

# League City Remount

## Description

### VEHICLE

S	0100-012	<b>MODEL</b>	Gladiator
O	8012-111	<b>CUSTOMERS / OEMS</b>	Spartan ERV (CMF1000)[1004096]
S	8011-018	<b>MODEL YEAR</b>	Model Year - 2018
S	8001-001	<b>COUNTRY OF SERVICE</b>	Country of Service United States Of America
S	8017-001	<b>CAB AND CHASSIS LABELING LANGUAGE</b>	Cab and Chassis Labeling Language English
O	8006-011	<b>APPARATUS TYPE</b>	Apparatus Type Rear Mount Quint
O	8066-008	<b>REAR MOUNT AERIAL DEVICE</b>	Rear Mount Aerial Device Platform 100' RP100-3-1000
S	8008-001	<b>VEHICLE TYPE</b>	Vehicle Type Straight Truck
O	0104-003	<b>AXLE CONFIGURATION</b>	Axle Configuration 6x4 (Rear Tandem Axle Drive Only)
O	0101-016	<b>GROSS AXLE WEIGHT RATINGS FRONT</b>	GAWR Front 23000#
O	0102-022	<b>GROSS AXLE WEIGHT RATINGS REAR</b>	GAWR Rear 62000#
O	8010-002	<b>PUMP PROVISION</b>	Pump Provision Driveline Midship
O	8009-004	<b>WATER &amp; FOAM TANK CAPACITY</b>	Water & Foam Tank Capacity Up to 750 Gallons

### CAB

O	1000-006	<b>CAB STYLE</b>	Cab Style LFD Flat Roof
S	1501-002	<b>CAB FRONT FASCIA</b>	Cab Frt Fascia Classic
O	1518-013	<b>FRONT GRILLE</b>	Cab Frt Grille Classic Styled
S	1551-002	<b>CAB UNDERCOAT</b>	Cab Undercoat
S	1552-002	<b>CAB SIDE DRIP RAIL</b>	Cab Side Drip Rail
O	1521-002	<b>CAB PAINT EXTERIOR</b>	Cab Paint Exterior Two Tone
S	1533-001	<b>CAB PAINT MANUFACTURER</b>	Cab Paint Manufacturer PPG
O	1522-961	<b>CAB PAINT PRIMARY/LOWER COLOR</b>	Cab Paint Primary/Lower Color PPG Red FBCH 926760
O	1523-560	<b>CAB PAINT SECONDARY/UPPER COLOR</b>	Cab Paint Sec/Upper Color PPG White FBCH 930818
O	1524-002	<b>CAB PAINT EXTERIOR BREAKLINE</b>	Cab Paint Exterior Breakline Classic
O	1515-005	<b>CAB PAINT PINSTRIPE</b>	Cab Paint Pinstripe 1/2" Black Temporary
S	8013-038	<b>CAB PAINT WARRANTY</b>	Cab Paint Warranty 2018 (10) Year/100,000 Miles
O	1334-039	<b>CAB PAINT INTERIOR</b>	Cab Paint Int Multi-tone Onyx Blk
O	1005-001	<b>CAB ENTRY DOORS</b>	Cab Entry Doors (4)
O	1101-102	<b>CAB ENTRY DOOR TYPE</b>	Cab Entry Door Type Barrier Free w/Pollak Switches
S	1322-002	<b>CAB INSULATION</b>	Cab Insulation
O	1540-111	<b>LH EXTERIOR REAR COMPARTMENT</b>	LH Ext Rr Cmpt 31"H x 11"W Hng Dr
O	5313-028	<b>LH EXTERIOR REAR COMPARTMENT LIGHTING</b>	LH Ext Rr Cmpt Lt LED Strip Lt On-Scene Access 10"
O	1548-002	<b>LH EXTERIOR COMPARTMENT INTERIOR FINISH</b>	LH Exterior Compartment Interior Finish DA Sand
O	1541-111	<b>RH EXTERIOR REAR COMPARTMENT</b>	RH Ext Rr Cmpt 31"H x 11"W Hng Dr

O	5345-029	<b>RH EXTERIOR REAR COMPARTMENT LIGHTING</b>	RH Ext Rr Cmpnt Lt LED Strip Lt On-Scene Access 10"
O	1549-002	<b>RH EXTERIOR COMPARTMENT INTERIOR FINISH</b>	RH Exterior Compartment Interior Finish DA Sand
S	8004-024	<b>CAB STRUCTURAL WARRANTY</b>	Cab Structural Warranty 2018 (10) Year/100,000 Miles
S	9001-006	<b>CAB TEST INFORMATION</b>	Cab Test Information Crash Test ECE-R29/SAE J2420/SAE J2422

## **ELECTRICAL POWER DISTRIBUTION**

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O	5000-002	<b>ELECTRICAL SYSTEM</b>	Elec System 12V DC MUX
O	5008-058	<b>OEM WIRING</b>	OEM Wir Aerial MUX Harness & Interface
O	5006-002	<b>APPARATUS WIRING PROVISION</b>	Apparatus Wiring Provision (8) Circuit Panel
O	5005-200	<b>MULTIPLEX DISPLAY</b>	MUX Display Weldon Vista LH Sw Pnl
O	5004-002	<b>LOAD MANAGEMENT SYSTEM</b>	Load Management System Multiplex
O	5622-003	<b>DATA RECORDING SYSTEM</b>	Data Recording Sys Vehicle Data Weldon MUX
O	5031-009	<b>ACCESSORY POWER</b>	Accessory Pwr & Gnd Stud 40A Batt Dir & 15A Ign Sw & 325A Mstr Sw w/Fus OEM Conn
O	5030-061	<b>AUXILIARY ACCESSORY POWER</b>	Aux Acc Pwr & Gnd Stud Frame Mnt Bhd Batt Box 600A Labeled "Aerial EPU" Batt Dir
O	5032-042	<b>ADDITIONAL ACCESSORY POWER</b>	Addl Acc Pwr 10 Fuse Pnl Bhd Off Seat w/40A Fuse Batt Dir
O	5033-039	<b>EXTRA ACCESSORY POWER</b>	Extra Acc Pwr 6 Fuse Blue Sea Pnl In FFC Seat Box 40A Batt Dir
O	5034-009	<b>ANCILLARY ACCESSORY POWER</b>	Ancillary Acc Pwr 6 Fuse Blue Sea Pnl Bhd Off Seat w/40A Fuse Batt Dir
S	5011-001	<b>EXTERIOR ELECTRICAL TERMINAL COATING</b>	Exterior Electrical Terminal Coating Spray On Plasti Dip

## **ENGINE**

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O	1701-160	<b>ENGINE</b>	Engine Diesel 565HP Cummins X15 - EPA 2017
S	1329-002	<b>CAB ENGINE TUNNEL</b>	Cab Engine Tunnel Large
S	1731-002	<b>DIESEL PARTICULATE FILTER CONTROLS</b>	DPF Ctrl Regeneration Sw & Inhibit Sw
S	1718-002	<b>ENGINE PROGRAMMING HIGH IDLE SPEED</b>	Engine Programming High Idle Speed 1250 RPM
O	1719-005	<b>ENGINE HIGH IDLE CONTROL</b>	Engine High Idle Ctrl Manual and Automatic w/MUX
S	1710-001	<b>ENGINE PROGRAMMING ROAD SPEED GOVERNOR</b>	Engine Programming Road Speed Governor Enabled
O	1713-010	<b>AUXILIARY ENGINE BRAKE</b>	Aux Engine Brake Compression Brake w/VG Turbo
O	1708-007	<b>AUXILIARY ENGINE BRAKE CONTROL</b>	Aux Engine Brake Ctrl Off/Low/High MUX
S	1720-003	<b>ELECTRONIC ENGINE OIL LEVEL INDICATOR</b>	Elec Engine Oil Level Indicator
O	1715-008	<b>FLUID FILLS</b>	Fluid Fills Under Cab
S	1735-001	<b>ENGINE DRAIN PLUG</b>	Engine Drain Plug
S	8002-001	<b>ENGINE WARRANTY</b>	Engine Warranty Cummins (5) Year/100,000 Miles
O	1706-011	<b>REMOTE THROTTLE CONTROL</b>	Rmt Throttle Ctrl PSG Fire Research In Control 400
O	1707-130	<b>REMOTE THROTTLE HARNESS</b>	Rmt Throttle Harness PSG FRC INControl 300/400 Top Mnt Shift Interlock
S	1721-001	<b>ENGINE PROGRAMMING REMOTE THROTTLE</b>	Engine Program Rmt Throttle Off

O 1727-003 **ENGINE PROGRAMMING IDLE SPEED** Engine Programming Idle Speed 750 RPM

## COOLING

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S 2704-002 **ENGINE FAN DRIVE** Engine Fan Drive Clutch

O 2701-015 **ENGINE COOLING SYSTEM** Engine Cooling Sys Serial Flow Large/Package Removable From Under Truck

S 2711-005 **ENGINE COOLING SYSTEM PROTECTION** Engine Cooling System Protection Light Duty Skid Plate Paint Frame Color

S 2708-001 **ENGINE COOLANT** Engine Coolant Extended Life

O 2707-002 **ENGINE COOLANT FILTER** Engine Coolant Filter

S 2706-003 **ELECTRONIC COOLANT LEVEL INDICATOR** Elec Low Coolant Level Indicator

O 2705-002 **ENGINE PUMP HEAT EXCHANGER** Engine Pump Heat Exchanger

S 2709-004 **COOLANT HOSES** Coolant Hoses Silicone Heater & Radiator w/Cab Int Rubber Hoses

## AIR INTAKE

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S 2801-009 **ENGINE AIR INTAKE** Engine Air Intake Filtration and Restriction w/SS Housing & Replaceable Element

S 2802-003 **AIR INTAKE PROTECTION** Air Intake Protection Light Duty Skid Plate Painted Frame Color

## EXHAUST

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O 2901-067 **ENGINE EXHAUST SYSTEM** Eng Exhaust Sys Under Frm RH Single Module Aftertreatment Outboard

O 2907-003 **DIESEL EXHAUST FLUID TANK** Diesel Exhaust Fluid Tank LH 6 Gal Fill Thru Rr Step

S 2902-010 **ENGINE EXHAUST ACCESSORIES** Engine Exh Acc Exh Temp Mitigation

S 2906-002 **ENGINE EXHAUST WRAP** Engine Exhaust Wrap

## TRANSMISSION

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O 1801-017 **TRANSMISSION** Transmission Allison 4000 EVS

O 1806-002 **TRANSMISSION MODE PROGRAMMING** Transmission Mode Programming 5th Startup/5th Mode

O 1811-004 **TRANSMISSION FEATURE PROGRAMMING** Transmission Feature Programming Allison Gen V-E I/O Package 198/Pumper

S 1815-002 **ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR** Elec Transmission Oil Level Indicator

S 1807-005 **TRANSMISSION SHIFT SELECTOR** Transmission GEN V-E Shift Sel Key Pad/Push Button

S 1814-002 **TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE** 2nd Gear Pre-Select

S 1808-007 **TRANSMISSION COOLING SYSTEM** Transmission Cooling System

S 1817-001 **TRANSMISSION DRAIN PLUG** Transmission Drain Plug

S 8005-001 **TRANSMISSION WARRANTY** Transmission Warranty Allison (5) Year

## POWER TAKE OFF

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O 2004-003 **LH PTO** LH PTO Spartan Sply

O 2001-109 **LH PTO MODEL** LH PTO Model Chelsea 280-GGFJP-B5XD

O 2005-008 **PTO LOCATION** PTO Location 8:00/1:00

O	2015-019	<b>LH PTO CONTROL</b>	LH PTO Ctrl Aerial PTO Prog Vista Actv Labeled Aerial On/Off/Active w/Neutral
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## DRIVELINE

O	3001-009	<b>DRIVELINE</b>	Driveline Spicer 1810/1710 HD w/Half Round Yokes
O	3005-002	<b>MIDSHIP PUMP / GEARBOX</b>	Midship Pump Jackshaft Only
O	3008-085	<b>MIDSHIP PUMP / GEARBOX MODEL</b>	Midship Pump/Gearbox Model Waterous CSUC20
O	3048-008	<b>MIDSHIP PUMP GEARBOX DROP</b>	Midship Pump Gearbox Drop Waterous "D"
O	3009-007	<b>MIDSHIP PUMP RATIO</b>	Midship Pump Ratio 2.27:1
O	3010-1075	<b>MIDSHIP PUMP LOCATION C/L SUCTION TO C/L REAR AXLE</b>	Midship Pump Location C/L Suction to C/L Rear Axle 107.5"
A	5013QXX	<b>PUMP SHIFT CONTROLS</b>	Pump Shift Ctrl Air Ctrl Knee Area Pmp Act Down.
O	3049-003	<b>PUMP SHIFT CONTROL PLUMBING</b>	Pump Shift Control Plumbing Pre-Plumb Elec/Air

## FUEL SYSTEMS

O	3109-042	<b>FUEL FILTER/WATER SEPARATOR</b>	Fuel Filter/Wtr Separator Racor S3238 w/Lt & Alarm
O	3111-002	<b>FUEL LINES</b>	Fuel Lines Wire Braid
S	3103-008	<b>ELECTRIC FUEL PRIMER</b>	Electric Fuel Primer Engine Sply Electric Lift Pump
O	3112-013	<b>FUEL COOLER</b>	Fuel Cooler Behind Rear Axle Raised
O	3101-102	<b>FUEL TANK</b>	Fuel Tank 68 Gallon
S	3130-001	<b>FUEL TANK MATERIAL AND FINISH</b>	Fuel Tank Material Steel & Finish Painted Frame Color
S	3131-001	<b>FUEL TANK STRAP MATERIAL AND FINISH</b>	Fuel Tank Strap Material Steel & Finish Painted Frame Color
O	3102-020	<b>FUEL TANK FILL PORT</b>	Fuel Tank Fill Port LH Fwd/LH Mid/RH Mid w/Vent Holes
O	3114-002	<b>FUEL TANK SERVICEABILITY PROVISIONS</b>	Fuel Tank Serviceability Prov 8' Fuel Line Extension
S	3115-001	<b>FUEL TANK DRAIN PLUG</b>	Fuel Tank Drain Plug

## FRONT AXLE

O	2401-022	<b>FRONT AXLE</b>	Frt Axle Meritor MFS 23000# Beam
S	8059-014	<b>FRONT AXLE WARRANTY</b>	Front Axle Warranty Meritor 2018
S	2405-001	<b>FRONT WHEEL BEARING LUBRICATION</b>	Frt Wheel Bearing Lube Oil

## FRONT SUSPENSION

S	2502-002	<b>FRONT SHOCK ABSORBERS</b>	Frt Shock Absorbers Bilstein
O	2501-014	<b>FRONT SUSPENSION</b>	Frt Suspension 10 Leaf 23000#

## STEERING

S	2601-006	<b>STEERING COLUMN/WHEEL</b>	Steering Column/Wheel Tilt/Telescopic 18" 4 Spoke
S	2609-002	<b>ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR</b>	Elec Power Steering Fluid Level Indicator
S	2603-011	<b>POWER STEERING PUMP</b>	Power Steering Pump TRW w/Passive Cooler
O	2606-009	<b>FRONT AXLE CRAMP ANGLE</b>	Front Axle Cramp Angle 48L/44R Degrees
O	2610-005	<b>POWER STEERING GEAR</b>	Power Steering Gear TRW TAS 85 w/Assist

S	2608-001	CHASSIS ALIGNMENT	Chassis Alignment
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## REAR AXLE

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O	3401-013	REAR AXLE	Rear Axle 63000# Meritor RT-58-185
S	3403-001	REAR AXLE DIFFERENTIAL LUBRICATION	Rear Axle Differential Lubrication Oil
S	8061-011	REAR AXLE WARRANTY	Rear Axle Warranty Meritor 2018
S	3411-001	REAR WHEEL BEARING LUBRICATION	Rear Wheel Bearing Lubrication Oil
O	3407-003	REAR AXLE DIFFERENTIAL CONTROL	Rear Axle Differential Ctrl Interaxle Lock
O	3408-008	VEHICLE TOP SPEED	Vehicle Top Speed 68 MPH

## REAR SUSPENSION

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O	3501-016	REAR SUSPENSION	Rear Susp Raydan AL-600 Air 54000-62000#
O	3503-003	REAR SHOCK ABSORBERS	Rear Shock Absorbers Suspension Sply

## TIRES

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O	3601-037	FRONT TIRE	Frt Tire 425/65R 22.5 Goodyear G296 MSA
O	3602-062	REAR TIRE	Rear Tire 315/80R 22.5 Goodyear G751 MSA
O	3413-489	REAR AXLE RATIO	Rear Axle Ratio 4.89
S	3614-030	TIRE PRESSURE INDICATOR	Tire Pressure Ind Frt & Rr LED

## WHEELS

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O	3701-034	FRONT WHEEL	Frt Wheel Alcoa Dura-Bright LvL One 22.5 x 12.25 Alum
O	3703-050	REAR WHEEL	Rr Whl Alcoa Dura-Bright LvL One 22.5 x 9.00 Alum
O	3719-002	BALANCE WHEELS AND TIRES	Balance Wheels & Tires
O	3702-002	WHEEL TRIM	Wheel Trim Hub & Nut Covers SS Shiploose

## AUXILIARY LUBE SYSTEMS

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O	4001-018	AUXILIARY LUBRICATION SYSTEM	Aux Lubrication System SKF LH Rail/WB Grease Lines
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## BRAKES

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O	3205-015	BRAKE SYSTEM	Brake System ABS/ATC/ESC Tandem Axle MUX Btn
O	3206-003	FRONT BRAKES	Frt Brakes Meritor EX225 Disc 17"
O	3207-005	REAR BRAKES	Rr Brakes S-Cam Drum 16.5" x 7" Cast Iron Shoe
S	3208-001	PARK BRAKE	Prk Brake Rr Wheels Only
O	3204-029	PARK BRAKE CONTROL	Prk Brake Ctrl LH Tunnel Mnt, Integrated w/Shift Pod Console
O	3214-005	REAR BRAKE SLACK ADJUSTERS	Rr Brake Slack Adjusters Gunitite
O	3202-015	AIR DRYER	Air Dryer Wabco System Saver 1200 Bhd LH Batt Box Outboard/Aerial Brkt
O	3215-004	FRONT BRAKE CHAMBERS	Frt Brake Chambers MGM Type 24 Long Stroke
O	3210-015	REAR BRAKE CHAMBERS	Rr Brake Chambers TSE 30/36 Long Stroke

## AIR SUPPLY SYSTEMS

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S	3320-001	AIR COMPRESSOR	Air Compressor Wabco SS318 18.7 CFM
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S	3339-004	<b>AIR GOVERNOR</b>	Air Governor Mnt on Air Dryer Bracket
O	3305-002	<b>AUXILIARY AIR RESERVOIR</b>	Aux Air Reservoir 2084 Cu In
O	3303-005	<b>MOISTURE EJECTORS</b>	Moisture Ejectors Auto w/Cable
O	3307-002	<b>AIR SUPPLY LINES</b>	Air Sply Lines Wire Braid
O	3334-002	<b>AIR TANK SPACERS</b>	Air Tank Spacers Inboard 1.5"
S	3338-002	<b>REAR AIR TANK MOUNTING</b>	Rear Air Tank Mnt Any Bhd Rear Axle Perpendicular w/Frame

## FRAME

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O	2103-2440	<b>WHEELBASE</b>	Wheelbase 244.0"
O	2106-1100	<b>REAR OVERHANG</b>	Rear Overhang 110.0"
O	2101-004	<b>FRAME</b>	Frame Triple Channel 35.00" Width
S	8007-021	<b>FRAME WARRANTY</b>	Frame Warranty Lifetime 2018
O	2118-004	<b>REAR TOW DEVICE</b>	Rear Tow Device Spartan ERV Pumper Pattern
O	2117-060	<b>FRAME CLEAR AREA</b>	Frame Clear Area RP100 Aerial Platform
O	2110-104	<b>FRAME PAINT</b>	Frame Paint Gloss Black
O	2105-002	<b>REAR MUD FLAP</b>	Rear Mud Flap & Fender Temp Mnt

## BUMPER

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O	2201-002	<b>FRONT BUMPER</b>	Frt Bumper Structural Steel Channel Severe Duty
O	2202-005	<b>FRONT BUMPER EXTENSION LENGTH</b>	Frt Bumper Extension Length 21"
O	2206-001	<b>FRONT BUMPER PAINT</b>	Frt Bumper Paint Primary/Lower Cab Color
O	2208-006	<b>FRONT BUMPER APRON</b>	Frt Bumper Apron For 21" Extension
O	2211-035	<b>FRONT BUMPER COMPARTMENT CENTER</b>	Frt Bumper Cmpt Ctr Full Size 38.00"Wx10.88"D w/Notched Cover
O	2210-004	<b>FRONT BUMPER COMPARTMENT COVER HARDWARE</b>	Frt Bumper Cmpt Cover Hardware Gas Cylinder/Flush Latch
O	5503-022	<b>MECHANICAL SIREN</b>	Mechanical Siren Federal Signal Q2B Pedestal Mnt
O	2218-002	<b>MECHANICAL SIREN LOCATION</b>	Mech Siren Location Frt Bmpr Apron LH OB
O	5501-003	<b>AIR HORN</b>	Air Horn (2) 24" Round Grover
O	2216-010	<b>AIR HORN LOCATION</b>	Air Horn Location (2) Frt Bmpr Face R/L IB
O	2232-003	<b>AIR HORN RESERVOIR</b>	Air Horn Reservoir (1) 2084 Cu In
O	5504-030	<b>ELECTRONIC SIREN SPEAKER</b>	Elect Siren Speaker (2) 100W Cast Products SA4301
O	2217-011	<b>ELECTRONIC SIREN SPEAKER LOCATION</b>	Elec Siren Speaker Location (2) Frt Bmpr Face R/L OB
O	2203-001	<b>FRONT BUMPER TOW HOOKS</b>	Frt Bumper Tow Hooks Chrome Below Fwd

## CAB TILT

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S	2301-001	<b>CAB TILT SYSTEM</b>	Cab Tilt System
O	2302-005	<b>CAB TILT AUXILIARY PUMP</b>	Cab Tilt Aux Pump Manual Mnt w/Tilt Pump
O	2303-003	<b>CAB TILT LIMIT SWITCH</b>	Cab Tilt Limit Sw Preset Limit
S	2305-001	<b>CAB TILT CONTROL RECEPTACLE</b>	Cab Tilt Ctrl Receptacle Temp

## CAB GLASS

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S	1401-009	<b>CAB WINDSHIELD</b>	Cab Windshield
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O	1402-002	<b>GLASS FRONT DOOR</b>	Glass Frt Dr Pwr
O	1407-002	<b>GLASS TINT FRONT DOOR</b>	Glass Tint Frt Dr Automotive Dark Gray
O	1419-008	<b>GLASS REAR DOOR RIGHT HAND</b>	Glass Rr Dr RH Pwr
O	1430-002	<b>GLASS TINT REAR DOOR RIGHT HAND</b>	Glass Tint Rr Door RH Automotive Dark Gray
O	1412-008	<b>GLASS REAR DOOR LEFT HAND</b>	Glass Rr Dr LH Pwr
O	1431-002	<b>GLASS TINT REAR DOOR LEFT HAND</b>	Glass Tint Rr Door LH Automotive Dark Gray
O	1410-003	<b>GLASS SIDE MID RIGHT HAND</b>	Glass Side Mid RH Fxd 16"W x 26"H
O	1432-002	<b>GLASS TINT SIDE MID RIGHT HAND</b>	Glass Tint Side Mid RH Automotive Dark Gray
O	1409-003	<b>GLASS SIDE MID LEFT HAND</b>	Glass Side Mid LH Fxd 16"W x 26"H
O	1433-002	<b>GLASS TINT SIDE MID LEFT HAND</b>	Glass Tint Side Mid LH Automotive Dark Gray

## CLIMATE CONTROL

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O	1614-202	<b>CLIMATE CONTROL</b>	Climate Ctrl Htr Defroster A/C SGM Ovrhd Painted Alum
O	1632-002	<b>CLIMATE CONTROL DRAIN</b>	Climate Control Drain Gravity
O	1617-112	<b>CLIMATE CONTROL ACTIVATION</b>	Climate Ctrl Actv Rotary Dash Mnt Ctr UpR LH
O	1620-019	<b>HVAC OVERHEAD COVER PAINT</b>	HVAC Overhead Cover Paint Multi-tone Onyx Black
O	1603-002	<b>A/C CONDENSER LOCATION</b>	A/C Condenser Location Roof Mnt Mid LH
O	1601-013	<b>A/C COMPRESSOR</b>	A/C Compressor TM-31/QP-31
O	1530-005	<b>UNDER CAB INSULATION</b>	Under Cab Insulation Eng Tnl & Cab Floor w/Removable Alum Tunnel Overlay

## CAB INTERIOR

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S	1327-001	<b>INTERIOR TRIM FLOOR</b>	Interior Trim Floor
S	1302-001	<b>INTERIOR TRIM</b>	Interior Trim Vinyl
S	1368-002	<b>REAR WALL INTERIOR TRIM</b>	Rear Wall Interior Trim Vinyl
O	1306-006	<b>HEADER TRIM</b>	Header Trim XDuty
O	1305-015	<b>TRIM CENTER DASH</b>	Trim Center Dash XDuty w/Gas Cylinder Stays
O	1339-102	<b>TRIM LEFT HAND DASH</b>	Trim LH Dash XDuty
O	1321-003	<b>TRIM RIGHT HAND DASH</b>	Trim RH Dash XDuty MDT Prov
S	1307-002	<b>ENGINE TUNNEL TRIM</b>	Eng Tnl Trim Flr Mat
O	5040-062	<b>POWER POINT DASH MOUNT</b>	Pwr Pnt Dash Mnt Batt Dir (2) Sw Pnl/(2) Rkr Position Dual 3.1A USB Sw Pnl
O	5043-009	<b>AUXILIARY POWER POINT MID CREW</b>	Aux Pwr Pnt Mid Crew Batt Dir 2.4A USB (1)R/(1)L w/4' Loop
O	1303-003	<b>STEP TRIM</b>	Step Trim Indented Lwr TPlt Mid
O	1336-002	<b>STEP TRIM KICKPLATE</b>	Step Trim Kickplate Treadplate
O	1379-004	<b>UNDER CAB ACCESS DOOR</b>	Under Cab Access Door Rear Step LH Tread Plate
S	1102-013	<b>INTERIOR DOOR TRIM</b>	Interior Door Trim Painted
O	1107-002	<b>DOOR TRIM KICKPLATE</b>	Door Trim Kickplate Treadplate
S	1323-001	<b>DOOR TRIM CUSTOMER NAMEPLATE</b>	Door Trim Customer Nameplate
O	1105-008	<b>CAB DOOR TRIM REFLECTIVE</b>	Remove Cab Door Trim Reflective
S	1308-001	<b>INTERIOR GRAB HANDLE "A" PILLAR</b>	Interior Grab Handle 'A' Pillar 11" Molded
S	1332-008	<b>INTERIOR GRAB HANDLE FRONT DOOR</b>	Interior Grab Handle Frt Door Horiz 9"
O	1345-002	<b>INTERIOR GRAB HANDLE REAR DOOR</b>	Int Grab Handle Rr Dr Alum Window Span 30" Black Powder Coat



O	1301-001	<b>INTERIOR SOFT TRIM COLOR</b>	Interior Soft Trim Color Black
O	1337-002	<b>INTERIOR TRIM SUNVISOR</b>	Interior Trim Sunvisor Tinted
O	1304-002	<b>INTERIOR FLOOR MAT COLOR</b>	Interior Floor Mat Color Black
O	1335-012	<b>CAB PAINT INTERIOR DOOR TRIM</b>	Cab Paint Int Dr Trim Spar-Liner Black
O	1371-021	<b>HEADER TRIM INTERIOR PAINT</b>	Header Trim Interior Paint Multi-tone Onyx Black
O	1370-023	<b>TRIM CENTER DASH INTERIOR PAINT</b>	Trim Center Dash Interior Paint Multi-tone Onyx Black
O	1378-022	<b>TRIM LEFT HAND DASH INTERIOR PAINT</b>	Trim LH Dash Interior Paint Multi-tone Onyx Black
O	1373-022	<b>TRIM RIGHT HAND DASH INTERIOR PAINT</b>	Trim RH Dash Interior Paint Multi-tone Onyx Black
S	1344-002	<b>DASH PANEL GROUP</b>	Dash Pnl Group 3-Pnl
O	1312-001	<b>SWITCHES CENTER PANEL</b>	Switches Ctr Pnl 0
O	1313-006	<b>SWITCHES LEFT PANEL</b>	Switches Left Pnl 4 (3+1) w/Wiper
O	1314-033	<b>SWITCHES RIGHT PANEL</b>	Switches Right Pnl 7 (3+3+1)

## **CAB SEATS**

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O	1225-016	<b>SEAT BELT WARNING</b>	Seat Belt Warn Vista Display w/VDR w/Heat Shrink & Fast Tone Alarm
S	1237-001	<b>SEAT MATERIAL</b>	Seat Material Ballistic
O	1243-003	<b>SEAT COLOR</b>	Seat Color Black/Red Seat Belts
O	1249-049	<b>SEAT BACK LOGO</b>	Seat Back Logo League City TX
S	1201-007	<b>SEAT DRIVER</b>	Seat Driver Bostrom Firefighter 8-Way Elect ABTS
S	1213-025	<b>SEAT BACK DRIVER</b>	Seat Back Driver Non-SCBA ABTS
S	1219-001	<b>SEAT MOUNTING DRIVER</b>	Seat Mounting Driver
S	1202-009	<b>SEAT OFFICER</b>	Seat Officer Bostrom Firefighter Fixed ABTS
O	1214-034	<b>SEAT BACK OFFICER</b>	Seat Back Officer SCBA IMMI SmartDock
O	1220-003	<b>SEAT MOUNTING OFFICER</b>	Seat Mounting Officer Rwd 2"
S	1297-002	<b>POWER SEAT WIRING</b>	Power Seats Wiring Battery Direct
O	1273-001	<b>SEAT BELT ORIENTATION CREW</b>	Seat Belt Orientation Crew Outboard Shoulder To Inboard Hip
O	1263-003	<b>SEAT REAR FACING OUTER LOCATION</b>	Seat RFO Location RH
O	1203-009	<b>SEAT CREW REAR FACING OUTER</b>	Seat Crew RFO Bostrom Firefighter Fixed
O	1215-031	<b>SEAT BACK REAR FACING OUTER</b>	Seat Back RFO SCBA IMMI SmartDock
O	1221-009	<b>SEAT MOUNTING REAR FACING OUTER</b>	Seat Mounting RFO Rwd 2"
O	1265-001	<b>SEAT FORWARD FACING OUTER LOCATION</b>	Seat FFO Location (2) R/L
O	1205-009	<b>SEAT CREW FORWARD FACING OUTER</b>	Seat Crew FFO Bostrom Firefighter Fixed
O	1217-032	<b>SEAT BACK FORWARD FACING OUTER</b>	Seat Back FFO SCBA IMMI SmartDock
O	1223-003	<b>SEAT MOUNTING FORWARD FACING OUTER</b>	Seat Mounting FFO Inboard
O	1266-005	<b>SEAT FORWARD FACING CENTER LOCATION</b>	Seat FFC Location Ctr
O	1206-009	<b>SEAT CREW FORWARD FACING CENTER</b>	Seat Crew FFC Bostrom Firefighter Fixed
O	1218-035	<b>SEAT BACK FORWARD FACING CENTER</b>	Seat Back FFC SCBA IMMI SmartDock



O	1269-103	<b>SEAT FRAME FORWARD FACING</b>	Seat Frm Fwd Fcg Full
O	1281-103	<b>SEAT FRAME FORWARD FACING STORAGE ACCESS</b>	Seat Frm Fwd Fcg Strg Acc Dr (2) R/L Fwd
O	1224-002	<b>SEAT MOUNTING FORWARD FACING CENTER</b>	Seat Mounting Forward Facing Center
O	1227-002	<b>SEAT FRAME EXTERIOR REAR COMPARTMENT ACCESS</b>	Seat Frame Exterior Rear Compartment Access
S	1311-101	<b>CAB FRONT UNDERSEAT STORAGE ACCESS DOOR</b>	Cab Frt Undrst Strg Acc Dr
O	1355-023	<b>SEAT COMPARTMENT DOOR FINISH</b>	Seat Compartment Door Finish Multi-tone Onyx Black

## **CAB EXTERIOR**

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S	1511-003	<b>WINDSHIELD WIPER SYSTEM</b>	Windshield Wiper System Single Motor
S	1534-002	<b>ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR</b>	Electronic Windshield Fluid Level Indicator
O	1103-001	<b>CAB DOOR HARDWARE</b>	Cab Door Hardware Chrome
O	1111-004	<b>DOOR LOCKS</b>	Door Locks Power (4) Entry Doors
O	1115-002	<b>DOOR LOCK LH REAR CAB COMPARTMENT</b>	Door Lock LH Rear Cab Compartment Manual
O	1116-002	<b>DOOR LOCK RH REAR CAB COMPARTMENT</b>	Door Lock RH Rear Cab Compartment Manual
O	1503-046	<b>GRAB HANDLES</b>	Grab Handles 3-Pc Alum Knurled Ltd 18" Actv w/Ignition
O	1112-004	<b>POWER DOOR LOCK COMPARTMENT ACTIVATION</b>	Power Door Lock Cmpt Actv Key Fob & Keypads
O	1527-002	<b>AUXILIARY GRAB HANDLE</b>	Aux Grab Handle 7" SS Cab Face Ctr
O	1504-049	<b>REARVIEW MIRRORS</b>	Mirror Bus Style Ramco 6018-FFHR-750HR Rmt Htd
O	1529-003	<b>REARVIEW MIRROR HEAT SWITCH</b>	Rearview Mirror Heat Sw MUX
O	1525-002	<b>EXTERIOR TRIM REAR CORNER</b>	Exterior Trim Rear Corner Scuff Plate
O	1507-002	<b>TRIM REAR WALL EXTERIOR</b>	Trim Rear Wall Exterior Treadplate
S	1513-002	<b>CAB FENDER</b>	Cab Fender Alum
O	1514-002	<b>MUD FLAPS FRONT</b>	Mud Flaps Frt
O	1526-026	<b>CAB EXTERIOR FRONT &amp; SIDE EMBLEMS</b>	Cab Ext Frt & Side Emblems Spartan

## **START / CHARGING SYSTEMS**

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S	5109-001	<b>IGNITION</b>	Ign Mstr Sw w/Keyless Start
O	5101-021	<b>BATTERY</b>	Batt (6) Group 31 Harris
O	5106-005	<b>BATTERY TRAY</b>	Batt Tray (2) R/L SS
O	5107-013	<b>BATTERY BOX COVER</b>	Batt Box Cover (2) SS w/Black Handles Hinged
S	5102-001	<b>BATTERY CABLE</b>	Batt Cables
S	5108-002	<b>BATTERY JUMPER STUD</b>	Batt Jumper Stud Frt LH Lwr Step
O	5104-012	<b>ALTERNATOR</b>	Alternator Niehoff 360A

## **LINE VOLTAGE ELECTRICAL POWER DISTRIBUTION**

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A	5202QXX	<b>BATTERY CONDITIONER</b>	Batt Cond Kussmaul 35/10 Under LH Ctr FF Crew Position. (5202-110)
O	5203-003	<b>BATTERY CONDITIONER DISPLAY</b>	Batt Cond Display LH Cab Side Fwd

O	3314-022	<b>AUXILIARY AIR COMPRESSOR</b>	Aux Air Cmp Kussmaul 12V Bhd Off Seat
O	5204-055	<b>ELECTRICAL INLET</b>	Elec Inlet 120V 20A Auto Eject
O	5209-029	<b>ELECTRICAL INLET LOCATION</b>	Elec Inlet Location LH Cab Side Fwd
O	5210-004	<b>ELECTRICAL INLET CONNECTION</b>	Elec Inlet Conn to Batt Conditioner
O	5206-002	<b>ELECTRICAL INLET COLOR</b>	Elec Inlet Color Yellow

## LIGHTING

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S	5301-100	<b>HEADLIGHTS</b>	Headlights 4 Headlamps Halogen
O	5303-026	<b>FRONT TURN SIGNALS</b>	Frt Turn Signals Whelen M6 LED Above Frt Warn
S	5337-001	<b>HEADLIGHT LOCATION</b>	Headlights Below Frt Warn Lts
S	5336-003	<b>SIDE TURN/MARKER LIGHTS</b>	Side Turn/Marker Lts LED
S	5302-003	<b>MARKER &amp; ICC LIGHTS</b>	Marker & ICC Lts Face Mnt LED
O	5350-071	<b>HEADLIGHT AND MARKER LIGHT ACTIVATION</b>	Hdlt & Mrkr Lt Actv MUX/Ign Sw
O	5308-031	<b>GROUND LIGHTS</b>	Ground Lts LED Prk Brk w/Headlight Interlock & Vista
O	5309-013	<b>LOWER CAB STEP LIGHTS</b>	Lwr Cab Step Lts LED Actv w/Gnd Lts
S	5382-002	<b>INTERMEDIATE STEP LIGHTS</b>	Intermediate Step Lts LED
O	5319-015	<b>UNDER BUMPER LIGHTS</b>	Under Bmpr Lts 4" LED Actv w/Ground Lights
S	5312-003	<b>ENGINE COMPARTMENT LIGHT</b>	Engine Cmpt Work Lt LED (1)
O	5403-051	<b>LIGHTBAR PROVISION</b>	Lightbar Prov Wire & Mnt (2) Spartan Supply
O	5450-255	<b>CAB FRONT LIGHTBAR</b>	Cab Frt Ltbar Whelen Freedom F4NMINI (2) 3R2C 30-Deg Mnt
O	5426-003	<b>LIGHTBAR SWITCH</b>	Lightbar Sw Vista
S	5305-166	<b>INTERIOR OVERHEAD LIGHTS</b>	Interior Overhead Lts Weldon LED w/Front Map Lts
O	5324-157	<b>AUXILIARY DOME LIGHT MID CREW</b>	Aux Dome Lt Mid Crew LED (2) Red Rr Dr/Vista Actv

## OPTICAL WARNING DEVICES

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S	5406-076	<b>DO NOT MOVE APPARATUS LIGHT</b>	Do Not Move App Lt Flashing Red Whelen Ion LED w/Alarm
O	5422-002	<b>MASTER WARNING SWITCH</b>	Mstr Warn Sw MUX
O	5409-002	<b>HEADLIGHT FLASHER</b>	Headlight Flasher Alternating
O	5425-003	<b>HEADLIGHT FLASHER SWITCH</b>	Headlight Flasher Sw MUX
O	5401-032	<b>INBOARD FRONT WARNING LIGHTS</b>	Inboard Frt Warn Lts Whelen M6 LED Chrm Bezel
O	5413-014	<b>INBOARD FRONT WARNING LIGHTS COLOR</b>	Inboard Frt Warn Lts Color Red/Blue w/Clr Lens
O	5414-022	<b>OUTBOARD FRONT WARNING LIGHTS</b>	Outboard Frt Warn Lts Whelen M6 LED Chrm Bezel
O	5415-003	<b>OUTBOARD FRONT WARNING LIGHTS COLOR</b>	Outboard Frt Warn Lts Color Red w/Clr Lens
O	5423-003	<b>FRONT WARNING SWITCH</b>	Frt Warn Sw Vista
O	5404-027	<b>INTERSECTION WARNING LIGHTS</b>	Intersection Warn Lts Whelen M6 Super LED
O	5419-015	<b>INTERSECTION WARNING LIGHTS COLOR</b>	Int Warn Lts Color Red/Amber w/Clr Lens
O	5420-004	<b>INTERSECTION WARNING LIGHTS LOCATION</b>	Intersection Warn Lts Location Bumper Tail Fwd Position
O	5402-029	<b>SIDE WARNING LIGHTS</b>	Side Warn Lts Whelen M6 Super LED
O	5418-016	<b>SIDE WARNING LIGHTS COLOR</b>	Side Warn Lts Color Red/Amber w/Clr Lens
O	5412-004	<b>SIDE WARNING LIGHTS LOCATION</b>	Side Warn Lts Location Upper Mid Fwd Flat Roof Position

O	5434-018	<b>AUXILIARY SIDE WARNING LIGHTS</b>	Aux Side Warn Lts Whelen M6 Super LED
O	5435-016	<b>AUXILIARY SIDE WARNING LIGHTS COLOR</b>	Aux Side Warn Lts Color Red/Blue w/Clr Lens
O	5436-002	<b>AUXILIARY SIDE WARNING LIGHTS LOCATION</b>	Aux Side Warn Lts Location Lwr Mid
O	5437-016	<b>ADDITIONAL SIDE WARNING LIGHTS</b>	Addl Side Warn Lts Whelen M6 Super LED
O	5438-015	<b>ADDITIONAL SIDE WARNING LIGHTS COLOR</b>	Addl Side Warn Lts Color Red/Amber w/Clr Lens
O	5439-007	<b>ADDITIONAL SIDE WARNING LIGHTS LOCATION</b>	Addl Side Warn Lts Location Lower Rear
O	5440-013	<b>EXTRA SIDE WARNING LIGHTS</b>	Extra Side Warn Lts Whelen M6 Super LED
O	5441-016	<b>EXTRA SIDE WARNING LIGHTS COLOR</b>	Extra Side Warn Lts Color Red/Blue w/Clear Lens
O	5442-006	<b>EXTRA SIDE WARNING LIGHTS LOCATION</b>	Extra Side Warn Lts Location Upper Rear
O	5424-003	<b>SIDE AND INTERSECTION WARNING SWITCH</b>	Side & Intersection Warn Sw Vista

## **AUDIBLE WARNING DEVICES**

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O	5510-004	<b>SIREN CONTROL HEAD</b>	Siren Ctrl Head Whelen 295HFS2
O	5514-005	<b>HORN BUTTON SELECTOR SWITCH</b>	Horn Btn Sel Sw Elec Horn/Air Horn MUX
O	5512-022	<b>AIR HORN ACTIVATION</b>	Air Horn Actv Strg Whl/Rkr Sw
O	5513-061	<b>MECHANICAL SIREN ACTIVATION</b>	Mech Siren Actv LH Ft Sw/Rkr Sw/Brk Sw/Brk MUX, Prk Brk Ctrl
O	5505-003	<b>BACK-UP ALARM</b>	Back-Up Alarm Preco-Matic 1059

## **INSTRUMENTATION**

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O	5601-044	<b>INSTRUMENTATION</b>	Instrumentation Standard/Omit Seat Warn
O	5624-004	<b>BACKLIGHTING COLOR</b>	Backlighting Color Blue
O	5607-016	<b>HOURLY METER</b>	Hour Meter Honeywell in Instrument Pnl for LH PTO Labeled "Aerial Hours"

## **COMMUNICATIONS SYSTEMS**

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O	5701-003	<b>RADIO</b>	Radio Panasonic WB/AM/FM/CD Ovrhd LH
O	5707-002	<b>AM/FM ANTENNA</b>	AM/FM Antenna LH Fwd Cab Roof
O	5706-025	<b>CAMERA</b>	Cam Rr/RH Teardrop on Vista
O	5703-011	<b>COMMUNICATION ANTENNA</b>	Comm Ant Base LH Fwd Cab Rf Spartan Sply
O	5708-003	<b>COMMUNICATION ANTENNA CABLE ROUTING</b>	Comm Ant Cable Routing Under Rkr Sw Pnl
O	5709-007	<b>AUXILIARY COMMUNICATION ANTENNA</b>	Aux Comm Ant Base RH Inboard Fwd Cab Roof Spartan Sply
O	5710-003	<b>AUXILIARY COMMUNICATION ANTENNA CABLE ROUTING</b>	Aux Comm Ant Cable Routing Under Rkr Sw Pnl
S	5020-001	<b>PANEL LAYOUT</b>	Panel Layout

## **ADDITIONAL EQUIPMENT**

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S	8814-002	<b>CAB EXTERIOR PROTECTION</b>	Cab Exterior Protection Front
S	8806-001	<b>FIRE EXTINGUISHER</b>	Fire Extinguisher Shiploose

O	8810-003	<b>DOOR KEYS</b>	Door Keys for Manual Locks (6)
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## **SALES ADMIN**

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S	8003-147	<b>WARRANTY</b>	Warranty Cab and Chassis 2018 (2) Year
S	8030-006	<b>CHASSIS OPERATION MANUAL</b>	Chassis Operation Manual Digital Copy (2)
S	8031-024	<b>ENGINE &amp; TRANSMISSION OPERATION MANUAL</b>	Eng & Trans Operation Man Eng Hard Copy/Trans Digital/Eng Owner Digital
O	8805-005	<b>CAB/CHASSIS AS BUILT WIRING DIAGRAMS</b>	Cab/Chassis As Built Wiring Diagrams Hard Copy/Digital
O	8034-002	<b>CUSTOMER INSPECTION</b>	Customer Inspection - Chassis
S	8039-001	<b>SALES TERMS</b>	Sales Terms

## **ENGINEERING**

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O	9005-002	<b>DRIVELINE LAYOUT CONFIRMATION</b>	Driveline Layout Confirmation Required
O	9006-002	<b>3D CHASSIS LAYOUT</b>	3D Chassis Layout Required
O	2124-002	<b>EFCM/REAR CROSSMEMBERS</b>	End of Frame Cross Member

# *Specification*

## **MODEL**

The chassis shall be a Gladiator model. The cab and chassis shall include design considerations for multiple emergency vehicle applications, rapid transit and maneuverability. The chassis shall be manufactured for heavy duty service with the strength and capacity to support a fully laden apparatus, one hundred (100) percent of the time.

## **MODEL YEAR**

The chassis shall have a vehicle identification number that reflects a 2018 model year.

## **COUNTRY OF SERVICE**

The chassis shall be put in service in the country of United States of America (USA).

The chassis will meet applicable U.S.A. federal motor vehicle safety standards per CFR Title 49 Chapter V Part 571 as clarified in the incomplete vehicle book per CFR Title 49 Chapter V Part 568 Section 4 which accompanies each chassis. Spartan Chassis is not responsible for compliance to state, regional, or local regulations. Dealers should identify those regulations and order any necessary optional equipment from Spartan Chassis or their OEM needed to be in compliance with those regulations.

## **CAB AND CHASSIS LABELING LANGUAGE**

The cab and chassis shall include the applicable caution, warning, and safety notice labels with text to be written in English.

## **APPARATUS TYPE**

The apparatus shall be a Quint vehicle designed for emergency service use. The apparatus shall include a permanently mounted fire pump which has a minimum rated capacity of 750 gallons per minute (3000 L/min), a water tank, a hose storage area, a compliment of ground ladders, and an aerial ladder or elevating platform with a permanently mounted waterway that shall be rear mounted thus providing the following vehicle benefits:

- Improved mobility vs. mid-ship mounted units, due to shorter overall travel length and wheelbase.
- Increased compartment space, hose load, and water capacity in the body, resulting from ladder being raised to clear the cab.
- Shorter vehicle wheelbase.

Shorter overall length of vehicle.

## **REAR MOUNT AERIAL DEVICE TYPE**

The chassis shall be configured for a rear mount elevating platform with a 100.00 feet high vertical reach.

## **VEHICLE TYPE**

The chassis shall be manufactured for use as a straight truck type vehicle and designed for the installation of a permanently mounted apparatus behind the cab. The apparatus of the vehicle shall be supplied and installed by the apparatus manufacturer.

## **AXLE CONFIGURATION**

The chassis shall feature a 6 x 4 axle configuration consisting of a tandem rear drive axle set with a single front steer axle.

## **GROSS AXLE WEIGHT RATINGS FRONT**

The front gross axle weight rating (GAWR) of the chassis shall be 23,000 pounds.

This front gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

## **GROSS AXLE WEIGHT RATINGS REAR**

The rear gross axle weight rating (GAWR) of the chassis shall be 62,000 pounds.

This rear gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

## **PUMP PROVISION**

The chassis shall include provisions to mount a drive line pump in the middle of the chassis, behind the cab, more commonly known as the midship location.

## **WATER & FOAM TANK CAPACITY**

The chassis shall include a carrying capacity of up to 750 gallons (2839 liters). The water and/or foam tank(s) shall be supplied and installed by the apparatus manufacturer.

## **CAB STYLE**

The cab shall be a custom, fully enclosed, LFD model with a flat roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to ten (10) seating positions.

The cab shall incorporate a fully enclosed design with side wall roof supports, allowing for a spacious cab area with no partition between the front and rear sections of the cab. To provide a superior finish by reducing welds that fatigue cab metal; the roof, the rear wall and side wall panels shall be assembled using a combination of welds and proven industrial adhesives designed specifically for aluminum fabrication for construction.

The cab shall be constructed using multiple aluminum extrusions in conjunction with aluminum plate, which shall provide proven strength and the truest, flattest body surfaces ensuring less expensive paint repairs if needed. All aluminum welding shall be completed to the American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum.

All interior and exterior seams shall be sealed for optimum noise reduction and to provide the most favorable efficiency for heating and cooling retention.

The cab shall be constructed of 5052-H32 corrosion resistant aluminum plate. The cab shall incorporate tongue and groove fitted 6061-T6 0.13 & 0.19 inch thick aluminum extrusions for extreme duty situations. A single formed, one (1) piece extrusion shall be used for the "A" pillar, adding strength and rigidity to the cab as well as additional roll-over protection. The cab side walls and roof skin shall be 0.13 inch thick; the rear wall skin shall be 0.09 inch thick; the front cab structure shall be 0.19 inch thick.

The exterior width of the cab shall be 99.40 inches wide with a minimum interior width of 91.00 inches. The overall cab length shall be 144.60 inches with 67.50 inches from the centerline of the front of the axle to the back of the cab.

The cab interior shall be designed to afford the maximum usable interior space and attention to ergonomics with hip and legroom while seated which exceeds industry standards. The crew cab floor shall be flat across the entire walking area for ease of movement inside the cab.

The cab shall offer an interior height of 57.50 inches from the front floor to the headliner and a rear floor to headliner height of 55.00 inches at a minimum. The cab shall offer an interior measurement at the floor level from the rear of the engine tunnel to the rear wall of the cab of 63.38 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

The cab shall include a driver and officer area with two (2) cab doors large enough for personnel in full firefighting gear. The front doors shall offer a clear opening of 40.25 inches wide X 53.50 inches high, from the cab floor to the top of the door opening. The cab shall also include a crew area with up to two (2) cab doors, also large enough for personnel in full firefighting gear. The rear doors shall offer a clear opening of 32.25 inches wide X 51.00 inches high, from the cab floor to the top of the door opening.

The cab shall incorporate a progressive two (2) step configuration from the ground to the cab floor at each door opening. The progressive steps are vertically staggered and extend the full width of each step well allowing personnel in full firefighting gear to enter and exit the cab easily and safely.

The first step for the driver and officer area shall measure approximately 11.50 inches deep X 31.13 inches wide. The intermediate step shall measure approximately 8.50 inches deep X 32.50 inches wide.



The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 11.00 inches.

The first step for the crew area shall measure approximately 11.50 inches deep X 20.44 inches wide. The intermediate step shall measure approximately 10.25 inches deep X 22.75 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.80 inches.

### **CAB FRONT FASCIA**

The front cab fascia shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate which shall be an integral part of the cab.

The cab fascia will encompass the entire front of the aluminum cab structure from the bottom of the windshield to the bottom of the cab and shall be the "Classic" design.

The front cab fascia shall include two (2) molded plastic modules on each side accommodating a total of up to four (4) Hi/Low beam headlights and two (2) turn signal lights or up to four (4) warning lights. A chrome plated molded plastic bezel shall be provided on each side around each set of four lamps.

### **FRONT GRILLE**

The front cab fascia shall include a classic box style, 304 stainless steel front grille. The grille shall measure 55.45 wide X 33.50 inches high X 1.50 inches deep. The grille shall include a minimum free air intake of 750.00 square inches.

### **CAB UNDERCOAT**

There shall be a rubberized undercoating applied to the underside of the cab that provides abrasion protection, sound deadening and corrosion protection.

### **CAB SIDE DRIP RAIL**

There shall be a drip rail along the top radius of each cab side. The drip rails shall help prevent water from the cab roof running down the cab side.

### **CAB PAINT EXTERIOR**

The cab shall be painted prior to the installation of glass accessories and all other cab trim to ensure complete paint coverage and the maximum in corrosion protection of all metal surfaces.

All metal surfaces on the entire cab shall be ground by disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once the surface is machine ground a high quality acid etching of base primer shall be applied. Upon the application of body fillers and their preparation, the cab shall be primed with a coating designed for corrosion resistance and surface paint adhesion. The maximum thickness of the primer coat shall be 2.00 mils.

The entire cab shall then be coated with an intermediate solid or epoxy surfacing agent that is designed to fill any minor surface defects, provide an adhesive bond between the primer and the paint and

improve the color and gloss retention of the color. The finish to this procedure shall be a sanding of the cab with 360 grit paper followed by sealing the seams with SEM brand seam sealer.

The cab shall then be painted the specific color designated by the customer with an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on the fire ground or emergency scene. The paint shall have a minimum thickness of 2.00 mils, followed by a clear top coat not to exceed 2.00 mils. The entire cab shall then be baked at 180 degrees for one (1) hour to speed the curing process of the coatings.

### **CAB PAINT MANUFACTURER**

The cab shall be painted with PPG Industries paint.

### **CAB PAINT PRIMARY/LOWER COLOR**

The primary/lower paint color shall be PPG FBCH 926760 red.

### **CAB PAINT SECONDARY/UPPER COLOR**

The secondary/upper paint color shall be PPG FBCH 930818 white.

### **CAB PAINT EXTERIOR BREAKLINE**

The upper and lower paint shall meet at a breakline on the cab which shall be located approximately 1.00 inch below the door windows on each side of the cab. The breakline shall curve down at the front cab corners to approximately 5.00 inches below the windshields on the front of the cab.

### **CAB PAINT PINSTRIPE**

Where the upper and lower paint colors meet a temporary 0.50 inch wide black pinstripe shall be applied over this break line to offer a more finished look prior to the final pinstripe being installed by the OEM.

### **CAB PAINT WARRANTY**

The cab and chassis shall be covered by a limited manufacturer paint warranty which shall be in effect for ten (10) years from the first owner's date of purchase or in service or the first 100,000 actual miles, whichever occurs first.

### **CAB PAINT INTERIOR**

The visible interior cab structure surfaces shall be painted with a multi-tone onyx black texture finish.

### **CAB ENTRY DOORS**

The cab shall include four (4) entry doors, two (2) front doors and two (2) crew doors designed for ease of entering and egress when outfitted with an SCBA. The doors shall be constructed of extruded aluminum with a nominal thickness of 0.13 inch. The exterior skins shall be constructed of 0.13 inch aluminum plate.

The doors shall include a double rolled style automotive rubber seal around the perimeter of each door frame and door edge which ensures a weather tight fit.

All door hinges shall be hidden within flush mounted cab doors for a pleasing smooth appearance and perfect fit along each side of the cab. Each door hinge shall be piano style with a 0.38 inch pin and shall be constructed of stainless steel.

### **CAB ENTRY DOOR TYPE**

All cab entry doors shall be barrier clear design resulting in exposed lower cab steps. The doors shall provide approximately 32.00 inches of clearance from the ground to the bottom of the door so cab doors may be opened un-hindered by most obstacles encountered, such as guard rails along interstate highways.

Entry doors shall include Pollak mechanical plunger style switches for electrical component activation.

### **CAB INSULATION**

The cab ceiling and walls shall include 1.00 inch thick foam insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

### **LH EXTERIOR REAR COMPARTMENT**

The cab shall offer an exterior compartment on the left side of the cab behind the rear door. The compartment opening shall be 10.00 inches wide X 31.19 inches high. The compartment size shall be 11.34 inches wide X 31.19 inches high X 21.19 inches deep. The compartment shall have a 10.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

### **LEFT HAND EXTERIOR REAR COMPARTMENT LIGHTING**

There shall be one (1) On-Scene brand Access LED strip light installed to illuminate the exterior rear compartment on the left side of the cab. The strip light shall be 10.00 inches long.

### **LH EXTERIOR COMPARTMENT INTERIOR FINISH**

The interior of the left hand exterior compartment shall have a DA sanded finish.

### **RH EXTERIOR REAR COMPARTMENT**

The cab shall offer an exterior compartment on the right side of the cab behind the rear door. The compartment opening shall be 10.00 inches wide X 31.19 inches high. The compartment size shall be 11.34 inches wide X 31.19 inches high X 21.19 inches deep. The compartment shall have a 10.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

### **RIGHT HAND EXTERIOR REAR COMPARTMENT LIGHTING**

There shall be one (1) On-Scene brand Access LED strip light installed to illuminate the exterior rear compartment on the right side of the cab. The strip light shall be 10.00 inches in length.

### **RH EXTERIOR COMPARTMENT INTERIOR FINISH**

The interior of the right hand exterior compartment shall have a DA sanded finish.

### **CAB STRUCTURAL WARRANTY**

Summary of Warranty Terms:

THE FOLLOWING IS SUMMARY OF WARRANTY TERMS FOR INFORMATION ONLY. THE ACTUAL LIMITED WARRANTY DOCUMENT, WHICH IS ATTACHED TO THIS OPTION, CONTAINS THE COMPLETE STATEMENT OF THE SPARTAN MOTORS USA LIMITED WARRANTY. SPARTAN'S RESPONSIBILITY IS TO BE ACCORDING TO THE TERMS OF THE COMPLETE LIMITED WARRANTY DOCUMENT.

The cab structure shall be warranted for a period of ten (10) years or one hundred thousand (100,000) miles which ever may occur first. The warranty period shall commence on the date the vehicle is delivered to the first end user.

### **CAB TEST INFORMATION**

The cab shall have successfully completed the preload side impact, static roof load application and frontal impact without encroachment to the occupant survival space when tested in accordance with Section 4 of SAE J2420 COE Frontal Strength Evaluation Dynamic Loading Heavy Trucks, Section 5 of SAE J2422 Cab Roof Strength Evaluation Quasi –Static Loading Heavy Trucks and ECE R29 Uniform Provisions Concerning the Approval of Vehicles with regard to the Protection of the Occupants of the Cab of a Commercial Vehicles Annex 3 Paragraph 5.

The above tests have been witnessed by and attested to by an independent third party. The test results were recorded using cameras, high speed imagers, accelerometers and strain gauges. Documentation of the testing shall be provided upon request.

### **ELECTRICAL SYSTEM**

The chassis shall include a single starting electrical system which shall include a 12 volt direct current Weldon brand of multiplexing system, suppressed per SAE J551. The wiring shall be appropriate gauge cross link with 311 degree Fahrenheit insulation. All SAE wires in the chassis shall be color coded and shall include the circuit number and function where possible. The wiring shall be protected by 275 degree Fahrenheit minimum high temperature flame retardant loom. All nodes and sealed Deutsch connectors shall be waterproof.

### **OEM WIRING**

A custom wiring interface and harness shall be provided and designed to meet the requirements provided by the apparatus manufacturer. This shall include the following circuits/features:

- Remote engine start circuit shall be provided to activate the engine starter solenoid from the aerial apparatus and shall utilize existing cab starter interlocks. The input for starter activation shall be provided and programmed by the apparatus manufacturer through the Weldon V-mux system.
- Remote engine stop circuit shall be provided to shut down the chassis engine from the aerial apparatus. The input for chassis engine shutdown shall be provided and programmed by the apparatus manufacturer through the Weldon V-mux system.
- Additional master power circuit located at apparatus manufacturer chassis interface connector at least 12 gauge in size and capable of supplying 20 amps.
- Additional communication connection for Weldon V-Mux multiplex system shall be provided and located near the apparatus manufacturer chassis interface connector.
- Aerial PTO override SPST guarded toggle switch located in the driver's diagnostic panel and labeled "Aerial PTO Override". When activated, the switch will override standard PTO interlocks and supply direct power to the aerial PTO solenoid for emergency activation.

The custom chassis harness shall also include additional inputs/outputs for Pump Engaged, Marker Lights, Neutral, Park Brake, Aerial Warning Lights, PTO Request, PTO Enable (input), PTO Enable (output), Open Door Beacon, and High Idle.

### **APPARATUS WIRING PROVISION**

An apparatus wiring panel shall be installed in the center dash area behind the rocker switch panel which shall include eight (8) open circuits consisting of three (3) 20 amp, one (1) 30 amp, three (3) 10 amp, and one (1) 15 amp circuit, with relays and breakers with trigger wires which shall be routed to the rocker switch panel.

### **MULTIPLEX DISPLAY**

The multiplex electrical system shall include a Weldon Vista IV display which shall be located on the left side of the dash in the switch panel. The Vista IV shall feature a full color LCD display screen which includes a message bar displaying the time of day and important messages requiring acknowledgement by the user which shall all be displayed on the top of the screen in the order they are received. There shall be eight (8) push button virtual controls, four (4) on each side of the display for the on-board diagnostics. The display screen shall be video ready for back-up cameras, thermal cameras, and DVD.

The Vista IV display shall offer varying fonts and background colors. The display shall be fully programmable to the needs of the customer and shall offer virtually infinite flexibility for screen configuration options.

### **LOAD MANAGEMENT SYSTEM**

The apparatus load management shall be performed by the included multiplex system. The multiplex system shall also feature the priority of sequences and shall shed electrical loads based on the priority list specifically programmed.

### **DATA RECORDING SYSTEM**

The chassis shall have a Weldon Vehicle Data Recorder (VDR) system installed. The system shall be designed to meet NFPA 1901 and shall be integrated with the Weldon Multiplex electrical system. The following information shall be recorded:

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

Each portion of the data shall be recorded at the specified intervals and stored for the specified length of time to meet NFPA 1901 guidelines and shall be retrievable by connecting a laptop computer to the VDR system.

### **ACCESSORY POWER**

The electrical distribution panel shall include two (2) power studs. The studs shall be size #10 and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall be capable of carrying up to a 40 amp battery direct load. One (1) power stud shall be capable of carrying up to a 15 amp ignition switched load. The two (2) power studs shall share one (1) #10 ground stud. A 325 amp master switched and fused power and ground stud shall be provided and installed on the chassis near the left hand battery box for OEM body connections.

### **AUXILIARY ACCESSORY POWER**

An auxiliary set of power and ground studs with supporting battery cables shall be provided at the apparatus interface location on the chassis transmission cross member location and labeled “Aerial EPU”. The studs and battery cables shall be capable of supplying 600 amps and be wired battery direct.

### **ADDITIONAL ACCESSORY POWER**

An additional ten (10) position blade type fuse panel shall be installed behind the officer’s seat. The fuse panel shall be protected by a 40 amp fuse located at the batteries. The panel shall be capable of carrying up to a maximum 40 amp battery direct load.

## **EXTRA ACCESSORY POWER**

An extra six (6) position Blue Sea Systems 5025 blade type fuse panel shall be provided and installed in the forward facing center seat box. The fuse panel shall be protected by a 40 amp fuse located at the batteries. The panel shall be capable of carrying up to a maximum 40 amp battery direct load.

## **ANCILLARY ACCESSORY POWER**

One (1) ancillary six (6) position Blue Sea Systems 5025 blade type fuse panel shall be installed behind the officer's seat. The fuse panel shall be protected by a 40 amp fuse located at the batteries. The panel shall be capable of carrying up to a maximum 40 amp battery direct load.

## **EXTERIOR ELECTRICAL TERMINAL COATING**

All terminals exposed to the elements will be sprayed with a high visibility protective rubberized coating to prevent corrosion.

## **ENGINE**

The chassis engine shall be a Cummins X15 engine. The X15 engine shall be an in-line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 565 horse power at 1800 RPM and shall be governed at 2100 RPM. The torque rating shall feature 1850 foot pounds of torque at 1150 RPM with 912 cubic inches (14.9 liter) of displacement.

The X15 engine shall feature a VGT™ Turbocharger, a high pressure common rail fuel system, fully integrated electronic controls with an electronic governor, and shall be EPA certified to meet the 2017 emissions standards using cooled exhaust gas recirculation and selective catalytic reduction technology.

The engine shall include an engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge for use with the engine lubrication system. The engine shall include Citgo brand Citgard 500, or equivalent SAE 15W40 CJ4 low ash engine oil which shall be utilized for proper engine lubrication.

A wiring harness shall be supplied ending at the back of the cab. The harness shall include a connector which shall allow an optional harness for the pump panel. The included circuits shall be provided for a tachometer, oil pressure, engine temperature, hand throttle, high idle and a PSG system. A circuit for J1939 data link shall also be provided at the back of the cab.

## **CAB ENGINE TUNNEL**

The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade 0.19 of an inch thick aluminum alloy plate. The tunnel shall be a maximum of 46.50 inches wide X 29.00 inches high.

## **DIESEL PARTICULATE FILTER CONTROLS**

There shall be two (2) controls for the diesel particulate filter. One (1) control shall be for regeneration and one (1) control shall be for regeneration inhibit.



## **ENGINE PROGRAMMING HIGH IDLE SPEED**

The engine high idle control shall maintain the engine idle at approximately 1250 RPM when engaged.

## **ENGINE HIGH IDLE CONTROL**

The vehicle shall be equipped with an automatic high-idle speed control. It shall be pre-set so when activated, it will operate the engine at the appropriate RPM to increase alternator output. This device shall operate only when the master switch is activated and the transmission is in neutral with the parking brake set. The device shall disengage when the operator depresses the brake pedal, or the transmission is placed in gear, and shall be available to manually or automatically re-engage when the brake is released, or when the transmission is placed in neutral. There shall be an indicator on the Vista display and control screen for the high idle speed control.

## **ENGINE PROGRAMMING ROAD SPEED GOVERNOR**

The engine shall include programming which will govern the top speed of the vehicle.

## **AUXILIARY ENGINE BRAKE**

A compression brake, for the six (6) cylinder engine shall be provided. A cutout relay shall be installed to disable the compression brake when in pump mode or when an ABS event occurs. The engine compression brake shall activate upon 0% accelerator when in operation mode and actuate the vehicle's brake lights.

The engine shall utilize a variable geometry turbo (VGT) as an integrated auxiliary engine brake to offer a variable rate of exhaust flow, which when activated in conjunction with the compression brake shall enhance the engine's compression braking capabilities.

## **AUXILIARY ENGINE BRAKE CONTROL**

An engine compression brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all of the following conditions are simultaneously detected:

- A valid gear ratio is detected.
- The driver has requested or enabled engine compression brake operation.
- The throttle is at a minimum engine speed position.
- The electronic controller is not presently attempting to execute an electronically controlled final drive gear shift.

The compression brake shall be controlled via an off/low/high virtual button through the Vista display and control screen. The multiplex system shall remember and default to the last engine brake control setting when the vehicle is shut off and re-started.

## **ELECTRONIC ENGINE OIL LEVEL INDICATOR**

The engine oil shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal. The warning shall activate in a low oil situation upon turning on the master battery and ignition switches without the engine running.

## **FLUID FILLS**

The engine oil, coolant, transmission, and power steering fluid fills shall be located under the cab. The windshield washer fill shall be accessible through the front left side mid step.

## **ENGINE DRAIN PLUG**

The engine shall include an original equipment manufacturer installed oil drain plug.

## **ENGINE WARRANTY**

The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever occurs first.

## **REMOTE THROTTLE CONTROL**

A Fire Research In Control 400 pressure sensor governor shall be provided for the electronic engine. It shall include a remote mountable control head.

The In Control shall regulate the pump pressure and monitor all essential engine parameters.

LED readouts shall display RPM, PSI, pump discharge and intake pressure, engine oil pressure, engine temperature, transmission temperature and battery voltage. An audible alarm output shall also be part of the system.

The rpm increase and decrease will be controlled by control knob on the face of the In Control 400.

## **REMOTE THROTTLE HARNESS**

An apparatus interface wiring harness for the engine shall be supplied with the chassis. The harness shall include a connector for connection to the chassis harness which shall terminate in the left frame rail behind the cab for reconnection by the apparatus builder. The harness shall contain connectors for a Fire Research In Control 300/400 pressure governor and a multiplexed gauge. Separate circuits shall be included for pump controls, "Pump Engaged" and "OK to Pump" indicator lights, open compartment ground, start signal, park brake ground, ignition signal, master power, customer ignition, air horn solenoid switch, high idle switch and high idle indication light. The harness shall contain interlocks that will prevent shifting to road or pump mode unless the transmission output speed translates to less than 1 mph and the transmission is in neutral. The shift to pump mode shall also require the park brake be set. The harness shall be designed for a top mount pump panel.

An apparatus interface wiring harness shall also be included which shall be wired to the cab harness interface connectors and shall incorporate circuits with relays to control pump functions. This harness shall control the inputs for the transmission lock up circuits, governor/hand throttle controls and dash display which shall incorporate "Pump Engaged" and "OK to Pump" indicator lights. The harness shall contain circuits for the apparatus builder to wire in a pump switch.

## **ENGINE PROGRAMMING REMOTE THROTTLE**

The engine ECM (Electronic Control Module) discrete wire remote throttle circuit shall be turned off for use with a J1939 based pump controller or when the discrete wire remote throttle controls are not required.

### **ENGINE PROGRAMMING IDLE SPEED**

The engine low idle speed will be programmed at 750 rpm.

### **ENGINE FAN DRIVE**

The engine cooling system fan shall incorporate a thermostatically controlled, Horton clutched type fan drive.

When the clutched fan is disengaged it shall facilitate improved vehicle performance, cab heating in cold climates, and fuel economy. The fan clutch design shall be fail safe so that if the clutch drive fails the fan shall engage to prevent engine overheating due to the fan clutch failure.

### **ENGINE COOLING SYSTEM**

There shall be a heavy-duty aluminum cooling system designed to meet the demands of the emergency response industry. The cooling system shall have the capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and all EPA requirements. The complete cooling system shall be mounted to isolate the entire system from vibration or stress. The individual cores of the cooling system shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores.

The cooling system shall be comprised of a charge air cooler to radiator serial flow package that provides the maximum cooling capacity for the specified engine as well as serviceability. The main components shall include a surge tank, a charge air cooler bolted to the front of the radiator, recirculation shields, a shroud, a fan, and required tubing.

The radiator shall be a down-flow design constructed with aluminum cores, plastic end tanks, and a steel frame. The radiator shall be equipped with a drain cock to drain the coolant for serviceability.

The cooling system shall include a one piece injected molded polymer eleven (11) blade fan with a three (3) piece fiberglass fan shroud.

The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and sight glass to monitor the level of the coolant. The surge tank shall have a dual seal cap that meets the engine manufacturer's pressure requirements, and allows for expansion and recovery of coolant into a separate integral expansion chamber.

All radiator tubes shall be formed from aluminized steel tubing. Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting performance.

The charge air cooler shall be a cross-flow design constructed completely of aluminum with cast tanks. All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicone

hump hoses and stainless steel “constant torque” style clamps meeting the engine manufacturer's requirements.

The radiator and charge air cooler shall be removable through the bottom of the chassis.

### **ENGINE COOLING SYSTEM PROTECTION**

The engine cooling system shall include a recirculation shield designed to act as a light duty skid plate below the radiator to provide additional protection for the engine cooling system from light impacts, stones, and road debris. The skid plate shall be painted to match the frame color.

### **ENGINE COOLANT**

The cooling package shall include Extended Life Coolant (ELC). The use of ELC provides longer intervals between coolant changes over standard coolants providing improved performance. The coolant shall contain a 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees Fahrenheit.

Proposals offering supplemental coolant additives (SCA) shall not be considered, as this is part of the extended life coolant makeup.

### **ENGINE COOLANT FILTER**

An engine coolant filter with a shut-off valve for the inlet and outlet shall be installed on the chassis. The location of the filter shall allow for easy maintenance.

Proposals offering engines equipped with coolant filters shall be supplied with standard non-chemical type particulate filters.

### **ELECTRONIC COOLANT LEVEL INDICATOR**

The instrument panel shall feature a low engine coolant indicator light which shall be located in the center of the instrument panel. An audible tone alarm shall also be provided to warn of a low coolant incident.

### **ENGINE PUMP HEAT EXCHANGER**

A single bundle type coolant to water heat exchanger shall be installed between the engine and the radiator. The heat exchanger shall be designed to prohibit water from the pump from coming in contact with the engine coolant. This shall allow the use of water from the discharge side of the pump to assist in cooling the engine.

### **COOLANT HOSES**

The cooling system hoses shall be silicone heater hose with rubber hoses in the cab interior. The radiator hoses shall be formed silicone coolant hoses with formed aluminized steel tubing. All heater hose, silicone coolant hose, and tubing shall be secured with stainless steel constant torque band clamps.

### **ENGINE AIR INTAKE**

The engine air intake system shall include an ember separator air intake filter which shall be located behind the right hand side headlamp. This filter ember separator shall be designed to protect the downstream air filter from embers, using a combination of unique flat and crimped metal screens packaged in a corrosion resistant heavy duty galvanized steel frame. This multilayered screen shall be design traps embers and allows them to burn out before passing through the pack.

The engine air intake system shall also include a stainless steel air cleaner mounted to the frame and located beneath the cab on the right side of the vehicle. The air cleaner shall utilize a replaceable filter element designed to prevent dust and debris from being ingested into the engine. The air cleaner housing and connections in the air intake system shall be designed to mitigate water intrusion into the system during severe weather conditions.

The air intake system shall also include a restriction indicator light in the warning light cluster on the instrument panel, which shall activate when the air cleaner element requires replacement.

### **AIR INTAKE PROTECTION**

A light duty skid plate shall be supplied for the engine air intake system below the right front side of the cab. The skid plate shall provide protection for the air intake system from light impacts, stones, and road debris. The skid plate shall be painted to match the frame color.

### **ENGINE EXHAUST SYSTEM**

The exhaust system shall include an end-in end-out horizontally mounted single module after treatment device, downpipe from the charge air cooled turbo. The single module shall include four temperature sensors, diesel particulate filter (DPF), urea dosing module (UL2), and a selective catalytic reduction (SCR) catalyst to meet current EPA standards. The selective catalytic reduction catalyst utilizes a diesel exhaust fluid solution consisting of urea and purified water to convert NOx into nitrogen, water, and trace amounts of carbon dioxide. The solution shall be mixed and injected into the system through the between the DPF and SCR.

The system shall utilize 0.07 inch thick stainless steel exhaust tubing between the engine turbo and the DPF. Zero leak clamps seal all system joints between the turbo and DPF.

The single module after treatment through the end of the tailpipe shall be connected with zero leak clamps. The discharge shall terminate horizontally on the right side of the vehicle ahead of the rear tires.

The exhaust system after treatment module shall be mounted below the frame in the outboard position.

### **DIESEL EXHAUST FLUID TANK**

The exhaust system shall include a molded cross linked polyethylene tank for Diesel Exhaust Fluid (DEF). The tank shall have a capacity of six (6) usable gallons and shall be mounted on the left hand side of the chassis frame behind the batteries below the frame.

The DEF tank shall be designed with capacity for expansion in case of fluid freezing. Engine coolant, which shall be thermostatically controlled, shall be run through lines in the tank to help prevent the DEF from freezing and to provide a means of thawing the fluid if it should become frozen.

The tank fill tube shall be routed under the rear of the cab with the fill neck and splash guard accessible in the top rear step.

### **ENGINE EXHAUST ACCESSORIES**

An exhaust temperature mitigation device shall be shipped loose for installation by the body manufacturer on the vehicle. The temperature mitigation device shall lower the temperature of the exhaust by combining ambient air with the exhaust gasses at the exhaust outlet.

### **ENGINE EXHAUST WRAP**

The exhaust tubing between the engine turbo and the diesel particulate filter (DPF) shall be wrapped with a thermal cover in order to retain the necessary heat for DPF regeneration. The exhaust wrap shall also help protect surrounding components from radiant heat which can be transferred from the exhaust.

### **TRANSMISSION**

The drive train shall include an Allison model EVS 4000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

The transmission shall include two (2) internal oil filters which shall offer Castrol TranSynd™ synthetic TES 295 transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

The transmission gear ratios shall be:

1st	3.51:1
2nd	1.91:1
3rd	1.43:1
4th	1.00:1
5th	0.74:1
6th	0.64:1 (if applicable)
Rev	4.80:1

### **TRANSMISSION MODE PROGRAMMING**

The transmission, upon start-up, will select the fifth speed operation without the need to press the mode button.

### **TRANSMISSION FEATURE PROGRAMMING**

The Allison Gen V-E transmission EVS group package number 127 shall contain the 198 vocational package in consideration of the duty of this apparatus as a pumper. This package shall incorporate an automatic neutral with selector override. This feature commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector. This requires re-selecting drive range to shift out of neutral for the override.

This package shall be coupled with the use of a split shaft PTO and incorporate pumping circuits. These circuits shall be used allowing the vehicle to operate in the fourth range lockup while operating the pump mode due to the 1 to 1 ratio through the transmission, therefore the output speed of the engine is the input speed to the pump. The pump output can be easily calculated by using this input speed and the drive ratio of the pump itself to rate the gallons of water the pump can provide.

A transmission interface connector shall be provided in the cab. This package shall contain the following input/output circuits to the transmission control module. The Gen V-E transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

<u>Function ID</u>	<u>Description</u>	<u>Wire assignment</u>
Inputs		
C	PTO Request	142
J	Fire Truck Pump Mode (4th Lockup)	122 / 123
Outputs		
C	Range Indicator	145 (4th)
G	PTO Enable Output	130
	Signal Return	103

### **ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR**

The transmission fluid shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal.

### **TRANSMISSION SHIFT SELECTOR**

An Allison pressure sensitive range selector touch pad shall be provided and located to the right of the driver within clear view and easy reach. The shift selector shall have a graphical Vacuum Florescent Display (VFD) capable of displaying two lines of text. The shift selector shall provide mode indication and a prognostic indicator (wrench symbol) on the digital display. The prognostics monitor various operating parameters and shall alert you when a specific maintenance function is required.

### **TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE**

When the auxiliary brake is engaged, the transmission shall automatically shift to second gear to decrease the rate of speed assisting the secondary braking system and slowing the vehicle.

### **TRANSMISSION COOLING SYSTEM**

The transmission shall include a water to oil cooler system located in the cooling loop between the radiator and the engine. The transmission cooling system shall meet all transmission manufacturer requirements. The transmission cooling system shall feature continuous flow of engine bypass water to maintain uninterrupted transmission cooling.

### **TRANSMISSION DRAIN PLUG**

The transmission shall include an original equipment manufacturer installed magnetic transmission fluid drain plug.



## **TRANSMISSION WARRANTY**

The Allison EVS series transmission shall be warranted for a period of five (5) years with unlimited mileage. Parts and labor shall be included in the warranty.

## **LH PTO**

A Spartan supplied ten (10) bolt standard duty clutched drive PTO shall be installed on the transmission. Installation shall include mounting of the PTO and wiring the unit with a control switch.

## **LH PTO MODEL**

A ten (10) bolt Chelsea model 280-GGFJP-B5XD heavy duty transmission driven PTO shall be installed. The clutched shifted PTO is designed specifically for the Allison world transmission and provides an intermittent and continuous torque rating of 360 lb. ft.

## **PTO LOCATION**

The transmission shall have two (2) power take off (PTO) mounting locations, one (1) in the 8:00 o'clock position and one (1) in the 1:00 o'clock position.

## **LH PTO CONTROL**

The left hand power take off shall be controlled by the transmission and shall be active in the neutral position only. It will use a virtual button on the Vista display and control screen with text messages. "Aerial Off" is displayed when switch is off. "Aerial On" is displayed when the switch is turned on. "Aerial Active" is displayed when the switch is on with positive engagement of the power take off.

Required operating conditions for enabling this function are:

- Throttle position is low
- Engine speed is within customer specified constant limits
- Transmission output speed is within customer specified constant limits
- Park brake set

Transmission position to be in neutral

## **DRIVELINE**

All drivelines shall be heavy duty metal tube and equipped with Spicer 1810 series universal joints for the main drivelines, and 1710 series for the inter-axle shaft. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®. The driveline shall include half round yokes.

## **MIDSHIP PUMP / GEARBOX**

A temporary jackshaft driveline shall be installed by the chassis manufacturer to accommodate the mid-ship split shaft pump as specified by the apparatus manufacturer.

## **MIDSHIP PUMP / GEARBOX MODEL**

The midship pump/gearbox provisions shall be for a Waterous CSUC20 pump.

### **MIDSHIP PUMP GEARBOX DROP**

The Waterous pump gearbox shall have a “D” (long) drop length.

### **MIDSHIP PUMP RATIO**

The ratio for the midship pump shall be 2.27:1.

### **MIDSHIP PUMP LOCATION C/L SUCTION TO C/L REAR AXLE**

The midship pump shall be located so the dimension from the centerline of the suction to the centerline of the rear axle is 107.50 inches.

### **PUMP SHIFT CONTROLS**

One (1) air pump shift control panel shall be located in the left hand side knee area below the dash. The following shall be provided on the panel: a three (3) position control lever; an engraved PUMP ENGAGED identification light; and an engraved OK TO PUMP identification light. The pump shift control panel shall be black with a yellow border outline and shall include pump instructions. An instruction plate describing the transmission shift selector position used for pumping shall be provided and located so it can be read from the driver's position per NFPA **16.10.1.3**. The road mode shall be selected when the control lever is in the up position and pump mode shall be selected when the control lever is in the down position.

The control lever center position shall exhaust air from both pump and road sides of the pump gear box shift cylinder...m

### **PUMP SHIFT CONTROL PLUMBING**

Air connections shall be provided from the air supply tank to the pump shift control valve and from the pump shift control valve to the frame mounted bracket. The frame mounted bracket shall include labeling identifying the pump and road connection points with threaded 0.25 inch NPT fittings on the solenoid for attaching the customer installed pump. The air supply shall be pressure protected from service brake system.

### **FUEL FILTER/WATER SEPARATOR**

The fuel system shall have a Racor S3238 fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve and a see through cover to allow visual inspection of fuel and filter condition. The Racor S3238 shall be a 10 micron filter capable of handling a maximum flow rate of 150 gallons per hour.

A secondary fuel filter shall be included as approved by the engine manufacturer.

An instrument panel lamp and audible alarm which indicates when water is present in the fuel-water separator shall also be included.

## **FUEL LINES**

The fuel system supply and return lines installed from the fuel tank to the engine shall be black textile braided lines which are reinforced with braided high tensile steel wire. The fuel lines shall be connected with reusable steel fittings.

## **ELECTRIC FUEL PRIMER**

Integral to the engine assembly is an electric lift pump that serves the purpose of pre-filter fuel priming.

## **FUEL COOLER**

An aluminum cross flow air to fuel cooler shall be provided to lower fuel temperature allowing the vehicle to operate at higher ambient temperatures. The fuel cooler shall be located behind the rear axle.

## **FUEL TANK**

The fuel tank shall have a capacity of sixty-eight (68) gallons and shall measure 35.00 inches in width X 17.00 inches in height X 29.00 inches in length.

The baffled tank shall have a vent port to facilitate venting to the top of the fill neck for rapid filling without "blow-back" and a roll over ball check vent for temperature related fuel expansion and draw.

The tank is designed with dual draw tubes and sender flanges. The tank shall have 2.00 inch NPT fill ports for right or left hand fill. A 0.50 inch NPT drain plug shall be centered in the bottom of the tank.

The fuel tank shall be mounted below the frame, behind the rear axle. Two (2) three-piece strap hanger assemblies with "U" straps bolted midway on the fuel tank front and rear shall be utilized to allow the tank to be easily lowered and removed for service purposes. Rubber isolating pads shall be provided between the tank and the upper tank mounting brackets. Strap mounting studs through the rail, hidden behind the body shall not be acceptable.

## **FUEL TANK MATERIAL AND FINISH**

The fuel tank shall be constructed of 12 gauge aluminized steel. The exterior of the tank shall be powder coated black and then painted to match the frame color.

All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 Method B, results to be 5B minimum. The pencil hardness test per ASTM D3363 shall have a final post-cured pencil hardness of H-2H. The direct impact resistance test per ASTM D2794, results to be 5B minimum.

Any proposals offering painted fuel tanks with variations from the above process shall not be accepted. The film thickness of vendor supplied parts shall also be sufficient to meet the performance standards as stated above.

## **FUEL TANK STRAP MATERIAL**

The fuel tank straps shall be constructed of ASTM A-36 steel. The fuel tank straps shall be powder coated black and then painted to match the frame color if applicable.

### **FUEL TANK FILL PORT**

The fuel tank fill ports shall be provided with two (2) left fill ports located one (1) in the forward position and one (1) in the middle position and the right fill port located in the middle position of the fuel tank.

A 1.50 inch diameter hole shall be provided in the left and right frame rails for vent hose routing provisions. The holes shall be located adjacent to the fuel tank and 5.13 inches up from the bottom of each rail.

### **FUEL TANK SERVICEABILITY PROVISIONS**

The chassis fuel lines shall have additional length provided so the tank can be easily lowered and removed for service purposes. The additional 8.00 feet of length shall be located above the fuel tank and shall be coiled and secured. The fuel line fittings shall be pointed towards the right side (curbside) of the chassis.

### **FUEL TANK DRAIN PLUG**

A 0.5 inch NPT drain plug shall be centered in the bottom of the fuel tank.

### **FRONT AXLE**

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-20. The axle shall include a 3.74 inch drop and a 71.00 inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle. The weight capacity for the axle shall be rated to 23,000 pounds. This rating shall require special approvals from the wheel manufacturers.

### **FRONT AXLE WARRANTY**

The front axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

### **FRONT WHEEL BEARING LUBRICATION**

The front axle wheel bearings shall be lubricated with oil. The oil level can be visually checked via clear inspection windows in the front axle hubs.

### **FRONT SHOCK ABSORBERS**

Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the front suspension system. The shocks shall be a monotubular design and fabricated using a special extrusion method, utilizing a single blank of steel without a welded seam, achieving an extremely tight peak-to-valley tolerance and maintains consistent wall thickness. The monotubular design shall provide superior strength while maximizing heat dissipation and shock life.

The ride afforded through the use of a gas shock is more consistent and shall not deteriorate with heat, the same way a conventional oil filled hydraulic shock would.

The Bilstein front shocks shall include a digressive working piston assembly allowing independent tuning of the compression and rebound damping forces to provide optimum ride and comfort without compromise. The working piston design shall feature fewer parts than most conventional twin tube and “road sensing” shock designs and shall contribute to the durability and long life of the Bilstein shock absorbers.

Proposals offering the use of conventional twin tube or “road sensing” designed shocks shall not be considered.

### **FRONT SUSPENSION**

The front suspension shall include a ten (10) leaf spring pack in which the longest leaf measures 53.38 inch long and 4.00 inches wide. The springs shall be shot peened for long life and include a military double wrapped front eye. The springs shall be bolted in place with M20 10.9 bolts and have replaceable rubber bushings in the spring eyes. The spring capacity shall be rated at 23,000 pounds.

### **STEERING COLUMN/ WHEEL**

The cab shall include a Douglas Autotech steering column which shall include a seven (7) position tilt, a 2.25 inch telescopic adjustment, and an 18.00 inch, four (4) spoke steering wheel located at the driver’s position. The steering wheel shall be covered with black polyurethane foam padding.

The steering column shall contain a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.

### **ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR**

The power steering fluid shall be monitored electronically and shall send a signal to activate an audible alarm and visual warning in the instrument panel when fluid level falls below normal.

### **POWER STEERING PUMP**

The hydraulic power steering pump shall be a TRW PS and shall be gear driven from the engine. The pump shall be a balanced, positive displacement, sliding vane type. The power steering system shall include an oil to air passive cooler.

### **FRONT AXLE CRAMP ANGLE**

The chassis shall have a front axle cramp angle of 48-degrees to the left and 44-degrees to the right.

### **POWER STEERING GEAR**

The power steering gear shall be a TRW model TAS 85 with an assist cylinder.

### **CHASSIS ALIGNMENT**

The chassis frame rails shall be measured to insure the length is correct and cross checked to make sure they run parallel and are square to each other. The front and rear axles shall be laser aligned. The front tires and wheels shall be aligned and toe-in set on the front tires by the chassis manufacturer.

### **REAR AXLE**

The rear axle shall be a Meritor model RT-58-185 tandem drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a fire service rated capacity of 63,000 pounds.

The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.56 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance.

The axle shall have heavy-duty Hypoid gearing for longer life, greater strength and quieter operation. Industry-standard wheel ends for compatibility with both disc and drum brakes, and unitized oil seal technology to keep lubricant in and help prevent contaminant damage will be used.

### **REAR AXLE DIFFERENTIAL LUBRICATION**

The rear axle differential shall be lubricated with oil.

### **REAR AXLE WARRANTY**

The rear axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

### **REAR WHEEL BEARING LUBRICATION**

The rear axle wheel bearings shall be lubricated with oil.

### **REAR AXLE DIFFERENTIAL CONTROL**

The tandem axle chassis shall include an inter-axle differential lock, which shall allow both axles to be engaged as drive axles. The inter-axle differential lock shall be controlled by a locking rocker switch on the switch panel. The light on the switch shall illuminate with positive engagement of the inter-axle differential lock.

### **VEHICLE TOP SPEED**

The top speed of the vehicle shall be approximately 68 MPH +/-2 MPH at governed engine RPM.

### **REAR SUSPENSION**

The tandem axle shall feature a Raydan Air-Link AL-600 air suspension. The Air-Link AL-600 shall feature a unique air ride and walking beam suspension design which combines a super smooth ride with

durability. The suspension has only two (2) moving parts for long wear and low maintenance cost. The rear tandem suspension shall have 56.00 inch axle centers.

Dual air height control valves shall be installed to ensure equal frame height on both sides of the vehicle regardless of the load.

The rear suspension shall be run flat capable at reduced speeds.

The rear suspension capacity shall be rated at 54,000 to 62,000 pounds.

### **REAR SHOCK ABSORBERS**

Shock absorbers shall be supplied by the suspension manufacturer and installed on the rear axle suspension.

### **FRONT TIRE**

The front tires shall be Goodyear 425/65R-22.5 20PR "L" tubeless radial G296 MSA mixed service tread.

The front tire stamped load capacity shall be 22,800 pounds per axle with a nominal speed rating of 68 miles per hour when properly inflated to 120 pounds per square inch.

The Goodyear Intermittent Service Rating maximum load capacity shall be 24,400 pounds per axle with a speed rating of 68 miles per hour when properly inflated to 120 pounds per square inch.

The Goodyear Intermittent Service Rating maximum speed capacity shall be 22,800 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.

The Goodyear Intermittent Service Rating limits the operation of the emergency vehicle to no more than fifty (50) miles of continuous operation under maximum recommended payload, or without stopping for at least twenty (20) minutes. The emergency vehicle must reduce its speed to no more than 50 MPH after the first fifty (50) miles of travel.

### **REAR TIRE**

The rear tires shall be Goodyear 315/80R-22.5 20PR "L" tubeless radial G751 MSA mixed service tread.

The rear tire stamped load capacity shall be 33,080 pounds per axle with a nominal speed rating of 68 miles per hour when properly inflated to 130 pounds per square inch.

The Goodyear Intermittent Service Rating maximum load capacity shall match the stamped load rating.

The Goodyear Intermittent Service Rating maximum speed capacity shall be 33,080 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 130 pounds per square inch.

The Goodyear Intermittent Service Rating limits the operation of the emergency vehicle to no more than fifty (50) miles of continuous operation under maximum recommended payload, or without stopping for

at least twenty (20) minutes. The emergency vehicle must reduce its speed to no more than 50 MPH after the first fifty (50) miles of travel.

### **REAR AXLE RATIO**

The rear axle ratio shall be 4.89:1.

### **TIRE PRESSURE INDICATOR**

There shall be electronic chrome LED valve caps shipped loose for installation by the OEM which shall illuminate with a red LED when tire pressure drops 8psi provided. The valve caps are self-calibrating and set to the pressure of the tire upon installation.

### **FRONT WHEEL**

The front wheels shall be Alcoa hub piloted, 22.50 inch X 12.25 inch LvL One™ polished aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and shall include Alcoa's Dura-Bright® finish with XBR technology as an integral part of the wheel surface. Alcoa Dura-Bright® wheels keep their shine without polishing. Brake dust, grime and road debris are easily removed by simply cleaning the wheels with soap and water.

### **REAR WHEEL**

The rear wheels shall be Alcoa hub piloted, heavy duty, 22.50 inch X 9.00 inch LvL One™ polished aluminum wheels with Alcoa Dura-Bright® wheel treatment with XBR® technology as an integral part of the wheel. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

### **BALANCE WHEELS AND TIRES**

All of the wheels and tires, including any spare wheels and tire assemblies, shall be dynamically balanced.

### **WHEEL TRIM**

The front wheels shall include stainless steel lug nut covers and stainless steel baby moons shipped loose with the chassis for installation by the apparatus builder. The baby moons shall have cutouts for oil seal viewing when applicable.

The rear wheels shall include stainless steel lug nut covers and band mounted spring clip stainless steel high hats shipped loose with the chassis for installation by the apparatus builder.

The lug nut covers, baby moons, and high hats shall be RealWheels® brand constructed of 304L grade, non-corrosive stainless steel with a mirror finish. Each wheel trim component shall meet D.O.T. certification.

### **AUXILIARY LUBRICATION SYSTEM**



An SKF centralized lubrication system (formerly Vogel) shall be installed on the chassis. The system shall be capable of lubricating up to twenty-four (24) grease points on the chassis. The grease lines shall be black textile braid covered high tensile steel reinforced wire braided hose with steel reusable fittings. A system diagnostic indicator light shall be provided on the dash. A park brake interlock is incorporated into the ignition system to keep the system from operating while parked. The main line system shall be monitored via a pressure switch. The system shall be mounted on the left hand frame rail.

## **BRAKE SYSTEM**

A rapid build-up air brake system shall be provided. The air brakes shall include a three (3) air tank, four (4) reservoir system with a total of 6220 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. An inversion valve shall be installed to provide a service brake application in the unlikely event of primary air supply loss. All air reservoirs provided on the chassis shall be labeled for identification.

The rear axle spring brakes shall automatically apply in any situation when the air pressure falls below 25 PSI and shall include a mechanical means for releasing the spring brakes when necessary. An audible alarm shall designate when the system air pressure is below 60 PSI.

A six (6) sensor, six (6) modulator Anti-lock Braking System (ABS) shall be installed on the front and tandem rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. This in turn shall allow the driver to maintain steering control under heavy braking and in most instances, shorten the braking distance. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

Additional safety shall be accommodated through Automatic Traction Control (ATC) which shall be installed on the tandem rear axle. The ATC system shall apply the ABS when the drive wheels loose traction. The system shall scale the electronic engine throttle back to prevent wheel spin while accelerating on ice or wet surfaces.

A virtual style switch shall be provided and properly labeled “mud/snow”. When the switch is pressed once, the system shall allow a momentary wheel slip to obtain traction under extreme mud and snow conditions. During this condition the ATC light shall blink continuously notifying the driver of activation. Pressing the switch again shall deactivate the mud/snow feature.

The Electronic Stability Control (ESC) unit is a functional extension of the electronic braking system. It is able to detect any skidding of the vehicle about its vertical axis as well as any rollover tendency. The control unit comprises an angular-speed sensor that measures the vehicle’s motion about the vertical axis, caused, for instance, by cornering or by skidding on a slippery road surface. An acceleration sensor measures the vehicle’s lateral acceleration. The Controller Area Network (CAN) bus provides information on the steering angle. On the basis of lateral acceleration and steering angle, an integrated microcontroller calculates a theoretical angular speed for the stable vehicle condition.

## **FRONT BRAKES**

The front brakes shall be Meritor EX225 Disc Plus disc brakes with 17.00 inch vented rotors.

### **REAR BRAKES**

The rear brakes shall be Meritor 16.50 inch X 7.00 inch S-cam drum type. The brakes shall feature a cast iron shoe.

### **PARK BRAKE**

Upon application of the push-pull valve in the cab, the rear brakes will engage via mechanical spring force. This is accomplished by dual chamber rear brakes, satisfying the FMVSS parking brake requirements.

### **PARK BRAKE CONTROL**

A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake.

The parking brake actuation valve shall be mounted to the left side of the engine tunnel integrated into the transmission shift pod console within easy access of the driver.

### **REAR BRAKE SLACK ADJUSTERS**

Gunitite rear brake automatic slack adjusters shall be installed on the axle.

### **AIR DRYER**

The brake system shall include a Wabco System Saver 1200 air dryer with an integral heater with a Metri-Pack sealed connector. The air dryer incorporates an internal turbo cutoff valve that closes the path between the air compressor and air dryer purge valve during the compressor "unload" cycle. The turbo cutoff valve allows purging of moisture and contaminants without the loss of turbo boost pressure. The air dryer shall be mounted to the frame behind the battery box on the left hand side outboard on an aerial apparatus bracket.

### **FRONT BRAKE CHAMBERS**

The front brakes shall be provided with MGM type 24 long stroke brake chambers.

### **REAR BRAKE CHAMBERS**

The rear axle shall include TSE 30/36 brake chambers which shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake shoes against the brake drum. The TSE Type 36 brake chamber has a 36.00 square inch effective area.

### **AIR COMPRESSOR**

The air compressor provided for the engine shall be a Wabco® SS318 single cylinder pass-through drive type compressor which shall be capable of producing 18.7 CFM at 1200 engine RPMs. The air compressor shall feature a higher delivery efficiency translating to more air delivery per horsepower

absorbed. The compressor shall include an aluminum cylinder head which shall improve cooling, reduce weight and decrease carbon formation. Superior piston and bore finishing technology shall reduce oil consumption and significantly increasing the system component life.

### **AIR GOVERNOR**

An air governor shall be provided to control the cut-in and cut-out pressures of the engine mounted air compressor. The governor shall be calibrated to meet FMVSS requirements. The air governor shall be located on the air dryer bracket on the left frame rail behind the battery box.

### **AUXILIARY AIR RESERVOIR**

One (1) auxiliary air reservoir with a 2084 cubic inch capacity shall be installed on the chassis to act as an additional reserve supply to the air system for air horn, air tool, or other non-service brake use. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

### **MOISTURE EJECTORS**

Automatic moisture ejectors with a manual drain provision shall be installed on all reservoirs of the air supply system. The manual drain provision shall include an actuation pull cable coiled and tied at each drain valve. The supplied cables when extended shall be sufficient in length to allow each drain to be activated from the side of the apparatus.

### **AIR SUPPLY LINES**

The air system on the chassis outside of the cab shall be plumbed with black textile braid covered high tensile steel reinforced wire braided hose with steel reusable fittings. All air plumbing inside the cab shall be reinforced nylon tubing. All drop hoses shall be fiber reinforced neoprene covered hose.

### **AIR TANK SPACERS**

There shall be spacers included with the air tank mounting. The spacers shall move the air tanks 1.50 inches inward towards the center of the chassis. This shall provide clearance between the air tanks and the frame for body U-bolt clearance.

### **REAR AIR TANK MOUNTING**

If a combination of wheel base, air tank quantity, or other requirements necessitate the location of one or more air tanks to be mounted rear of the fuel tank, these tank(s) will be mounted perpendicular to frame.

### **WHEELBASE**

The chassis wheelbase shall be 244.00 inches.

### **REAR OVERHANG**

The chassis rear overhang shall be 110.00 inches.

## **FRAME**

The frame shall consist of triple side rails and cross members forming a ladder style frame. The side rails shall be formed in the shape of a "C" channel, with the outer rail measuring 10.25 inches high X 3.50 inches deep X 0.38 inches thick, with an inner channel 9.44 inches high X 3.13 inches deep X 0.38 inches thick, and a second inner channel, 8.55 inches high X 2.75 inches deep X 0.25 inches thick which shall be provided extending from the rear of the cab to the forward rear suspension cross member. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. The triple rail section shall be rated by a Resistance Bending Moment (RBM) minimum of 3,921,500 inch pounds and have a minimum section modulus of 35.65 cubic inches. The frame shall measure 35.00 inches in width.

Proposals calculating the frame strength using the "box method" shall not be considered.

Proposals including heat treated rails shall not be considered. Heat treating frame rails produces rails that are not uniform in their mechanical properties throughout the length of the rail. Rails made of high strength, low alloy steel are already at the required yield strength prior to forming the rail.

A minimum of seven (7) fully gusseted 0.25 inch thick cross members shall be installed. The inclusion of the body mounting, or bumper mounting shall not be considered as a cross member. The cross members shall be attached using zinc coated grade 8 fasteners. The bolt heads shall be flanged type, held in place by distorted thread flanged lock nuts. Each cross member shall be mounted to the frame rails utilizing a minimum of 0.25 inch thick gusset reinforcement plates at all corners balancing the area of force throughout the entire frame.

Any proposals not including additional reinforcement for each cross member shall not be considered.

All relief areas shall be cut in with a minimum 2.00 inch radius at intersection points with the edges ground to a smooth finish to prevent a stress concentration point.

The frame and cross members shall carry a lifetime warranty to the original purchaser. A copy of the frame warranty shall be made available upon request.

Proposals offering warranties for frames not including cross members shall not be considered.

## **FRAME WARRANTY**

Summary of Warranty Terms:

THE FOLLOWING IS SUMMARY OF WARRANTY TERMS FOR INFORMATION ONLY. THE ACTUAL LIMITED WARRANTY DOCUMENT, WHICH IS ATTACHED TO THIS OPTION, CONTAINS THE COMPLETE STATEMENT OF THE SPARTAN MOTORS USA LIMITED WARRANTY. SPARTAN'S RESPONSIBILITY IS TO BE ACCORDING TO THE TERMS OF THE COMPLETE LIMITED WARRANTY DOCUMENT.

The frame and cross members shall carry a limited lifetime warranty to the original purchaser. The warranty period shall commence on the date the vehicle is delivered to the first end user.

## **REAR TOW DEVICE**

The frame rails shall contain (6) holes per frame in a pattern specified by the OEM for mounting Spartan ERV tow eyes at the rear of the frame at a location defined by the OEM.

### **FRAME CLEAR AREA**

The chassis frame shall be left clear of chassis mounted components inside and outside the frame rails behind the cab. The clear area shall allow space for a 100.00 feet long rear mount platform and apparatus. The clear areas behind the cab shall be within the following dimensions measured in inches

Clear area Inside/Outside Rail from	76.88	to	113.00	Behind CL Rear Axle
Clear area Inside/Outside Rail from	102.25	to	122.75	Forward of CL Rear Axle
Clear area Inside/Outside Rail from	0.75	to	14.19	Behind Back of Cab

### **FRAME PAINT**

The frame shall be powder coated black prior to any attachment of components.

All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 shall not have a fail of more than ten (10) squares. The pencil hardness test per ASTM D3363 shall have a final post-curved pencil hardness of H-2H. The direct impact resistance test per ASTM D2794 shall have an impact resistance of 120.00 inches per pound at 2 mils.

Any proposals offering painted frame with variations from the above process shall not be accepted. The film thickness of vendor supplied parts shall also be sufficient to meet the performance standards as stated above.

The chassis under carriage consisting of frame, axles, driveline running gear, air tanks and other chassis mounted components shall be painted with gloss black paint. Paint shall be applied prior to airline and electrical wiring installation.

### **REAR MUD FLAP**

The unit shall be equipped with a temporary wooden fender and mud flap assembly for transport to the body manufacturer.

### **FRONT BUMPER**

The chassis shall be equipped with a severe duty front bumper constructed from structural steel channel. The bumper material shall be 0.38 thick ASTM A36 steel which shall measure 12.00 inches high with a 3.05 inch flange and shall be 104.50 inches wide with angled front corners.

The bumper shall be primed and painted as specified.

### **FRONT BUMPER EXTENSION LENGTH**

The front bumper shall be extended approximately 21.00 inches ahead of the cab.

## **FRONT BUMPER PAINT**

The front bumper shall be painted the same as the lower cab color.

## **FRONT BUMPER APRON**

The 21.00 inch extended front bumper shall include an apron constructed of 0.19 inch thick embossed aluminum tread plate.

The apron shall be installed between the bumper and the front face of the cab affixed using stainless steel bolts attaching the apron to the top bumper flange.

## **FRONT BUMPER COMPARTMENT CENTER**

The front bumper shall include a compartment in the bumper apron located in the center between the frame rails which may be used as a hose well. The compartment shall be constructed of 0.13 inch 5052-H32 grade aluminum and shall include drain holes in the bottom corners to allow excess moisture to escape. The compartment shall be the full size of available space in the apron from the cab fascia to the bumper and 38.00 inches wide X 10.88 inches deep. The clear opening shall be 37.75 inches wide. The compartment shall include a notched cover constructed of 0.19 inch thick bright embossed aluminum tread plate. The notch shall be located in the right front portion of the cover and shall be 4.00 inches in length with a 2.00 inches wide radius.

## **FRONT BUMPER COMPARTMENT COVER HARDWARE**

The front bumper compartment cover(s) shall include gas cylinder stays which shall hold the cover open. Each cover shall be held in the closed position via a flush push button style latch.

## **MECHANICAL SIREN**

The front bumper shall include an electro mechanical Federal Q2B™ siren, which shall be streamlined, chrome-plated and shall produce 123 decibels of sound at 10.00 feet. The Q2B™ siren produces a distinctive warning sound that is recognizable at long distances. A unique clutch design provides a longer coast down sound while reducing the amp draw to 100 amps. The siren shall measure 10.50 inches wide X 10.00 inches high X 14.00 inches deep. The siren shall include a pedestal mount to surface mount on a horizontal surface.

## **MECHANICAL SIREN LOCATION**

The siren shall be pedestal mounted on the bumper apron on the furthest outboard section of the bumper on the driver side.

## **AIR HORN**

The chassis shall include two (2) Grover brand Stutter Tone air horns which shall measure 24.50 inches long with a 6.00 inch round flare. The air horns shall be trumpet style with a chrome finish.

## **AIR HORN LOCATION**

The air horns shall be recess mounted in the front bumper face, one (1) on the right side of the bumper in the inboard position relative to the right hand frame rail and one (1) on the left side of the bumper in the inboard position relative to the left hand frame rail.

### **AIR HORN RESERVOIR**

One (1) air reservoir, with a 2084 cubic inch capacity, shall be installed on the chassis to act as a supply tank for operating air horns. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

### **ELECTRONIC SIREN SPEAKER**

There shall be two (2) Cast Products Inc. model SA4301, 100 watt speakers provided. Each speaker shall measure 6.20 inches tall X 7.36 inches wide X 3.06 inches deep. Each speaker shall include a flat mounting flange which shall be polished aluminum.

### **ELECTRONIC SIREN SPEAKER LOCATION**

The two (2) electronic siren speakers shall be located on the front bumper face outboard of the frame rails with one (1) on the right side and one (1) on the left side in the outboard positions.

### **FRONT BUMPER TOW HOOKS**

Two (2) heavy duty chrome plated tow hooks shall be installed below the front bumper in the forward position, bolted directly to the underside of each chassis frame rail with grade 8 bolts.

### **CAB TILT SYSTEM**

The entire cab shall be capable of tilting approximately 45-degrees to allow for easy maintenance of the engine and transmission. The cab tilt pump assembly shall be located on the right side of the chassis above the battery box.

The electric-over-hydraulic lift system shall include an ignition interlock and red cab lock down indicator lamp on the tilt control which shall illuminate when holding the "Down" button to indicate safe road operation.

It shall be necessary to activate the master battery switch and set the parking brake in order to tilt the cab. As a third precaution the ignition switch must be turned off to complete the cab tilt interlock safety circuit.

Two (2) spring-loaded hydraulic hold down hooks located outboard of the frame shall be installed to hold the cab securely to the frame. Once the hold-down hooks are set in place, it shall take the application of pressure from the hydraulic cab tilt lift pump to release the hooks.

Two (2) cab tilt cylinders shall be provided with velocity fuses in each cylinder port. The cab tilt pivots shall be 1.90 inch ball and be anchored to frame brackets with 1.25 inch diameter studs.

A steel safety channel assembly, painted safety yellow shall be installed on the right side cab lift cylinder to prevent accidental cab lowering. The safety channel assembly shall fall over the lift cylinder

when the cab is in the fully tilted position. A cable release system shall also be provided to retract the safety channel assembly from the lift cylinder to allow the lowering of the cab.

### **CAB TILT AUXILIARY PUMP**

A manual cab tilt pump module shall be attached to the cab tilt pump housing.

### **CAB TILT LIMIT SWITCH**

A cab tilt limit switch shall be installed. The switch will effectively limit the travel of the cab when being tilted. The limit adjustment of the switch shall be preset by the chassis manufacturer to prevent damage to the cab or any bumper mounted option mounted in the cab tilt arc. Further adjustment to the limit by the apparatus manufacturer shall be available to accommodate additional equipment.

### **CAB TILT CONTROL RECEPTACLE**

The cab tilt control cable shall include a receptacle which shall be temporarily located on the right hand chassis rail rear of the cab to provide a place to plug in the cab tilt remote control pendant. The tilt pump shall include 8.00 feet of cable with a six (6) pin Deutsch receptacle with a cap.

The remote control pendant shall include 20.00 feet of cable with a mating Deutsch connector. The remote control pendant shall be shipped loose with the chassis.

### **CAB WINDSHIELD**

The cab windshield shall have a surface area of 2969.88 square inches and be of a two (2) piece wraparound design for maximum visibility.

The glass utilized for the windshield shall include standard automotive tint. The left and right windshield shall be fully interchangeable thereby minimizing stocking and replacement costs.

Each windshield shall be installed using black self locking window rubber.

### **GLASS FRONT DOOR**

The front cab doors shall include a window which is 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished using electric actuation. The left and right front door windows shall be controlled using a switch on each respective side inner door panel. The driver's door shall include a switch for each powered door window in the cab.

There shall be an irregular shaped fixed window which shall measure 2.50 inches wide at the top, 8.00 inches wide at the bottom X 26.00 inches in height, more commonly known as "cozy glass" ahead of the front door roll down windows.

The windows shall be mounted within the frame of the front doors trimmed with a black anodized ring on the exterior.

### **GLASS TINT FRONT DOOR**



The windows located in the left and right front doors shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

#### **GLASS REAR DOOR RH**

The rear right hand side crew door shall include a window which is 27.00 inches in width X 26.00 inches in height. The window shall be a powered type and shall be controlled by a switch on the inner door panel and on the driver's control panel.

#### **GLASS TINT REAR DOOR RIGHT HAND**

The window located in the right hand side rear window shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

#### **GLASS REAR DOOR LH**

The rear left hand side crew door shall include a window which is 27.00 inches in width X 26.00 inches in height. The window shall be a powered type and shall be controlled by a switch on the inner door panel and on the driver's control panel.

#### **GLASS TINT REAR DOOR LEFT HAND**

The window located in the left hand side rear door shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

#### **GLASS SIDE MID RH**

The cab shall include a window on the right side behind the front and ahead of the crew door which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

#### **GLASS TINT SIDE MID RIGHT HAND**

The window located on the right hand side of the cab between the front and rear doors shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

#### **GLASS SIDE MID LH**

The cab shall include a window on the left side behind the front door and ahead of the crew door and above the wheel well which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

## **GLASS TINT SIDE MID LEFT HAND**

The window located on the left hand side of the cab between the front and rear doors shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

## **CLIMATE CONTROL**

A ceiling mounted combination defroster and cabin heating and air conditioning system shall be located above the engine tunnel area. The system covers and plenums shall be of sever duty design made of aluminum which shall be coated with a customer specified interior paint. The design of the system's covers shall provide quick access to washable air intake filters as well as easy access to other serviceable items.

The air delivery plenums provide targeted airflow directly to the vehicle occupants. Six (6) adjustable louvers will provide comfort for the front seat occupants and ten (10) adjustable louvers will provide comfort for the rear crew occupants.

The system shall be capable of producing up to 12 FPM of air velocity at all occupant seating positions. Separate front and rear blower motors shall be of brushless design and shall be controlled independently. It shall be capable of reducing the interior cabin air temperature from 122° F (+/- 3° F) to 80° F in thirty minutes with 50% relative humidity and full solar load as described in SAE J2646.

The system shall also provide heater pull up performance which meets or exceeds the performance requirements of SAE J1612 as well as defrost performance that meets or exceeds the performance requirements of SAE J381.

A gravity drain system shall be provided that is capable of evacuating condensate from the vehicle while on a slope of up to a 13% grade in any direction.

The air conditioning system plumbing shall be a mixture of custom bent zinc coated steel fittings and Aero-quip GH134 flexible hose with Aeroquip EZ-Clip fittings.

The overhead heater/defroster plumbing shall include an electronic flow control valve that re-directs hot coolant away from the evaporator, via a bypass loop, as the temperature control is moved toward the cold position.

Any component which needs to be accessed to perform system troubleshooting shall be accessible by one person using basic hand tools. Regularly serviced items shall be replaceable by one person using basic hand tools.

*\*\*Performance data is based on testing performed by an independent third party test facility using a medium four-door 10" Raised roof Gladiator chassis equipped with an ISL engine.*

## **CLIMATE CONTROL DRAIN**

The climate control system shall include a gravity drain for water management. The gravity drain shall remove condensation from the air conditioning system without additional mechanical assistance.

### **CLIMATE CONTROL ACTIVATION**

The heating, defrosting and air conditioning controls shall be located on the center dash panel in the upper left hand side, in a position which is easily accessible to the driver. The climate control shall be activated by a rotary switch.

### **HVAC OVERHEAD COVER PAINT**

The overhead HVAC cover shall be painted with a multi-tone onyx black texture finish.

### **A/C CONDENSER LOCATION**

A roof mounted A/C condenser shall be installed on the left side of the cab, mid-roof.

### **A/C COMPRESSOR**

The air-conditioning compressor shall be a belt driven, engine mounted compressor. The compressor shall be compatible with R134-a refrigerant.

### **UNDER CAB INSULATION**

The underside of the cab tunnel surrounding the engine and the underside of the entire cab floor shall be lined with multi-layer insulation, engineered for application inside diesel engine compartments.

The insulation shall act as a noise barrier, absorbing noise thus keeping the decibel level in the cab well within NFPA recommendations. As an additional benefit, the insulation shall assist in sustaining the desired temperature within the cab interior.

The engine tunnel insulation shall measure approximately 0.75 inch thick including a vertically lapped polyester fiber layer, a 1.0 lb/ft<sup>2</sup> PVC barrier layer, an open cell foam layer, and a moisture and heat reflective foil facing, reinforced with a woven fiberglass layer. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.

The cab floor insulation shall measure 0.56 inch thick including a 1.0#/sf PVC barrier and a moisture and heat reflective foil facing, reinforced with fiberglass strands. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed MVSS 302 flammability test.

The insulation shall be cut precisely to fit each section and sealed for additional heat and sound deflection. The insulation shall be held in place by 3 mils of acrylic pressure sensitive adhesive and aluminum pins with hard hat, hold in place fastening heads. In addition, the insulation on the underside of the cab floor shall have an expanded metal overlay to assist in retaining the insulation tight against the cab and the insulation inside the tunnel shall have a removable aluminum overlay installed to protect the insulation and assist in retaining the insulation tight against the engine tunnel surfaces.

### **INTERIOR TRIM FLOOR**

The floor of the cab shall be covered with a multi-layer mat consisting of 0.25 inch thick sound absorbing closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The covering shall be held in place by a pressure sensitive adhesive and aluminum trim molding. All exposed seams shall be sealed with silicone caulk matching the color of the floor mat to reduce the chance of moisture and debris retention.

### **INTERIOR TRIM**

The cab interior shall include trim on the front ceiling, rear crew ceiling, and the cab walls. It shall be easily removable to assist in maintenance. The trim shall be constructed of insulated vinyl over a hard board backing.

### **REAR WALL INTERIOR TRIM**

The rear wall of the cab shall be trimmed with vinyl.

### **HEADER TRIM**

The cab interior shall feature header trim over the driver and officer dash constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum.

### **TRIM CENTER DASH**

The main center dash area shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate. There shall be four (4) holes located on the top of the dash near each outer edge of the electrical access cover for ventilation. The center dash electrical access cover shall include a gas cylinder stay which shall hold the cover open during maintenance.

### **TRIM LH DASH**

The left hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate for a perfect fit around the instrument panel. For increased occupant protection the extreme duty left hand dash utilizes patent pending break away technology to reduce rigidity in the event of a frontal crash. The left hand dash shall offer lower vertical surface area to the left and right of the steering column to accommodate control panels.

### **TRIM RH DASH**

The right hand dash trim shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate and shall include a Mobile Data Terminal (MDT) provision.

### **ENGINE TUNNEL TRIM**

The cab engine tunnel shall be covered with a multi-layer mat consisting of 0.25 inch closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The mat shall be held in place by pressure sensitive adhesive. The engine tunnel mat shall be trimmed with anodized aluminum stair nosing trim for an aesthetically pleasing appearance.

## **POWER POINT DASH MOUNT**

The cab shall include two (2) 12 volt cigarette lighter type receptacles in the cab dash to provide a power source for 12 volt electrical equipment. The receptacles shall be wired battery direct.

The cab shall also include two (2) Dual universal serial bus (USB) charging receptacles in the cab dash rocker switch cutout to provide a power source for USB chargeable electrical equipment. Each USB receptacle shall include one (1) USB port capable of a 5 Volt-1 amp output and one (1) USB port capable of a 5 Volt-2.1 amp output. The receptacles shall be wired battery direct and include a backlit legend.

## **AUXILIARY POWER POINT MID CREW**

The cab interior shall include two (2) universal serial bus (USB) charging receptacles to provide a power source for USB chargeable electrical equipment. Each USB receptacle shall include one (1) USB port capable of a 12 watt 2.4 amp fast charge output. Each USB receptacle shall be located in the mid crew area. One (1) receptacle shall be temporarily located under right hand mid side window location and one (1) receptacle shall be temporarily located under the left hand mid side window location. The receptacles shall be connected directly to the batteries. Four (4) feet of additional wire shall be looped at these locations for relocation of the power point by the body builder.

## **STEP TRIM**

Each cab entry door shall include a three step entry. The first step closest to the ground shall be constructed of SAE 304 stainless steel with indented perforations. The perforations shall allow water and other debris to flow through rather than becoming trapped within the stepping surface. The stainless steel material shall have a number 7 mirror finish. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed in 0.08 inch thick 3003-H22 embossed aluminum tread plate.

## **STEP TRIM KICKPLATE**

The cab steps shall include a kick plate in the rise of each step. The risers shall be trimmed in 3003-H22 bright aluminum tread-plate which is 0.07 inch thick.

## **UNDER CAB ACCESS DOOR**

The cab shall include an access door in the left crew step riser constructed of aluminum tread plate with a push and turn latch. The under cab access door shall provide access to the diesel exhaust fluid fill.

## **INTERIOR DOOR TRIM**

The interior trim on the doors of the cab shall consist of an aluminum panel constructed of Marine Grade 5052-H32 0.13 of an inch thick aluminum plate. The door panels shall include a painted finish.

## **DOOR TRIM KICKPLATE**

The inner door panels shall include an aluminum tread kick plate which shall be fastened to the lower portion of the door panels.

## **DOOR TRIM CUSTOMER NAMEPLATE**

The interior door trim on the front doors shall include a customer nameplate which states the vehicle was custom built for their Department.

## **CAB DOOR TRIM REFLECTIVE**

In accordance with the current standards of NFPA, the body builder shall provide 96.00 square inches of reflective material on the interior of each cab door.

## **INTERIOR GRAB HANDLE "A" PILLAR**

There shall be two (2) rubber covered 11.00 inch grab handles installed inside the cab, one on each "A" post at the left and right door openings. The left handle shall be located 7.88 inches above the bottom of the door window opening and the right handle shall be located 2.88 inches above the bottom of the door window opening. The handles shall assist personnel in entering and exiting the cab.

## **INTERIOR GRAB HANDLE FRONT DOOR**

Each front door shall include one (1) ergonomically contoured 9.00 inch cast aluminum handle mounted horizontally on the interior door panels. The handles shall feature a textured black powder coat finish to assist personnel entering and exiting the cab.

## **INTERIOR GRAB HANDLE REAR DOOR**

A black powder coated cast aluminum assist handle shall be provided on the inside of each rear crew door. A 30.00 inch long handle shall extend horizontally the width of the window just above the window sill. The handle shall assist personnel in exiting and entering the cab.

## **INTERIOR SOFT TRIM COLOR**

The cab interior soft trim surfaces shall be black in color.

## **INTERIOR TRIM SUN VISOR**

The header shall include two (2) 7.00 inches high X 18.00 inches wide impact resistant, transparent acrylic polycarbonate sun visors with a smoke gray tint shall be provided and installed on the header above the driver and officer.

The see thru visors are designed for maximum flexibility of positioning utilizing an arm with virtually unlimited adjustability with 13.50 inch long lateral travel of the tinted visor at the end of the arm which can be locked in place by a thumbscrew.

The visors are easily adjusted and can be placed into a chosen position with one hand. The sun visors will help protect vehicle occupants from solar glare without obscuring their vision.

## **INTERIOR FLOOR MAT COLOR**

The cab interior floor mat shall be black in color.

### **CAB PAINT INTERIOR**

The inner door panel surfaces shall feature a black Spar-Liner spray on bedliner coating.

### **HEADER TRIM INTERIOR PAINT**

The metal surfaces in the header area shall be coated with multi-tone onyx black texture finish.

### **TRIM CENTER DASH INTERIOR PAINT**

The entire center dash shall be coated with multi-tone onyx black texture finish. Any accessory pods attached to the dash shall also be painted this color.

### **TRIM LH DASH INTERIOR PAINT**

The left hand dash shall be painted with a multi-tone onyx black texture finish.

### **TRIM RIGHT HAND DASH INTERIOR PAINT**

The right hand dash shall be painted with multi-tone onyx black texture finish.

### **DASH PANEL GROUP**

The main center dash area shall include three (3) removable panels located one (1) to the right of the driver position, one (1) in the center of the dash and one (1) to the left of the officer position. The center panel shall be within comfortable reach of both the driver and officer.

### **SWITCHES CENTER PANEL**

The center dash panel shall include no rocker switches or legends.

### **SWITCHES LEFT PANEL**

The left dash panel shall include four (4) switches. There shall be three (3) across the top of the panel with one (1) below. Two (2) of the top row of switches shall be rocker type and the left one (1) shall be the windshield wiper/washer control switch. The lower switch shall be a rocker type switch.

A rocker switch with a blank legend installed directly above shall be provided for any position not designated by a specific option. The non-designated switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

### **SWITCHES RIGHT PANEL**

The right dash panel shall include seven (7) rocker switch positions in a three (3) over three (3) switch configuration plus (1) configuration.

A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

### **SEAT BELT WARNING**

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall provide a visual warning indicator in the Vista display and control screen(s) and a fast tone audible alarm. The wiring connections at each seat shall have heat shrink tubing applied so that the wiring cannot be easily disconnected to disable the system.

The warning system shall activate when any seat is occupied with a minimum of 60 pounds, the corresponding seat belt remains unfastened, and the park brake is released. The warning system shall also activate when any seat is occupied, the corresponding seat belt was fastened in an incorrect sequence, and the park brake is released. Once activated, the visual indicators and audible alarm shall remain active until all occupied seats have the seat belts fastened.

### **SEAT MATERIAL**

The seats shall include a covering of high strength, wear resistant fabric made of durable ballistic polyester. A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. Common trade names for this material are Imperial 1200 and Durawear.

### **SEAT COLOR**

All seats supplied with the chassis shall be black in color. All seats shall include red seat belts.

### **SEAT BACK LOGO**

The seat backs shall include the logo for the League City Fire Department of League City, Texas. The logo shall be centered on the standard headrest of the seat back and on the left side of a split headrest.

### **SEAT DRIVER**

The driver's seat shall be an H.O. Bostrom 400 Series Firefighter Sierra model seat. The seat shall feature eight-way electric positioning. The eight positions shall include up and down, fore and aft with 8.00 inches of travel, back angle adjustment and seat rake adjustment. The seat shall feature integral springs to isolate shock.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches measured with the seat height adjusted to the lowest position of travel.



This model of seat shall have successfully completed the static load tests set forth by FMVSS 207, 209, and 210 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity.

The materials used in construction of the seat shall also have successfully completed testing with regard to the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which dictates the allowable burning rate of materials in the occupant compartments of motor vehicles.

### **SEAT BACK DRIVER**

The driver's seat shall include a standard seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a contoured head rest.

### **SEAT MOUNTING DRIVER**

The driver's seat shall be installed in an ergonomic position in relation to the cab dash.

### **SEAT OFFICER**

The officer's seat shall be a H.O. Bostrom 400 Series Firefighter series. The seat shall feature a tapered and padded seat, and cushion. The seat shall be a non-adjustable type seat.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

### **SEAT BACK OFFICER**

The officer's seat back shall include an IMMI brand SmartDock® Gen 2 hands-free self contained breathing apparatus (SCBA) holder. The hands-free holder shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of emergency response

vehicles. The bracket shall accommodate and secure most types of self-contained breathing apparatus cylinders.

The hands-free holder shall consist of a back plate, bottom cradle, non-marring top claws, and claw height adjustment knob. The height adjustment knob shall allow for easy adjustment of the claws to the SCBA. The hands-free holder's claws shall lock from inertial forces to prevent the SCBA from becoming a projectile in the event of a crash to meet the NFPA 1901-03 standard for SCBA retention. The SCBA holder shall offer single-motion insertion into the claws and hands-free release when the SCBA fitted seat occupant rises.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

### **SEAT MOUNTING OFFICER**

The officer's seat shall offer a special mounting position which is 2.00 inches rearward of the standard location offering increased leg room for the occupant.

### **POWER SEAT WIRING**

The power seat or seats installed in the cab shall be wired directly to battery power.

### **SEAT BELT ORIENTATION CREW**

The crew position seat belts shall follow the standard orientation which extends from the outboard shoulder extending to the inboard hip.

### **SEAT REAR FACING OUTER LOCATION**

The crew area shall include one (1) rear facing crew seat located directly behind the right side front seat.

### **SEAT CREW REAR FACING OUTER**

The crew area shall include a seat in the rear facing outboard position which shall be a H.O. Bostrom 400 Series Firefighter model seat. The seat shall feature a tapered and padded seat, and cushion.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th

percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

### **SEAT BACK REAR FACING OUTER**

The crew area seat backs shall include an IMMI brand SmartDock® Gen 2 hands-free self contained breathing apparatus (SCBA) holder. The hands-free holder shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of emergency response vehicles. The bracket shall accommodate and secure most types of self-contained breathing apparatus cylinders.

The hands-free holder shall consist of a back plate, bottom cradle, non-marring top claws, and claw height adjustment knob. The height adjustment knob shall allow for easy adjustment of the claws to the SCBA. The hands-free holder's claws shall lock from inertial forces to prevent the SCBA from becoming a projectile in the event of a crash to meet the NFPA 1901-03 standard for SCBA retention. The SCBA holder shall offer single-motion insertion into the claws and hands-free release when the SCBA fitted seat occupant rises.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

### **SEAT MOUNTING REAR FACING OUTER**

The rear facing outer seats shall offer special mounting positions which shall be 2.00 inches towards the rear wall offering additional space between the front seats and the outer rear facing seats.

### **SEAT FORWARD FACING OUTER LOCATION**

The crew area shall include two (2) forward facing outboard seats, which include one (1) located next to the outer wall of the cab on the left side of the cab and one (1) located next to the outer wall on the right side of the cab.

### **SEAT CREW FORWARD FACING OUTER**

The crew area shall include a seat in the forward facing outer position which shall be a H.O. Bostrom 400 Series Firefighter model seat. The seat shall feature a tapered and padded seat back and cushion.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab

model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

### **SEAT BACK FORWARD FACING OUTER**

The crew area seat backs shall include an IMMI brand SmartDock® Gen 2 hands-free self contained breathing apparatus (SCBA) holder. The hands-free holder shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of emergency response vehicles. The bracket shall accommodate and secure most types of self-contained breathing apparatus cylinders.

The hands-free holder shall consist of a back plate, bottom cradle, non-marring top claws, and claw height adjustment knob. The height adjustment knob shall allow for easy adjustment of the claws to the SCBA. The hands-free holder's claws shall lock from inertial forces to prevent the SCBA from becoming a projectile in the event of a crash to meet the NFPA 1901-03 standard for SCBA retention. The SCBA holder shall offer single-motion insertion into the claws and hands-free release when the SCBA fitted seat occupant rises.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

### **SEAT MOUNTING FORWARD FACING OUTER**

The forward facing outer seat shall be mounted inboard from the side wall for additional clearance facing the front of the cab.

### **SEAT FORWARD FACING CENTER LOCATION**

The crew area shall include one (1) forward facing center crew seat located directly behind the engine tunnel in the center of the cab.

### **SEAT CREW FORWARD FACING CENTER**

The crew area shall include a seat in the forward facing center position which shall be a H.O. Bostrom 400 Series Firefighter model seat. The seat shall feature a tapered and padded seat, and cushion. The seat shall be mounted in a fixed position.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

### **SEAT BACK FORWARD FACING CENTER**

The crew area seat backs shall include an IMMI brand SmartDock® Gen 2 hands-free self contained breathing apparatus (SCBA) holder. The hands-free holder shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of emergency response vehicles. The bracket shall accommodate and secure most types of self-contained breathing apparatus cylinders.

The hands-free holder shall consist of a back plate, bottom cradle, non-marring top claws, and claw height adjustment knob. The height adjustment knob shall allow for easy adjustment of the claws to the SCBA. The hands-free holder's claws shall lock from inertial forces to prevent the SCBA from becoming a projectile in the event of a crash to meet the NFPA 1901-03 standard for SCBA retention. The SCBA holder shall offer single-motion insertion into the claws and hands-free release when the SCBA fitted seat occupant rises.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

### **SEAT FRAME FORWARD FACING**

The forward facing center seating positions shall include a full width seat frame located and installed at the rear wall. The seat frame shall span the available space on the rear wall. The seat frame shall be 12.38 inches high X 22.00 inches deep. The seat frame shall be constructed of Marine Grade 5052-H32 0.19 inch thick aluminum plate. The seat box shall be painted with the same color as the remaining interior.

### **SEAT FRAME FORWARD FACING STORAGE ACCESS**

There shall be two (2) access points to the storage area centered on the front of the seat frame. Each access point shall be covered by a hinged door to allow access for storage in the seat box.

### **SEAT MOUNTING FORWARD FACING CENTER**

The forward facing center seats shall be installed facing the front of the cab.

### **SEAT FRAME EXTERIOR REAR COMPARTMENT ACCESS**

The seat frame shall be open to the exterior rear compartment on both the right hand side and the left hand side. This shall allow interior access to the left and right exterior rear compartments.

## **CAB FRONT UNDERSEAT STORAGE ACCESS**

The left and right under seat storage areas shall have a solid aluminum hinged door with non-locking latch.

## **SEAT COMPARTMENT DOOR FINISH**

All underseat storage compartment access doors shall have a multi-tone onyx black texture finish.

## **WINDSHIELD WIPER SYSTEM**

The cab shall include a dual arm wiper system which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers which shall be affixed to a radial wet arm. The system shall include a single motor which shall initiate the arm in which both the left hand and right hand windshield wipers are attached, initiating a back and forth motion for each wiper. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver's position.

## **ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR**

The windshield washer fluid level shall be monitored electronically. When the washer fluid level becomes low the yellow "Check Message Center" indicator light on the instrument panel shall illuminate and the message center in the dual air pressure gauge shall display a "Check Washer Fluid Level" message.

## **CAB DOOR HARDWARE**

The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of aluminum with a chrome plated finish.

The interior exit door handles shall be flush paddle type with a black finish, which are incorporated into the upper door panel.

All cab entry doors shall include locks which are keyed alike. The door locks shall be designed to prevent accidental lockout.

## **DOOR LOCKS**

The cab entry doors shall include a Controller Area Network (CAN) based electronic door lock system which shall include two (2) external keypads, one (1) located on the left side next to the front grab handle and one (1) on the right side next to the front grab handle. There shall be one (1) red rocker switch provided on the inside of each front cab entry door to actuate the cab door locks. Each door lock may also be manually actuated from the inside of the cab by means of a red knob located on the paddle handle of the respective door. The electronic door lock system shall include four (4) key fobs for actuation with buttons for cab entry door locks and for compartment door locks.

When the doors are unlocked using the external keypad or the key fobs the interior dome lights shall illuminate and remain on for a period of twenty (20) seconds. The interior dome safety feature shall require the interior lighting power to be battery direct.

Wiring shall also be provided for up to four (4) exterior cab compartments and up to four (4) body compartments.

#### **DOOR LOCK LH REAR CAB COMPARTMENT**

The left hand side rear compartment shall feature a manual door lock.

#### **DOOR LOCK RH REAR CAB COMPARTMENT**

The right hand side rear compartment shall feature a manual door lock.

#### **GRAB HANDLES**

The cab shall include one (1) 18.00 inch three-piece knurled aluminum anti-slip exterior grab handle behind each cab door. The Hansen Lit Anti-Slip Rails shall be mounted in bright anodized aluminum 4000 Series II stanchions, complete with weep holes to prevent the buildup of moisture.

The grab rails shall include a 12 volt, 17.00 inch long clear LED light to provide an increased margin of safety for night time cab entry and egress. The lights shall only be activated when the parking brake is set and the ignition is on.

#### **POWER DOOR LOCK COMPARTMENT ACTIVATION**

The power door lock feature shall include activation for exterior compartment door locks through the key fob and keypads.

#### **AUXILIARY GRAB HANDLE**

There shall be a 7.00 inch molded stainless steel grab handle with a bright finish attached to the front fascia of the cab in the center below the windshield. The handle installation shall include steel reinforcement behind the front cab fascia.

#### **REARVIEW MIRRORS**

Ramco model 6018-FFHR-750HR bus style mirrors shall be provided. The mirror heads shall be polished cast aluminum and shall measure 9.75 inches wide X 13.00 inches high with an additional top mount convex assembly. The mirrors shall be mounted one (1) on each front cab corner radius below the windshield with 18.00 inch long polished cast aluminum arms.

The mirrors shall feature a remote controlled heated full flat glass and a top mounted remote controlled heated convex glass. The mirror control switches shall be located within easy reach of the driver. The mirrors shall be manufactured using the finest quality non-glare glass and shall feature a rigid mounting thereby reducing vibration. The mirrors shall be corrosion free under all weather conditions.

#### **REARVIEW MIRROR HEAT SWITCH**

The heat for the rearview mirrors shall be controlled through a virtual button on the Vista display and control screen.

## **EXTERIOR TRIM REAR CORNER**

There shall be mirror finish stainless steel scuff plates on the outside corners at the back of the cab. The stainless steel plate shall be affixed to the cab using two sided adhesive tape.

## **TRIM REAR WALL EXTERIOR**

The exterior rear wall of the cab shall include an overlay of 3003-H22 aluminum tread plate which shall be 0.07 inches thick. This overlay shall cover the entire rear wall of the cab.

## **CAB FENDER**

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Each two-piece liner shall consist of an inner liner 16.00 inches wide made of vacuum formed ABS composite and an outer fenderette 3.50 inches wide made of polished aluminum.

## **MUD FLAPS FRONT**

The front wheel wells shall have mud flaps installed on them.

## **CAB EXTERIOR FRONT & SIDE EMBLEMS**

The cab shall include three (3) Spartan emblems. There shall be one (1) installed on the front air intake grille and one (1) emblem on each of the cab sides.

## **IGNITION**

A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a one-quarter turn Cole Hersee switch, both of which shall be mounted to the left of the steering wheel on the dash. A chrome push type starter button shall be provided adjacent to the master battery and ignition switches.

Each switch shall illuminate a green LED indicator light on the dash when the respective switch is placed in the "ON" position.

The starter button shall only operate when both the master battery and ignition switches are in the "ON" position.

## **BATTERY**

The single start electrical system shall include six (6) Harris BCI 31 925 CCA batteries with a 210 minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541.

## **BATTERY TRAY**

The batteries shall be installed within two (2) stainless steel battery trays located on the left side and right side of the chassis, securely bolted to the frame rails. The battery trays shall be coated with the same material as the frame.



The battery trays shall include drain holes in the bottom for sufficient drainage of water. A durable, non-conducting, interlocking mat made by Dri-Dek shall be installed in the bottom of the trays to allow for air flow and help prevent moisture build up. The batteries shall be held in place by non-conducting phenolic resin hold down boards.

### **BATTERY BOX COVER**

Each battery box shall include a hinged stainless steel cover which protects the top of the batteries. Each cover shall include flush latches which shall keep the cover secure as well as a black powder coated handle for convenience when opening.

### **BATTERY CABLE**

The starting system shall include cables which shall be protected by 275 degree F. minimum high temperature flame retardant loom, sealed at the ends with heat shrink and sealant.

### **BATTERY JUMPER STUD**

The starting system shall include battery jumper studs. These studs shall be located in the forward most portion of the driver's side lower step. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

### **ALTERNATOR**

The charging system shall include a 360 amp Niehoff 12 volt alternator. The alternator shall include an ignition excited external regulator.

### **BATTERY CONDITIONER**

A Kussmaul 35/10 battery conditioner shall be supplied. The battery conditioner shall provide a 35 amp output for the chassis batteries and a 10 amp battery saver output. The battery conditioner shall be mounted in the cab inside the forward facing seat base below the left hand center seat.

### **BATTERY CONDITIONER DISPLAY**

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted in front of the left side door just below the windshield.

### **AUXILIARY AIR COMPRESSOR**

A Kussmaul Auto Pump 12V air compressor shall be supplied. The air compressor shall be installed behind the officer's seat. The air compressor shall be plumbed to the air brake system to maintain air pressure.

### **ELECTRICAL INLET**

A Kussmaul 20 amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed.

A single item or an addition of multiple items must not exceed the rating of the electric inlet that it's connected to.

**Amp Draw Reference List:**

*Kussmaul 1000 Charger - 3.5 Amps*

*Kussmaul 1200 Charger - 10 Amps*

*Kussmaul 35/10 Charger - 10 Amps*

*1000W Engine Heater - 8.33 Amps*

*1500W Engine Heater - 12.5 Amps*

*120V Air Compressor - 4.2 Amps*

**ELECTRICAL INLET LOCATION**

An electrical inlet shall be installed on the left hand side of the cab ahead of the front door.

**ELECTRICAL INLET CONNECTION**

The electrical inlet shall be connected to the battery conditioner.

**ELECTRICAL INLET COLOR**

The electrical inlet connection shall include a yellow cover.

**HEADLIGHTS**

The cab front shall include four (4) rectangular halogen headlamps with separate high and low beams mounted in bright chrome bezels.

**FRONT TURN SIGNALS**

The front fascia shall include two (2) Whelen model M6 4.00 inch X 6.00 inch amber LED turn signals which shall be installed in a chrome housing above and outboard of the front warning and head lamps.

**HEADLIGHT LOCATION**

The headlights shall be located on the front fascia of the cab directly below the front warning lights.

**SIDE TURN/MARKER LIGHTS**

The sides of the cab shall include two (2) LED round side marker lights which shall be provided just behind the front cab radius corners.

**MARKER AND ICC LIGHTS**

In accordance with FMVSS, there shall be five (5) LED cab marker lamps designating identification, center and clearance provided. These lights shall be installed on the face of the cab within full view of other vehicles from ground level.

### **HEADLIGHT AND MARKER LIGHT ACTIVATION**

The headlights and marker lights shall be controlled via a virtual button on the Vista display. There shall be a virtual dimmer control on the Vista display to adjust the brightness of the dash lights. The headlamps and markers lamps shall illuminate to 100% brilliance when the ignition switch is in the "On" position.

### **GROUND LIGHTS**

Each door shall include an NFPA compliant LED ground light mounted to the underside of the cab step below each door. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted for extended life. The ground lighting shall be activated when the park brake is set if the headlights are on and through a virtual button on the Vista display and control screen.

### **LOWER CAB STEP LIGHTS**

The middle step located at each door shall include a recess mounted 4.00 inch round LED light which shall activate with the ground lights.

### **INTERMEDIATE STEP LIGHTS**

The intermediate step well area at each door shall include an LED light within a chrome housing. The Egress step lights shall provide visibility to the step well area for the first step exiting the vehicle. The Egress step lights shall activate with Entry step lighting.

### **UNDER BUMPER LIGHTS**

There shall be two (2) 4.00 inch round LED NFPA compliant ground lights mounted under the bumper. The lights shall include a polycarbonate lens, a housing which is vibration welded, and LEDs which shall be shock mounted for extended life. The under bumper ground lighting shall activate with the ground lights.

### **ENGINE COMPARTMENT LIGHT**

There shall be an LED NFPA compliant light mounted under the engine tunnel for area work lighting on the engine. The light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. The light shall activate automatically when the cab is tilted.

### **LIGHTBAR PROVISION**

There shall be two (2) light bars installed on the cab roof. The light bars shall be provided and installed by Spartan Chassis. The light bar installation shall include mounting and wiring to a control switch on the cab dash.

## **CAB FRONT LIGHTBAR**

The lightbar provisions shall be for two (2) Whelen brand Freedom FN4MINI lightbars mounted on the left and right side of the front cab roof, each at a 30-degree angle. Each lightbar shall be 21.50 inches in length. Each lightbar shall feature three (3) red LED lights modules and two (2) clear LED light modules. The clear lights shall be disabled with park brake engaged. The cables shall exit the lightbars near the center of each lightbar.

## **LIGHTBAR SWITCH**

The light bar shall be controlled by a virtual button on the Vista display and control screen. This button shall be clearly labeled for identification.

## **INTERIOR OVERHEAD LIGHTS**

The cab shall include a two-section, red and clear Weldon LED dome lamp located over each door. The dome lamps shall be rectangular in shape and shall measure approximately 7.00 inches in length X 3.00 inches in width with a black colored bezel. The clear portion of each lamp shall be activated by opening the respective door and both the red and clear portion can be activated by individual push lenses on each lamp.

An additional incandescent three (3) light module with dual map lights shall be located over the engine tunnel which can be activated by individual switches on the lamp.

## **AUXILIARY DOME LIGHT MID CREW**

The cab shall include two (2) 7.00 inch LED auxiliary dome lights on the headliner in the middle of the crew area inboard of the outer seats. The lights shall include red lenses. The lights shall be activated by the rear doors and by a single virtual button on the Vista display and control screen which shall also activate any other red auxiliary dome lights in the cab specifying Vista activation.

## **DO NOT MOVE APPARATUS LIGHT**

The front headliner of the cab shall include a flashing red Whelen Ion LED light clearly labeled "Do Not Move Apparatus". In addition to the flashing red light, an audible alarm shall be included which shall sound while the light is activated.

The flashing red light shall be located centered left to right for greatest visibility.

The light and alarm shall be interlocked for activation when either a cab door is not firmly closed or an apparatus compartment door is not closed, and the parking brake is released.

## **MASTER WARNING SWITCH**

A master switch shall be included, as a virtual button on the Vista display and control screen which shall be labeled "E Master" for identification. The button shall feature control over all devices wired through it. Any warning device switches left in the "ON" position when the master switch is activated shall automatically power up.

## **HEADLIGHT FLASHER**

An alternating high beam headlight flashing system shall be installed into the high beam headlight circuit which shall allow the high beams to flash alternately from left to right.

Deliberate operator selection of high beams will override the flashing function until low beams are again selected. Per NFPA, these clear flashing lights will also be disabled “On Scene” when the park brake is applied.

## **HEADLIGHT FLASHER SWITCH**

The flashing headlights shall be activated through a virtual button on the Vista display and control screen.

## **INBOARD FRONT WARNING LIGHTS**

The cab front fascia shall include two (2) Whelen M6 Super LED front warning lights in the left and right inboard positions. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the front fascia of the cab within a chrome bezel

## **INBOARD FRONT WARNING LIGHTS COLOR**

The warning lights mounted on the cab front fascia in the inboard positions shall be red/blue with a clear lens.

## **OUTBOARD FRONT WARNING LIGHTS**

The cab front fascia shall include two (2) Whelen M6 Super LED front warning lights in the left and right outboard positions. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the front fascia of the cab within a chrome bezel.

## **OUTBOARD FRONT WARNING LIGHTS COLOR**

The warning lights mounted on the cab front fascia in the outboard position shall be red with a clear lens.

## **FRONT WARNING SWITCH**

The front warning lights shall be controlled through a virtual control on the Vista display and control screen. This switch shall be clearly labeled for identification.

## **INTERSECTION WARNING LIGHTS**

The chassis shall include two (2) Whelen M6 series Super LED intersection warning lights, one (1) each side. The lights shall feature multiple flash patterns including steady burn.

### **INTERSECTION WARNING LIGHTS COLOR**

The intersection lights shall be red/amber with a clear lens.

### **INTERSECTION WARNING LIGHTS LOCATION**

The intersection lights shall be mounted in the forward position on the side of the bumper.

### **SIDE WARNING LIGHTS**

The cab sides shall include two (2) Whelen M6 Super LED warning lights, one (1) on each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the sides of the cab within a chrome bezel.

### **SIDE WARNING LIGHTS COLOR**

The warning lights located on the side of the cab shall be red/amber with a clear lens.

### **SIDE WARNING LIGHTS LOCATION**

The warning lights on the side of the cab shall be mounted on the “B” pillar in the flat roof position.

### **AUXILIARY SIDE WARNING LIGHTS**

The cab side shall include an auxiliary set of Whelen series M6 4.00 inch tall X 6.00 inch wide Super LED warning lights, one (1) each side, which shall feature multiple flash patterns including steady burn.

### **AUXILIARY SIDE WARNING LIGHTS COLOR**

The auxiliary warning lights located on the side of the cab shall be split red and blue with a clear lens.

### **AUXILIARY SIDE WARNING LIGHTS LOCATION**

The auxiliary warning lights on the side of the cab shall be mounted over the front wheel well directly over the center of the front axle.

### **ADDITIONAL SIDE WARNING LIGHTS**

The cab sides shall include an additional set of Whelen series M6 Super LED 4.00 inch tall X 6.00 inch wide warning lights, one (1) each side, which shall offer multiple flash patterns including steady burn.

### **ADDITIONAL SIDE WARNING LIGHTS COLOR**

The additional warning lights located on the sides of the cab shall be red and amber with a clear lens.

### **ADDITIONAL SIDE WARNING LIGHTS LOCATION**

The warning lights on the side of the cab shall be mounted behind the rear crew door in the lowest available position.

### **EXTRA SIDE WARNING LIGHTS**

The cab sides shall include an additional set of Whelen series M6 Super LED 4.00 inch tall X 6.00 wide inch warning light, one (1) each side, which shall offer multiple flash patterns including steady burn.

### **EXTRA SIDE WARNING LIGHTS COLOR**

The extra warning lights located on the sides of the cab shall be red and blue with a clear lens.

### **EXTRA SIDE WARNING LIGHTS LOCATION**

The warning lights on the side of the cab shall be mounted behind the rear crew door in the highest position available.

### **SIDE AND INTERSECTION WARNING SWITCH**

The side warning lights shall be controlled through a virtual button on the Vista display and control screen. This button shall be clearly labeled for identification.

### **SIREN CONTROL HEAD**

A Whelen 295HFS2 electronic siren control head with remote amplifier shall be provided and flush mounted in the switch panel with a location specific to the customer's needs. The siren shall feature 200-watt output, hands free mode and shall be in "standby" mode awaiting instruction. The siren shall offer radio broadcast, public address, wail, yelp, or piercer tones and hands free operation which shall allow the operator to turn the siren on and off from the horn ring if a horn/siren selector switch option is also selected.

### **HORN BUTTON SELECTOR SWITCH**

A virtual button on the Vista display and control screen shall be provided to allow control of either the electric horn or the air horn from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in either position to meet FMCSA requirements.

### **AIR HORN ACTIVATION**

The air horn activation shall be accomplished by the steering wheel horn button for the driver and a momentary rocker switch on the switch panel. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

### **MECHANICAL SIREN ACTIVATION**

The mechanical siren shall be actuated by a Linemaster model SP491-S81 foot switch mounted in the front section of the cab for use by the driver and a momentary rocker switch in the switch panel on the dash. A red momentary siren brake rocker switch shall be provided in the switch panel on the dash. A virtual button for the siren brake shall be provided on the Vista display.

The siren activation shall be interlocked with the park brake and shall only be active when master warning switch is on to prevent accidental engagement.

## **BACK-UP ALARM**

A Preco-Matic model 1059 dual function, dual sound backup alarm shall be installed at the rear of the chassis with an auto-adjusting output level of 87 dB to 112 dB. The alarm shall automatically activate when the transmission is placed in reverse.

## **INSTRUMENTATION**

An ergonomically designed instrument panel shall be provided. Each gauge shall be backlit with LED lamps. Stepper motor movements shall drive all gauges. The instrumentation system shall be multiplexed and shall receive ABS, engine, and transmission information over the J1939 data bus to reduce redundant sensors and wiring.

A twenty eight (28) icon lightbar message center with integral LCD odometer/trip odometer shall be included. The odometer shall display up to 999,999.9 miles. The trip odometer shall display 9,999.9 miles. The LCD message center screen shall be capable of custom configuration by the users for displaying certain vehicle status and diagnostic functions.

The instrument panel shall contain the following gauges:

One (1) three-movement gauge displaying vehicle speed, fuel level, and Diesel Exhaust Fluid (DEF) level. The primary scale on the speedometer shall read from 0 to 100 MPH, and the secondary scale on the speedometer shall read from 0 to 160 KM/H. The scale on the fuel and DEF level gauges shall read from empty to full as a fraction of full tank capacity. Red indicator lights in the gauge and an audible alarm shall indicate low fuel or low DEF at 1/8<sup>th</sup> tank level.

One (1) three-movement gauge displaying engine RPM, and primary and secondary air system pressures shall be included. The scale on the tachometer shall read from 0 to 3000 RPM. The scale on the air pressure gauges shall read from 0 to 150 pounds per square inch (PSI) with a red line zone indicating critical levels of air pressure. Red indicator lights in the gauge and an audible alarm shall indicate low air pressure.

One (1) four-movement gauge displaying engine oil pressure, coolant temperature, voltmeter, and transmission temperature shall be included. The scale on the engine oil pressure gauge shall read from 0 to 100 pounds PSI with a red line zone indicating critical levels of oil pressure. A red indicator light in the gauge and audible alarm shall indicate low engine oil pressure. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (°F) with a red line zone indicating critical coolant temperatures. A red indicator light in the gauge and audible alarm shall indicate high coolant temperature. The scale on the voltmeter shall read from 9 to 18 volts with a red line zone indicating critical levels of battery voltage. A red indicator light in the gauge and an audible alarm shall indicate high or low system voltage. The low voltage alarm shall indicate when the system voltage has dropped below 11.8 volts for more than 120 seconds in accordance with the requirements of NFPA 1901. The scale on the transmission temperature gauge shall read from 100 to 300 degrees °F with a red line zone indicating critical temperatures. A red indicator light in the gauge and an audible alarm shall indicate a high transmission temperature.



The light bar portion of the message center shall include twenty-eight (28) LED backlit indicators. The lightbar shall be split with fourteen (14) indicators on each side of the LCD message screen. The lightbar shall contain the following indicators and produce the following audible alarms when supplied in conjunction with applicable configurations:

### **RED INDICATORS**

Stop Engine - indicates critical engine fault  
Air Filter Restricted - indicates excessive engine air intake restriction  
Park Brake - indicates parking brake is set  
Low Coolant - indicates critically low engine coolant  
Cab Tilt Lock - indicates the cab tilt system locks are not engaged.

### **AMBER INDICATORS**

Malfunction Indicator Lamp (MIL) - indicates an engine emission control system fault  
Check Engine - indicates engine fault  
Check Transmission - indicates transmission fault  
Anti-Lock Brake System (ABS) - indicates anti-lock brake system fault  
High exhaust system temperature – indicates elevated exhaust temperatures  
Water in Fuel - indicates presence of water in fuel filter  
Wait to Start - indicates active engine air preheat cycle  
Windshield Washer Fluid – indicates washer fluid is low  
DPF restriction - indicates a restriction of the diesel particulate filter  
Regen Inhibit-indicates regeneration of the DPF has been inhibited by the operator  
Range Inhibit - indicates a transmission operation is prevented and requested shift request may not occur.  
SRS - indicates a problem in the supplemental restraint system  
Check Message - indicates a vehicle status or diagnostic message on the LCD display requiring attention.

### **GREEN INDICATORS**

Left and Right turn signal indicators  
ATC - indicates low wheel traction for automatic traction control equipped vehicles, also indicates mud/snow mode is active for ATC system  
High Idle - indicates engine high idle is active.  
Cruise Control - indicates cruise control is enabled  
OK to Pump - indicates the pump is engaged and conditions have been met for pump operations  
Pump Engaged - indicates the pump transmission is currently in pump gear  
Auxiliary Brake - indicates secondary braking device is active

### **BLUE INDICATORS**

High Beam indicator

### **AUDIBLE ALARMS**

Air Filter Restriction  
Cab Tilt Lock  
Check Engine  
Check Transmission

Open Door/Compartment  
High Coolant Temperature  
High or Low System Voltage  
High Transmission Temperature  
Low Air Pressure  
Low Coolant Level  
Low DEF Level  
Low Engine Oil Pressure  
Low Fuel  
Stop Engine  
Water in Fuel  
Extended Left/Right Turn Signal On  
ABS System Fault

### **BACKLIGHTING COLOR**

The instrumentation gauges and the switch panel legends shall be backlit using blue LED backlighting.

### **HOOR METER**

Within the instrument panel, a Honeywell brand hour meter shall be installed which shall measure the amount of hours the PTO has been operated. The hour meter shall be wired to the left hand PTO and labeled "AERIAL HOURS".

### **RADIO**

A Panasonic radio with weather band, AM/FM stereo receiver, compact disc player, and four (4) speakers shall be installed in the cab. The radio shall be installed above the driver position. The speakers shall be installed inside the cab with two (2) speakers recessed within the headliner of the front of the cab just behind the windshield and two (2) speakers on the upper rear wall of the cab.

### **AM/FM ANTENNA**

A small antenna shall be located on the left hand side of the cab roof for AM/FM and weather band reception.

### **CAMERA**

An Audiovox Voyager heavy duty rearview camera system shall be supplied. One (1) camera with a teardrop shaped chrome plated housing shall be shipped loose for OEM installation in the body to afford the driver a clear view to the rear of the vehicle and one (1) shall be mounted on the officer side of the cab below windshield ahead of the front door at approximately the same level as the cab door handle.

The cameras shall be wired to a single Weldon Vista display located on the driver's side dash. The rear camera shall activate when the transmission is placed in reverse and the right camera shall activate with the right side turn signal. Each camera shall also be activated by a button on the Vista display.

### **COMMUNICATION ANTENNA**

An antenna base, for use with an NMO type antenna, shall be mounted on the left hand front corner of the cab roof so not to interfere with light bars or other roof mounted equipment installed by Spartan Chassis. The antenna base shall be an Antenex model MABVT8 made for either a 0.38 inch or 0.75 inch receiving hole in the antenna and shall include 17 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base design provides the most corrosion resistance and best power transfer available from a high temper all brass construction and gold plated contact design. The antenna base shall be provided by Spartan.

### **COMMUNICATION ANTENNA CABLE ROUTING**

The antenna cable shall be routed from the antenna base mounted on the roof to the area inside the center rocker switch console.

### **AUXILIARY COMMUNICATION ANTENNA**

An auxiliary antenna base, for use with and NMO type antenna, shall be installed on the cab. The antenna base shall be an Antenex model MABVT8 and shall include 17.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base shall be mounted in the inboard position on the right hand front corner of the cab roof so not to interfere with light bars or other roof mounted equipment installed by Spartan Chassis. The antenna base shall be provided by Spartan.

### **AUXILIARY COMMUNICATION ANTENNA CABLE ROUTING**

The auxiliary antenna cable shall be routed from the antenna base mounted on the roof to the area inside the center rocker switch console.

### **CAB EXTERIOR PROTECTION**

The cab face shall have a removable plastic film installed over the painted surfaces to protect the paint finish during transport to the body manufacturer.

### **FIRE EXTINGUISHER**

A 2.50 pound D.O.T approved fire extinguisher with BC rating shall be shipped loose with the cab.

### **DOOR KEYS**

The cab and chassis shall include a total of six (6) door keys for the manual door locks.

### **WARRANTY**

Summary of Warranty Terms:

THE FOLLOWING IS SUMMARY OF WARRANTY TERMS FOR INFORMATION ONLY. THE ACTUAL LIMITED WARRANTY DOCUMENT, WHICH IS ATTACHED TO THIS OPTION, CONTAINS THE COMPLETE STATEMENT OF THE SPARTAN MOTORS USA LIMITED WARRANTY. SPARTAN'S RESPONSIBILITY IS TO BE ACCORDING TO THE TERMS OF THE COMPLETE LIMITED WARRANTY DOCUMENT.

The chassis manufacturer shall provide a limited parts and labor warranty to the original purchaser of the custom built cab and chassis for a period of twenty-four (24) months, or the first 36,000 miles, whichever occurs first. The warranty period shall commence on the date the vehicle is delivered to the first end user.

### **CHASSIS OPERATION MANUAL**

There shall be two (2) digital copies of the chassis operation manual provided with the chassis. The digital data shall include a parts list specific to the chassis model.

### **ENGINE AND TRANSMISSION OPERATION MANUALS**

The following manuals specific to the engine and transmission models ordered will be included with the chassis in the ship loose items:

- (1) Hard copy of the Engine Operation and Maintenance manual with CD
- (1) Digital copy of the Transmission Operator's manual
- (1) Digital copy of the Engine Owner's manual

### **CAB/CHASSIS AS BUILT WIRING DIAGRAMS**

The cab and chassis shall include two (2) complete sets of wiring schematics and option wiring diagrams. One (1) set shall be a printed hard copy, one (1) set shall be a digital copy.

### **CUSTOMER INSPECTION**

There shall be a customer inspection of the chassis at Spartan Chassis in Charlotte, Michigan. The customer, the dealer, or the OEM shall be responsible for all travel costs and arrangements.

The date of the chassis inspection shall be determined based on the requested chassis completion date, OEM production schedules, the chassis off-line date, and the chassis completion date.

The inspection must be coordinated between the OEM/Dealer representative and Andy Torrence the Spartan Chassis FT Auditor/Inspection Coordinator. Andy can be contacted by phone at 517-543-6400 extension 3148, on his cell at 517-231-0959, or by email to [andy.torrence@spartanchassis.com](mailto:andy.torrence@spartanchassis.com).

### **SALES TERMS**

The sale of the Spartan Chassis shall be governed by the terms contained on the Sales Terms – Acceptance of Purchase Order document, a copy of which is attached to this option.

### **DRIVELINE LAYOUT CONFIRMATION**

During the design phase of the chassis the Spartan Chassis driveline engineer shall submit the driveline layout to an OEM engineer to review the chassis design for any potential problems integrating the OEM body to the chassis. The OEM engineer shall provide approval to the driveline engineer prior to driveline bills of materials being released.

### **3D CHASSIS LAYOUT**

A three dimensional (3D) layout of the chassis shall be provided to the OEM engineering group for use in designing the OEM body.

The layout shall include the following:

- Cab
- Frame
- Bumper
- Front Towing Device
- Front Axle
- Front Suspension
- Cab Tilt
- Exhaust
- Air Drier
- Battery Boxes & Covers
- Rear Axle
- Rear Suspension
- Fuel Tank