

Invader

E-One
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BULLDOG FIRE APPARATUS

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Quote Id : 3106 Bulldog FFA,Revision Level: -3

BULLDOG FIRE APPARATUS

Phone : 605-582-4054

Order Id:

Sales Order Number: 3106 Bulldog FFA

Lead Unit Order Id:

Lead Sales Order Number: 3106
Bulldog FFA

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Quotation

Description

VEHICLE

S	0100-011	MODEL	Invader
O	8012-008	CUSTOMERS / OEMS	Ferrara Fire Apparatus (11150)[1000016]
O	8011-024	MODEL YEAR	Model Year - 2024
S	8001-001	COUNTRY OF SERVICE	Country of Service United States Of America
S	8110-001	ADDITIONAL VOCATIONAL STANDARD	NO Addl Vocational Standard
S	8017-009	CAB AND CHASSIS LABELING LANGUAGE	Cab and Chassis Labeling Language English w/Innovative Controls Labels
S	8006-009	APPARATUS TYPE	Apparatus Type Pumper
S	8066-001	REAR MOUNT AERIAL DEVICE	NO Rear Mount Aerial Device
S	8067-001	MID MOUNT MULTI-PURPOSE APPLIANCE	NO Mid Mount Multi-Purpose Appliance
S	8068-001	MID MOUNT AERIAL DEVICE	NO Mid Mount Aerial Device
S	8069-000	AERIAL APPARATUS WITH HYDRAULIC GENERATOR	NO Aerial Apparatus With Hydraulic Generator
S	8008-001	VEHICLE TYPE	Vehicle Type Straight Truck
S	8008A-000	VEHICLE ANGLE OF APPROACH PACKAGE	Vehicle Angle of Approach NFPA Minimum 8.00 Degrees
S	0104-001	AXLE CONFIGURATION	Axle Configuration 4x2 (Rear Axle Drive Only)
O	0101-004	GROSS AXLE WEIGHT RATINGS FRONT	GAWR Front 21500#
O	0102-028	GROSS AXLE WEIGHT RATINGS REAR	GAWR Rear 26000#
S	0106-001	GROSS COMBINATION WEIGHT RATING	NO Gross Combination Weight Rating
S	8010-201	PUMP PROVISION	Pump Provision Driveline Midship, Pump Mode Prog w/Auto Park Brake "N"
S	8009-013	WATER & FOAM TANK CAPACITY	Water & Foam Tank Capacity 750 to 1250 Gallons

CAB

O	1000-013	CAB STYLE	Cab Style EMFD 10" Raised Roof
O	8101-200	OCCUPANT PROTECTION	Occupant Protection IMMI 4Front & RollTek w/SRA
O	1501-018	CAB FRONT FASCIA	Cab Frt Fascia Classic w/Quad Headlight Bezels
O	1518-063	FRONT GRILLE	Cab Frt Grille Ferrara
S	1551-002	CAB UNDERCOAT	Cab Undercoat
S	1552-002	CAB SIDE DRIP RAIL	Cab Side Drip Rail
S	1521-001	CAB PAINT EXTERIOR	Cab Paint Exterior Single Color

O	1533-002	CAB PAINT PROCESS/MANUFACTURER	Cab Paint Process/Manufacturer Sikkens
O	1522-1608	CAB PAINT PRIMARY/LOWER COLOR	Cab Paint Primary/Lower Color Sikkens Red FLNA 32528
S	1539-001	SHIPLOOSE PAINT	NO Shiploose Paint
S	1523-001	CAB PAINT SECONDARY/UPPER COLOR	NO Cab Paint Secondary/Upper Color
S	1524-001	CAB PAINT EXTERIOR BREAKLINE	NO Cab Paint Exterior Breakline
S	1515-001	CAB PAINT PINSTRIPE	NO Cab Paint Pinstripe
S	1519-001	CAB EXTERIOR ROLL-UP DOOR FINISH	NO Cab Exterior Roll-up Door Finish
O	8013-056	CAB PAINT WARRANTY	Cab Paint Warranty (10) Year RFW0710
O	1334-031	CAB PAINT INTERIOR	Cab Paint Int Bedliner Medium Gray
S	1005-001	CAB ENTRY DOORS	Cab Entry Doors (4)
O	1101-102	CAB ENTRY DOOR TYPE	Cab Entry Door Type Barrier Free w/Pollak Switches
S	1322-007	CAB INSULATION	Cab Insulation Nonwoven Polyester Fiber
S	1537-001	AUXILIARY CAB STEPS	NO Auxiliary Cab Steps
S	1556-001	LH MID EMS COMPARTMENT	NO LH Mid EMS Compartment
S	1558-001	LH MID EMS COMPARTMENT EXTERIOR ACCESS	NO LH Mid EMS Compartment Exterior Access
S	1560-001	LH MID EMS COMPARTMENT INTERIOR	NO LH Mid EMS Compartment Interior
S	1562-001	LH MID EMS COMPARTMENT INTERIOR ACCESS	NO LH Mid EMS Compartment Interior Access
S	1564-001	LH MID EMS COMPARTMENT SHELVING	NO LH Mid EMS Compartment Shelving
S	1566-001	LH MID EMS COMPARTMENT DOOR HARDWARE	NO LH Mid EMS Compartment Door Hardware
S	1568-001	LH MID EMS COMPARTMENT TRIM	NO LH Mid EMS Compartment Trim
S	1557-001	RH MID EMS COMPARTMENT	NO RH Mid EMS Compartment
S	1559-001	RH MID EMS COMPARTMENT EXTERIOR ACCESS	NO RH Mid EMS Compartment Exterior Access
S	1561-001	RH MID EMS COMPARTMENT INTERIOR	NO RH Mid EMS Compartment Interior
S	1563-001	RH MID EMS COMPARTMENT INTERIOR ACCESS	NO RH Mid EMS Compartment Interior Access
S	1565-001	RH MID EMS COMPARTMENT SHELVING	NO RH Mid EMS Compartment Shelving
S	1567-001	RH MID EMS COMPARTMENT DOOR HARDWARE	NO RH Mid EMS Compartment Door Hardware
S	1569-001	RH MID EMS COMPARTMENT TRIM	NO RH Mid EMS Compartment Trim
S	5384-001	MID EMS COMPARTMENT LIGHTING	NO Mid EMS Compartment Lighting
S	1535-001	MID EMS COMPARTMENT EXTERIOR FINISH	NO Mid EMS Compartment Exterior Finish
S	1536-001	MID EMS COMPARTMENT INTERIOR FINISH	NO Mid EMS Compartment Interior Finish

S	1001-001	REAR CAB ROOF MODIFICATION	NO Rear Cab Roof Modification
S	1002-001	CAB ROOF TRENCH	NO Cab Roof Trench
S	1540-100	LH EXTERIOR REAR COMPARTMENT	NO LH Exterior Rear Compartment
S	5313-001	LH EXTERIOR REAR COMPARTMENT LIGHTING	NO Left Hand Exterior Rear Compartment Lighting
S	1548-001	LH EXTERIOR COMPARTMENT INTERIOR FINISH	NO LH Exterior Compartment Interior Finish
S	1541-100	RH EXTERIOR REAR COMPARTMENT	NO RH Exterior Rear Compartment
S	5345-001	RH EXTERIOR REAR COMPARTMENT LIGHTING	NO Right Hand Exterior Rear Compartment Lighting
S	1549-001	RH EXTERIOR COMPARTMENT INTERIOR FINISH	NO RH Exterior Compartment Interior Finish
S	1007-001	PUMP PANEL CUTOUT	NO Pump Panel Cutout
S	1004-001	REAR CAB WALL CUTOUT	NO Rear Cab Wall Cutout
S	1003-001	SHIPPING COVER REARWALL CUTOUT	NO SHIPPING COVER REARWALL CUTOUT
S	8004-033	CAB STRUCTURAL WARRANTY	Cab Structural Warranty (10) Year RFW0602
S	9001-006	CAB TEST INFORMATION	Cab Test Information Crash Test ECE-R29/SAE J2420/SAE J2422

ELECTRICAL POWER DISTRIBUTION

S	5000-018	ELECTRICAL SYSTEM	Elec System 12V DC Multiplex
S	5008-001	OEM WIRING	NO OEM Wiring
S	5009-001	TRAILER ELECTRICAL CONNECTION	NO Trailer Electrical Connection
S	5006-001	APPARATUS WIRING PROVISION	NO Apparatus Wiring Provision
O	5005-300	VEHICLE DISPLAY	Vehicle Display UltraView 780 Touchscreen w/Push Button Surround LH Sw Pnl
O	5046-068	MULTIPLEX DISPLAY SPECIAL LAYOUT	Multiplex Display Special Layout Day/Night Dimmer Settings
S	5004-002	LOAD MANAGEMENT SYSTEM	Load Management System Multiplex
S	5622-003	DATA RECORDING SYSTEM	Data Recording Sys Vehicle Data Weldon MUX
O	5031-010	ACCESSORY POWER	Accessory Pwr & Gnd Stud 40A Batt & 15A Ign w/200A Mstr Sw/300A Batt OEM Conn
O	5030-050	AUXILIARY ACCESSORY POWER	Aux Acc Pwr 6 Fuse Blue Sea Pnl Bhd Sw Pnl w/40A Fuse Batt Dir
O	5032-036	ADDITIONAL ACCESSORY POWER	Addl Acc Pwr 6 Fuse Blue Sea Pnl Eng Tnl Bhd Off Seat w/40A Brkr Batt Dir
O	5033-088	EXTRA ACCESSORY POWER	Extra Acc Pwr 6 Fuse Blue Sea Pnl Rr Wall Left of Ctr Abv Seat Frm 40A Batt Dir
S	5034-001	ANCILLARY ACCESSORY POWER	NO Ancillary Accessory Power & Ground Stud
S	5011-001	EXTERIOR ELECTRICAL TERMINAL COATING	Exterior Electrical Terminal Coating Spray On Plasti Dip
S	8014-002	ELECTRICAL SYSTEM WARRANTY	Electrical System Warranty (2) Year RFW0202

IDLE REDUCTION TECHNOLOGY

S	4103-001	IDLE REDUCTION SYSTEM ALTERNATOR	NO Idle Reduction Technology Alternator
S	4104-001	IDLE REDUCTION SYSTEM A/C COMPRESSOR	NO Idle Reduction Technology A/C Compressor
S	4105-001	IDLE REDUCTION AIR SYSTEM	NO Idle Reduction Technology Air System
S	4107-001	IDLE REDUCTION SYSTEM GENERATOR	NO Idle Reduction Technology Generator
S	4102-001	IDLE REDUCTION SYSTEM ENGINE	NO Idle Reduction Technology Engine
S	4108-001	IDLE REDUCTION SYSTEM EXHAUST	NO Idle Reduction Technology Exhaust
S	4106-001	IDLE REDUCTION FUEL SYSTEM	NO Idle Reduction Technology Fuel System

ENGINE

O	1701-170	ENGINE	Engine Diesel 500HP Cummins X12 - EPA 2021-26
S	1733-001	ENGINE PROTECTION	NO Engine Protection
S	1329-001	CAB ENGINE TUNNEL	Cab Engine Tunnel Small/Medium
S	1731-002	DIESEL PARTICULATE FILTER CONTROLS	DPF Ctrl Regeneration Sw & Inhibit Sw
S	1718-002	ENGINE PROGRAMMING HIGH IDLE SPEED	Engine Programming High Idle Speed 1250 RPM
S	1719-005	ENGINE HIGH IDLE CONTROL	Engine High Idle Ctrl Manual and Automatic w/Disp Actv
S	1710-001	ENGINE PROGRAMMING ROAD SPEED GOVERNOR	Engine Programming Road Speed Governor Enabled
S	1713-010	AUXILIARY ENGINE BRAKE	Aux Engine Brake Compression Brake w/VG Turbo
S	1708-008	AUXILIARY ENGINE BRAKE CONTROL	Aux Engine Brake Ctrl Off/Low/Med/High Disp
S	1717-001	AUXILIARY ENGINE OIL FILTRATION	NO Auxiliary Engine Oil Filtration
S	1714-001	ENGINE EXHAUST BRAKE	NO Engine Exhaust Brake
S	1722-001	ENGINE EXHAUST BRAKE CONTROL	NO Engine Exhaust Brake Control
S	1720-003	ELECTRONIC ENGINE OIL LEVEL INDICATOR	Elec Engine Oil Level Indicator
O	1715-008	FLUID FILLS	Fluid Fills Under Cab
S	1735-001	ENGINE DRAIN PLUG	Engine Drain Plug
S	1704-001	ENGINE BLOCK HEATER	NO Engine Block Heater
S	1716-001	EMERGENCY ENGINE SHUTDOWN SYSTEM	NO Emergency Engine Shutdown System
S	8002-001	ENGINE WARRANTY	Engine Warranty Cummins (5) Year/100,000 Miles
S	1706-001	REMOTE THROTTLE CONTROL	NO Remote Throttle Control
S	1707-116	REMOTE THROTTLE HARNESS	Rmt Throttle Harness Cab Harness Only Shift Interlock
S	1721-001	ENGINE PROGRAMMING REMOTE THROTTLE	Engine Program Rmt Throttle Off
S	1725-001	CRUISE CONTROL	NO Cruise Control
S	1727-001	ENGINE PROGRAMMING IDLE SPEED	Engine Programming Idle Speed 700 RPM

AIR INTAKE

S	2801-010	ENGINE AIR INTAKE	Engine Air Intake Filtration and Restriction w/Replaceable Element Abv Radiator
S	2802-001	AIR INTAKE PROTECTION	NO Air Intake Protection

COOLING

S	2704-016	ENGINE FAN DRIVE	Engine Fan Drive Variable Speed
S	2701-021	ENGINE COOLING SYSTEM	Engine Cooling System Serial Flow w/Package Drop-Out Prov
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
S	2707-001	ENGINE COOLANT FILTER	NO Engine Coolant Filter
S	2706-003	ELECTRONIC COOLANT LEVEL INDICATOR	Elec Low Coolant Level Indicator
S	2705-002	ENGINE PUMP HEAT EXCHANGER	Engine Pump Heat Exchanger
S	2709-001	COOLANT HOSES	Coolant Hoses Silicone
S	2710-005	ENGINE COOLANT OVERFLOW BOTTLE	Engine Coolant Overflow Expansion Bottle

EXHAUST

S	2901-067	ENGINE EXHAUST SYSTEM	Eng Exhaust Sys Under Frm RH Single Module Aftertreatment Outboard
S	2907-003	DIESEL EXHAUST FLUID TANK	Diesel Exhaust Fluid Tank LH 6 Gal Fill Thru Rr Step
O	2902-032	ENGINE EXHAUST ACCESSORIES	Engine Exhaust Acc Temp Mitigation w/Inboard 7" Offset Tail Pipe
S	2906-002	ENGINE EXHAUST WRAP	Engine Exhaust Wrap
S	8018-002	EMISSIONS SYSTEM WARRANTY	Emissions System Warranty (5) Year/100,000 Miles RFW0140

TRANSMISSION

O	1801-017	TRANSMISSION	Transmission Allison 4000 EVS
O	1806-002	TRANSMISSION MODE PROGRAMMING	Transmission Mode Programming 5th Startup/5th Mode
S	1811-004	TRANSMISSION FEATURE PROGRAMMING	Transmission Feature Programming Allison Gen 5 & 6-E I/O Package 198/Pumper
S	1807-005	TRANSMISSION SHIFT SELECTOR	Transmission GEN 5 & 6-E Shift Sel Key Pad/Push Button
S	1815-002	ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR	Elec Transmission Oil Level Indicator
S	1812-001	TRANSMISSION RETARDER CONTROL	NO Transmission Retarder Control
S	1816-001	TRANSMISSION RETARDER CAPACITY LEVEL	NO Transmission Retarder Capacity Level
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

TRANSFER CASE

S	1901-007	TRANSFER CASE	NO Transfer Case
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POWER TAKE OFF

S	2003-001	TRANSFER CASE DRIVEN PTO	NO Transfer Case Driven PTO
S	2006-001	TRANSFER CASE CONTROL	NO Transfer Case Control
S	2004-001	LH PTO	NO LH PTO
S	2001-001	LH PTO MODEL	NO LH PTO Model
O	2010A-000	RH PTO INSTALLED	NO RH PTO INSTALLED
S	2010-001	RH PTO	NO RH PTO
S	2008-001	RH PTO MODEL	NO RH PTO Model
O	2005-008	PTO LOCATION	PTO Location 8:00/1:00
S	2015-001	LH PTO CONTROL	NO LH PTO Control
S	2016-001	RH PTO CONTROL	NO RH PTO Control
S	2007-001	PTO PROGRAMMING	NO PTO Programming
S	1330-100	PTO CLEARANCE	NO PTO Clearance

DRIVELINE

O	3001-015	DRIVELINE	Driveline MSI 1810 w/Meritor U-Joints w/Thrust Washers
S	3075-001	PTO/POWER DIVIDE PUMP YOKES	NO PTO/Power Divide Pump Yokes
S	3004-001	DRIVELINE GUARDS	NO Driveline Guards
S	3002-001	DRIVELINE RETARDER	NO Driveline Retarder
S	3013-001	MIDSHIP RETARDER CONTROL	NO Driveline Retarder Control
O	3005-081	MIDSHIP PUMP / GEARBOX	Midship Pump Jackshaft w/OEM Body 48" Sd Ctrl Pumphouse w/Full Body Waterous
S	3008-085	MIDSHIP PUMP / GEARBOX MODEL	Midship Pump/Gearbox Model Waterous CSUC20/C22 Fwd
S	3048-007	MIDSHIP PUMP GEARBOX DROP	Midship Driveline Pump Gearbox Drop Waterous "C"
S	3009-007	MIDSHIP PUMP RATIO	Midship Pump Ratio 2.27:1
O	3010-0995	MIDSHIP PUMP LOCATION C/L SUCTION TO C/L REAR AXLE	Midship Pump Location C/L Suction to C/L Rear Axle 99.5"
S	3006-001	PUMP YOKES PROVIDER	NO Pump Yokes Provider
S	3014-001	REAR MOUNT PUMP	NO Rear Mount Pump
S	3015-001	REAR MOUNT PUMP MODEL	NO Rear Mount Pump Model
O	5013-032	PUMP SHIFT CONTROLS	Pump Shift Ctrl Air Ctrl Integrated Shifter Pod

- O 3049-003 **PUMP SHIFT CONTROL PLUMBING** Pump Shift Control Plumbing Pre-Plumb Elec/Air

FUEL SYSTEMS

- O 3109-064 **FUEL FILTER/WATER SEPARATOR** Fuel Filter/Wtr Separator Racor GreenMAX 6600R w/Lt & Alarm
- O 3111-002 **FUEL LINES** Fuel Lines Wire Braid
- O 3104-012 **FUEL SHUTOFF VALVE** Fuel Shutoff Valve at Tank and (2) at Primary Filter
- S 3103-008 **ELECTRIC FUEL PRIMER** Electric Fuel Primer Engine Sply Electric Lift Pump
- O 3112-018 **FUEL COOLER** Fuel Cooler w/Active Cooling Fan/Temp Ctrl Sw
- O 3101-102 **FUEL TANK** Fuel Tank 68 Gallon
- S 3130-001 **FUEL TANK MATERIAL AND FINISH** Fuel Tank Material Steel & Finish Painted Frame Components Color
- S 3131-001 **FUEL TANK STRAP MATERIAL AND FINISH** Fuel Tank Strap Material Steel & Finish Painted Frame Components Color
- S 3132-001 **FUEL TANK MISCELLANEOUS OPTIONS** NO Fuel Tank Miscellaneous Options
- O 3102-020 **FUEL TANK FILL PORT** Fuel Tank Fill Port LH Fwd/LH Mid/RH Mid w/Vent Holes
- O 3114-002 **FUEL TANK SERVICEABILITY PROVISIONS** Fuel Tank Serviceability Prov 8' Fuel Line Extension
- S 3115-002 **FUEL TANK DRAIN PLUG** Fuel Tank Drain Plug Magnetic

FRONT AXLE

- O 2401-004 **FRONT AXLE** Frt Axle Meritor MFS 21500# Beam
- O 8059-022 **FRONT AXLE WARRANTY** Front Axle Warranty Meritor 2024
- S 2409-001 **FRONT AXLE DIFFERENTIAL CONTROL** NO Front Axle Differential Control
- S 2407-001 **FRONT AXLE DIFFERENTIAL LUBRICATION** NO Front Axle Differential Lubrication
- S 2405-001 **FRONT WHEEL BEARING LUBRICATION** Frt Wheel Bearing Lube Oil

FRONT SUSPENSION

- S 2502-002 **FRONT SHOCK ABSORBERS** Frt Shock Absorbers Bilstein
- S 2501-016 **FRONT SUSPENSION** Frt Suspension 10 Leaf 20000-21500#
- S 2505-001 **FRONT RIDE HEIGHT ADJUSTMENT** NO Front Ride Height Adjustment

STEERING

- S 2601-006 **STEERING COLUMN/WHEEL** Steering Column/Wheel Tilt/Telescopic 18" 4 Spoke
- S 2609-002 **ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR** Elec Power Steering Fluid Level Indicator
- S 2603-011 **POWER STEERING PUMP** Power Steering Pump TRW w/Passive Cooler
- S 2607-001 **TILLER STEERING PROVISIONS** NO Tiller Steering Provisions
- S 2606-009 **FRONT AXLE CRAMP ANGLE** Front Axle Cramp Angle 48L/44R Degrees

S	2610-003	POWER STEERING GEAR	Power Steering Gear TRW TAS 65 w/Assist
S	2608-001	CHASSIS ALIGNMENT	Chassis Alignment

REAR AXLE

S	3401-003	REAR AXLE	Rear Axle 27000# Meritor RS-25-160
S	3403-001	REAR AXLE DIFFERENTIAL LUBRICATION	Rear Axle Differential Lubrication Oil
O	8061-019	REAR AXLE WARRANTY	Rear Axle Warranty Meritor 2024
S	3412-001	WHEEL HUB PAINT	NO Wheel Hub Paint
S	3411-001	REAR WHEEL BEARING LUBRICATION	Rear Wheel Bearing Lubrication Oil
S	3407-001	REAR AXLE DIFFERENTIAL CONTROL	NO Rear Axle Differential Control
S	3408-008	VEHICLE TOP SPEED	Vehicle Top Speed 68 MPH
S	3410-001	REAR AXLE EXTERNAL VENT	Rear Axle External Vent OEM Housing Breather

REAR SUSPENSION

O	3501-059	REAR SUSPENSION	Rear Susp Reyco 79KB 24001-27000# Parabolic 5 Leaf
S	3505-001	REAR RIDE HEIGHT ADJUSTMENT	NO Rear Ride Height Adjustment
O	3503-002	REAR SHOCK ABSORBERS	Rear Shock Absorbers Bilstein
S	3504-001	SUSPENSION CONTROLS	NO Suspension Controls

TIRES

S	3625-002	TIRE INTERMITTENT SERVICE RATING	Tire Intermittent Service Ratings Acceptable
O	3601-083	FRONT TIRE	Frnt Tire 385/65R 22.5 Michelin X Multi HL Z
O	3602-010	REAR TIRE	Rear Tire 12R 22.5 Michelin XZE
O	3413-489	REAR AXLE RATIO	Rear Axle Ratio 4.89
S	3605-000	SPARE TIRE FRONT QUANTITY	NO Spare Tire Front Quantity
S	3615-029	SPARE TIRE FRONT	NO Spare Tire Front
S	3613-000	SPARE TIRE REAR QUANTITY	NO Spare Tire Rear
S	3616-005	SPARE TIRE REAR	NO Spare Tire Rear
S	3606-001	TIRE PRESSURE EQUALIZATION SYSTEM	NO Tire Pressure Equalization System
S	3614-030	TIRE PRESSURE INDICATOR	Tire Pressure Ind Frt & Rr LED

WHEELS

O	3701-034	FRONT WHEEL	Frnt Wheel Alcoa Dura-Bright 22.5 x 12.25 Alum
S	3732-001	FRONT WHEEL PAINT	NO Front Wheel Paint
O	3703-062	REAR WHEEL	Rr Whl Alcoa Dura-Bright 22.5 x 8.25 Alum
S	3733-001	REAR WHEEL PAINT	NO Rear Wheel Paint

O	3719-003	BALANCE WHEELS AND TIRES	Balance Wheels & Tires Counteract Beads
O	3702-002	WHEEL TRIM	Wheel Trim Hub & Nut Covers SS Shiploose
S	3725-001	WHEEL GUARDS	NO Wheel Guards
S	3709-000	SPARE WHEEL FRONT QUANTITY	NO Spare Front Wheel
S	3730-001	SPARE WHEEL FRONT	NO Spare Wheel Front
S	3714-000	SPARE WHEEL REAR QUANTITY	NO Spare Rear Wheel
S	3731-001	SPARE WHEEL REAR	NO Spare Wheel Rear
S	3729-001	TYRON WHEEL BAND	NO Tyron Wheel Band

TIRE CHAINS

S	3801-001	TIRE CHAINS	NO Tire Chains
S	3802-001	TIRE CHAINS ACTIVATION	NO Tire Chains Activation

AUXILIARY LUBE SYSTEMS

S	4001-004	AUXILIARY LUBRICATION SYSTEM	NO Auxiliary Lubrication System
S	4003-001	AUXILIARY LUBRICATION PROVISIONS	NO Auxiliary Lubrication Provision

BRAKES

S	3205-014	BRAKE SYSTEM	Brake System ABS/ATC/ESC Sgl Axle Disp Actv
S	3206-003	FRONT BRAKES	Frt Brakes Meritor EX225 Disc 17"
O	3207-003	REAR BRAKES	Rr Brakes Meritor EX225 Disc 17"
S	3208-001	PARK BRAKE	Prk Brake Rr Wheels Only
S	3219-001	SUPPLEMENTAL BRAKE	NO Supplemental Brake
O	3204-025	PARK BRAKE CONTROL	Prk Brake Ctrl Ctr Sw Pnl Mnt w/Horiz Orientation Guard
S	3203-001	EMERGENCY SPRING BRAKE RELEASE	NO Emergency Spring Brake Release
S	3220-001	BRAKE ASSIST	NO Brake Assist
S	3213-006	FRONT BRAKE SLACK ADJUSTERS	NO Front Brake Slack Adjusters w/Disc Brakes
O	3214-006	REAR BRAKE SLACK ADJUSTERS	NO Rear Brake Slack Adjusters w/Disc Brakes
S	3209-001	BRAKE STROKE SLACK INDICATORS	NO Brake Stroke Slack Indicators
S	3211-001	FRONT BRAKE DUST SHIELDS	NO Front Brake Dust Shields
S	3212-001	REAR BRAKE DUST SHIELDS	NO Rear Brake Dust Shields
O	3202-005	AIR DRYER	Air Dryer Wabco System Saver 1200 Bhd LH Batt Box
S	3215-004	FRONT BRAKE CHAMBERS	Frt Brake Chambers MGM Type 24 Long Stroke
O	3210-023	REAR BRAKE CHAMBERS	Rr Brake Chambers TSE 24/30 H.O.T.

AIR SUPPLY SYSTEMS

O	3320-009	AIR COMPRESSOR	Air Compressor Wabco SS440 25.9 CFM
S	3339-004	AIR GOVERNOR	Air Governor Mnt on Air Dryer Bracket

O	3305-002	AUXILIARY AIR RESERVOIR	Aux Air Reservoir 2084 Cu In
O	3303-005	MOISTURE EJECTORS	Moisture Ejectors Auto w/Cable
O	3307-001	AIR SUPPLY LINES	Air Sply Lines Nylon w/Compression Fittings
S	3308-001	AIR HORN SHUTOFF VALVE	NO Air Horn Shutoff Valve
O	3309-033	AIR INLET CONNECTION	Air Inlet Connection
S	3321-001	AIR INLET/AUTO EJECT CONNECTION COVER	NO Air Inlet/Auto Eject Connection Cover
O	3349-002	AIR INLET LOCATION	Air Inlet Location LH Lwr Frt Step Fwd
S	3322-001	AUX AIR INLET CONNECTION	NO Auxiliary Air Inlet Connection
S	3361-001	AUX AIR INLET LOCATION	NO Aux Air Inlet Location
S	3323-001	AUX AIR INLET/AUTO EJECT CONNECTION COVER	NO Aux Air Inlet/Auto Eject Connection Cover
S	3324-001	AIR INLET SHUTOFF VALVE	NO Air Inlet Shutoff Valve
S	3310-004	AIR OUTLET CONNECTION	NO Air Outlet Connection
S	3328-001	PLUMBING AIR OUTLET CONNECTION	NO Plumbing Air Outlet Connection
S	3311-014	AUX AIR OUTLET CONNECTION	NO Aux Air Outlet Connection
S	3325-001	AIR OUTLET SHUTOFF VALVE	NO Air Outlet Shutoff Valve
O	3326-002	AIR INLET/OUTLET FITTING TYPE	Air Inlet/Outlet Manual Conn Tru-Flate Interchange 1/4"
S	3316-001	TRACTOR DRAWN AIR BRAKE CONNECTION PACKAGE	NO Tractor Drawn Air Brake Connection Package
S	3319-001	TRAILER AIR BRAKE HAND CONTROL	NO Trailer Hand Brake Control
S	3313-001	AUXILIARY AIR CONNECTION	NO Auxiliary Air Connection
S	3315-001	VEHICLE TOWED AIR SUPPLY PACKAGE	NO Vehicle Towed Air Supply Package
O	3334-003	AIR TANK SPACERS	Air Tank Spacers Inboard 3.0"
S	3318-001	TRAILER SUPPLY VALVE	NO Trailer Supply Valve
O	3338-001	REAR AIR TANK MOUNTING	Rear Air Tank Mnt Any Bhd Rear Axle Parallel w/Frame

HITCHES

S	3904-001	FIFTH WHEEL	NO Fifth Wheel
S	3906-001	FIFTH WHEEL HEIGHT	NO Fifth Wheel Height
S	3907-001	FIFTH WHEEL KING PIN LOCATION	NO Fifth Wheel King Pin Location
S	3905-001	FRONT RECEIVER HITCH	NO Front Receiver Hitch

FRAME

O	2103-1840	WHEELBASE	Wheelbase 184.0"
S	2106-0470	REAR OVERHANG	Rear Overhang 47.0"
S	2101-002	FRAME	Frame Double Channel 35.00" Width
S	2107-0000	FRAME LINER CUT OFF LENGTH	NO Frame Liner Cut Off Length
S	2112-001	OUTER RAIL TRIM LENGTH	NO Outer Rail Trim Length

O	2111-045	MISC FRAME OPTIONS	Misc Frame Options Spartan ERV Legend Hole Pattern
O	2118-007	REAR TOW DEVICE	Rear Tow Device Spartan ERV Legend Pattern
S	2117-001	FRAME CLEAR AREA	NO Frame Clear Area
S	2110-201	FRAME PAINT	Frame Paint Hot Dipped Galvanized - Frame Only Addl Comp Blk Powder Coat
S	2170-001	FRAME PAINT - MISCELLANEOUS	NO Frame Paint Miscellaneous
S	8007-036	FRAME ASSEMBLY STRUCTURAL WARRANTY	Frame Assembly Structural Warranty (50) Year RFW0305
S	8019-003	FRAME RAIL CORROSION WARRANTY	Frame Rail Corrosion Warranty (25) Year RFW0316
S	8022-004	FRAME COMPONENTS CORROSION WARRANTY	Frame Components Corrosion Warranty (3) Year RFW0315
O	2105-002	REAR MUD FLAP	Rear Mud Flap & Fender Temp Mnt

BUMPER

O	2201-002	FRONT BUMPER	Frnt Bumper Structural Steel Channel Severe Duty
S	2113-001	FRAME MODIFICATION PROVISIONS	NO Frame Modification Provisions
S	2202-005	FRONT BUMPER EXTENSION LENGTH	Frnt Bumper Extension Length 21"
S	2223-001	FRONT BUMPER REINFORCEMENT	NO Front Bumper Reinforcement
O	2206-012	FRONT BUMPER PAINT	Frnt Bumper Paint Primary/Lower Cab Color w/Bedliner Black Bumper Trim
O	2227-010	FRONT BUMPER TRIM	Frnt Bumper Trim SS Painted Band Frnt Top Edge & Corners Below Apron
S	2215-001	FRONT BUMPER SUCTION PROVISION	NO Front Bumper Suction Provision
S	2221-001	FRONT BUMPER WINCH	NO Front Bumper Winch
S	2208-006	FRONT BUMPER APRON	Frnt Bumper Apron For 21" Extension
S	2237-001	FRONT BUMPER DISCHARGE	NO Front Bumper Discharge
O	2211-038	FRONT BUMPER COMPARTMENT CENTER	Frnt Bumper Cmpt Ctr Full Size 38.00"Wx10.88"D w/Cover
S	2212-001	FRONT BUMPER COMPARTMENT LH	NO Front Bumper Compartment LH
S	2213-001	FRONT BUMPER COMPARTMENT RH	NO Front Bumper Compartment RH
O	2210-002	FRONT BUMPER COMPARTMENT COVER HARDWARE	Frnt Bumper Cmpt Cover Hardware Gas Cylinder/D-Ring
S	2228-001	FRONT BUMPER GUIDE POLES	NO Front Bumper Guide Poles
O	5503-022	MECHANICAL SIREN	Mechanical Siren Federal Signal Q2B Pedestal Mnt
O	2218-002	MECHANICAL SIREN LOCATION	Mech Siren Location Frnt Bmpr Apron LH OB
S	5511-001	MECHANICAL SIREN ACCESSORIES	NO Mechanical Siren Accessories
O	5501-012	AIR HORN	Air Horn (2) 24" Round Hadley E-Tone
O	2216-011	AIR HORN LOCATION	Air Horn Location (2) Frnt Bmpr Face R/L OB
S	5518-001	AIR HORN SNOW SHIELDS	NO Air Horn Snow Shields
O	2232-003	AIR HORN RESERVOIR	Air Horn Reservoir (1) 2084 Cu In
O	5504-030	ELECTRONIC SIREN SPEAKER	Elect Siren Speaker (2) 100W Cast Products SA4301

O	2217-010	ELECTRONIC SIREN SPEAKER LOCATION	Elec Siren Speaker Location (2) Frt Bmpr Face R/L IB
S	5520-001	AUXILIARY ELECTRONIC SIREN SPEAKER	NO Auxiliary Elect Siren Speaker
S	2234-001	AUX ELECTRONIC SIREN SPEAKER LOCATION	NO Aux Electronic Siren Speaker Location
S	5507-001	FIRE BELL	NO Fire Bell
S	2229-001	FIRE BELL LOCATION	NO Fire Bell Location
O	2203-002	FRONT BUMPER TOW HOOKS	Frt Bumper Tow Hooks Painted Below Fwd
S	2204-005	FRONT BUMPER TOW EYES	NO Front Bumper Tow Eyes
S	2233-001	FRONT LICENSE PROVISION	NO Front License Provision
S	2231-001	TOW FORK PROVISION	NO Tow Fork Provision

CAB TILT

S	2310-001	CAB HEIGHT ADJUSTMENT	NO Cab Height Adjustment
S	2301-001	CAB TILT SYSTEM	Cab Tilt System
O	2302-005	CAB TILT AUXILIARY PUMP	Cab Tilt Aux Pump Manual Mnt w/Tilt Pump
O	2303-003	CAB TILT LIMIT SWITCH	Cab Tilt Limit Sw Preset Limit
S	2304-001	CAB TILT ALARM	NO Cab Tilt Alarm
O	2305-003	CAB TILT CONTROL RECEPTACLE	Cab Tilt Ctrl Receptacle For Customer Install In Body
S	2307-001	CAB TILT NOISE DAMPENER	NO Cab Tilt Noise Dampener
S	2306-002	CAB TILT LOCK DOWN INDICATOR	Cab Tilt Lock Down Indicator

CAB GLASS

S	1401-009	CAB WINDSHIELD	Cab Windshield
O	1402-002	GLASS FRONT DOOR	Glass Frt Dr Pwr
O	1407-002	GLASS TINT FRONT DOOR	Glass Tint Frt Dr Automotive Dark Gray
O	1419-008	GLASS REAR DOOR RIGHT HAND	Glass Rr Dr RH Pwr
O	1430-002	GLASS TINT REAR DOOR RIGHT HAND	Glass Tint Rr Door RH Automotive Dark Gray
O	1412-008	GLASS REAR DOOR LEFT HAND	Glass Rr Dr LH Pwr
O	1431-002	GLASS TINT REAR DOOR LEFT HAND	Glass Tint Rr Door LH Automotive Dark Gray
S	1410-003	GLASS SIDE MID RIGHT HAND	Glass Side Mid RH Fxd 16"W x 26"H
O	1432-002	GLASS TINT SIDE MID RIGHT HAND	Glass Tint Side Mid RH Automotive Dark Gray
S	1409-003	GLASS SIDE MID LEFT HAND	Glass Side Mid LH Fxd 16"W x 26"H
O	1433-002	GLASS TINT SIDE MID LEFT HAND	Glass Tint Side Mid LH Automotive Dark Gray
S	1411-001	GLASS SIDE REAR RIGHT HAND	NO Glass Side Rear RH
S	1434-003	GLASS TINT SIDE REAR RIGHT HAND	NO Glass Tint Side Rear RH
S	1429-001	GLASS SIDE REAR LEFT HAND	NO Cab Glass Side Rr LH
S	1435-003	GLASS TINT SIDE REAR LEFT HAND	NO Glass Tint Side Rear LH
S	1405-016	GLASS REAR WALL OUTER UPPER	NO Glass Rear Wall Outer Upper

S	1436-003	GLASS TINT REAR WALL OUTER UPPER	NO Glass Tint Rear Wall Outer Upper
S	1413-001	GLASS UPPER SIDE FRONT	NO Glass Upper Side Front
S	1437-003	GLASS TINT UPPER SIDE FRONT	NO Glass Tint Upper Side Front
S	1415-001	GLASS UPPER SIDE MID	NO Glass Upper Side Mid
S	1438-003	GLASS TINT UPPER SIDE MID	NO Glass Tint Upper Side Mid
S	1417-001	GLASS UPPER SIDE REAR DOOR	NO Glass Upper Side Rear Door
S	1439-003	GLASS TINT UPPER SIDE REAR DOOR	NO Glass Tint Upper Side Rear Door
S	1421-001	GLASS UPPER SIDE REAR	NO Cab Glass Upper Side Rear
S	1440-003	GLASS TINT UPPER SIDE REAR	NO Glass Tint Upper Side Rear
S	1427-001	GLASS UPPER SIDE REAR PPHE	NO Glass Upper Side Rear PPHE
S	1441-003	GLASS TINT UPPER SIDE REAR PPHE	NO Glass Tint Upper Side Rear PPHE
S	1423-001	GLASS REAR WALL CENTER	NO Cab Glass Rear Wall Center
S	1442-003	GLASS TINT REAR WALL CENTER	NO Glass Tint Rear Wall Center
S	1403-001	GLASS UPPER FRONT	NO Glass Upper Front
S	1443-003	GLASS TINT UPPER FRONT	NO Glass Tint Upper Front
S	1424-001	GLASS REAR WALL OUTER LOWER	NO Glass Rear Wall Outer Lower
S	1444-003	GLASS TINT REAR WALL OUTER LOWER	NO Glass Tint Rear Wall Outer Lower
S	1428-001	GLASS REAR WALL EXTENSION LOOKDOWN	NO Glass Rear Wall Extension Lookdown
S	1445-003	GLASS TINT REAR WALL HORIZONTAL	NO Glass Tint Rear Wall Horizontal

CLIMATE CONTROL

O	1640-001	CABIN AIR FILTRATION	NO Cabin Air Filtration System
O	1614-202	CLIMATE CONTROL	Climate Ctrl Htr Defroster A/C SGM Ovrhd Alum
S	1632-002	CLIMATE CONTROL DRAIN	Climate Control Drain Gravity
S	1617-201	CLIMATE CONTROL ACTIVATION	Climate Ctrl Actv Rotary Dash Mnt Ctr
S	1620-015	HVAC OVERHEAD COVER PAINT	HVAC Overhead Cover Paint Multi-tone Silver Gray
S	1606-001	AUXILIARY CLIMATE CONTROL FRONT UNDERSEAT	NO Aux Climate Control Frt Underseat
S	1611-003	AUXILIARY CLIMATE CONTROL REAR CREW	NO Auxillary Climate Control Rear Crew
S	1610-001	HEATER HOSE INSULATION	NO Heater Hose Insulation
S	1605-001	AUXILIARY A/C CAB CEILING/ROOF	NO Auxiliary A/C Cab Ceiling/Roof
S	1603-003	A/C CONDENSER LOCATION	A/C Condenser Location Roof Mnt Fwd Ctr
S	1616-001	AUXILIARY A/C CONDENSER LOCATION	NO Auxillary A/C Condenser Location
S	1601-013	A/C COMPRESSOR	A/C Compressor TM-31/QP-31
S	1607-001	CAB ROOF VENT	NO Cab Roof Vent

S	1608-001	CAB CIRCULATION FANS FRONT	NO Cab Circulation Fans Front
S	1618-001	CAB CIRCULATION FANS MID	NO Cab Circulation Fans Mid
S	1609-001	CAB CIRCULATION FANS REAR	NO Cab Circulation Fans Rear
O	1530-104	UNDER CAB INSULATION	Under Cab Insulation Eng Tnl & Cab Floor w/Removable Alum Tunnel Overlay

CAB INTERIOR

O	1327-015	INTERIOR TRIM FLOOR	Interior Trim Floor w/TPlt Trim
S	1302-001	INTERIOR TRIM	Interior Trim Vinyl
S	1368-002	REAR WALL INTERIOR TRIM	Rear Wall Interior Trim Vinyl
S	1306-006	HEADER TRIM	Header Trim XDuty
S	1305-015	TRIM CENTER DASH	Trim Center Dash XDuty w/Gas Cylinder Stay
S	1339-102	TRIM LEFT HAND DASH	Trim LH Dash XDuty
O	1321-030	TRIM RIGHT HAND DASH	Trim RH Dash XDuty Glove Cmpt/MDT Prov/4.50"H Glovebox
S	1324-001	TRIM RIGHT HAND DASH ACCESSORIES	NO Trim RH Dash Accessories
S	1307-002	ENGINE TUNNEL TRIM	Eng Tnl Trim Flr Mat
S	1310-001	ENGINE TUNNEL ACCESSORIES	NO Engine Tunnel Accessories
O	5040-169	POWER POINT DASH MOUNT	Pwr Pnt Dash Mnt Batt Dir (2) Blue Sea Dual 4.8A USB Sw Pnl
S	5041-001	POWER POINT DRIVER/OFFICER	NO Power Point Driver/Officer
S	5042-001	AUXILIARY POWER POINT ENGINE TUNNEL	NO Auxiliary Power Point Engine Tunnel
S	5043-001	AUXILIARY POWER POINT MID CREW	NO Auxiliary Power Points Mid Crew
S	5044-001	AUXILIARY POWER POINT REAR CREW	NO Auxiliary Power Point Rear Crew
S	5045-001	AUXILIARY POWER POINT COMPARTMENTS	NO Auxiliary Power Point Compartments
O	1303-039	STEP TRIM	Step Trim Embossed & Diamond Cut Lwr TPlt Mid
O	1336-002	STEP TRIM KICKPLATE	Step Trim Kickplate Treadplate
S	1379-003	UNDER CAB ACCESS DOOR	Under Cab Access Door Rear Step LH Painted
S	1102-013	INTERIOR DOOR TRIM	Interior Door Trim Painted
S	1107-001	DOOR TRIM KICKPLATE	NO Door Trim Kickplate
S	1328-001	DOOR TRIM SCUFF PLATE	NO Door Trim Scuff Plate
S	1323-050	DOOR TRIM CUSTOMER NAMEPLATE	Door Trim Customer Nameplate
O	1105-008	CAB DOOR TRIM REFLECTIVE	Remove Cab Door Trim Reflective
S	1308-001	INTERIOR GRAB HANDLE "A" PILLAR	Interior Grab Handle 'A' Pillar 11" Molded
O	1332-032	INTERIOR GRAB HANDLE FRONT DOOR	Interior Grab Handle Frt Door Horiz 9" DA Sanded
O	1345-008	INTERIOR GRAB HANDLE REAR DOOR	Int Grab Handle Rr Dr Alum Window Span 30" DA Sanded
S	1319-010	ADDITIONAL INTERIOR GRAB HANDLE REAR DOOR	NO Additional Cab Interior Grab Handle Rear Door

S	1347-001	INTERIOR REAR WALL COMPARTMENT	NO Interior Rear Wall Compartment
S	1354-001	INTERIOR REAR WALL COMPARTMENT INTERIOR FINISH	NO Interior Rearwall Compartment Interior Finish
S	5341-001	INTERIOR REARWALL COMPARTMENT LIGHTING	NO Interior Rear Wall Compartment Lighting
S	1348-001	INTERIOR MID COMPARTMENT	NO Interior Mid Compartment
S	1350-001	INTERIOR MID COMPARTMENT SHELF	NO Interior Mid Compartment Shelf
S	5342-001	INTERIOR MID COMPARTMENT LIGHTING	NO Interior Mid Compartment Lighting
S	1351-001	INTERIOR MID COMPARTMENT ACCESSORIES	NO Interior Mid Compartment Accessories
S	1346-001	INTERIOR REAR VIEW MIRROR	NO Interior Rearview Mirror
S	1301-003	INTERIOR SOFT TRIM COLOR	Interior Soft Trim Color Gray
S	1337-001	INTERIOR TRIM SUNVISOR	Interior Trim Sunvisor Vinyl
S	1318-004	INTERIOR ABS TRIM COLOR	NO Interior ABS Trim Color
S	1304-001	INTERIOR FLOOR MAT COLOR	Interior Floor Mat Color Gray
O	1335-013	CAB PAINT INTERIOR DOOR TRIM	Cab Paint Int Dr Trim Bedliner Medium Gray
O	1371-013	HEADER TRIM INTERIOR PAINT	Header Trim Interior Paint Bedliner Medium Gray
O	1370-014	TRIM CENTER DASH INTERIOR PAINT	Trim Center Dash Interior Paint Bedliner Medium Gray
O	1378-014	TRIM LEFT HAND DASH INTERIOR PAINT	Trim LH Dash Interior Paint Bedliner Medium Gray
O	1373-014	TRIM RIGHT HAND DASH INTERIOR PAINT	Trim RH Dash Interior Paint Bedliner Medium Gray
S	1374-001	RIGHT HAND DASH ACCESSORIES INTERIOR PAINT	NO RH Dash Accessories Interior Paint
S	1372-001	ENGINE TUNNEL ACCESSORIES PAINT	NO Engine Tunnel Accessories Paint
S	1369-001	REAR WALL INTERIOR PAINT	NO Rear Wall Interior Paint
S	1375-001	FLOOR INTERIOR PAINT	NO Floor Interior Paint
O	1344-009	DASH PANEL GROUP	Dash Pnl Group 3-Pnl w/Black Textured Aluminum Panels
O	1312-001	SWITCHES CENTER PANEL	Switches Ctr Pnl 0
S	1313-002	SWITCHES LEFT PANEL	Switches Left Pnl 1 Wiper
O	1314-012	SWITCHES RIGHT PANEL	Switches Right Pnl 6 (3+3)
S	1338-002	SWITCHES OVERHEAD PANEL	NO Switches Overhead Panel

CAB SEATS

O	1225-016	SEAT BELT WARNING	Seat Belt Warn Disp w/VDR w/Heat Shrink & Fast Tone Alarm
S	1226-001	SEAT CONTROLS ALTERED LOCATION	NO Seat Controls Altered Location
S	1237-005	SEAT MATERIAL	Seat Material Bostrom Durawear Plus
S	1243-001	SEAT COLOR	Seat Color Gray/Red Seat Belts
S	1249-001	SEAT BACK LOGO	Seat Back Logo Spartan

O	1201-042	SEAT DRIVER	Seat Driver Bostrom Firefighter 8-Way Elect 500 Series ABTS w/Limited Travel
S	1213-025	SEAT BACK DRIVER	Seat Back Driver Non-SCBA ABTS
S	1219-001	SEAT MOUNTING DRIVER	Seat Mounting Driver
O	8102-200	OCCUPANT PROTECTION DRIVER	Occupant Protection Driver 4Front & Mechanical/Elect Seat RollTek w/SRA
S	1231-001	ADDITIONAL SEAT COVER DRIVER	NO Additional Seat Cover Driver
S	1207-001	SCBA MASK HOLDER DRIVER	NO SCBA Mask Holder Driver
S	1284-001	ARMREST DRIVER	NO Armrest Driver
S	1202-037	SEAT OFFICER	Seat Officer Bostrom Firefighter Fixed 500 Series ABTS
O	1214-034	SEAT BACK OFFICER	Seat Back Officer SCBA IMMI SmartDock
O	1220-005	SEAT MOUNTING OFFICER	Seat Mounting Officer Rwd 2.50" w/Seat Box Mod
O	8103-200	OCCUPANT PROTECTION OFFICER	Occupant Protection Officer 4Front & Mechanical/Elect Seat RollTek w/SRA
S	1232-001	ADDITIONAL SEAT COVER OFFICER	NO Additional Seat Cover Officer
S	1208-001	SCBA MASK HOLDER OFFICER	NO SCBA Mask Holder Officer
S	1285-001	ARMREST OFFICER	NO Armrest Officer
S	1297-002	POWER SEAT WIRING	Power Seats Wiring Battery Direct
S	1273-001	SEAT BELT ORIENTATION CREW	Seat Belt Orientation Crew Outboard Shoulder To Inboard Hip
O	1263-004	SEAT REAR FACING OUTER LOCATION	NO Seat Rear Facing Outer Location
O	1203-010	SEAT CREW REAR FACING OUTER	NO Seat Crew Rear Facing Outer
O	1215-003	SEAT BACK REAR FACING OUTER	NO Seat Back Rear Facing Outer
O	1221-001	SEAT MOUNTING REAR FACING OUTER	NO Seat Mounting Rear Facing Outer
S	8104-100	OCCUPANT PROTECTION RFO	NO Occupant Protection RFO
S	1233-001	ADDITIONAL SEAT COVER RFO	NO Additional Seat Cover RFO
S	1209-001	SCBA MASK HOLDER REAR FACING OUTER	NO SCBA Mask Holder Rear Facing Outer
S	1286-001	ARMREST REAR FACING OUTER	NO Armrest Rear Facing Outer
S	1264-004	SEAT REAR FACING CENTER LOCATION	NO Seat Rear Facing Center Location
S	1204-010	SEAT CREW REAR FACING CENTER	NO Seat Crew Rear Facing Center
S	1216-003	SEAT BACK REAR FACING CENTER	NO Seat Back Rear Facing Center
S	1222-001	SEAT MOUNTING REAR FACING CENTER	NO Seat Mounting Rear Facing Center
S	8105-100	OCCUPANT PROTECTION RFC	NO Occupant Protection RFC
S	1234-001	ADDITIONAL SEAT COVER RFC	NO Additional Seat Cover RFC
S	1210-001	SCBA MASK HOLDER REAR FACING CENTER	NO SCBA Mask Holder Rear Facing Center
S	1287-001	ARMREST REAR FACING CENTER	NO Armrest Rear Facing Center
S	1267-100	SEAT FRAME REAR FACING CENTER	NO Seat Frame Rear Facing Center

S	1280-100	SEAT FRAME REAR FACING CENTER STORAGE ACCESS	NO Seat Frame Rear Facing Center Storage Access
S	1265-004	SEAT FORWARD FACING OUTER LOCATION	NO Seat Forward Facing Outer Location
S	1205-010	SEAT CREW FORWARD FACING OUTER	NO Seat Crew Forward Facing Outer
S	1217-003	SEAT BACK FORWARD FACING OUTER	NO Seat Back Forward Facing Outer
S	1223-001	SEAT MOUNTING FORWARD FACING OUTER	NO Seat Mounting Forward Facing Outer
S	8106-100	OCCUPANT PROTECTION FFO	NO Occupant Protection FFO
S	1235-001	ADDITIONAL SEAT COVER FFO	NO Additional Seat Cover FFO
S	1211-001	SCBA MASK HOLDER FORWARD FACING OUTER	NO SCBA Mask Holder Forward Facing Outer
S	1288-001	ARMREST FORWARD FACING OUTER	NO Armrest Forward Facing Outer
O	1266-005	SEAT FORWARD FACING CENTER LOCATION	Seat FFC Location Ctr
S	1206-031	SEAT CREW FORWARD FACING CENTER	Seat Crew FFC Bostrom Firefighter Fold & Hold Flip-Up 500 Series
O	1218-035	SEAT BACK FORWARD FACING CENTER	Seat Back FFC SCBA IMMI SmartDock
O	8107-101	OCCUPANT PROTECTION FFC	Occupant Protection FFC RollTek Belt Pretensioner
S	1236-001	ADDITIONAL SEAT COVER FFC	NO Additional Seat Cover FFC
S	1212-001	SCBA MASK HOLDER FORWARD FACING CENTER	NO SCBA Mask Holder Forward Facing Center Pouch
S	1289-001	ARMREST FORWARD FACING CENTER	NO Armrest Forward Facing Center
O	1269-120	SEAT FRAME FORWARD FACING	Seat Frm Fwd Fcg Triple w/Chamfer
O	1281-103	SEAT FRAME FORWARD FACING STORAGE ACCESS	Seat Frm Fwd Fcg Strg Acc Dr (2) R/L Fwd
S	1282-001	UNDER SEAT STORAGE AREA PARTITION	NO Under Seat Storage Area Partition
S	1224-002	SEAT MOUNTING FORWARD FACING CENTER	Seat Mounting Forward Facing Center
S	5371-001	SEAT FRAME STORAGE ACCESS LIGHTING	NO Seat Frame Storage Access Lighting
O	1311-103	CAB FRONT UNDERSEAT STORAGE ACCESS DOOR	Cab Frt Undrst Strg Acc Dr LH
O	1355-016	SEAT COMPARTMENT DOOR FINISH	Seat Compartment Door Finish Bedliner Medium Gray
S	1357-001	HELMET STORAGE FRONT LOCATION	NO Helmet Storage Front Location
S	1358-001	HELMET STORAGE FRONT	NO Helmet Storage Front
S	1359-001	HELMET STORAGE FRONT CREW OUTER LOCATION	NO Helmet Storage Front Crew Outer Location
S	1360-001	HELMET STORAGE FRONT CREW OUTER	NO Helmet Storage Front Crew Outer

S	1361-001	HELMET STORAGE FRONT CREW CENTER LOCATION	NO Helmet Storage Front Crew Center Location
S	1362-001	HELMET STORAGE FRONT CREW CENTER	NO Helmet Storage Front Crew Center
S	1363-001	HELMET STORAGE REAR CREW OUTER LOCATION	NO Helmet Storage Rear Crew Outer Location
S	1364-001	HELMET STORAGE REAR CREW OUTER	NO Helmet Storage Rear Crew Outer
S	1365-001	HELMET STORAGE REAR CREW CENTER LOCATION	NO Helmet Storage Rear Crew Center Location
S	1366-001	HELMET STORAGE REAR CREW CENTER	NO Helmet Storage Rear Crew Center
S	1376-001	HELMET STORAGE SHIPLOOSE QUANTITY	NO Helmet Storage Shiploose Quantity
S	1377-001	HELMET STORAGE SHIPLOOSE	NO Helmet Storage Shiploose
S	1298-001	STRETCHER RESTRAINTS FFO	NO Stretcher Restraints FFO
S	1299-001	STRETCHER RESTRAINTS FFC	NO Stretcher Restraints FFC

CAB EXTERIOR

O	1511-201	WINDSHIELD WIPER SYSTEM	Windshield Wiper System, Prk Brk Interlock
S	1534-002	ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR	Electronic Windshield Fluid Level Indicator
O	1103-001	CAB DOOR HARDWARE	Cab Door Hardware Chrome
O	1111-004	DOOR LOCKS	Door Locks Power (4) Entry Doors
S	1113-001	DOOR LOCK LH EMS COMPARTMENT	NO Door Lock LH EMS Compartment
S	1114-001	DOOR LOCK RH EMS COMPARTMENT	NO Door Lock RH EMS Compartment
S	1115-001	DOOR LOCK LH REAR CAB COMPARTMENT	NO Door Lock LH Rear Cab Compartment
S	1116-001	DOOR LOCK RH REAR CAB COMPARTMENT	NO Door Lock RH Rear Cab Compartment
O	1112-004	POWER DOOR LOCK COMPARTMENT ACTIVATION	Power Door Lock Cmpt Actv Key Fob & Keypads
O	1503-209	GRAB HANDLES	Grab Handles 3-Pc Alum Knurled 18" w/Red Reflective
O	1503D-003	LIGHTED EXTERIOR GRAB HANDLES	Lighted Grab Handles Clear LED
S	1503R-000	ADDITIONAL REAR GRAB HANDLE	NO Additional Rear Grab Handles
S	1527-001	AUXILIARY GRAB HANDLE	NO Auxiliary Grab Handle
S	1504-014	REARVIEW MIRRORS	Mirror Aerodynamic Retractable 613305 Rmt Htd
S	1529-003	REARVIEW MIRROR HEAT SWITCH	Rearview Mirror Heat Sw Disp
S	1531-001	AUXILIARY EXTERIOR MIRRORS	NO Auxiliary Exterior Mirrors
S	1505-001	TRIM FRONT	NO Trim Front
S	1506-001	TRIM LOWER SIDE	NO Trim Lower Side

S	1509-002	TRIM LOWER SIDE FRONT	NO Trim Lower Side Front
O	1525-008	EXTERIOR TRIM REAR CORNER	Exterior Trim Rear Corner Treadplate Wide
S	1507-001	TRIM REAR WALL EXTERIOR	NO Trim Rear Wall Exterior
S	1508-001	TRIM ROOF	NO Trim Roof
X	1513-029	CAB FENDER	Cab Fender SS Wide
S	1514-002	MUD FLAPS FRONT	Mud Flaps Frt
O	1526-003	CAB EXTERIOR FRONT & SIDE EMBLEMS	NO Cab Exterior Front & Side Emblems
S	1502-011	CAB EXTERIOR MODEL NAMEPLATE	NO Cab Exterior Model Nameplate
S	1550-001	ROOF ACCESSORY GUARD	NO Roof Acc Guard

START / CHARGING SYSTEMS

S	5109-015	IGNITION	Ign Mstr Rkr Sw w/Push-Button Start
S	5101-021	BATTERY	Batt (6) Group 31 Harris
S	5106-003	BATTERY TRAY	Batt Tray (2) R/L Steel
S	5107-007	BATTERY BOX COVER	Batt Box Cover (2) Steel w/Black Handles
S	5110-001	BATTERY HEAT PADS	NO Battery Heat Pads
S	5102-001	BATTERY CABLE	Batt Cables
S	5108-010	BATTERY JUMPER STUD	Batt Jumper Stud Frt LH Lwr Step 8" Apart
S	5104-002	ALTERNATOR	Alternator Leece-Neville 320A
S	5105-001	STARTER MOTOR	Starter Motor Delco

LINE VOLTAGE ELECTRICAL POWER DISTRIBUTION

O	5202-173	BATTERY CONDITIONER	Batt Cond Kussmaul Chief 4012 LH RFO Seat Position
O	5203-047	BATTERY CONDITIONER DISPLAY	Batt Cond Display LH Cab Side Fwd Auto Charge Status Center
S	5208-001	CAB/CHASSIS ELECTRICAL OUTLET	NO Cab/Chassis Electrical Outlet
S	3314-004	AUXILIARY AIR COMPRESSOR	NO Auxiliary Air Compressor
S	5209-002	ELECTRICAL INLET LOCATION	Elec Inlet Location LH Cab Side Mid
S	5204-055	ELECTRICAL INLET	Elec Inlet 120V 20A Auto Eject
O	5210-004	ELECTRICAL INLET CONNECTION	Elec Inlet Conn to Batt Conditioner
S	5206-002	ELECTRICAL INLET COLOR	Elec Inlet Color Yellow
S	5205-001	AUXILIARY ELECTRICAL INLET	NO Auxiliary Electrical Inlet
S	5211-001	AUXILIARY ELECTRICAL INLET LOCATION	NO Auxiliary Electrical Inlet Location
S	5212-001	AUXILIARY ELECTRICAL INLET CONNECTION	NO Auxiliary Electrical Inlet Connection
S	5207-001	AUXILIARY ELECTRICAL INLET COLOR	NO Auxiliary Electrical Color

LIGHTING

O	5301-106	HEADLIGHTS	Headlights 4 Headlamps LED, Firetech FT-4X6-4KIT
S	5337-001	HEADLIGHT LOCATION	Headlights Below Frt Warn Lts
O	5303-026	FRONT TURN SIGNALS	Frt Turn Signals Whelen M6 LED Above Frt Warn Rad Mnt
S	5348-001	REAR CAB WALL TURN SIGNALS	NO Rear Cab Wall Turn Signals
S	5336-015	SIDE TURN/MARKER LIGHTS	Side Turn/Marker Lts LED Tecniq S170
S	5302-022	MARKER & ICC LIGHTS	Marker & ICC Lts Face Mnt LED Tecniq S170
S	5385-001	LIGHTING SPECIAL ACTIVATION	NO Lighting Special Activation
O	5350-103	HEADLIGHT AND MARKER LIGHT ACTIVATION	Hdlt & Mrkr Lt Actv MUX/Mrkr & Halo Ign Sw/HdLts Prk Brk Ctrl
S	5334-001	AUX SIDE MARKER/TURN LIGHTS	NO Aux Side Marker/Turn Lights
S	5311-001	FOG LIGHTS	NO Fog Lights
S	5314-001	FOG LIGHT LOCATION	NO Fog Light Location
S	5333-001	CORNERING LIGHTS	NO Cornering Lights
S	5390-001	CORNERING LIGHTS ACTIVATION	NO Cornering Light Activation
S	5391-001	CORNERING LIGHTS LOCATION	NO Cornering Light Location
O	5305-353	INTERIOR OVERHEAD LIGHTS	Interior Overhead Lts Whelen 6" Red/Clear LED
O	5388-004	INTERIOR OVERHEAD LIGHTING ACTIVATION	Int Ovrhd Lt Actv Resp Dr & MUX Multi Level Sw
O	5327-015	AUXILIARY DOME LIGHT FRONT CENTER	Auxiliary Dome Lt Frt Whelen 6" Red/Clear LED
O	5389-002	AUXILIARY DOME LIGHT FRONT CENTER ACTIVATION	Aux Dome Lt Frt Ctr Actv w/Int Ovrhd Lts
S	5321-001	AUXILIARY DOME LIGHT LH	NO Auxiliary Dome Light LH
S	5322-001	AUXILIARY DOME LIGHT RH	NO Auxiliary Dome Light RH
S	5323-001	AUXILIARY DOME LIGHT FRONT CREW	NO Auxiliary Dome Light Front Crew
S	5324-001	AUXILIARY DOME LIGHT MID CREW	NO Auxiliary Dome Light Mid Crew
S	5325-001	AUXILIARY DOME LIGHT REAR CREW	NO Auxiliary Dome Light Rear Crew
S	5403-062	LIGHTBAR PROVISION	Lightbar Prov Wire & Lwr Mnt Chassis Supply
S	5450N-003	CAB FRONT LIGHTBAR MODEL	Cab Front Lightbar Model Whelen F4N72
S	5450-999	CAB FRONT LIGHTBAR	Cab Front Lightbar - Configured in 5450M Subcategory
S	5450M-002	FRONT LIGHTBAR LAYOUT	Cab Front Lightbar Layout
S	5450X-002	FRONT LIGHTBAR ORIENTATION	Front Lightbar Orientation - Standard Fwd
O	5450L2-002	FRONT LIGHTBAR LIGHT POSITION 2	Cab Front Lightbar Position 2 - Red LH Side
O	5450L4-002	FRONT LIGHTBAR LIGHT POSITION 4	Cab Front Lightbar Position 4 - Red
O	5450L5-003	FRONT LIGHTBAR LIGHT POSITION 5	Cab Front Lightbar Position 5 - White

O	5450L6-002	FRONT LIGHTBAR LIGHT POSITION 6	Cab Front Lightbar Position 6 - Red
O	5450L7-002	FRONT LIGHTBAR LIGHT POSITION 7	Cab Front Lightbar Position 7 - Red
O	5450L8-002	FRONT LIGHTBAR LIGHT POSITION 8	Cab Front Lightbar Position 8 - Red
O	5450L11-002	FRONT LIGHTBAR LIGHT POSITION 11	Cab Front Lightbar Position 11 - Red
O	5450L12-002	FRONT LIGHTBAR LIGHT POSITION 12	Cab Front Lightbar Position 12 - Red
O	5450L13-002	FRONT LIGHTBAR LIGHT POSITION 13	Cab Front Lightbar Position 13 - Red
O	5450L14-003	FRONT LIGHTBAR LIGHT POSITION 14	Cab Front Lightbar Position 14 - White
O	5450L15-002	FRONT LIGHTBAR LIGHT POSITION 15	Cab Front Lightbar Position 15 - Red
O	5450L17-032	FRONT LIGHTBAR LIGHT POSITION 17	Cab Front Lightbar Position 17 - Red RH Side
S	5454-001	CAB SIDE LIGHTBAR	NO Cab Side Lightbar
O	5426-003	LIGHTBAR SWITCH	Lightbar Sw Disp
O	5317-189	FRONT SCENE LIGHTS	Frt Scene Lts Whelen Pioneer 12V LED PCH2 (2)
O	5329-006	FRONT SCENE LIGHT LOCATION	Frt Scene Lt Loc (2) Outboard Brow Pos
O	5335-022	FRONT SCENE LIGHTS ACTIVATION	Frt Scene Lts Actv Disp & Lighted Momentary Rkr Sw
O	5306-153	SIDE SCENE LIGHTS	Side Scene Lts Whelen Pioneer LED 12V PCH2 0 Deg
O	5318-004	SIDE SCENE LIGHT LOCATION	Side Scene Lt Loc Upper Mid Rwd 10" Roof Position
O	5316-033	SIDE SCENE ACTIVATION	Side Scene Actv Indv Lighted Momentary Sw, Indv Disp Actv, Resp Side Doors
S	5338-001	AUXILIARY SIDE SCENE LIGHTS	NO Auxiliary Side Scene Lights
S	5339-001	AUXILIARY SIDE SCENE LIGHT LOCATION	NO Auxiliary Side Scene Light Location
S	5340-001	AUXILIARY SIDE SCENE LIGHT ACTIVATION	NO Auxiliary Side Scene Light Activation
O	5330-035	REAR SCENE LIGHTS	Rear Scene Lts Body Mount Provision
S	5332-001	REAR SCENE LIGHT LOCATION	NO Rear Scene Light Location
O	5331-009	REAR SCENE LIGHT ACTIVATION	Rear Scene Lt Actv Sgl Sw MUX
S	5308-300	GROUND LIGHTS	Ground Lts Tecniq T44 LED
O	5386-006	GROUND LIGHTING ACTIVATION	Ground Lt Actv Prk Brk, Resp Sd Dr, Disp, Rev & Turn Sig
O	5319-015	UNDER BUMPER LIGHTS	Under Bmpr Lts 4" LED Actv w/Ground Lights
S	5309-003	LOWER CAB STEP LIGHTS	Lwr Cab Step Lts Tecniq T44 LED
O	5382-007	INTERMEDIATE STEP LIGHTS	Intermediate Step Lts Tecniq D06 LED
S	5351-001	INTERIOR UNDERDASH LIGHT	NO Interior Underdash Light
S	5310-001	MAP LIGHTS	NO Map Light
S	5315-001	SPOTLIGHT	NO Spotlight

S	5307-001	CAB SPOTLIGHTS	NO Cab Spotlights
S	5349-001	LIGHT TOWER PROVISION	NO Light Tower Provision
S	5352-001	LIGHT TOWER MODEL	NO Light Tower Model
S	1009-001	LIGHT TOWER ORIENTATION	NO Light Tower Orientation
S	1013-001	LIGHT TOWER HORIZONTAL JUSTIFICATION	NO Light Tower Horizontal Justification
S	1014-001	LIGHT TOWER LIGHT HEAD ORIENTATION	NO Light Tower Light Head Orientation
S	1015-001	LIGHT TOWER FORE/AFT ORIENTATION	NO Light Tower Fore/Aft Orientation
S	5312-003	ENGINE COMPARTMENT LIGHT	Engine Cmpt Work Lt LED (1)
S	5320-001	TILLER GUIDE LIGHTS	NO Tiller Guide Lights

OPTICAL WARNING DEVICES

S	5406-119	DO NOT MOVE APPARATUS LIGHT	Do Not Move App Lt Flashing Red Tecniq K50 LED w/Alarm
S	5472-001	MASTER WARNING SMART CONTROLLER	NO Master Warning Smart Controller
O	5422-020	MASTER WARNING SWITCH	Mstr Warn Sw MUX w/Warning Lt Dimmer, Disp Dim & Prk Brk Interlock
S	5409-002	HEADLIGHT FLASHER	Headlight Flasher Alternating
O	5425-007	HEADLIGHT FLASHER SWITCH	Headlight Flasher Sw MUX No Blocking Mode
O	5401-079	INBOARD FRONT WARNING LIGHTS	Inboard Frt Warn Lts Whelen M6 LED TripleFlash 75 I/O Pattern Chrm Bezel
O	5413-006	INBOARD FRONT WARNING LIGHTS COLOR	Inboard Frt Warn Lts Color Blue w/Clr Lens
O	5414-057	OUTBOARD FRONT WARNING LIGHTS	Outboard Frt Warn Lts Whelen M6 LED TripleFlash 75 I/O Pattern Chrm Bezel
O	5415-003	OUTBOARD FRONT WARNING LIGHTS COLOR	Outboard Frt Warn Lts Color Red w/Clr Lens
S	5455-001	AUXILIARY FRONT WARNING LIGHTS	NO Auxiliary Front Warning Light
S	5456-001	AUXILIARY FRONT WARNING LIGHTS COLOR	NO Auxiliary Front Warning Light Color
S	5474-001	BUMPER FACE WARN LOCATION	NO Bumper Face Warning Light Location
O	5432-033	BUMPER FACE WARNING LIGHT	Bmpr Face Warn Lt Whelen M6 LED Ctr R/L OB TripleFlash 75 I/O Pattern
O	5433-004	BUMPER FACE WARNING LIGHT COLOR	Bmpr Face Warn Lt Color Red w/Clear Lens
O	5423-003	FRONT WARNING SWITCH	Frt Warn Sw Disp
O	5404-080	INTERSECTION WARNING LIGHTS	Intersection Warn Lts Whelen M6 LED TripleFlash 75 I/O Pattern
O	5419-003	INTERSECTION WARNING LIGHTS COLOR	Int Warn Lts Color Red w/Clr Lens
O	5420-007	INTERSECTION WARNING LIGHTS LOCATION	Intersection Warn Lts Location Bumper Tail Ctr Position

S	5443-001	AUXILIARY INTERSECTION WARNING LIGHTS	NO Auxiliary Intersection Warning Lights
S	5444-001	AUXILIARY INTERSECTION WARNING LIGHTS COLOR	NO Auxiliary Intersection Warning Lights Color
S	5445-001	AUXILIARY INTERSECTION WARNING LIGHTS LOCATION	NO Auxiliary Intersection Warning Lights Location
O	5402-080	SIDE WARNING LIGHTS	Side Warn Lts Whelen M6 LED TripleFlash 75 I/O Pattern
O	5418-003	SIDE WARNING LIGHTS COLOR	Side Warn Lts Color Red w/Clr Lens
O	5412-002	SIDE WARNING LIGHTS LOCATION	Side Warn Lts Location Lwr Mid
O	5434-044	AUXILIARY SIDE WARNING LIGHTS	Aux Side Warn Lts Whelen M6 LED TripleFlash 75 I/O Pattern
O	5435-003	AUXILIARY SIDE WARNING LIGHTS COLOR	Aux Side Warn Lts Color Red w/Clr Lens
O	5436-003	AUXILIARY SIDE WARNING LIGHTS LOCATION	Aux Side Warn Lts Location Upper Frt
S	5437-001	ADDITIONAL SIDE WARNING LIGHTS	NO Additional Side Warning Lights
S	5438-001	ADDITIONAL SIDE WARNING LIGHTS COLOR	NO Additional Side Warning Lights Color
S	5439-001	ADDITIONAL SIDE WARNING LIGHTS LOCATION	NO Additional Side Warning Lights Location
S	5440-001	EXTRA SIDE WARNING LIGHTS	NO Extra Side Warning Lights
S	5442-001	EXTRA SIDE WARNING LIGHTS LOCATION	NO Extra Side Warning Lights Location
O	5424-003	SIDE AND INTERSECTION WARNING SWITCH	Side & Intersection Warn Sw Disp
S	5447-001	WARNING LIGHTS SHIPLOOSE	NO Warning Lights Shiploose
S	5448-001	WARNING LIGHTS SHIPLOOSE COLOR	NO Warning Lights Shiploose Color
O	5469-002	TANK LEVEL LIGHTS	Tank Lvl Lts FRC Max Vision
O	5470-002	TANK LEVEL LIGHTS ACTIVATION	Tank Lvl Lights Actv Prewire Rear of Cab
O	5471-003	TANK LEVEL LIGHTS LOCATION	Tank Lvl Lights Loc Rear Cab Sides Centered
S	5405-001	TRAFFIC CONTROL	NO Traffic Control
O	5449-012	REAR WARNING LIGHTS	Rr Warn Lts LH IB Overhead Whelen TACTL5 Traf Advsr
S	5451-001	CAB REAR WARNING LIGHTS	NO Cab Rear Warning Lights
S	5452-001	CAB REAR WARNING LIGHTS COLOR	NO Cab Rear Warning Lights Color
S	5453-001	CAB REAR WARNING LIGHTS SWITCH	NO Cab Rear Warning Lights Switch
S	5383-001	AUXILIARY GROUND/PERIMETER LIGHTING	NO Auxiliary Ground/Perimeter Lights
S	5410-001	ROTO-RAYS WARNING LIGHT	NO Roto-Rays Warning Light
S	5427-001	ROTO-RAYS WARNING LIGHT SWITCH	NO Roto-Ray Warning Lights Switch
S	5428-001	MARS WARNING LIGHTS	NO Mars Warning Lights
S	5430-001	MARS WARNING LIGHT SWITCH	NO Mars Warning Lights Switch
S	5429-001	METEOR WARNING LIGHT	NO Meteor Warning Light
S	5431-001	METEOR WARNING LIGHT SWITCH	NO Meteor Warning Light Switch

- O 5407-019 **INTERIOR DOOR OPEN WARNING LIGHTS** Int Dr Open Warn Lts Amber Weldon 15" LED Dir Flsh

AUDIBLE WARNING DEVICES

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- O 5510-079 **SIREN CONTROL HEAD** Siren Ctrl Head Whelen 295HFSC9
 - O 5514-102 **STEERING WHEEL HORN BUTTON SELECTOR SWITCH** Horn Btn Sel Sw Elec Horn/Air Horn MUX Def Air Horn On
 - O 5526-004 **AUDIBLE WARNING LH FOOT SWITCH** Audible Warning LH Foot Switch Siren
 - S 5526A-000 **AIR HORN FOOT SWITCH LH** NO Air Horn Foot Switch LH
 - S 5526B-000 **AIR HORN FOOT SWITCH LH LOCATION** NO Air Horn Foot Switch LH Location
 - S 5526C-000 **AIR HORN FOOT SWITCH LH POSITION** NO Air Horn Foot Switch LH Position
 - O 5526D-001 **MECHANICAL SIREN FOOT SWITCH LH** Mechanical Siren Foot Switch LH Linemaster 491-S
 - O 5526E-001 **MECHANICAL SIREN FOOT SWITCH LH LOCATION** Mechanical Foot Switch LH Location A-Pillar
 - O 5526F-001 **MECHANICAL SIREN FOOT SWITCH LH POSITION** Mechanical Siren Foot Switch Position Outboard of Other Foot Switches
 - S 5526G-000 **ELECTRIC SIREN FOOT SWITCH LH** NO Electric Siren Foot Switch LH
 - S 5526H-000 **ELECTRIC SIREN FOOT SWITCH LH LOCATION** NO Electric Siren Foot Switch LH Location
 - S 5526I-000 **ELECTRIC SIREN FOOT SWITCH LH POSITION** NO Electric Siren Foot Switch LH Position
 - O 5529-002 **AUDIBLE WARNING LH FOOT SWITCH BRACKET** Audible Warn LH Ft Sw Double Brkt 30Deg TPlate
 - S 5527-001 **AUDIBLE WARNING RH FOOT SWITCH** NO Audible Warning RH Foot Switch
 - S 5527A-000 **AIR HORN FOOT SWITCH RH** NO Air Horn Foot Switch RH
 - S 5527B-000 **AIR HORN FOOT SWITCH RH LOCATION** NO Air Horn Foot Switch RH Location
 - S 5527C-000 **MECHANICAL SIREN FOOT SWITCH RH** NO Mechanical Siren Foot Switch RH
 - S 5527D-000 **MECHANICAL SIREN FOOT SWITCH RH LOCATION** NO Mechanical Siren Foot Switch RH Location
 - S 5527E-000 **ELECTRIC SIREN FOOT SWITCH RH** NO Electric Siren Foot Switch RH
 - S 5527F-000 **ELECTRIC SIREN FOOT SWITCH RH LOCATION** NO Electric Siren Foot Switch RH Location
 - S 5527G-000 **AUXILIARY ELECTRIC SIREN FOOT SWITCH RH** NO Aux Electric Siren Foot Switch RH
 - S 5527H-000 **AUXILIARY ELECTRIC SIREN FOOT SWITCH RH LOCATION** NO Aux Electric Siren Foot Switch RH Location

S	5530-001	AUDIBLE WARNING RH FOOT SWITCH BRACKET	NO Audible Warning RH Foot Switch Bracket
O	5512-217	AIR HORN AUXILIARY ACTIVATION	Air Horn Actv Rkr Sw
S	5531-001	AIR HORN CIRCUIT INTERLOCK	NO Air Horn Circuit Interlock
O	5513-506	MECHANICAL SIREN BRAKE/AUXILIARY ACTIVATION	Mech Siren Actv Rkr Sw/Brk Sw/Brk Sw Disp
O	5532-002	MECHANICAL SIREN INTERLOCK	Mechanical Siren Interlock Park Brake & Master Warn
S	5515-001	ELECTRONIC SIREN AUXILIARY ACTIVATION	NO Electronic Siren Auxiliary Activation
S	5533-001	ELECTRIC SIREN AUXILIARY ACTIVATION INTERLOCK	NO Electric Siren Auxiliary Activation Interlock
S	5505-002	BACK-UP ALARM	Back-Up Alarm Ecco 575
S	5517-001	FIRE BELL ACTIVATION	NO Fire Bell Activation
S	5519-001	AUXILIARY ELECTRONIC SIREN CONTROL HEAD	NO Auxiliary Electronic Siren Control Head
S	5521-001	AUXILIARY ELECTRONIC SIREN AUXILIARY ACTIVATION	NO Auxiliary Electronic Siren Auxiliary Activation
O	5521R-001	AUXILIARY ELECTRONIC SIREN RH FT SW ACTIVATION	NO RH ELECTRONIC SIREN FOOT SWITCHES
O	5521L-001	AUXILIARY ELECTRONIC SIREN LH FT SW ACTIVATION	NO LH ELECTRONIC SIREN FOOT SWITCHES

INSTRUMENTATION

O	5601-044	INSTRUMENTATION	Instrumentation Standard/Omit Seat Warn
O	5624-003	BACKLIGHTING COLOR	Backlighting Color White
S	5602-001	AMMETER	NO Ammeter
S	5603-001	BRAKE APPLICATION PRESSURE GAUGE	NO Brake Application Pressure Gauge
S	5606-001	FUEL VACUUM GAUGE KIT	NO Fuel Vacuum Gauge Kit
S	5607-001	HOURLY METER	NO Hour Meter
S	5612-001	CLOCK	NO Clock
S	5613-001	AUXILIARY SPEEDOMETER	NO Auxiliary Speedometer
S	5614-001	APPARATUS PANEL INSTRUMENTATION	NO Apparatus Panel Gauge
S	5617-001	AIR PRESSURE GAUGE AUXILIARY AIR TANK	NO Air Pressure Gauge Auxiliary Air Tank
S	5618-001	TRANSMISSION PRESSURE GAUGE	NO Transmission Pressure Gauge
S	5619-001	AIR RESTRICTION GAUGE	NO Air Restriction Indicator Gauge
S	5620-001	FUEL PRESSURE GAUGE	NO Fuel Pressure Gauge
S	3727-001	WHEEL ODOMETER	NO Wheel Odometers

COMMUNICATIONS SYSTEMS

O	5701-300	RADIO	Radio Jensen WB/AM/FM/BT
X	5739-002	RADIO AUXILIARY INPUT	Radio Auxiliary Input Ctr Dash Sw Pnl
O	5736-100	RADIO LOCATION	Radio Overhead LH
O	5707-002	AM/FM ANTENNA	AM/FM Antenna LH Fwd Cab Roof
O	5737-200	RADIO SPEAKERS	Radio Speakers (4) Front/Rear
S	5738-001	RADIO CUTOFF	NO Radio Cutoff
S	5721-001	VEHICLE CONNECTIVITY	NO Vehicle Connectivity
S	5722-001	VEHICLE CONNECTIVITY ANTENNA	NO Vehicle Connectivity Antenna
S	5706-300	CAMERA	NO Cam in View 360 (4) Cam Bird's Eye View System
S	5726-001	CAMERA LEFT HAND	NO Camera LH
O	5727-002	CAMERA RIGHT HAND	Camera RH Teardrop
O	5728-012	CAMERA REAR	Camera HD Rear Box w/o Speaker
S	5729-001	CAMERA FRONT	NO Camera Front View
S	5730-001	CAMERA MISCELLANEOUS LOCATION	NO Camera Miscellaneous Location
O	5731-004	CAMERA DISPLAY	Camera Display on Disp
S	5732-001	CAMERA SPEAKER	NO Camera Speaker
S	5733-001	CAMERA GUARD	NO Camera Guard
S	5734-001	CAMERA SPECIAL ACTIVATION	NO Camera Special Activation
S	5735-001	CAMERA MISCELLANEOUS OPTIONS	NO Camera Miscellaneous Options
S	5703-001	COMMUNICATION ANTENNA	NO Communication Antenna
S	5708-001	COMMUNICATION ANTENNA CABLE ROUTING	NO Communication Antenna Cable Routing
S	5709-001	AUXILIARY COMMUNICATION ANTENNA	NO Auxiliary Communication Antenna
S	5710-001	AUXILIARY COMMUNICATION ANTENNA CABLE ROUTING	NO Auxiliary Communication Antenna Cable Routing
S	5711-001	ADDITIONAL COMMUNICATION ANTENNA	NO Additional Communication Antenna
S	5712-001	ADDITIONAL COMMUNICATION ANTENNA CABLE ROUTING	NO Additional Communication Antenna Cable Routing
S	5714-001	EXTRA COMMUNICATION ANTENNA	NO Extra Communication Antenna
S	5715-001	EXTRA COMMUNICATION ANTENNA CABLE ROUTING	NO Extra Communication Antenna Cable Routing
S	5716-001	ANCILLARY COMMUNICATION ANTENNA	NO Ancillary Communication Antenna
S	5717-001	ANCILLARY COMMUNICATION ANTENNA CABLE ROUTING	NO Ancillary Communication Antenna Cable Routing
S	5713-001	NAVIGATION SYSTEM	NO Navigation System
S	5702-001	TWO-WAY RADIOS	NO Two-Way Radios
S	8812-001	ADDITIONAL ROCKER SWITCHES & LEGENDS	NO Additional Rocker Switches & Legends

S 5020-002 **PANEL LAYOUT** Panel Layout

AERIAL DEVICE

S 6000-001	AERIAL DEVICE	NO Aerial Device
S 6001-001	AERIAL DEVICE WATERWAY SYSTEM	NO Aerial Device Waterway System
S 6002-001	AERIAL DEVICE WATERWAY FLOW METER	NO Aerial Device Waterway Flow Meter
S 6003-001	AERIAL ELECTRIC MONITOR	NO Aerial Electric Monitor
S 6004-001	AERIAL ELECTRIC NOZZLE	NO Aerial Electric Nozzle
S 6027-001	AERIAL DEVICE AUXILIARY DISCHARGE	NO Aerial Device Auxiliary Discharge
S 6028-001	AERIAL DEVICE MOUNTED STACKED TIP	NO Aerial Device Mounted Stacked Tip
S 6029-001	AERIAL DEVICE MOUNTED SHAPER TUBE	NO Aerial Device Mounted Shaper Tube
S 6005-001	FRONT AERIAL DEVICE OUTRIGGERS	NO Front Aerial Device Outriggers
S 6006-001	REAR AERIAL DEVICE OUTRIGGERS	NO Rear Aerial Device Outriggers
S 6008-001	AERIAL DEVICE AUXILIARY OUTRIGGER PADS	NO Aerial Device Auxiliary Outrigger Pads
S 5374-001	AERIAL DEVICE OUTRIGGER GROUND LIGHTS	NO Aerial Device Outrigger Ground Lights
S 5466-001	AERIAL DEVICE OUTRIGGER WARNING LIGHTS	NO Aerial Device Outrigger Warning Lights
S 6007-001	AERIAL DEVICE EMERGENCY HYDRAULIC PUMP	NO Aerial Device Emergency Hydraulic Pump
S 6009-001	AERIAL DEVICE TURNTABLE	NO Aerial Device Turntable
S 6010-001	TURNTABLE DECK ACCESS	NO Turntable Deck Access
S 6011-001	TURNTABLE CONTROL STATION	NO Turntable Control Station
S 5378-001	TURNTABLE WORK LIGHTS	NO Turntable Work Lights
S 6012-001	AERIAL TIP LADDER CONTROLS	NO Aerial Device Mount Controls
S 6013-001	AERIAL LADDER RADIO REMOTE CONTROLS	NO Aerial Ladder Radio Remote Controls
S 6014-001	AERIAL LADDER FLY TIP STEP	NO Aerial Ladder Fly Tip Step
S 5376-001	AERIAL DEVICE SPOT LIGHT	NO Aerial Device Spot Light
S 5377-001	AERIAL DEVICE TRACKING SPOT LIGHT	NO Aerial Device Tracking Spot Light
S 5215-001	AERIAL DEVICE AC ELECTRICAL POWER	NO Aerial Device AC Electrical Power
S 5216-001	AERIAL DEVICE ELECTRICAL OUTLET	NO Aerial Device Electrical Outlet
S 5375-001	AERIAL TIP SCENE LIGHT	NO Aerial Tip Scene Light
S 5379-001	AERIAL LADDER RUNG ILLUMINATION	NO Aerial Ladder Rung Illumination
S 5628-001	APPARATUS LEVEL INDICATOR	NO Apparatus Level Indicator

S	5629-001	AERIAL LOW LEVEL LOAD INDICATOR	NO Aerial Low Level Load Indicator
S	5719-001	AERIAL COMMUNICATION SYSTEM	NO Aerial Communication System
S	6021-001	LADDER AXE MOUNT	NO Ladder Axe Mount
S	6022-001	LADDER FLY SECTION PIKE POLE MOUNT	NO Ladder Fly Section Pike Pole Mount
S	6023-001	LADDER FLY SECTION LADDER MOUNT	NO Ladder Fly Section Roof Ladder Mount
S	6024-001	AERIAL DEVICE RESCUE ROPE	NO Aerial Device Rescue Rope
S	6025-001	LADDER BASE SECTION LADDER MOUNT	NO Ladder Base Section Ladder Mount
S	6026-001	LADDER BASE SECTION STOKES BASKET MOUNT	NO Ladder Base Section Stokes Basket Mount
S	5720-001	AERIAL DEVICE CAMERA SYSTEM	NO Aerial Camera System
S	6015-001	AERIAL DEVICE PAINT	NO Aerial Device Paint
S	6016-001	AERIAL DEVICE LIFT CYLINDER PAINT	NO Aerial Device Lift Cylinder Paint
S	6017-001	AERIAL DEVICE TRAVEL REST PAINT	NO Aerial Device Travel Rest Paint
S	6018-001	AERIAL OUTRIGGER PAINT	NO Aerial Outrigger Paint
S	6019-001	TORQUE BOX/TURNTABLE/CONTROL STATION PAINT	NO Torque Box/Turntable/Control Station Paint
S	6020-001	AERIAL EXTENSION/RETRACTION CYLINDER PAINT	NO Aerial Extension/Retraction Cylinder Paint
S	6030-001	AERIAL DEVICE TIP PAINT	NO Aerial Device Tip Paint
S	8035-001	AERIAL DEVICE OPERATION MANUALS	NO Aerial Device Operation Manuals
S	8816-001	AERIAL DEVICE AS BUILT WIRING DIAGRAMS	NO Aerial Device As Built Wiring Diagram
S	8817-001	AERIAL DEVICE AS BUILT HYDRAULIC PLUMBING DIAGRAMS	NO Aerial Device As Built Hydraulic Diagram
S	8036-001	AERIAL DEVICE WARRANTY	NO Aerial Device Warranty
S	8037-001	AERIAL DEVICE TRAINING	NO Aerial Device Training

ADDITIONAL EQUIPMENT

S	8814-002	CAB EXTERIOR PROTECTION	Cab Exterior Protection Front
S	8806-001	FIRE EXTINGUISHER	Fire Extinguisher Shiploose
S	8807-001	ROAD SAFETY KIT	NO Road Safety Kit
S	8808-001	LUG WRENCH	NO Lug Wrench
S	8810-001	DOOR KEYS	Door Keys for Manual Locks (4)
S	8801-001	DIAGNOSTIC SOFTWARE ENGINE	NO Diagnostic Software Engine
S	8802-001	DIAGNOSTIC SOFTWARE TRANSMISSION	NO Diagnostic Software Transmission
S	8803-001	DIAGNOSTIC SOFTWARE ABS	NO Diagnostic Software ABS

S	8804-001	DIAGNOSTIC INTERFACE MODULE	NO Diagnostic Interface Module
S	8809-001	DIAGNOSTIC SOFTWARE WELDON V-MUX	NO Diagnostic Software Weldon MUX
S	8811-001	DIAGNOSTIC SOFTWARE OCCUPANT PROTECTION	NO Diagnostic Software Occupant Protection

SALES ADMIN

S	8038-001	END USER TRAINING	NO End User Training
S	8003-197	WARRANTY	Warranty Cab and Chassis (2) Year RFW0102
O	8030-021	CHASSIS OPERATION MANUAL	Chassis Operation Manual w/On-Board USB Storage
S	8031-024	ENGINE & TRANSMISSION OPERATION MANUAL	Eng & Trans Operation Man Eng Hard Copy/Trans Digital/Eng Owner Digital
S	8032-007	ENGINE SERVICE MANUAL	NO Engine Service Manual
S	8033-006	TRANSMISSION SERVICE MANUAL	NO Transmission Service Manual
O	8805-019	CAB/CHASSIS AS BUILT WIRING DIAGRAMS	Cab/Chassis As Built Wiring Diagrams w/On-Board USB Storage
S	8813-001	AS BUILT AIR PLUMBING DIAGRAM	NO As Built Air Plumbing Diagram
S	8815-001	AS BUILT FUEL PLUMBING DIAGRAM	NO As Built Fuel Plumbing Diagram
O	8063-011	CAB PAINT CONFIRMATION	Cab Paint Confirmation - Sikkens - Single Color - Confirmation #1
S	8034-001	CUSTOMER INSPECTION	NO Customer Inspection
S	8039-001	SALES TERMS	Sales Terms

ENGINEERING

S	9005-001	DRIVELINE LAYOUT CONFIRMATION	NO Driveline Layout Confirmation
S	9006-001	3D CHASSIS LAYOUT	NO 3D Chassis Layout
S	2124-001	EFCM/REAR CROSSMEMBERS	NO End of Frame Cross Member
S	9007-001	POST PRODUCTION TESTING DURATION	NO Post Production Testing Duration

Specification

MODEL

The chassis shall be an Invader 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 2024 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. The chassis manufacturer is not responsible for compliance to state, regional, or local regulations. Dealers should identify those regulations and order any necessary optional equipment from the chassis manufacturer 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. All applicable caution, warning, and safety notice labels shall be Innovative Controls brand. Where applicable to the location within the specific layout and label package of the cab and chassis, the labels shall include decorative chrome bezels. Designs shall include bezels that fit individual labels or packaged configurations of labels in certain common locations.

APPARATUS TYPE

The apparatus shall be a pumper vehicle designed for emergency service use which shall be equipped with a permanently mounted fire pump which has a minimum rated capacity of 750 gallons per minute (3000 L/min). The apparatus shall include a water tank and hose body whose primary purpose is to combat structural and associated fires.

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.

VEHICLE ANGLE OF APPROACH PACKAGE

The angle of approach of the apparatus shall be a minimum of 8.00 degrees.

NFPA1901 Angle of Approach definition:

“To determine the angle of approach, place a thin steel strip against the front of the tires where they touch the ground or stretch a tight string from one front tire to the other at the front where they touch the ground. Determine the lowest point (component or equipment) on the vehicle forward of the front tire that would make the smallest angle of approach. Hang a plumb bob from the lowest point and mark the point on the ground where the point of the plumb bob touches. Measure the vertical distance from the ground to the point where the plumb bob was hung (distance V). Measure the horizontal distance from the plumb bob point to the steel strip or string running from front tire to front tire (distance H). Divide the vertical distance by the horizontal distance. The ratio of V/H is the tangent of the angle of approach. If the ratio is known, the angle of approach can be determined from a table of trigonometric functions of angles or from a math calculator. The standard requires a minimum angle of approach of 8.00 degrees: since the tangent of 8.00 degrees is 0.1405, if V divided by H is 0.1405 or larger, the angle of approach is 8.00 degrees or greater.”

AXLE CONFIGURATION

The chassis shall feature a 4 x 2 axle configuration consisting of a single rear drive axle with a single front steer axle.

GROSS AXLE WEIGHT RATINGS FRONT

The front gross axle weight rating (GAWR) of the chassis shall be 21,500 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 26,000 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. Chassis driveline pump provisions shall include an interlock feature for automatic setting of the park brake when the vehicle is shifted into pump mode while the transmission is in neutral and the transmission output speed translates to less than 1 mph. When the conditions are met the driver side parking brake valve shall activate. Once shifted to road

mode the condition for electric automatic brake engagement is no longer present and the driver's parking brake control valve shall function normally.

WATER & FOAM TANK CAPACITY

The chassis shall include a carrying capacity of 750 gallons (2839 liters) to 1250 gallons (4732 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, EMFD model with a 10.00 inch raised 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 eight (8) 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 lower roof skin shall be 0.13 inch thick; the rear wall and raised roof skins shall be 0.09 inch thick; the front cab structure shall be 0.19 inch thick.

The exterior width of the cab shall be 94.00 inches wide with a minimum interior width of 88.00 inches. The overall cab length shall be 137.10 inches with 60.00 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 65.00 inches in the raised roof area, 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 57.88 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 61.00 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.

OCCUPANT PROTECTION

An IMMI 4Front® occupant protection system shall be installed in the vehicle's cab. The system shall inflate three (3) air bags in the following locations:

- Steering wheel air bag to protect the head and neck of the driver
- Knee bolster air bag to protect the driver's legs
- Knee bolster air bag to protect the officer's legs

The air bags shall use a combination of high-pressure stored argon and oxygen with a pyrotechnic charge for initiation to inflate the bags remain inflated for several seconds.

The system shall be connected to the crash detection sensor that will also activate the driver and first officer integrated belt pretensioners if it detects a frontal crash.

A RollTek™ rollover occupant protection system shall be installed in the apparatus cab. The system shall include an integrated roll sensor (IRS) master module and a slave sensor in applicable configurations.

The IRS shall be a microprocessor-controlled solid-state sensing device that utilizes vehicle-specific calibrations to detect rollovers. The IRS shall be equipped with pyrotechnic loops for connection to the

protective countermeasures which shall include seat integrated side roll airbags (SRA), integrated seat belt pretensioners, and air seat pull-downs (S4S), in applicable occupant seat positions.

The IRS shall continuously monitor the truck's acceleration and angle, and upon detection of an imminent roll-over, shall activate protective countermeasures in a pre-programmed sequence. In addition, the IRS shall also act as a data recorder to record crash events for post-crash evaluation.

CAB FRONT FASCIA

The front cab fascia shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick 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) 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. Two (2) chrome plated bezels shall be provided on each side around each set of two lamps.

FRONT GRILLE

The front cab fascia shall include a Ferrara Fire Apparatus (FFA) specific style, 304 stainless steel front grille.

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 exterior shall be painted a single color per customers specified paint color.

CAB PAINT PROCESS/MANUFACTURER

The cab shall be painted with Sikkens paint 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 cab shall be mechanically etched by sanding disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once all imperfections on the exterior surfaces are removed and sanded smooth, body fillers shall be applied to the cab on all surfaces that require a critically aesthetic finish and sanded smooth.

The entire cab shall then be coated with a high quality base primer 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 sanding the cab to a smooth finish followed by sealing the seams with an automotive seam sealer. The minimum thickness of the primer coat after sanding shall be 2.50 mils with a maximum thickness of 5.00 mils.

The cab shall then be painted the specific color(s) designated by the customer with an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on an emergency scene. The paint shall have a minimum thickness of 1.00 mils with a maximum of 4 mils, followed by a clear top coat with a minimum of 2.5 mils and a maximum of 3.5 mils. The entire cab shall then be baked to speed the curing process of the coatings.

CAB PAINT PRIMARY/LOWER COLOR

The lower paint color shall be Sikkens FLNA 32528 Red.

CAB PAINT WARRANTY

Purchaser shall receive a Paint and Finish (Exterior Clear coated) Ten (10) Years limited warranty in accordance with, and subject to, warranty certificate RFW0710. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

CAB PAINT INTERIOR

The visible interior cab structure surfaces shall feature a medium gray spray on bedliner coating which shall mold to each surface of the cab interior. The bedliner shall be environmentally friendly and chemically resistant.

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 a nonwoven polyester fiber insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

CAB STRUCTURAL WARRANTY

Purchaser shall receive a Cab Structure (Aluminum) Ten (10) Years or 100,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0602. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

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 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.

MULTIPLEX DISPLAY

The multiplex electrical system shall include an UltraView 780 display with an interactive touchscreen display and fourteen (14) tactile push buttons. The display shall be located on the left side of the dash in the switch panel. The display shall feature a full color 7.00 inch LCD display screen which shall include a message bar displaying the time of day and important messages requiring acknowledgement by the user. The display screen shall be video ready for back-up cameras, thermal cameras, and 360 camera systems.

The 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.

MULTIPLEX DISPLAY SPECIAL LAYOUT

The Vista display and control screen shall be configured specifically for the vista dimmer control screen to have two dimmer settings. The dimmer settings shall be labeled “DAY” (Normal) and “NIGHT”. This shall omit the additional default settings “MAX” and “DIM”.

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. The laptop connection shall be a panel mounted female type B USB connection point, remotely mounted in the left side foot well.

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.

An OEM body connections bracket shall be installed on the chassis near the left hand battery box. The bracket shall include one (1) set each of 200 amp master power switched and 300 amp battery direct fused power and ground studs.

AUXILIARY ACCESSORY POWER

An auxiliary six (6) position Blue Sea Systems 5025 blade type fuse panel shall be installed behind the switch panel. The fuse panel shall be protected by a 40 amp fuse. The panel shall be capable of carrying up to a maximum 40 amp battery direct load.

ADDITIONAL ACCESSORY POWER

An additional six (6) position Blue Sea Systems 5025 blade type fuse panel shall be installed on the side wall of the engine tunnel behind the officer's seat. The fuse panel shall be protected by a 40 amp fuse. 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 on the lower rear wall of the cab above the seat frame. The fuse panel shall be offset left of the cab centerline between the forward facing center seat and the forward facing outer seat. The fuse panel shall be protected by a 40 amp fuse and be wired battery direct.

EXTERIOR ELECTRICAL TERMINAL COATING

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

ELECTRICAL SYSTEM WARRANTY

Purchaser shall receive an Electrical System Two (2) Years or 36,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0202. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

ENGINE

The chassis engine shall be a Cummins X12 engine. The X12 engine shall be an in-line six (6) cylinder, four-cycle diesel-powered engine. The engine shall offer a rating of 500 horsepower at 1900 RPM and shall be governed at 2000 RPM. The torque rating shall feature 1700-foot pounds of torque at 1000 RPM with 720 cubic inches (11.8 liter) of displacement.

The X12 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 2021-26 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 CK-4 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.

If a pre-2027 emission engine is NOT available at the time of build (starting production on January 1, 2026) your order will automatically be upgraded and charged for either the 2027 engine compliant Cummins X-10 or X-15, with all associated costs being passed on to the end user. No exceptions.

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. The tunnel shall be a maximum of 41.50 inches wide X 25.50 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 a virtual button on the vehicle display and control screen, and 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 engine is running 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 vehicle 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/medium/high virtual button on the vehicle display and control screen. The 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 HARNESS

An apparatus interface wiring harness for the engine and transmission pump interlocks shall be supplied with the chassis. The harness shall include a connector for connection to a chassis pump panel harness supplied by the body builder and shall terminate in the left frame rail behind the cab for connection by the body builder. The harness shall include circuits deemed for a pump panel and shall contain circuits for a hand throttle, and a multiplexed gauge. Separate circuits shall also be included for a pump control switch, "Pump Engaged" and "OK to Pump" indicator lights, open compartment ground, start signal, park brake ground, ignition signal, master power, clean power, customer ignition, air horn solenoid switch, high idle switch and high idle indicator 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.

ENGINE PROGRAMMING REMOTE THROTTLE

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

ENGINE PROGRAMMING IDLE SPEED

The engine low idle speed will be programmed at 700 rpm.

ENGINE AIR INTAKE

The engine air intake system shall include an ember separator. This 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 heavy duty galvanized steel frame. This multilayered screen shall trap embers and allow them to burn out before passing through the pack.

The engine air intake system shall also include an air cleaner mounted above the radiator. This air cleaner shall utilize a replaceable dry type filter element designed to prevent dust and debris from being ingested into the engine. A service cover shall be provided on the housing, reducing the chance of contaminating the air intake system during air filter service.

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

ENGINE FAN DRIVE

The engine cooling system fan shall incorporate a thermostatically controlled, Horton fully variable type fan drive with SmartClutch J-1939 CAN controller.

The variable speed fan clutch only engages at the amount needed for proper cooling to 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. The fan speed shall include a J-1939 CAN clutch controller to receive signal from the engine control module to activate at variable rates of speed. Variable speeds shall be set through thermostatic and engine speed signals to run as efficiently and quietly as required to maintain temperature.

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 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 rearward oriented sight glass to observe coolant in the system. A cold fill and observation line shall be included within the frame mounted translucent recovery bottle 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 components.

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.

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 systems hose shall be formed silicone hose and formed aluminized steel tubing and include stainless steel constant torque band clamps.

ENGINE COOLANT OVERFLOW BOTTLE

A remote engine coolant overflow expansion bottle shall be provided in the case of over filling the coolant system. The overflow bottle shall capture the expansion fluid or overflow rather than allow the fluid to drain on the ground.

ENGINE EXHAUST SYSTEM

The exhaust system shall include an end-in end-out horizontally mounted single module after treatment device, and 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 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.

The tail pipe shall have a 7.00 inch offset shifting the exhaust pipe inboard of the exhaust canister to provide additional clearance from the body and frame mounted brackets.

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.

The exhaust flex joint shall not include the thermal exhaust wrap.

EMISSIONS SYSTEMS WARRANTY

Purchaser shall receive a Regulated Emissions Systems Five (5) Years or 100,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0140. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

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 Allison formulated Castrol TranSynd™ synthetic 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/VI-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/VI-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

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.

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 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.

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.

DRIVELINE

All drivelines shall be heavy duty metal tube and equipped with MSI 1810 series universal joints. 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 drivelines shall include Meritor brand u-joints with thrust washers.

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. Holes shall be provided as specified by the OEM for mounting a customer installed pump module.

See PDF for specific hole pattern.

MIDSHIP PUMP / GEARBOX MODEL

The midship pump/gearbox provisions shall be for a Waterous CSUC20 or C22 pump.

MIDSHIP PUMP GEARBOX DROP

The Waterous pump gearbox shall have a "C" (medium length) 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 99.50 inches.

PUMP SHIFT CONTROLS

One (1) air pump shift control panel shall be located on the left hand side of the engine tunnel, integrated with the shifter pod. 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 forward position and pump mode shall be selected when the control lever is in the rearward position.

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

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 GreenMAX 6600R 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 6600R shall meet engine requirements for particulate size, collection capacity, removal efficiency, and water removal efficiency. The filter shall be 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.

FUEL SHUTOFF VALVE

There shall be two (2) fuel shutoff valves which shall be installed, one (1) in the fuel draw line at the primary fuel filter and one (1) in the fuel outlet line at the primary fuel filter to allow the fuel filters to be changed without loss of fuel to the fuel pump.

A third fuel shutoff valve shall be installed in the fuel draw line, near the fuel tank to allow maintenance to be performed with minimal loss of fuel.

ELECTRIC FUEL PRIMER

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

FUEL COOLER

A fuel cooler shall be provided to lower fuel temperature allowing the vehicle to operate at higher ambient temperatures. The fuel cooler shall include an electrical fan and temperature-controlled relay switch.

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 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 Method B, results to be 5B minimum. 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, 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 components if possible.

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 magnetic 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 21,500 pounds FAWR.

FRONT AXLE WARRANTY

The front axle shall be warranted by Meritor for five (5) 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 54.00 inch long and 4.00 inches wide and shall include a military double wrapped front eye. Both spring eyes

shall have a case hardened threaded bushing installed with lubrication counter bore and lubrication land off cross bore with grease fitting. The spring capacity shall be rated at 21,500 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 65 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 RS-25-160 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a fire service rated capacity of 27,000 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 0.63 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 five (5) 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.

VEHICLE TOP SPEED

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

REAR SUSPENSION

The single rear axle shall feature a Reyco 79KB vari-rate, self-leveling captive slipper type parabolic five (5) leaf spring pack suspension with 57.50 inch X 3.00 inch springs. The suspension shall also utilize two (2) torque arms with eccentric cam adjustment.

The rear suspension capacity shall be rated to 27,000 pounds.

REAR SHOCK ABSORBERS

Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the rear 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.

TIRE INTERMITTENT SERVICE RATING

The chassis shall be rated using Intermittent Service ratings provided to the emergency vehicle market by the tire manufacturers as the basis for determining the maximum vehicle load and speed.

FRONT TIRE

The front tires shall be Michelin 385/65R22.5 "L" tubeless radial X Multi HL Z regional tread.

The front tire stamped load capacity shall be 22,000 pounds per axle with a nominal speed rating of 68 miles per hour when properly inflated to 130 pounds per square inch.

The Michelin Intermittent Service Rating maximum load capacity shall be 23,540 pounds per axle with a maximum speed of 68 miles per hour when properly inflated to 130 pounds per square inch.

The Michelin Intermittent Service Rating maximum speed capacity shall be 22,000 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 130 pounds per square inch.

The Michelin 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 Michelin 12R-22.5 16PR "H" tubeless radial XZE regional tread.

The rear tire stamped load capacity shall be 27,120 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.

The Michelin Tire Intermittent Service Rating load capacity shall be 28,880 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch. The Michelin Intermittent Service Rating limits the operation of the emergency vehicle to one (1) hour of loaded travel with a one (1) hour cool down prior to another loaded run.

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 aluminum wheels. The outer face of the wheels shall feature Alcoa's Dura-Bright® finish 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. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

REAR WHEEL

The rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch aluminum wheels with a polished outer surface and Alcoa Dura-Bright® wheel treatment as an integral part of the wheel surface. The inner rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch aluminum wheels with a polished inner and outer surface and Alcoa Dura-Bright® wheel treatment as an integral part of the wheel surface. 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 include Counteract brand balancing beads.

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.

BRAKE SYSTEM

A rapid build-up air brake system shall be provided. The air brakes shall include, at a minimum, a two (2) air tank, three (3) reservoir system with a total of 4152 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 four (4) sensor, four (4) modulator Anti-lock Braking System (ABS) shall be installed on the front and 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 single rear axle. The ATC system shall apply the ABS when the drive wheels lose traction. The system shall scale the electronic engine throttle back to prevent wheel spin while accelerating on ice or wet surfaces.

A virtual button on the vehicle display and control screen 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 EX225 Disc Plus disc brakes with 17.00 inch vented rotors.

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 system. The control shall be yellow in color.

The parking brake actuation valve shall be mounted in the switch panel. A horizontal orientation guard shall be installed over the parking brake control to prevent accidental application or release.

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 behind the battery box on the left hand side.

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 24/30 H.O.T. (High Output Technology) brake chambers 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 pads against the brake rotor.

AIR COMPRESSOR

The air compressor provided for the engine shall be a naturally aspirated Wabco® SS440 single cylinder pass-through drive type compressor which shall be capable of producing 26.0 CFM at 1200 engine RPMs. The compressor shall include an aluminum cylinder head which shall improve cooling, reduce weight and decrease carbon formation.

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.

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 shall be plumbed with color coded reinforced nylon tubing air lines. The primary (rear) brake line shall be green, the secondary (front) brake line red, the parking brake line orange and the auxiliary (outlet) will be blue.

Brass compression type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses.

AIR INLET CONNECTION

An air connection for the shoreline air inlet shall be supplied.

AIR INLET LOCATION

The air inlet shall be installed in the left hand side lower front step in the forward position.

AIR INLET/ OUTLET FITTING TYPE

The air connector supplied shall be a 0.25 inch size Tru-Flate Interchange style manual connection which is compatible with Milton 'T' style, Myers 0.25 inch Automotive style and Parker 0.25 inch 10 Series connectors.

AIR TANK SPACERS

There shall be spacers included with the air tank mounting. The spacers shall move the air tanks 3.00 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 parallel to frame.

WHEELBASE

The chassis wheelbase shall be 184.00 inches.

REAR OVERHANG

The chassis rear overhang shall be 47.00 inches.

FRAME

The frame shall consist of double rails running parallel to each other with cross members forming a ladder style frame. The frame 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 upper and lower flanges X 0.38 inches thick with an inner channel of 9.44 inches high X 3.13 inches deep and 0.38 inches thick. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. Each double rail section shall be rated by a Resistance Bending Moment (RBM) minimum of 3,213,100 inch pounds and have a minimum section modulus of 29.21 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.

MISCELLANEOUS FRAME OPTIONS

The frame shall include hole patterns which shall be specific to Spartan ERV Legend style body mounting.

See PDF for OEM specified pattern.

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 PAINT

The frame rails shall be hot dip galvanized prior to assembly and attachment of any components. The components that shall be galvanized shall include:

- Main frame “C” channel or channels

The frame parts which are not galvanized shall be powder coated prior to any attachment of components. Parts which shall be powder coated shall include but are not limited to:

- Steering gear bracket
- Front splayed rails and fish plates
- Bumper extensions
- Cross members
- Cross member gussets
- Fuel tank mounting brackets
- Fuel tank straps (unless material/finish is specified in 3130 subcat)
- Air tanks (unless color coded tanks are specified in 3205 subcat)
- Air tank mounting brackets
- Exhaust mounting brackets
- Air cleaner skid plate
- Radiator skid plate
- Battery supports, battery trays and battery covers

Other non-galvanized under carriage components which are received from the suppliers with coatings already applied shall include but are not limited to:

- Suspension components
- Front and rear axles

All powder coatings, primers and paint used on the non-galvanized components 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.

FRAME ASSEMBLY STRUCTURAL

Purchaser shall receive a Frame Assembly Structural Fifty (50) Years or 250,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0305. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

FRAME RAIL CORROSION

Purchaser shall receive a Frame Rail Corrosion (Zinc Plate and Powder Coat) Twenty Five (25) Years or 150,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0316. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

FRAME COMPONENTS CORROSION

Purchaser shall receive a Frame Components Corrosion (Powder Coat) Three (3) Years or 48,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0313. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

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 99.00 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. The front bumper trim shall feature a black spray on bedliner coating.

FRONT BUMPER TRIM

A stainless steel trim angle, painted to the customer's specifications, shall be installed on the top corner of the bumper across the front and on the top corner of the bumper tails. The trim angle shall measure

1.10 inches wide on the horizontal flange and 1.60 inches tall on the vertical flange. The trim shall be affixed to the bumper, below the apron without holes and fasteners.

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 cover constructed of 0.19 inch thick bright embossed aluminum tread plate.

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 D-ring 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) Hadley brand E-Tone air horns which shall measure 24.00 inches long with a 6.00 inch round flare. The air horns shall be trumpet style with a chrome finish on the exterior and a painted finish deep inside the trumpet.

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 outboard position relative to the right hand frame rail and one (1) on the left side of the bumper in the outboard 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 inboard positions.

FRONT BUMPER TOW HOOKS

Two (2) heavy duty tow hooks, painted to match the frame components, 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

A 25.00 foot cab tilt control harness shall be provided on the right side of frame just behind the cab. This harness shall consist of an 8.00 foot harness connected to the tilt pump and a 17.00 foot extension harness with a six (6) pin Deutsch connector with cap for mounting in a compartment in the body.

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 TILT LOCK DOWN INDICATOR

The cab dash shall include a message located within the dual air pressure gauge which shall alert the driver when the cab is unlocked and ajar. The alert message shall cease to be displayed when the cab is in the fully lowered position and the hold down hooks are secured and locked to the cab mounts.

In addition to the alert message an audible alarm shall sound when the cab is unlocked and ajar with the parking brake released.

CAB WINDSHIELD

The cab windshield shall have a surface area of 2825.00 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 door panel ledge 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 door panel ledge 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 severe 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 Aeroquip 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.

*****The chassis manufacturer recommends that the overall climate system performance be based off third-party testing in accordance with the Society of Automotive Engineering standards as a complete system.***

Individual component level BTU ratings is not an accurate indicator of the performance capability of the completed system. System individual component BTU ratings:

- Air conditioning evaporator total BTU/HR: 82,000
- Air conditioning condenser total BTU/HR: 59,000
- Heater coil total BTU/HR: 98,000

Performance data specified is based on testing performed by an independent third-party test facility using a medium four-door 10” raised roof cab 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 in the center dash center switch panel, 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 silver gray texture finish.

A/C CONDENSER LOCATION

A roof mounted A/C condenser shall be installed centered on the cab forward of the raised roof against the slope rise.

A/C COMPRESSOR

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

*****The chassis manufacturer recommends that the overall climate system performance be based off third-party testing in accordance with the Society of Automotive Engineering standards as a complete system.***

Individual component level ratings are not an accurate indicator of the performance capability of the completed system.

Refrigerant Compressor displacement: 19.1 cubic inches per revolution.

UNDER CAB INSULATION

The underside of the cab tunnel surrounding the engine 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 0.30 inch thick including a multi-layer foil faced glass cloth and polyester fiber layer. The foil surface acts as protection against heat, 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 FMVSS 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 acrylic pressure sensitive adhesive. In addition, the insulation on the underside of the cab floor shall have aluminum pins with hard hat, hold in place fastening heads and an expanded metal overlay to assist in retaining the insulation tight against the cab. 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.

The cab floor insulation shall cover the driver and officer floor areas as well as all crew floor areas and compartment floor areas if applicable.

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 embossed treadplate trim that shall wrap 2" horizontally and vertically. 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 shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate and shall include a glove compartment with a hinged door and a Mobile Data Terminal (MDT) provision. The glove compartment size will measure 14.00 inches wide X 4.50 inches high X 5.88 inches deep. The MDT provision shall be provided above the glove compartment.

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 interior shall include (2) Blue Sea dual universal serial bus (USB) charging receptacles in the cab dash switch panel to provide a power source for USB chargeable electrical equipment. The USB port shall be capable of a 5 Volt-4.8 amp total output. The receptacles shall be wired battery direct.

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 embossed perforations and diamond shaped cutout. The perforations and cutouts shall allow water and other debris to flow through rather than becoming trapped within the stepping surface. The step shall feature a splash guard to reduce water and debris from splashing in to the step. The splash guard shall have drainage holes beneath the back of the step to allow debris and water to flow through rather than becoming trapped within the stepping surface. The stainless steel material shall have a number 8 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 aluminum access door in the left crew step riser painted to match the cab interior paint 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 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, city, township, or county.

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 DA sand finish to assist personnel entering and exiting the cab.

INTERIOR GRAB HANDLE REAR DOOR

A DA sanded 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 gray in color.

INTERIOR TRIM SUNVISOR

The header shall include two (2) sun visors, one each side forward of the driver and officer seating positions above the windshield. Each sun visor shall be constructed of Masonite and covered with padded vinyl trim.

INTERIOR FLOOR MAT COLOR

The cab interior floor mat shall be gray in color.

CAB PAINT INTERIOR

The inner door panel surfaces shall feature a medium gray spray on bedliner coating.

HEADER TRIM INTERIOR PAINT

The metal surfaces in the header area shall feature a medium gray spray on bedliner coating.

TRIM CENTER DASH INTERIOR PAINT

The entire center dash and any accessory pods attached to the dash shall feature a medium gray spray on bedliner coating.

TRIM LEFT HAND DASH INTERIOR PAINT

The left hand dash shall feature a medium gray spray on bedliner coating.

TRIM RIGHT HAND DASH INTERIOR PAINT

The right hand dash shall feature a medium gray spray on bedliner coating.

DASH PANEL GROUP

The main center dash area shall include three (3) aluminum 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 panels shall be coated with a black texture finish. 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 one (1) windshield wiper/washer control switch located in the left hand side of the panel. The switch shall have backlighting provided.

SWITCHES RIGHT PANEL

The right dash panel shall six (6) rocker switch positions in a three (3) over three (3) switch 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 vehicle 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 applicable audible alarm shall remain active until all occupied seats have the seat belts fastened.

SEAT MATERIAL

The Bostrom Firefighter seats shall include a covering of extra high strength, wear resistant fabric made of durable low seam Durawear Plus™ 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. Durawear Plus™ meets or exceeds specification of the common trade name Imperial 1800. The material meets FMVSS 302 flammability requirements.

If applicable, Theatre style seats located in the cab shall be 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 gray in color. All seats shall include red seat belts.

SEAT BACK LOGO

The seat back shall include the "Spartan" logo. 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 500 Series Firefighter Sierra model seat. The seat shall feature eight-way electric positioning. The eight positions shall include up and down, fore and aft, back angle adjustment and seat rake adjustment. The seat shall feature integral springs to isolate shock. The fore and aft travel shall be limited as required due to customer selected items such as axillary air compressors, battery conditioners and their specified locations.

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 ABTS feature shall also include the RiteHite™ shoulder adjustment feature to provide enhanced comfort and safety by allowing customized seat belt fit.

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.

OCCUPANT PROTECTION DRIVER

The driver's position shall be equipped with the IMMI 4Front and RollTek™ Systems which shall secure belted occupants and increase the survivable space within the cab. The 4Front and RollTek™ Systems shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, and rollover events.

The Driver's seating area protection shall include:

- Drivers airbag **DAB** - inflates a steering wheel airbag to protect the head and neck of the driver.
- Driver's knee airbag **DKAB** - inflating knee bolster airbags to protect the knees.
- Integrated roll sensor **IRS** - detects an imminent rollover, activates protective devices and records crash events.
- Integrated belt pretension **IBP** - device for mechanical and/or electrical seats tightens the seat belt, securing driver in seat and positions driver for contact with seat integrated head cushion side roll airbag.

Inflatable head cushion seat integrated side roll airbag **SRA** - protects driver's head/neck and shields driver from dangerous surfaces.

SEAT OFFICER

The officer's seat shall be a H.O. Bostrom 500 Series Sierra seat model. 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 ABTS feature shall also include the RiteHite™ shoulder adjustment feature to provide enhanced comfort and safety by allowing customized seat belt fit.

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 approximately 2.50 inches rearward of the standard location offering increased leg room for the occupant. The front face of the officer's under seat storage box shall be modified 8.13 inches rearward for floor storage below the seat eliminating the under seat storage compartment and access door.

OCCUPANT PROTECTION OFFICER

The officer's position shall be equipped with the IMMI 4Front and RollTek™ Systems which shall secure belted occupants and increase the survivable space within the cab. The 4Front and RollTek™ Systems shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, and rollover events.

The Officer's seating area protection shall include:

- Officer's knee airbag **OKAB** - inflating knee bolster airbags to protect the knees.
- Integrated roll sensor **IRS** - detects an imminent rollover, activates protective devices and records crash events.
- Integrated belt pretension **IBP** - device for mechanical and/or electrical seats tightens the seat belt, securing officer in seat and positioning officer for contact with seat integrated head cushion side roll airbag.
- Inflatable head cushion seat integrated side roll airbag **SRA** - protects officer's head/neck and shields officer from dangerous surfaces.

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 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 forward facing center seat shall be a H.O. Bostrom 500 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 and cushion shall be hinged and compact in design for additional room. The seat shall include a "Fold and Hold" feature so that the cushion shall remain in the seated position and simply touched to flip up.

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 ABTS feature shall also include the RiteHite™ shoulder adjustment feature to provide enhanced comfort and safety by allowing customized seat belt fit.

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.

OCCUPANT PROTECTION FFC

The forward facing center seat positions shall be equipped with the RollTek™ rollover occupant protection system which shall secure occupants, increase the survivable space within the cab and protect against head/neck injuries in the event of a rollover accident.

The system shall function using a microprocessor-controlled, solid-state sensing device which, when the system detects a side roll shall provide instantaneous occupant protection (less than 0.3 seconds from trigger to total deployment) by automatically initiating the following sequence:

1. The seat belt shall tighten around the occupant.

System Components Shall Include:

Integrated Roll Sensor **IRS** - detects an imminent rollover, activates protective devices and records crash events.

Integrated Belt Pretension **IBP** with flip-up (non theatre) and fixed mechanical seats - tightens the seat belt around occupant, securing occupant in seat.

Integrated Gas Pretension **IGP** with flip-up theatre style seats - tightens the seat belt around occupant, securing occupant in seat.

SEAT FRAME FORWARD FACING

The forward facing center seating positions shall include an enclosed style seat frame located and installed at the rear wall. The seat frame shall measure 62.38 inches wide X 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 forward corners of the bench shall be chamfered 45-degrees X 4.00 inches.

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.

CAB FRONT UNDERSEAT STORAGE ACCESS DOOR

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

SEAT COMPARTMENT DOOR FINISH

All underseat storage compartment access doors shall feature a medium gray spray on bedliner coating.

WINDSHIELD WIPER SYSTEM

The cab shall include a triple arm linkage wiper system which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers; each shall be affixed to a radial arm. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver's position. The windshield wipers shall be interlocked with the park brake allowing activation only when the park brake is released.

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.

POWER DOOR LOCK COMPARTMENT ACTIVATION

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

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 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 red reflective tape.

LIGHTED GRAB HANDLES

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.

REARVIEW MIRRORS

Retrac Aerodynamic West Coast style dual vision mirror heads model 613305 shall be provided and installed on each of the front cab doors.

The mirrors shall be mounted via 1.00 inch diameter tubular stainless steel arms to provide a rigid mounting to reduce mirror vibration.

The mirrors shall measure 8.00 inches wide X 19.00 inches high and shall include an integral convex mirrors installed in the mirror head below the flat glass to provide a wider field of vision. The flat and convex mirrors shall be motorized with remote horizontal and vertical adjustment. The control switches

shall be mounted within easy reach of the driver. The flat and convex mirrors shall be heated for defrosting in severe cold weather conditions.

The mirrors shall be constructed of a vacuum formed chrome plated ABS plastic housing that is corrosion resistant and shall include the finest quality non-glare glass.

REARVIEW MIRROR HEAT SWITCH

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

EXTERIOR TRIM REAR CORNER

There shall be an overlay of 3003-H22 aluminum tread plate which shall be 0.07 inches thick on the outside corners at the back of the cab. The overlay shall wrap 1.00 inches forward on the sides of the cab and 12.00 inches inboard on the rear wall.

CAB FENDER

Wheel well liners shall be integrated into cab design and include a bed liner undercoat to limit road splash and enable easier cleaning. Each outer fenderette shall be 5.00 inches wide made of SAE 304 polished stainless steel.

MUD FLAPS FRONT

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

IGNITION

A master battery system with a keyless start ignition system shall be provided. There shall be a three-position rocker switch with off, battery, and ignition positions as well as a stainless-steel etched engine start push-button. The engine start button shall include an illuminated LED halo ring. Both switches shall be mounted to the left of the steering wheel on the dash.

The engine start switch shall only operate when the master battery and ignition switch is in the "ignition" 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) 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 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, 8.00 inches apart. 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 320 amp Leece-Neville 12 volt alternator. The alternator shall include a self-exciting integral regulator.

STARTER MOTOR

The single start electrical system shall include a Delco brand starter motor.

BATTERY CONDITIONER

A Kussmaul Auto Charge Chief 4012 battery conditioner shall be supplied. The battery conditioner shall provide a 40 amp output for the chassis batteries and a 20 amp output circuit for accessory loads. The battery conditioner shall be mounted in the cab in the LH rear facing outer seating position and shall include a battery temperature sensor.

BATTERY CONDITIONER DISPLAY

A Kussmaul universal status center battery conditioner display shall be supplied. The display shall indicate full charge, low charge, charging, and a three (3) digit voltage reading. The battery conditioner display shall be mounted in front of the left side door just below the windshield.

ELECTRICAL INLET LOCATION

An electrical inlet shall be installed on the left hand side of cab over the wheel well.

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 40 LPC Charger - 5 Amps*
- Kussmaul 40/20 Charger - 8.5 Amps*
- Kussmaul 80 LPC Charger - 13 Amps*
- Kussmaul EV-40 - 6.2 Amps*
- Blue Sea P12 7532 - 7.5 Amps*
- Iota DLS-45/IQ4 - 11 Amps*
- 1000W Engine Heater - 8.33 Amps*
- 1500W Engine Heater - 12.5 Amps*
- 120V Air Compressor - 4.2 Amps*
- 120V Dometic HVAC - 15 Amps*

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 two (2) FireTech rectangular LED headlamps with high/low beam in the same housing and two (2) separate FireTech LED high beam only headlamps mounted in bright chrome bezels.

HEADLIGHT LOCATION

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

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 radius mount housing above and outboard of the front warning and head lamps.

SIDE TURN/MARKER LIGHTS

The sides of the cab shall include two (2) Tecniq S170 LED side marker lights which shall be provided just behind the front cab radius corners. The lights shall be amber with chrome bezels.

MARKER AND ICC LIGHTS

In accordance with FMVSS, there shall be five (5) Tecniq S170 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. The lights shall be amber with chrome bezels.

HEADLIGHT AND MARKER LIGHT ACTIVATION

The headlights and marker lights shall be controlled via a virtual button on the Vista display. The headlamps shall be equipped with an LED halo parking light around the perimeter of each lamp that shall activate with marker lights "on". The headlights shall turn on in the low beam setting when the park brake is disengaged. The headlights shall turn off when the park brake is engaged. The marker and LED halo parking lights shall turn on when the ignition switch is in the "On" position. There shall be a virtual dimmer control on the Vista display to adjust the brightness of the dash lights.

INTERIOR OVERHEAD LIGHTS

The cab shall include a Whelen 60CREGCS LED dome lamp located over each door. The dome lamps shall be circular in shape and shall measure approximately 6.00 inches in diameter. The lights shall include push buttons on each lamp to activate both the clear and red portions of the light individually.

INTERIOR OVERHEAD LIGHTS ACTIVATION

The clear portion of each lamp shall be activated by opening the respective door and via the multiplex display. The virtual button shall be a multilevel switch that cycles red, clear and off.

AUXILIARY DOME LIGHT FRONT CENTER

The cab shall include a Whelen 60CREGCS LED dome lamp as an auxiliary dome light. The dome lamp shall be circular in shape and shall measure approximately 6.00 inches in diameter. The auxiliary dome light shall be located over the engine tunnel. The light shall include push buttons to activate both the clear and red portions of the light individually.

AUXILIARY DOME LIGHT FRONT CENTER ACTIVATION

The auxiliary dome light shall have the same activation as the interior overhead lights.

LIGHTBAR PROVISION

There shall be one (1) light bar installed on the cab roof. The light bar shall be provided and installed by the chassis manufacturer. The light bar installation shall include a lowered mounting that shall place the light bar just above the junction box and wiring to a control switch on the cab dash.

CAB FRONT LIGHTBAR MODEL

The cab shall be provided with one (1) Whelen model F4N72 light bar. The light bar shall be 72.00 inches in length and feature eighteen (18) customizable pods.

See the light bar layout for specific details.

LIGHTBAR SWITCH

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

FRONT SCENE LIGHTS

The front of the cab shall include two (2) Whelen Pioneer model PCH2 contour roof mount scene lights installed on the brow of the cab.

Each 150 watt lamp head shall incorporate a 12 volt DC Super-LED combination flood/spot light installed in a die-cast aluminum housing. Each lamp head shall use a collimator/metalized redux spot/flood reflector assembly with Proclera™ silicone optics and a clear non-optic polycarbonate lens. The lens/reflector assembly shall utilize a liquid injected molded silicone gasket to be resistant to water, moisture, dust, and other environmental conditions. The PCH2 shall be vibration resistant. The Pioneer PC boards shall be conformal coated for additional protection. Each combination flood/spot light lamp head shall draw 13.0 amps in spotlight mode and generate 17,750 lumens total. Each lamp head shall measure 4.25 inches in height X 14.00 inches in width. The lamp heads and brackets shall be powder coated white.

FRONT SCENE LIGHT LOCATION

There shall be two (2) scene lights mounted to the front brow of the cab in the outboard position.

FRONT SCENE LIGHTS ACTIVATION

The front scene lighting shall be activated by a virtual button on the vehicle display and control screen and a lighted momentary rocker switch on the dash.

SIDE SCENE LIGHTS

The cab shall include two (2) Whelen model Pioneer PCH2 semi-recess mount lights installed one (1) on each side of the cab.

Each 150 watt lamp head shall incorporate a 12 volt DC Super-LED combination flood/spot light installed in a die-cast aluminum housing. Each lamp head shall use a collimator/metalized redux spot/flood reflector assembly with Proclera™ silicone optics and a clear non-optic polycarbonate lens. The lens/reflector assembly shall utilize a liquid injected molded silicone gasket to be resistant to water, moisture, dust, and other environmental conditions. The PCH2 shall be vibration resistant. The Pioneer PC boards shall be conformal coated for additional protection. Each combination flood light lamp head shall draw 13.0 amps in spotlight mode and generate 17,750 lumens total. Each lamp head shall measure 4.25 inches in height X 14.00 inches in width. Each lamp head shall be mounted within a semi-recess housing featuring a chrome flange which shall measure 7.92 inches in height X 17.17 inches in width. The lamp heads and brackets shall be powder coated white.

SIDE SCENE LIGHT LOCATION

The scene lighting located on the left and right sides of the cab shall be mounted rearward of the cab "B" pillar in the 10.00 inch raised roof portion of the cab between the front and rear crew doors.

SIDE SCENE ACTIVATION

The scene lights shall be activated by two (2) lighted momentary rocker switches located in the switch panel, one (1) for each light, by two (2) virtual buttons on the vehicle display and control screen(s), one (1) for each light, and by opening the respective side cab doors.

REAR SCENE LIGHTS

The vehicle shall include multiplex activated rear scene lighting for body builder installed scene lights and body builder installed multiplex output.

REAR SCENE LIGHT ACTIVATION

The rear scene lighting shall be activated via a virtual button on the Vista display and control screen.

GROUND LIGHTS

Each door shall include a Tecniq T44 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.

GROUND LIGHTS

The ground lighting shall be activated when the parking brake is set, by the opening of the door on the respective cab side, through a virtual button on the vehicle display and control screen, when the truck is placed into reverse, and by the respective side turn signal.

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.

LOWER CAB STEP LIGHTS

The middle step located at each door shall include a Tecniq T44 LED light which shall activate with the opening of the respective door. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted for extended life.

INTERMEDIATE STEP LIGHTS

The intermediate step well area at each door shall include a TecNiq D06 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.

ENGINE COMPARTMENT LIGHT

There shall be a LED NFPA compliant light mounted under the engine tunnel for area work lighting on the engine. The light shall activate automatically when the cab is tilted.

DO NOT MOVE APPARATUS LIGHT

The front headliner of the cab shall include a flashing red TecNiq K50 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 vehicle 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.

There shall be an additional virtual button on the vehicle display and control screen to manually override an automatic warning light dimmer clearly labeled “WARNING LIGHT DIMMER”. The warning light dimmer will automatically reduce the brightness of the warning lights with the display screen “Night” dimmer setting and with the park brake set. The operator can override the warning light dimmer feature and manually select the warning lights to be at normal brightness using the warning light dimmer virtual button, or ”Day” display screen brightness. The lights shall also default to normal brightness when the “E Master” button is activated, and the park brake is released.

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. There shall be no blocking mode on clear warning lights.

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. The lights shall be mounted to the front fascia of the cab within a chrome bezel. The warning lights shall be set to emit the “TripleFlash 75” in/out flash pattern.

INBOARD FRONT WARNING LIGHTS COLOR

The warning lights mounted on the cab front fascia in the inboard positions shall be 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. The lights shall be mounted to the front fascia of the cab within a chrome bezel. The warning lights shall be set to emit the “TripleFlash 75” in/out flash pattern.

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.

BUMPER FACE WARNING LIGHT

The front bumper face shall include two (2) Whelen M6 series 4.31 inch tall X 6.75 inch wide Super LED® warning lights located between the frame rails in the right and left side outboard positions. The warning lights shall feature multiple flash patterns including steady burn. The lights shall be surface mounted within a chrome bezel. The warning lights shall be set to flash “TripleFlash 75” in/out flash pattern.

BUMPER FACE WARNING LIGHT COLOR

The warning lights in the bumper shall be red with clear lenses.

FRONT WARNING SWITCH

The front warning lights shall be controlled through a virtual control on the vehicle 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. The lights shall be set to flash “TripleFlash 75” I/O flash pattern.

INTERSECTION WARNING LIGHTS COLOR

The intersection lights shall be red with a clear lens.

INTERSECTION WARNING LIGHTS LOCATION

The intersection lights shall be mounted centered front to rear on the flat portion of the side of the bumper tail.

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. The light shall be programmed to emit the "TripleFlash 75" in/out flash pattern.

SIDE WARNING LIGHTS COLOR

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

SIDE WARNING LIGHTS LOCATION

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

AUXILIARY SIDE WARNING LIGHTS

The cab sides shall include two (2) Whelen series M6 Super LED 4.00 inch X 6.00 inch warning lights, one (1) each side, which shall feature multiple flash patterns including steady burn. The warning lights shall be set to flash “TripleFlash 75” in/out flash pattern.

AUXILIARY SIDE WARNING LIGHTS COLOR

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

AUXILIARY SIDE WARNING LIGHTS LOCATION

The auxiliary warning lights on the side of the cab shall be mounted above the front doors.

SIDE AND INTERSECTION WARNING SWITCH

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

TANK LEVEL LIGHTS

There shall be two (2) FRC MaxVision surface mount water level light strips.

The light strips shall feature four (4) colors of LED lights to indicate the fluid level of a tank. The colors from top to bottom shall be green, blue, amber, and red.

TANK LEVEL LIGHTS ACTIVATION

The tank level lights shall be pre-wired and coiled at rear of the cab for connection to the apparatus by the body builder.

TANK LEVEL LIGHTS LOCATION

There shall be water level lights mounted on each side of the cab, centered between the rear cab doors and the rear corners of the cab.

REAR WARNING LIGHTS

The cab shall have a Whelen TACTL5 Traffic Advisor control head installed and wired in the header above the driver. The control head shall be mounted in the driver’s side header inboard of the radio position.

The power to the control head shall be ignition switched and activation dependent upon the state of the controllers switched position upon ignition.

Wiring provisions shall be provided routed to the rear of the frame for OEM installation of up to eight (8) individual traffic advisor warning lights rated at no more than one (1) amp each.

INTERIOR DOOR OPEN WARNING LIGHTS

The interior of each door shall include one (1) 15.87 inch long X 0.73 inch tall amber Weldon LED warning light. The light shall be located on the upper portion of the door frame to be visible when a person is standing in front of the door while entering or exiting the cab. Each light shall activate with a

scrolling directional flash pattern which moves from inside to outside when the door is in the open position. This shall serve as a warning to oncoming traffic.

SIREN CONTROL HEAD

A Whelen 295HFSC9 electronic siren control head shall be provided. The siren head shall feature a 200-watt output, wail, yelp, manual siren, 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. The siren shall be installed in the switch panel with a location specific to the customer's needs.

STEERING WHEEL HORN BUTTON SELECTOR SWITCH

A virtual button on the Vista display and control screen shall be provided to allow control of the electric horn or the air horn from the steering wheel horn button. The horn button selection shall default to the air horn each time the Vista screen power is cycled off and on.

AUDIBLE WARNING LH FOOT SWITCH

A foot switch wired to actuate the mechanical siren(s) shall be supplied for installation in the front section of the cab for driver actuation.

MECHANICAL SIREN FOOT SWITCH LH

The mechanical siren foot switch shall be a Linemaster model 491-S.

MECHANICAL SIREN FOOT SWITCH LH LOCATION

The mechanical siren foot switch shall be located on the left hand side accessible to the driver between the steering column and the door.

MECHANICAL SIREN FOOT SWITCH LH POSITION

The mechanical siren foot switch shall be positioned outboard of any other foot switch, if applicable.

AUDIBLE WARNING LH FOOT SWITCH BRACKET

A 30.00 degree angled foot switch bracket, wide enough to accommodate (2) foot switches, shall be installed outboard of the steering column for specified driver accessible foot switch activations.

AIR HORN AUXILIARY ACTIVATION

The air horn activation shall be accomplished by a momentary rocker switch on the switch panel.

MECHANICAL SIREN BRAKE/AUXILIARY ACTIVATION

The mechanical siren shall be actuated by 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 vehicle display and control screen.

MECHANICAL SIREN INTERLOCK

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

An ECCO model 575 backup alarm shall be installed at the rear of the chassis with an output level of 107 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 1/8th 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 white LED backlighting.

RADIO

A Jensen brand heavy-duty radio with weather band, AM/FM stereo receiver and Bluetooth capabilities shall be installed in a customer specified location. Radio shall be the current, commercially available heavy-duty single-DIN automotive model at time of vehicle manufacturing date.

RADIO AUXILIARY INPUT

There shall be an auxiliary audio port with USB interface and 1/8” stereo input jack for use with smart phone or a portable electronic device. The auxiliary port shall be located within the center dash switch panels in a location chosen by the customer.

RADIO LOCATION

The radio shall be installed in the left hand overhead position above the driver.

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.

RADIO SPEAKERS

There shall be two (2) speakers installed in the front portion of the cab recessed overhead and two (2) speakers installed in the rear portion of the cab overhead. The speakers shall be provided for connection to the sound system.

CAMERA RIGHT HAND

One (1) Audiovox Voyager heavy duty rearview teardrop shaped chrome plated housing camera shall be mounted on the officer side of the cab below the windshield ahead of the front door at approximately the same level as the cab door handles. The camera display shall activate when the right side turn signal is activated.

CAMERA REAR

One (1) Audiovox Voyager heavy duty box shaped HD camera shall be shipped loose for OEM installation in the body to afford the driver a clear view to the rear of the vehicle.

The rear camera display shall activate when the vehicle’s transmission is placed in reverse.

CAMERA DISPLAY

The camera system shall be wired to a single vehicle display and control screen located on the driver’s side dash. The camera system display can be activated through the vehicle display and control screen.

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 four (4) door keys for the manual door locks.

WARRANTY

Purchaser shall receive a Custom Chassis Two (2) Years or 36,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0102. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

CHASSIS OPERATION MANUAL

The chassis operation manual shall be contained in an on board USB digital storage device. The chassis operation manual shall be accessible through a USB port provided in the OBD diagnostic panel.

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 digital copy

(1) Digital copy of the Transmission Operator’s manual

(1) Digital copy of the Engine Owner’s manual

CAB/CHASSIS AS BUILT WIRING DIAGRAMS

Prepared By WYATT COMPTON

Prepared For CHRIS KUZIO

Quote Id : 3106 Bulldog FFA,Revision Level: -3

BULLDOG FIRE APPARATUS

Phone : 605-582-4054

Order Id:

Sales Order Number: 3106 Bulldog FFA

Lead Unit Order Id:

Lead Sales Order Number: 3106
Bulldog FFA

The cab and chassis wiring schematics and option wiring diagrams shall be contained in an on board USB digital storage device. The cab and chassis wiring schematics and option wiring diagrams shall be accessible through a USB port provided in the OBD diagnostic panel.

PAINT CONFIRMATION

There shall be a paint confirmation letter sent to the body manufacturer with paint spray outs to confirm the cab primary paint color or primary and secondary paint color as specified by the paint options.

SALES TERMS

The sale of the 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.