The pump shall be high pressure, medium volume, gear driven pump. The pump shall perform as follows;

- 120 gpm (454 L/M) @ 130 psi (8.9 bar)
- 100 gpm (378 L/M) @ 170 psi (11.7 bar)
- 50 gpm (189 L/M) @ 250 psi (17.2 bar)

#### **Bronze Alloy Impeller:**

The impeller shall be accurately balanced and splined to the pump shaft for a precision fit. Double seal ring design eliminates end thrust.

#### **Impeller Seal Rings:**

Renewable double-labyrinth type, cast from solid Bronze.

#### **Stainless Steel Pump Shaft:**

The pump shaft shall be corrosion-resistant, precision-ground and splined for broached impeller hubs, to resist wear, vibration, corrosion and torque. The longwearing hard ceramic coating under packing glands fights friction.

**Mechanical seal:**

Darley uses Silicon Carbide Mechanical seals with welded springs. The stationary face of our mechanical seals is made from silicon carbide an extremely hard and heat dissipative material, which resists wear and dry running damage much better than the conventional Ni-resist and Tungsten Carbide materials.

**Deep Groove Radial-Type Ball Bearings:**

The ball bearings are oversized for longer life. All openings are protected from road dirt and water with oil seals and water slinger.

**Exhaust-Type Primer:**

Combination muffler and exhaust jet eductor-type primer with turn bronze shutoff valve. Automatic check valve in primer line allows one hand operation.

**Pump Casing:**

Pump casing and waterways shall be made of a hard-anodized aluminum (no exceptions) and gear case shall be made of sulfuric anodized bronze fittings.

**Pump Engine:**

Engine shall be a Briggs & Stratton 18 HP Vanguard four stroke gasoline engine. Features shall include 12-volt electric start, overhead valves, quick starting and quite running. It shall be skid-mounted. It includes a keyed ignition, adjustable mechanical type governor.

In addition, the pump engine start system shall be connected to cab/chassis battery system.

**Engine Control Panel:**

The standard panel shall include an adjustable Mechanical Type Throttle, Illuminated Pressure Gauge, Engine choke, Run/Stop Ignition Switch, and Push-Pull Primer Control, low oil pressure, tachometer & hour meter.

In addition, a remote engine start/stop switch and relay system shall be provided in cab within reach of driver.

**Electrical System:**

Qwik-connector for the 12 volt battery to skid unit connection. 4' of red 4-gauge, and 4' of black 4 - gauge battery cables along with male and female connectors are supplied.

**Pump Exhaust Heat Shield:**

Installed around the pump engine exhaust shall be a protective heat shield to protect the pump operator.

**Fuel Tank:**

6 gallon plastic fuel tank

**Pump Certification:**

The pump, when dry, shall be capable of taking suction and discharging water in compliance with NFPA #1906. The pump shall be tested at the manufacturer's facility. The conditions of the pump test shall be as outlined and in accordance with current NFPA 1906.

The pump shall deliver the percentage of rated capacities at pressures indicated: 100% of rated capacities at 150 PSI (1000KPA) net pump pressure.

**Pump Warranty:**

Pump shall have a three (3) Year Pump Warranty & 72 Hour Parts Shipping. W.S. Darley & Co. guarantees to replace or repair any defective part or parts, which Darley determines to be defective in materials or workmanship from date of shipment as outlined in the Standard Pump Warranty Document, for a period of three (3) years.

**INTAKE**

Pump intake shall be provided with 2-1/2" (65mm) plumbing provided with a tank-pump valve and panel mounted valve with 2-1/2" chrome swivel and plug w/ chain. Valve controls shall be manual handles at valves.

- There shall be one (1) 2-1/2" (65 mm) gated intake(s) located on pump panel. Each intake shall include:
  - One (1) Akron Brass 8800 series Gen II, manual type 2-1/2" (65 mm) valve(s), Stainless Steel ball with HydroMax technology. Each valve shall be equipped with a Class 1 stainless steel weld type valve adapter on inlet side, and discharge side with drain port.
    - Valve(s) shall be controlled with a chrome handle directly connected to valve.
- Color Code: BURGUNDY.
- Each intake shall have a 2-1/2" (65 mm) NSTF chrome swivel adapter with strainer provided.
  - The specified adapter shall be provided with a 2-1/2" (65 mm) NSTM chrome plated plug with chain.
- One (1) Innovative Controls model 3003000, 3/4" brass 90 degree ball type drain valve(s) with lift type handle which can be opened under pressure, with color coded label shall be provided. Valve(s) shall be located on lower pump panel and drain the lowest point in the plumbing.



**TANK FILL**

1" (30mm) tank fill shall be provided with manual valve controlled at valve.

- One (1) of the discharge(s) shall flow water only.
- One (1) Akron Brass 8800 series Gen II, manual type 1-1/2" (38 mm) valve(s), Stainless Steel ball with HydroMax technology. Each valve shall be equipped with a Class 1 stainless steel weld type valve adapter on inlet side, and discharge side with drain port.
  - Valve(s) shall be controlled with a chrome handle directly connected to valve.

Color Code: BLACK.

- There shall be a 1-1/2" (38 mm) NSTF x 1-1/2" (38 mm) NSTM chrome plated long adapter provided for hose bed discharge(s).

**FOAM SYSTEM**

Pump discharge shall be provided with a FoamPro model 1600 proportioner for specified discharges with a 12 VDC, 1/3 hp electric motor driven positive displacement piston type foam concentrate pump with a rated capacity of .01 to 1.7 gpm @ 200 psi, with operating pressures up to 400 psi. The system will draw a maximum of 30 amps @ 12 VDC.

The apparatus shall be equipped with an electronic, fully automatic, variable speed, direct injection, and discharge side foam proportioning system. The system shall be capable of handling Class A foam concentrate. The foam proportioning operation shall be based on direct measurement of water flows, and remain consistent within the specified flows and pressures. System must be capable of delivering accuracy to within 5% of calibrated settings over the advertised operation range when installed according to factory standards. The system shall be equipped with a control module suitable for installation on the pump panel. Incorporated within the motor driver shall be a microprocessor that receives input from the system flowmeter, while also monitoring foam concentrate pump output. This compares values to ensure that the operator’s preset is proportional to the amount of foam concentrate injected into the discharge side of the fire pump.

A paddlewheel-type flowmeter shall be installed in the discharge system specified to be “foam capable.” A simulated flow feature shall be incorporated into the motor driver to simulate an approximate flow value of 100 gpm. This feature is to be engaged or disengaged with a momentary switch and will automatically disengage when the main system switch is turned off.

The control module shall enable the pump operator to:

<ul style="list-style-type: none"> <li>• Activate the foam proportioning system</li> <li>• Select proportioning rates from 0.1% to 1.0%</li> </ul>	<ul style="list-style-type: none"> <li>• See a “low concentrate” warning light flash when the foam tank runs low and in two minutes, if foam concentrate is not added to the tank, shut the foam concentrate pump down</li> </ul>
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A 12 VDC electric motor driven positive displacement plunger pump shall be provided. The pump capacity shall be from 0.1 gpm (0.38 L/min) to 1.7 gpm (6.4 L/min) at 200 psi (13.8 BAR) with a maximum operating pressure up to 400 psi (27.6 BAR). The pump shall have the capability to draw 3 foot of lift. The system will draw a maximum of 30 amps @ 12 VDC. The motor shall be controlled by the microprocessor (mounted to the base of the pump). It shall receive signals from the control module and power the 1/3 hp (.25 kW) electric motor in a variable speed duty cycle to ensure that the correct proportion of concentrate is injected into the water stream. A full flow check valve shall be provided in the discharge piping

to prevent foam contamination of fire pump and water tank. A 12 psi (.83 BAR) opening pressure check valve shall be provided in concentrate line.

Components of the complete proportioning system as described above shall include:

Operator control module	• Low level tank switch
• Paddlewheel flowmeter	• Foam tank
• Pump and electric motor/motor driver	• Foam injection check valve
• Wiring harnesses	• Main waterway check valve

An installation and operation manual shall be provided for the unit, along with a one-year limited warranty by the manufacturer. The system must be installed and calibrated by a Certified FoamPro Dealer. The system design shall have passed environmental testing which simulates heavy use on off-road mobile apparatus. Testing shall have been conducted in accordance to SAE standards.

A means shall be provided to prevent water back flow into the foam proportioning system and the foam concentrate storage tank..

**DISCHARGE REAR**

Pump rear 1-1/2" (38mm) discharge shall be provided with manual valve controlled at valve with cap and chain.

- One (1) of the discharge(s) shall flow water only.
- One (1) Akron Brass 8800 series Gen II, manual type 1-1/2" (38 mm) valve(s), Stainless Steel ball with HydroMax technology. Each valve shall be equipped with a Class 1 stainless steel weld type valve adapter on inlet side, and discharge side with drain port.
  - Valve(s) shall be controlled with a chrome handle directly connected to valve.
- Color Code: BLUE.
  - The specified elbow shall be provided with a 1-1/2" (38 mm) NSTF chrome plated cap with chain.

**DISCHARGE FRONT**

**FRONT BUMPER GROUND SWEEP NOZZLES**

The front bumper shall be provided with 1/2" ground sweep nozzles with 145 degree spray angle (approx. 16 GPM @ 100 PSI) with spray overlap. Two (2) Bete 1/2" NPT brass fan type nozzles with vertical adjustable brass nozzle joints shall be provided and mounted, one (1) each corner of bumper and plumbed to valve using high pressure flexible 1/2" hose.

- One (1) of the discharge(s) shall flow water only.
- Two (2) KZ 84 series 1/2" (12 mm) valves with EH3 series 12 VDC electric on/off control shall be provided to control the front ground sweep nozzles. 84 Series valves have bronze body with stainless steel ball and stem.

Each valve shall be individually controlled with 12 VDC on/off switches located in cab near driver, and labeled "Front Spray Bar - Left / Right".

- One (1) Innovative Controls model 3003000, ¾" brass 90 degree ball type drain valve(s) with lift type handle which can be opened under pressure, with color coded label shall be provided. Valve(s) shall be located on lower pump panel and drain the lowest point in the plumbing.

### **REMOTE CONTROL MONITOR**

A Task Force Tips Tornado model # Y2-E84A electric remote controlled monitor shall be provided on completed vehicle. The monitor shall be controlled by a monitor mounted membrane switch panel with functions that control rotation, elevation and nozzle patterns, oscillate, park, auxiliary 1 and auxiliary 2.

The monitor shall have the following travel capabilities: full horizontal rotation with travel 185 degrees left and right of center, full 135 degrees of vertical travel with field changeable vertical stops at 45 degrees above and 20 degrees below horizontal, field changeable rotation stops shall be provided 90 degrees left and right of center, flow capability of 500 GPM with no more than 25 PSI loss, maximum operating pressure of 200 PSI.

The electrical components for the monitor shall be waterproof and utilize current limiting and position encoders to protect the drive train at the ends of travel. Monitor shall have waterproof plug for power and control cable connection for easy removal. An electrical connection for a TFT remote control nozzle shall be provided. The monitor shall be compatible with optional wired and wireless control panels and monitor position display. The monitor shall be equipped with manual override knobs for use in the event of power failure.

For resistance to corrosion the monitor shall be constructed from hardcoat anodized aluminum with a red powder coat interior and exterior finish.

The monitor shall be configured with a 2" NPT inlet x 1.5" NH male outlet. The unit shall be covered by a five-year warranty.

A model B-TOS-ERP selectable electric remote tip 1.5" NH (38mm) nozzle shall be provided with infinite adjustment between 15 and 120 gpm @ 100 psi (50-450 l/min at 7 bar). Indexed flow settings are provided at 15 gpm and 50 l/min increments. Flow setting may be adjusted without shutting down or locked to a specific setting as desired. Includes flush without shutting down and molded rubber teeth for full-fill "power fog" pattern. Lightweight hardcoat anodized aluminum for maximum resistance to corrosion and wear.

A model Y4E-JS joystick monitor operator station shall be provided to allow any TFT RC electric monitor to be controlled using a joystick. Moving the joystick controls monitor vertical and horizontal movement. Thumb switches control nozzle pattern. A trigger built into the joystick handle can be used to open and close some water valves. The joystick control is also equipped with push buttons on top for PARK and OSCILLATE functions as well as a toggle switch to select water valve open, close, and joystick control. The joystick control is factory wired so that the AUX2 button on TFT monitor operator stations will also open and close the water valve. Mounting bracket meets NFPA 1901 9G force requirements which ensures the security of equipment and safety of personnel.

A Y4E-DISP monitor position display will show the stream position of the electric monitor. Position is indicated by two sets of LEDs, one set for the vertical position and one set for the horizontal position. Buttons for the PARK & Oscillate features and HIGH/LOW speed selection are also supplied.

A Class 1 high pressure flexible hose with stainless steel Victaulic couplers shall connect the discharge valve and monitor. Hose shall be secured to body and chassis frame with bolted "P" style clamps and protected from abrasion, sharp edges, or high heat.

- One (1) of the discharge(s) shall flow water and foam.

- One (1) TFT model YE-VK-PH electric actuated type 2" (52 mm) stainless steel valve with Polypropylene ball and valve interface control shall be provided and connected to specified remote controlled monitor. Valve shall be equipped with a Class1 stainless steel weld type valve adapter on inlet side, and discharge side with drain port.
- One (1) Class 1, 3/4" brass automatic type drain valve(s) shall be provided for the above plumbing item. Drain valve(s) shall be located on lower pump panel. The normally open valv(s) shall close with 6 psi located at the lowest point of the plumbing.
- A discharge pressure gauge is not required with the remote valve control.

### **DISCHARGE, HOSE REEL**

One (1) hose reel shall be provided located above pump with valve control at valve.

- Each booster hose reel shall be equipped with a Hannay FH-3 hose guide rollers.
- Each booster hose reel shall be supplied with 100' x 1" diameter, 800 PSI rubber booster hose with 1" NST hardcoat aluminum couplings. Color of hose shall be red.
- **Two (2) 50' Sections.**
- No nozzle is required with specified booster hose reel(s).
- One (1) of the discharge(s) shall flow water and foam.
- One (1) Akron Brass 8800 series Gen II, manual type 1-1/2" (38 mm) valve(s), Stainless Steel ball with HydroMax technology. Each valve shall be equipped with a Class 1 stainless steel weld type valve adapter on inlet side, and discharge side with drain port.
  - Valve(s) shall be controlled with a chrome handle directly connected to valve.
- Color Code: RED.
- One (1) Innovative Controls model 3003000, 3/4" brass 90 degree ball type drain valve(s) with lift type handle which can be opened under pressure, with color coded label shall be provided. Valve(s) shall be located on lower pump panel and drain the lowest point in the plumbing.

### **DISCHARGE, WHIP LINE, FRONT**

One (1) 1" hose connection shall be provided at front of body with valve control at valve.

- One (1) of the discharge(s) shall flow water and foam.

### **SPARE TIRE STORAGE**

A spare tire storage module shall be incorporated within pump skid. Spare tire will be accessible from rear of apparatus.

Tire storage module shall be provided with a hinged cover.

## **POLY WATER TANK**

The water tank capacity shall be approximately 400 US gallon or 333 Imperial gallons. Certification of the tank capacity shall be recorded on the manufacturer's record of construction and shall be provided to the purchaser upon delivery of the apparatus.

## **CONSTRUCTION**

The water tank shall be of a specific configuration and designed to be completely independent of the body and to incorporate the lowest possible Center of Gravity. The transverse and longitudinal baffles shall be manufactured of a minimum of 3/8" polypropylene. All baffles shall be properly vented to permit movement of air and water between compartments. All baffles shall interlock with one another and are completely fused to each other as well as to the walls of the tank. All partitions and spacing shall comply with NFPA 1901. All exterior walls and interior baffles shall be welded to the floor of the tank. Tolerances in design allow for a maximum variation of 1/8" on all dimensions. All poly sheeting utilized in the construction of the tank shall be of a textured finish.

## **WATER FILL TOWER AND COVER**

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" polypropylene sheet and shall have a minimum outside dimension of 8" (203mm) x 8" (203mm). The tower shall have a 1/4" thick removable polypropylene screen and a polypropylene hinged cover. The fill tower cover shall include a Label "WATER ONLY" that is blue in color with white letters indicating that it is a water-only fill tower. Inside the fill tower there shall be a combination vent/overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I.D. of 4" that is designed to run through the tank and shall be piped to discharge water behind the rear wheels as required in NFPA 1901 so as too not interfere with rear tire traction. The discharge of the overflow/vent shall be threaded to allow for a fitting and hose to be installed and routed below the fuel tank or rear axle to prevent flooding.

## **SUMP**

The sump shall be constructed of a minimum of 1/2" polypropylene. When a front suction is required, a 3" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3" N.P.T. threaded outlet on the bottom for a drain plug per NFPA. This shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 3" above the inside floor.

## **THREADED PORTS**

There will be three (3) standard threaded Ports: one for the tank-to-pump suction Line, one for tank fill line and a one for a water level sensor. All threads shall be of National Pipe Taper specification unless otherwise specified.

## **MOUNTING AND SUPPORT**

The tank shall be mounted to the sub-frame of the body with a barrier of 1/4" rubber between tank and any frame material. The rubber Isolator shall have a Rockwell rating of 60 durometer. The frame / cradle shall support the entire floor including the perimeter of the tank with a maximum unsupported area of 529 square inches (.341 sq m) for tanks equal to or less than 40" (1016 mm) tall and 400 square inches (.258 sq m) for tanks greater than 40" (1016 mm) tall.

## **WATER TANK LEVEL GAUGE**

There shall be one (1) Innovative Controls SL series 10-LED water tank level gauge(s) for indicating water tank level. The tank level gauge shall indicate the liquid level on an easy to read display.

Each tank level gauge system shall include:

- A pressure transducer that is mounted on the outside of the tank in an easily accessible area.
- A super bright LED bar graph display with a visual alarm at 1/4 of a tank. The display shall also provide an output to activate an audible alarm or secondary visual alarm at 1/4 of a tank.
- A set of weather resistant connectors to connect the digital display to the pressure transducer and to the apparatus power.

### **CAB MOUNTED WATER TANK INDICATOR**

There shall be one (1) Innovative Controls SL Mini 4-light, remote tank level gauge for indicating water level installed in cab. The tank level gauge shall indicate the liquid level or volume on an easy to read blue LED display and show increments of 1/4 of a tank.

The Mini remote gauge will receive data from the same source as the Master Display. No additional transducers shall be required.

### **WATER TANK LEVEL INDICATOR**

Water tank level indicators shall not be provided on completed unit.

### **POLY WATER TANK WARRANTY**

The poly water tank shall be provided with a lifetime material and workmanship limited warranty. The manufacturer shall supply details of their warranty information with their bid submission.

### **CLASS A POLYPROPYLENE FOAM CELL**

There shall be one (1) 10 US gallon or 8.3 Imperial gallon polypropylene foam cell incorporated into the polypropylene water tank. This foam tank capacity shall be deducted from water tank size specified.

There shall be one (1) pressure/vacuum vent installed on the foam tank.

A minimum 1 in. (25 mm) inside diameter full flow drain valve and piping shall be provided at the lowest point of any foam concentrate tank. The drain shall be piped to drain directly to the surface beneath the apparatus without contacting other body or chassis components. Foam cell shall be drill and tapped for foam level gauge.

A label that reads "Foam Tank Fill" shall be placed at or near the foam concentrate tank fill opening.

A label that specifies the following shall be placed at or near any foam concentrate tank fill opening:

1. Type(s) of foam concentrate the system is designed to use.
2. Any restrictions on the type of foam concentrate that can be used with the system.
3. A FAMA 19 label that reads "Warning: Do Not Mix Brands and Types of Foam". In addition, label shall be in both English/French for units built for Canada; "*Avertissement : Ne pas mélanger les marques et les types d'émulseur*".

### **FOAM TANK LEVEL GAUGE**

There shall be one (1) Innovative Controls SL series 10-LED foam tank level gauge(s) for indicating foam tank level. The gauge shall indicate the liquid level on an easy to read display.

Each tank level gauge system shall include:

- A pressure transducer that is mounted on the outside of the tank in an easily accessible area.
- A super bright LED bar graph display with a visual alarm at 1/4 of a tank. The display shall also provide an output to activate an audible alarm or secondary visual alarm at 1/4 of a tank.
- A set of weather resistant connectors to connect the digital display to the pressure transducer and to the apparatus power.

### **CAB MOUNTED WATER TANK INDICATOR**

There shall be one (1) Innovative Controls SL Mini 4-light, remote tank level gauge for indicating foam level installed in cab. The tank level gauge shall indicate the liquid level or volume on an easy to read red LED display and show increments of 1/4 of a tank.

The Mini remote gauge will receive data from the same source as the Master Display. No additional transducers shall be required.

### **EQUIPMENT PAYLOAD WEIGHT ALLOWANCE**

In compliance with NFPA 1906 standards, the vehicle shall be designed for an equipment loading allowance of 500 lbs. of Platteville Gilcrest FPD provided equipment based on the wildland body having at least 50 cu. ft. of storage space and under 20,000 GVWR.

### **EQUIPMENT**

The following equipment shall be furnished with the completed wildland vehicle;

- 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.
- There shall be two (2) Worden HW C7Y-WH yellow handled aluminum wheel chocks provided for 44" diameter tires that together will hold the vehicle when loaded to its GVWR or GCWR, on a hard surface with a 20% grade, with the transmission in neutral, and the parking brake released. The wheel chocks shall have a bright yellow powder coat finish for high visibility, safety and corrosion resistance.
  - The wheel chock(s) shall be shipped loose with the completed apparatus.

### **REMAINING NFPA MINOR EQUIPMENT BY PURCHASER**

All other minor equipment not specified above, but required by NFPA 1906 for wildland vehicles, section 5.7 shall be supplied and mounted by Platteville Gilcrest FPD before the unit is placed in emergency service.

