



3500 Shelby Lane
Denton, Texas 76207
GDN P115891
TXDOT MVD No. A115890
EIN 27-4333590

November 16, 2017

Robert Isbell, Chief
Round Rock Fire Department
203 Commerce
Round Rock TX 78664

Proposal for 100` Rear Mount Aluminum Platform

Siddons-Martin Emergency Group, LLC is pleased to provide the following proposal to Round Rock Fire Department. Unit will comply with all specifications attached and made a part of this proposal. Total price includes delivery FOB Round Rock Fire Department and training on operation and use of the apparatus.

Description	Amount
EP804488, No. 539, 2018 Dash CF RMAP Pierce, Dash CF, Aerial, Platform - Alum, DD13 525, 300 gal, PUC 1500 Price guaranteed for 30 days. Delivery within 12-13 months of order date. A warranty term of 12 months is included.	
	Vehicle Price \$ 1,336,950.00
	Equipment \$ 86,363.00
	Trade-In (\$ 86,363.00)
	SUB TOTAL \$ 1,336,950.00
	BuyBoard 491-15 \$ 1,500.00
	TOTAL \$ 1,338,450.00

Additional. The vehicle to be traded in is a 2001 Pierce Dash 100 Aerial Platform - Pierce Job # 12005 - VIN# 4P1CT02E71A001114. The unit will be released to Siddons-Martin Emergency Group when the new unit - Pierce Job 31272 is able to be placed in service.

Taxes. Tax is not included in this proposal. In the event that the purchasing organization is not exempt from sales tax or any other applicable taxes and/or the proposed apparatus does not qualify for exempt status, it is the duty of the purchasing organization to pay any and all taxes due. Balance of sale price is due upon acceptance of the apparatus at the factory.

Late Fee. A late fee of .033% of the sale price will be charged per day for overdue payments beginning ten (10) days after the payment is due for the first 30 days. The late fee increases to .044% per day until the payment is received. In the event a prepayment is received after the due date, the discount will be reduced by the same percentages above increasing the cost of the apparatus.

Cancellation. In the event this proposal is accepted and a purchase order is issued then cancelled or terminated by Customer before completion, Siddons-Martin Emergency Group may charge a cancellation fee. The following charge schedule based on costs incurred may be applied:

- (A) 10% of the Purchase Price after order is accepted and entered by Manufacturer;
- (B) 20% of the Purchase Price after completion of the approval drawings;
- (C) 30% of the Purchase Price upon any material requisition.

The cancellation fee will increase accordingly as costs are incurred as the order progresses through engineering and into manufacturing. Siddons-Martin Emergency Group endeavors to mitigate any such costs through the sale of such product to another purchaser; however, the customer shall remain liable for the difference between the purchase price and, if applicable, the sale price obtained by Siddons-Martin Emergency Group upon sale of the product to another purchaser, plus any costs incurred by Siddons-Martin to conduct such sale.

Acceptance. In an effort to ensure the above stated terms and conditions are understood and adhered to, Siddons-Martin Emergency Group, LLC requires an authorized individual from the purchasing organization sign and date this proposal and include it with any purchase order. Upon signing of this proposal, the terms and conditions stated herein will be considered binding and accepted by the Customer. The terms and acceptance of this proposal will be governed by the laws of the state of TX. No additional terms or conditions will be binding upon Siddons-Martin Emergency Group, LLC unless agreed to in writing and signed by a duly authorized officer of Siddons-Martin Emergency Group, LLC.

Sincerely,

Travis Walden

Siddons-Martin Emergency Group, LLC

I, _____, the authorized representative of Round Rock Fire Department, agree to purchase the proposed and agree to the terms of this proposal and the specifications attached hereto.

Signature & Date

1/6/2017

Page 1 of 1

SHIP TO 1900: Vehicle Maint

DELIVERY DATE
REQUESTED☐ New Vendor (W-9 attached)☐ State (Reg. No. M2462-_____)☐ State PO#☐ HGAC ☐ DIR ☐ TCPN☐ Buy Board ☐ Other:

☐ Blanket – Start Date _____ End Date _____ City Contact Name _____

VENDOR

55618

VENDOR Siddons-Martin Emergency Group

ADDRESS

CITY STATE, ZIP

3500 Shelby Lane

Denton Tx 76201

VENDOR CONTACT NAME

TELEPHONE NUMBER

FAX NUMBER

PERSON CONTACT NAME
Travis Wolden

(S00) 784-6806

E-MAIL ADDRESS

QUOTATIONS RECEIVED:

TOTAL 1,338,450.00

REMARKS Reason for Purchase/Special Instructions/HUB list shall be attached:

PREPARED BY

DEPARTMENT

PURCHASING

FINANCE

White Copy: Finance Yellow Copy: Purchasing Pink Copy: Department Green Copy: ~~Receiving~~

01-25-17



Phone: 800-695-2919
Fax: 800-211-5454
Email: info@buyboard.com

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Vendor Contract Information

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Siddons-Martin Emergency Group

[X]

Price Range

Show all prices

Category

None Selected

Contract

None selected

Vendor Name: Siddons-Martin Emergency Group**Address:** 14233 Interdrive West

Houston, TX 77032

Phone Number: (800) 784-6806**Email:** jdoran@siddons-martin.com**Website:** <http://www.siddons-martin.com>**Federal ID:** 27-4333590**Contact:** Jeffrey Doran**Accepts RFQs:** Yes**Minority Owned:** No**Women Owned:** No**Service-Disabled Veteran Owned:** No**EDGAR:** No**Contract Name:** Fire Apparatus**Contract Description:** Commercial and custom class A pumper/tankers; aerial ladder & aerial platform; non-walk in and walk in rescue vehicles; quick attack and brush type vehicles; optional equipment; repair parts and service**Contract#:** 491-15**Effective Date:** 09/01/2015**Expiration Date:** 08/31/2018**Service Fee:** Vehicles purchase orders are subject to a \$1500 service fee**Payment Terms:** Upon delivery**Delivery Days:** 360**Shipping Terms:** Pre-paid and added to invoice**Freight Terms:** FOB Destination**Ship Via:** Common Carrier**Region Served:** All Texas Regions**States Served:** All States**Additional Info:** Purchase order subject to a \$1500 service fee.**Quote Reference Number:** 491-15**Additional Dealers:** See Extended Exceptions for dealer list.

Contract Documents

EDGAR Notice: [Click to view EDGAR Notice](#)**Proposal Documents:** [Click to view BuyBoard Proposal Documents](#)**Regulatory Notice:** [Click to view Bonding Regulatory Notice](#)**Proposal Files:** [Click to view Vendor Proposal Files Documents](#)

Contact us 800-695-2919

CONTRACT PRICING WORKSHEET
for motor vehicles only

Buy Board Contract 491-15

Contract No.: 491-15

Date: 12/20/2016

Agency:	Round Rock (539)	Contractor:	Siddons-Martin Emergency Group
Contact:	Angelo Luna	Prepared:	Jeff Doran
Phone:	512-218-6625	Phone:	281-442-6806
Fax:	512-671-2780	Fax:	
Email:	aluna@roundrocktexas.gov	Email:	jdoran@siddons-martin.com

Prod. Code:	20	Description:	Arrow 4 door, 400 HP, 100' Platform
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A. Product Item Base Unit Price Per Contractor's Buy Board Contract:	\$ 1,011,698.00
----------------------------------------------------------------------	-----------------

B. Published Options - Itemize below - Attach additional sheet(s) if necessary - Include Option Code in description if applicable.

Description	Cost	Description	Cost
Pierce Field Stock Unit 28024			
Subtotal From Additional Sheet(s):		\$	267,553.00
Subtotal B:		\$	267,553.00

Total Published Options	\$ 1,279,251.00
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C. Unpublished Options - Itemize below / attach additional sheet(s) if necessary.

Description	Cost	Description	Cost
Subtotal From Additional Sheet(s):		\$	57,699.00
Subtotal C:		\$	57,699.00

Check: Total cost of Unpublished Options (C) cannot exceed 25% of the total of the Base Unit Price plus Published Options (A+B).	5%
----------------------------------------------------------------------------------------------------------------------------------	----

D. Other Cost Items Not Itemized Above (e.g. Installation, Freight, Delivery, Etc.)

Description	Cost	Description	Cost
Subtotal D:		\$	-

E. Total Cost Before Any Applicable Trade-In / Other Allowances / Discounts (A+B+C+D)	\$ 1,336,950.00
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Quantity Ordered:	1	X Subtotal of A + B + C + D:	1336950.001	=	Subtotal E:	\$ 1,336,950.00
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F. Buy Board Fee Calculation (From Current Fee Tables) Fee included in pricing	Subtotal F:	\$ 1,500.00
--------------------------------------------------------------------------------	-------------	-------------

Description	Cost	Description	Cost
Chassis Pre-Payment Discount		Rounding factor	
100% Pre-Payment Discount			
Subtotal of column	\$ -	Subtotal of Column	\$ -
Subtotal G:		\$	-

Delivery Date:		H. Total Purchase Price (E+F+G):	\$ 1,338,450.00
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CERTIFICATE OF INTERESTED PARTIES

FORM 1295

1 of 1

Complete Nos. 1 - 4 and 6 if there are interested parties.
Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.

OFFICE USE ONLY CERTIFICATION OF FILING

1 Name of business entity filing form, and the city, state and country of the business entity's place of business.

Siddons Martin Emergency Group, LLC
Houston, TX United States

Certificate Number:
2017-268104

Date Filed:
10/03/2017

Date Acknowledged:

2 Name of governmental entity or state agency that is a party to the contract for which the form is being filed.

City of Round Rock

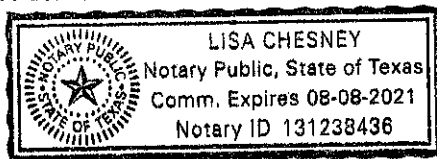
3 Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the services, goods, or other property to be provided under the contract.

100' Aerial Fire Truck
PO# 20180001-00 - 100' Aerial Fire Truck

4	Name of Interested Party	City, State, Country (place of business)	Nature of interest (check applicable)	
			Controlling	Intermediary
	Martin Jr, Leon	Houston, TX United States	X	
	Siddons, Patrick	Houston, TX United States	X	

5 Check only if there is NO Interested Party. ☐

6 AFFIDAVIT



I swear, or affirm, under penalty of perjury, that the above disclosure is true and correct.

Kathryn Williams
Signature of authorized agent of contracting business entity

AFFIX NOTARY STAMP / SEAL ABOVE

Sworn to and subscribed before me, by the said Kathryn Williams, this the 3rd day of October, 2017, to certify which, witness my hand and seal of office.

Lisa Chesney
Signature of officer administering oath

Lisa Chesney
Printed name of officer administering oath

Notary Public
Title of officer administering oath

Proposal for **Round Rock Fire Department**

Prepared by **Siddons-Martin Emergency Group**

12/21/2016



PERFORM. LIKE NO OTHER.™

CONTENTS

GENERAL DESIGN AND CONSTRUCTION.....	21
QUALITY AND WORKMANSHIP	21
DELIVERY.....	22
MANUAL AND SERVICE INFORMATION.....	22
SAFETY VIDEO	22
PERFORMANCE TESTS	22
SERVICE AND WARRANTY SUPPORT.....	23
COMMERCIAL GENERAL LIABILITY INSURANCE	23
SINGLE SOURCE MANUFACTURER	23
NFPA 2016 STANDARDS	24
NFPA COMPLIANCY	24
VEHICLE INSPECTION PROGRAM CERTIFICATION	24
INSPECTION CERTIFICATE.....	24
PUMP TEST	25
GENERATOR TEST.....	25
BREATHING AIR TEST	25
BID BOND	25
PERFORMANCE BOND NOT REQUESTED	26
APPROVAL DRAWING	26
ELECTRICAL WIRING DIAGRAMS	26
DASH CF CHASSIS	27
WHEELBASE	27
GVW RATING.....	27
FRAME.....	27
FRAME REINFORCEMENT	27
FRONT NON DRIVE AXLE.....	27
FRONT SUSPENSION	28
FRONT SHOCK ABSORBERS	29
FRONT OIL SEALS.....	29
FRONT TIRES	29

REAR AXLE	29
TOP SPEED OF VEHICLE.....	29
REAR SUSPENSION.....	29
REAR OIL SEALS	29
REAR TIRES.....	29
TIRE BALANCE.....	30
TIRE PRESSURE MANAGEMENT	30
FRONT HUB COVERS	30
REAR HUB COVERS.....	30
CHROME LUG NUT COVERS	30
VALVE STEM EXTENDERS	30
MUD FLAPS	30
WHEEL CHOCKS	30
WHEEL CHOCK BRACKETS.....	31
ELECTRONIC STABILITY CONTROL	31
ANTI-LOCK BRAKE SYSTEM	31
AUTOMATIC TRACTION CONTROL	31
BRAKES.....	31
AIR COMPRESSOR, BRAKE SYSTEM.....	32
BRAKE SYSTEM	32
BRAKE SYSTEM AIR DRYER.....	32
BRAKE LINES.....	32
AIR INLET/OUTLET	32
ALL WHEEL LOCK-UP	33
AIR COMPRESSOR - BRAKE SYSTEM MAINTENANCE	33
AUTOMATIC MOISTURE EJECTOR(S)	33
COMPRESSION FITTINGS ONLY	33
ENGINE.....	33
REPTO DRIVE.....	34
LOCATION OF FILTERS	34
HIGH IDLE	34

ENGINE BRAKE	34
HYDRAULIC FAN	35
ENGINE AIR INTAKE	35
EXHAUST SYSTEM	35
RADIATOR	35
COOLANT LINES	36
FUEL TANK	36
DIESEL EXHAUST FLUID TANK	37
FUEL COOLER.....	37
TRANSMISSION	37
TRANSMISSION SHIFTER.....	37
TRANSMISSION PROGRAMMING	37
TRANSMISSION COOLER	38
DOWNSHIFT MODE (w/engine brake)	38
TRANSMISSION FLUID	38
DRIVELINE	38
STEERING	38
STEERING WHEEL	38
LOGO AND CUSTOMER DESIGNATION ON DASH	38
BUMPER	39
GRAVEL PAN	39
HOSE TRAY	39
CENTER HOSE TRAY COVER	39
LIFT AND TOW MOUNTS	39
TOW HOOKS.....	39
LICENSE PLATE (Mounting Holes).....	39
FRONT BUMPER LINE-X COATING.....	40
CAB	40
CAB ROOF DRIP RAIL	41
INTERIOR CAB INSULATION	41
FENDER LINERS	41

WINDSHIELD	41
WINDSHIELD WIPERS	42
ENGINE TUNNEL.....	42
CAB REAR WALL EXTERIOR COVERING.....	42
CAB LIFT	42
Cab Lift Interlock.....	43
GRILLE	43
DOOR JAMB SCUFFPLATES.....	43
TRIM BAND ON CAB FACE	43
SIDE OF CAB MOLDING	43
MIRRORS.....	43
DOORS	43
DOOR PANELS	44
RECESSED POCKET WITH ELASTIC COVER.....	44
ELECTRIC OPERATED CAB DOOR WINDOWS	45
CAB STEPS.....	45
CAB and CREW CAB STEP LIGHTS	45
FENDER CROWNS.....	45
CREW CAB WINDOWS	46
WINDOW TINT	46
STORAGE COMPARTMENTS	46
COVER.....	46
EQUIPMENT MOUNTING TRAY(S).....	46
MOUNTING PLATE(S)	47
COMPUTER MOUNTING	47
CAB INTERIOR.....	47
CAB HEADLINER UPHOLSTERY	48
INTERIOR PAINT (Cab)	48
CAB FLOOR	48
CAB DEFROSTER	48
CAB/CREW CAB HEATER.....	49

AIR CONDITIONING	49
INTERIOR CAB INSULATION	50
SPECIAL DRAIN TUBES	50
SUN VISORS	50
GRAB HANDLES.....	50
ENGINE COMPARTMENT LIGHTS.....	51
ACCESS TO ENGINE DIPSTICKS	51
EQUIPMENT DRAWER	52
CAB SAFETY SYSTEM	52
FRONTAL IMPACT PROTECTION	52
SIDE ROLL PROTECTION	53
SEATING CAPACITY	53
DRIVER SEAT.....	53
OFFICER SEAT	54
RADIO COMPARTMENT	55
REAR FACING DRIVER SIDE OUTBOARD SEAT.....	55
REAR FACING PASSENGER SIDE OUTBOARD SEAT	55
FORWARD FACING DRIVER SIDE OUTBOARD SEAT.....	56
FORWARD FACING CENTER EMS COMPARTMENT	57
Compartment Light.....	57
FORWARD FACING PASSENGER SIDE OUTBOARD SEAT.....	57
LOUVERS	58
SEAT UPHOLSTERY	58
AIR BOTTLE HOLDERS.....	58
ARM REST(S).....	58
ARM REST(S).....	58
SHOULDER HARNESS HEIGHT ADJUSTMENT	58
SEAT BELTS	58
HELMET STORAGE.....	59
CAB DOME LIGHTS	59
HAND HELD SPOTLIGHT.....	59

ADDITIONAL HAND HELD LIGHT	59
CAB INSTRUMENTATION	59
GAUGES	59
INDICATOR LAMPS	61
ALARMS	62
INDICATOR LAMP AND ALARM PROVE-OUT	62
CONTROL SWITCHES	63
CUSTOM SWITCH PANELS	64
DIAGNOSTIC PANEL	64
CAB LCD DISPLAY	65
AIR RESTRICTION INDICATOR	65
"DO NOT MOVE APPARATUS" INDICATOR	65
DO NOT MOVE TRUCK MESSAGES	65
SWITCH PANELS	66
WIPER CONTROL	67
HOURLMETER - AERIAL DEVICE	67
AERIAL MASTER	67
AERIAL PTO SWITCH	67
SPARE CIRCUIT	67
SPARE CIRCUIT	67
SPARE CIRCUIT	68
INSTRUMENT PANEL CUTOUT	68
SPECIAL PUC GAUGE LOCATION	68
INFORMATION CENTER	68
GENERAL SCREEN DESIGN	69
HOME/TRANSIT SCREEN	69
ON SCENE SCREEN	69
VIRTUAL BUTTONS	70
PAGE SCREEN	70
VEHICLE DATA RECORDER	72
Seat Belt Monitoring System	72

INTERCOM SYSTEM.....	73
RADIO / INTERCOM INTERFACE INCLUDED	73
UNDER THE HELMET HEADSET.....	73
HEADSET HANGERS	74
COMPLETE MDT INSTALLATION	74
TWO WAY RADIO SPEAKER INSTALLATION	74
TWO WAY RADIO INSTALLATION	74
RADIO ANTENNA MOUNT	74
VEHICLE CAMERA SYSTEM.....	74
VEHICLE CAMERA GUARD	75
KNOX-BOX MOUNTING BRACKET.....	75
KNOX-BOX	75
ELECTRICAL POWER CONTROL SYSTEM	75
SOLID-STATE CONTROL SYSTEM	76
CIRCUIT PROTECTION AND CONTROL DIAGRAM.....	77
ON-BOARD ELECTRICAL SYSTEM DIAGNOSTICS	77
TECH MODULE WITH WIFI.....	77
PROGNOSTICS	78
ADVANCED DIAGNOSTICS	78
INDICATOR LIGHT AND ALARM PROVE-OUT SYSTEM.....	78
VOLTAGE MONITOR SYSTEM	78
DEDICATED RADIO EQUIPMENT CONNECTION POINTS.....	78
ENHANCED SOFTWARE	79
EMI/RFI PROTECTION	79
ELECTRICAL	79
BATTERY SYSTEM	80
ISOLATED BATTERY	81
BATTERY SYSTEM	81
MASTER BATTERY SWITCH.....	81
BATTERY COMPARTMENTS	81
JUMPER STUDS.....	81

BATTERY CHARGER	81
AUTO EJECT FOR SHORELINE	82
ALTERNATOR	82
DUAL USB SOCKET	82
ELECTRONIC LOAD MANAGER	82
SEQUENCER	83
HEADLIGHTS	84
DIRECTIONAL LIGHTS	84
CAB CLEARANCE/MARKER/ID LIGHTS	84
INTERMEDIATE LIGHT	84
PLATFORM CLEARANCE/MARKER/ID LIGHTS	84
FRONT CAB SIDE DIRECTIONAL/MARKER LIGHTS	85
REAR CLEARANCE/MARKER/ID LIGHTING	85
MARKER LIGHTS	86
REAR FMVSS LIGHTING	86
LICENSE PLATE BRACKET	86
LIGHTING BEZEL	86
BACK-UP ALARM	86
CAB PERIMETER SCENE LIGHTS	86
PUMP HOUSE PERIMETER LIGHTS	87
BODY PERIMETER SCENE LIGHTS	87
ADDITIONAL PERIMETER LIGHTS	87
STEP LIGHTS	87
12 VOLT LIGHTING	87
DECK LIGHTS	88
WALKING SURFACE LIGHTS	88
WATER TANK	88
HOSE BED	89
AERIAL HOSE BED HOSE RESTRAINT	90
HOSE BED CROSS DIVIDER	90
RUNNING BOARDS	90

HANDRAILS	90
TURNTABLE STEPS	90
STEP LIGHTS	91
SMOOTH ALUMINUM REAR WALL	91
TOW EYES	91
COMPARTMENTATION	91
AGGRESSIVE WALKING SURFACE	92
LOUVERS	92
COMPARTMENTATION, DRIVER SIDE.....	92
PASSENGER SIDE COMPARTMENTATION.....	93
COMPARTMENT IN PLACE OF TURNTABLE STEPS, PASSENGER SIDE.....	93
ROLL-UP DOOR, SIDE COMPARTMENTS.....	93
COMPARTMENT BLISTER.....	94
REAR BUMPER	94
DOOR GUARD	94
COMPARTMENT LIGHTING.....	94
COMPARTMENT LIGHTING.....	95
MOUNTING TRACKS	95
ADJUSTABLE SHELVES.....	95
SLIDE-OUT ADJUSTABLE HEIGHT TRAY.....	95
ONE WAY HOSE TRAY	95
SLIDE-OUT/TILT-DOWN TRAY	96
SLIDE-OUT FLOOR MOUNTED TRAY.....	96
SLIDE-OUT TOOLBOARD	97
COMPARTMENT FLOOR SCUFFPLATE	97
DRAWER ASSEMBLY	97
COMPARTMENT IPO HOSE CHUTE.....	98
OIL DRY HOPPER	98
FOAM.....	98
VERTICAL COMPARTMENT PARTITION.....	98
ALUMINUM PEGBOARD.....	98

REAR WALL	99
PERMANENTLY MOUNTED SHELF, INVERTED.....	99
RUB RAIL	99
BODY FENDER CROWNS.....	99
HARD SUCTION HOSE	99
FOUR AIR BOTTLE STORAGE COMPARTMENT.....	99
AIR BOTTLE COMPARTMENT STRAP	100
EXTINGUISHER STORAGE.....	100
EXTENSION LADDER.....	100
AERIAL EXTENSION LADDER	100
ROOF LADDER.....	100
ADDED ROOF LADDER.....	100
AERIAL FOLDING LADDER	100
GROUND LADDER STORAGE.....	100
LADDER STORAGE LIGHTING.....	101
DURA-SURF LADDER SLIDES	101
NESTED LADDER STORAGE.....	101
BACKBOARD STORAGE	101
PIKE POLES - 12FT	101
8' PIKE POLE.....	101
ADDITIONAL PIKE POLE(S)	101
6' PIKE POLE.....	102
8' PIKE POLE	102
PIKE POLE STORAGE	102
PIKE POLE STORAGE	102
PIKE POLE STORAGE MODIFICATION.....	102
PUMP.....	102
PUMP MOUNTING.....	103
MECHANICAL SEALS.....	103
PUMP GEAR CASE.....	103
CLUTCH.....	104

PUMPING MODE.....	104
PUMP SHIFT.....	105
TRANSMISSION LOCK UP.....	105
AUXILIARY COOLING SYSTEM.....	105
INTAKE RELIEF VALVE.....	105
PRESSURE CONTROLLER	105
PRIMING PUMP.....	107
PUMP MANUALS	107
PLUMBING, STAINLESS STEEL AND HOSE	107
MAIN PUMP INLETS	107
MAIN PUMP INLET CAP.....	108
INLET BUTTERFLY VALVE	108
VALVES.....	108
LEFT SIDE INLET.....	108
ADAPTER, INLET.....	108
ANODE, INLET	109
INLET CONTROL	109
INLET BLEEDER VALVE	109
TANK TO PUMP	109
TANK REFILL.....	109
LEFT SIDE DISCHARGE OUTLETS	109
RIGHT SIDE DISCHARGE OUTLETS.....	109
LARGE DIAMETER DISCHARGE OUTLET	110
FRONT DISCHARGE OUTLET	110
DISCHARGE CAPS.....	110
OUTLET BLEEDER VALVE	110
LARGE DIAMETER OUTLET ADAPTER.....	110
ADAPTERS.....	111
DISCHARGE OUTLET CONTROLS	111
AERIAL OUTLET	111
CROSSLAY HOSE BEDS	111

SPEEDLAY HOSE RESTRAINT.....	112
FOAM PROPORTIONER.....	112
System Capacity.....	112
Control System.....	112
Low Level, Foam Tank.....	113
Hydraulic Drive System.....	113
Foam Concentrate Pump.....	113
External Foam Concentrate Connection	114
Panel Mounted Strainer/External Pick-Up Connection	114
Pick-Up Hose	114
Discharges.....	114
System Electrical Load	114
Foam Supply Valve.....	114
Maintenance Message.....	114
Flush System.....	114
SINGLE FOAM TANK REFILL	115
FOAM CELL	115
FOAM TANK DRAIN	115
PUC MODULE.....	116
PUMP CONTROL PANELS (Left Side Control).....	116
PASSENGER SIDE PUC MODULE COMPARTMENT	117
PUMP PANEL CONFIGURATION.....	117
PUMP OPERATOR'S PLATFORM	117
PUMP OPERATOR'S PLATFORM PERIMETER LIGHT	117
PUMP AND GAUGE PANEL	117
PUMP AND PLUMBING ACCESS	118
PUMP COMPARTMENT LIGHTING	118
AIR HORN SWITCH.....	119
VACUUM AND PRESSURE GAUGES	119
PRESSURE GAUGES.....	119
WATER LEVEL GAUGE.....	120

MINI SLAVE UNIT	120
FOAM LEVEL GAUGE	120
SIDE CONTROL PUMP OPERATOR'S/PUMP PANEL LIGHTING	120
AIR HORN SYSTEM.....	121
Air Horn Location.....	121
AIR HORN CONTROL	121
ELECTRONIC SIREN	121
SPEAKERS.....	121
AUXILIARY MECHANICAL SIREN	121
MECHANICAL SIREN CONTROL	121
SIREN BRAKE SWITCH	122
FRONT ZONE UPPER WARNING LIGHTS.....	122
FRONT ZONE UPPER LIGHTING, PLATFORM.....	122
ADDITIONAL WARNING LIGHTS	123
ADDITIONAL BASKET WARNING LIGHTS.....	123
COVER, TRAFFIC LIGHT CONTROLLER	123
TRAFFIC LIGHT CONTROLLER.....	123
CAB FACE WARNING LIGHTS	123
HEADLIGHT FLASHER.....	124
SIDE ZONE LOWER LIGHTING.....	124
INTERIOR COMPARTMENT DOOR WARNING LIGHTS	124
ADDITIONAL SIDE UPPER LIGHTS	125
REAR ZONE LOWER LIGHTING.....	125
REAR BODY WARNING LIGHTS	125
WARNING LIGHTS (Rear and Side upper zones).....	125
ELECTRICAL SYSTEM GENERAL DESIGN for ALTERNATING CURRENT	126
General	126
Grounding	126
Operation.....	127
Overcurrent protection	127
Wiring Identification.....	128

Wet Locations	128
Dry Locations.....	128
Listing	128
Electrical System Testing	128
Operational Test per Current NFPA 1901 Standard	129
GENERATOR	129
Generator Instruments and Controls	129
GENERATOR LOCATION	129
GENERATOR START.....	129
CIRCUIT BREAKER PANEL	130
RECESSED CIRCUIT BREAKER BOX	130
GENERATOR PTO MOUNTING LOCATION.....	130
REMOTE LIGHT SWITCH.....	130
ELECTRIC CORD REEL	130
CORD	130
PORTABLE JUNCTION BOX.....	130
THREE SECTION 100 FOOT AERIAL PLATFORM	131
GENERAL INFORMATION.....	131
OPERATION ON GRADES	131
CONSTRUCTION STANDARDS.....	131
LADDER CONSTRUCTION	132
VERTICAL HEIGHT	133
HORIZONTAL REACH	133
OPERATION RANGE	133
MOUNTING OF ELEVATING PLATFORM.....	133
TORQUE BOX.....	133
TURNTABLE.....	133
ELEVATION SYSTEM	134
EXTENSION/RETRACTION SYSTEM.....	135
ROTATION SYSTEM	135
MANUAL OVERRIDE CONTROLS.....	136

LADDER SLIDE MECHANISM	136
BASKET LEVELING SYSTEM	136
ROTATION INTERLOCK	136
LOAD CAPACITIES	137
35 MPH WIND CONDITIONS/WATERWAY DRY	137
35 MPH WIND CONDITIONS/WATERWAY CHARGED	137
LADDER CRADLE INTERLOCK SYSTEM.....	138
BOOM SUPPORT	138
TORQUE BOX MODIFIED	138
AERIAL BOOM SUPPORT LIGHT	138
BOOM SUPPORT COMPARTMENT DIRECTLY BEHIND THE CAB	138
TORQUE BOX MODIFIED	139
AERIAL BOOM PANEL	139
PIKE POLE MOUNTING BRACKETS	139
LADDER STORAGE MOUNTING BRACKETS	139
STOKES AND MISCELLANEOUS STORAGE BOX.....	139
PIKE POLE MOUNTING BRACKETS	140
BASKET STRUCTURE.....	140
BASKET SIDES	140
PLATFORM ENTRANCES/EXITS	140
ACCESSORY MOUNTING RECEPTACLES.....	141
LADDER BELT BOX AT PLATFORM	141
MULTIPLEX DISPLAY COVER	141
AXE MOUNTING BRACKETS.....	141
BASKET LANDING PAD EXTENSIONS	141
LIGHTS FOR TURNTABLE WALKWAY	141
BASKET HEAT SHIELDS	141
INFORMATION CENTER	142
OPERATION	142
GENERAL SCREEN DESIGN	142
PAGE SCREENS.....	143

LOWER CONTROL STATION	145
AERIAL DEVICE CONTROL STATIONS	145
TURNTABLE CONTROL STATION.....	146
TURNTABLE WORK LIGHTS	146
BASKET CONTROL CONSOLE.....	146
AERIAL FUNCTION CONTROLS.....	146
HIGH IDLE	147
STABILIZERS	147
STABILIZER CONTROLS.....	147
STABILIZER PADS	148
AUXILIARY STABILIZER PADS	148
CRADLE INTERLOCK SYSTEM.....	149
STABILIZER PINS	149
STABILIZER CONTROL BOX ALUMINUM DOOR.....	149
HYDRAULIC SYSTEM	149
HYDRAULIC RESERVOIR.....	149
HYDRAULIC FILTERS	150
HYDRAULIC CYLINDERS.....	150
POWER TAKEOFF / HYDRAULIC PUMP	150
EMERGENCY PUMP.....	150
HYDRAULIC SWIVEL.....	151
ELECTRIC SWIVEL	151
WATER SWIVEL	151
13-BIT ABSOLUTE ENCODER.....	151
ELECTRICAL SYSTEM	151
TRACKING LIGHTS.....	153
LIGHTING ON AERIAL LADDER.....	154
STABILIZER WARNING LIGHTS	154
STABILIZER BEAM WARNING LIGHTS.....	154
STABILIZER SCENE LIGHTS.....	154
PLATFORM 120-VOLT ELECTRIC SYSTEM	154

FRONT OF PLATFORM 240 VOLT LIGHTING	155
240 VOLT UNDER PLATFORM LIGHTING.....	155
COMMUNICATION SYSTEM.....	155
<i>Lyfe</i> Combo™BRACKETS	155
AERIAL TURNTABLE MANSAVER™ BARS	156
AERIAL WATERWAY	156
WATERWAY SEALS.....	156
PLATFORM WATER SYSTEM	157
AERIAL MONITOR	157
WATERWAY FLOWMETER.....	157
REAR INLET	157
STORZ INLET ADAPTER.....	157
MANUALS.....	157
INITIAL INSTRUCTION	158
LOOSE EQUIPMENT.....	158
NFPA REQUIRED LOOSE EQUIPMENT PROVIDED BY FIRE DEPARTMENT.....	158
SOFT SUCTION HOSE PROVIDED BY FIRE DEPARTMENT.....	159
DRY CHEMICAL EXTINGUISHER PROVIDED BY FIRE DEPARTMENT.....	159
WATER EXTINGUISHER PROVIDED BY FIRE DEPARTMENT.....	159
FLATHEAD AXE PROVIDED BY FIRE DEPARTMENT.....	160
PICKHEAD AXE PROVIDED BY FIRE DEPARTMENT.....	160
PAINT.....	160
PAINT - ENVIRONMENTAL IMPACT.....	161
PAINT CHASSIS FRAME ASSEMBLY	162
PAINT, REAR WHEELS	162
COMPARTMENT INTERIOR PAINT	163
AERIAL TURNTABLE PAINT COLOR.....	163
REFLECTIVE STRIPES	163
CHEVRON STRIPING ON THE FRONT BUMPER	163
REAR CHEVRON STRIPING.....	163
REFLECTIVE STRIPE ON STABILIZERS	164

"Z" JOG IN REFLECTIVE STRIPE	164
TOOLBOARD DIAMOND GRADE CHEVRON STRIPING	164
SLIDE OUT TRAY DIAMOND GRADE CHEVRON STRIPING.....	164
DIAMOND GRADE CHEVRON STRIPE.....	164
REFLECTIVE STRIPE ON REAR FENDERS	164
CHEVRON STRIPING ON THE FRONT BUMPER	164
CHEVRON, INVERTED "V" STRIPING ON CABDOORS	164
LETTERING.....	164
LETTERING.....	165
LETTERING.....	165
LETTERING.....	165
LETTERING.....	165
LETTERING.....	165
CAB GRILLE DESIGN	165
EMBLEM	165
EMBLEM	165
EMBLEM	165
PRECONSTRUCTION & FINAL INSPECTION TRIP	165
FIRE APPARATUS PARTS CD MANUAL	167
SERVICE PARTS INTERNET SITE	167
CHASSIS SERVICE CD MANUALS	167
CHASSIS OPERATION CD MANUALS	168
TRANSMISSION MANUAL(S).....	168
ENGINE MANUALS	168
ONE (1) YEAR MATERIAL AND WORKMANSHIP	168
ENGINE WARRANTY	168
STEERING GEAR WARRANTY	168
FIFTY (50) YEAR STRUCTURAL INTEGRITY	168
FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY	168
REAR AXLE TWO (2) YEAR MATERIAL AND WORKMANSHIP WARRANTY	168
ABS BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY	168

TEN (10) YEAR STRUCTURAL INTEGRITY	169
TEN (10) YEAR PRO-RATED PAINT AND CORROSION	169
FIVE (5) YEAR MATERIAL AND WORKMANSHIP	169
CAMERA SYSTEM WARRANTY	169
COMPARTMENT LIGHT WARRANTY	169
TRANSMISSION WARRANTY	169
TRANSMISSION COOLER WARRANTY	169
WATER TANK WARRANTY	169
TEN (10) YEAR STRUCTURAL INTEGRITY	169
ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY	169
SIX (6) YEAR MATERIAL AND WORKMANSHIP	169
TEN (10) YEAR PUMP PLUMBING WARRANTY	170
FOAM SYSTEM WARRANTY	170
TWENTY (20) YEAR AERIAL DEVICE STRUCTURAL INTEGRITY WARRANTY	170
AERIAL SWIVEL WARRANTY	170
HYDRAULIC SYSTEM COMPONENTS WARRANTY	170
HYDRAULIC SEAL WARRANTY	170
AERIAL WATERWAY WARRANTY	170
FOUR (4) YEAR PRO-RATED PAINT AND CORROSION	170
FIVE (5) YEAR MATERIAL AND WORKMANSHIP	170
SIX (6) YEAR GENERATOR MATERIAL AND WORKMANSHIP WARRANTY	170
TEN (10) YEAR PRO-RATED PAINT AND CORROSION	170
ONE (1) YEAR MATERIAL AND WORKMANSHIP	170
VEHICLE STABILITY CERTIFICATION	171
ENGINE INSTALLATION CERTIFICATION	171
POWER STEERING CERTIFICATION	171
CAB INTEGRITY CERTIFICATION	171
CAB DOOR DURABILITY CERTIFICATION	172
WINDSHIELD WIPER DURABILITY CERTIFICATION	172
ELECTRIC WINDOW DURABILITY CERTIFICATION	172
SEAT BELT ANCHOR STRENGTH	172

SEAT MOUNTING STRENGTH.....	172
CAB DEFROSTER CERTIFICATION	172
CAB HEATER CERTIFICATION	172
CAB AIR CONDITIONING PERFORMANCE CERTIFICATION	173
AMP DRAW REPORT	173

Siddons-Martin Emergency Group is pleased to submit a proposal to Round Rock Fire Department for a **Pierce® 100' Aerial Platform** per your request for quotation. The following paragraphs will describe in detail the apparatus, construction methods, and equipment proposed. This proposal will indicate size, type, model and make of components parts and equipment, providing proof of compliance with each and every item (except where noted) in the departments advertised specifications.

PIERCE MANUFACTURING was founded in 1913. Since then we have been building bodies with one philosophy, "BUILD THE FINEST". Our skilled craftsmen take pride in their work, which is reflected, in the final product. We have been building fire apparatus since the early "forties" giving Pierce Manufacturing over 60 years of experience in the fire apparatus market. Pierce Manufacturing has built and put into service more than 51,000 apparatus, including more than 27,000 on Pierce custom chassis designed and built specifically for fire and emergency applications. Our Appleton, Wisconsin facility has over 757,000 total square feet of floor space situated on approximately 97 acres of land. Our Bradenton, Florida facility has 300,000 square feet of floor space situated on approximately 38 acres of land.

Our beliefs in high ethical standards are carried through in all of our commitments and to everyone with whom we do business. Honesty, Integrity, Accountability and Citizenship are global tenets by which we all live and work. Consequently, we neither engage in, nor have we ever been convicted of price fixing, bid rigging, or collusion in any domestic or international fire apparatus market.

Pierce has only one brand of fire apparatus "Pierce", ensuring you are receiving top of the line product that meets your specification.

In accordance with the current edition of NFPA 1901 standards, this proposal will specify whether the fire department, manufacturer, or apparatus dealership will provide required loose equipment.

Images and illustrative material in this proposal are as accurate as known at the time of publication, but are subject to change without notice. Images and illustrative material is for reference only, and may include optional equipment and accessories and may not include all standard equipment.

GENERAL DESIGN AND CONSTRUCTION

To control quality, ensure compatibility, and provide a single source for service and warranty, the custom cab, chassis, pump module and body will be entirely designed, assembled/welded and painted in Pierce owned manufacturing facilities. This includes, but not limited to the cab weldment, the pumphouse module assembly, the chassis assembly, the body and the electrical system.

QUALITY AND WORKMANSHIP

Pierce has set the pace for quality and workmanship in the fire apparatus field. Our tradition of building the highest quality units with craftsmen second to none has been the rule right from the beginning and we demonstrate that ongoing commitment by: Ensuring all steel welding follows American Welding Society D1.1-2004 recommendations for structural steel welding. All aluminum welding follows American Welding society and ANSI D1.2-2003 requirements for structural welding of aluminum. All

sheet metal welding follows American welding Society B2.1-2000 requirements for structural welding of sheet metal. Our flux core arc welding uses alloy rods, type 7000 and is performed to American Welding Society standards A5.20-E70T1. Furthermore, all employees classified as welders are tested and certified to meet the American welding Society codes upon hire and every three (3) years thereafter. Pierce also employs an American Welding Society certified welding inspector in plant during working hours to monitor weld quality.

Pierce Manufacturing operates a Quality Management System under the requirements of ISO 9001. These standards sponsored by the International Organization for Standardization (ISO) specify the quality systems that are established by the manufacturer for design, manufacture, installation and service. A copy of the certificate of compliance is included with this proposal.

In addition to the Quality Management system, we also employ a Quality Achievement Supplier program to insure the vendors and suppliers that we utilize meet the high standards we demand. That is just part of our overall "Quality at the Source" program at Pierce.

To demonstrate the quality of our products and services, a list of at least two (2) fire departments/municipalities that have purchased vehicles for a second time is provided.

DELIVERY

The apparatus will be delivered under its own power to insure proper break-in of all components while the apparatus is still under warranty. A qualified delivery representative shall deliver the apparatus and remain for a sufficient length of time to instruct personnel in proper operation, care and maintenance of the equipment delivered.

MANUAL AND SERVICE INFORMATION

At time of delivery, complete operation and maintenance manuals covering the apparatus will be provided. A permanent plate will be mounted in the driver's compartment specifying the quantity and type of fluids required including engine oil, engine coolant, transmission, pump transmission lubrication, pump primer and drive axle.

SAFETY VIDEO

At the time of delivery Pierce will also provide one (1) 39-minute, professionally produced apparatus safety video, in DVD format. This video will address key safety considerations for personnel to follow when they are driving, operating, and maintaining the apparatus, including the following: vehicle pre-trip inspection, chassis operation, pump operation, aerial operation, and safety during maintenance.

PERFORMANCE TESTS

A road test will be conducted with the apparatus fully loaded and a continuous run of no less than ten (10) miles. During that time the apparatus will show no loss of power nor will it overheat. The transmission drive shaft or shafts and the axles will run quietly and be free of abnormal vibration or noise. The apparatus when fully loaded will not have less than 25 percent nor more than 50 percent on

the front axle, and not less than 50 percent nor more than 75 percent on the rear axle. The apparatus will meet NFPA 1901 acceleration and braking requirements.

SERVICE AND WARRANTY SUPPORT

Pierce dealership support will be provided by Siddons-Martin Emergency Group by operating a Pierce authorized service center. The service center will have factory-trained mechanics on staff versed in Pierce fire apparatus. The service facility will be located within fifty (50) miles of the fire department.

In addition to the dealership, Pierce has service facilities located in both, Weyauwega, Wisconsin and Bradenton, Florida. Pierce also maintains a dedicated parts facility of over 100,000 square feet in Appleton, Wisconsin. The parts facility stocks in excess of \$5,000,000 in parts dedicated to service and replacement parts. The parts facility employs a staff dedicated solely for the distribution and shipment of service and replacement parts.

Service parts for the apparatus being proposed can be found via Pierceparts.com which, is an interactive online tool that delivers information regarding your specific apparatus as well as the opportunity to register for training classes.

As a Pierce customer you have the ability to view the complete bill of materials for your specific apparatus, including assembly drawings, piece part drawings, and beneficial parts notations. You will also have the ability to search the complete Pierce item master through a parts search function which offers all Pierce SKU's and descriptions offered on all Pierce apparatus. Published component catalogs, which include proprietary systems along with an extensive operators manual library is available for easy reference.

Pierce Manufacturing maintains a dedicated service and warranty staff of over 35 personnel, dedicated to customer support, which also maintains a 24 hour 7 day a week toll free hot line, four (4) on staff EVTs, and offers hands-on repair and maintenance training classes multiple times a year.

COMMERCIAL GENERAL LIABILITY INSURANCE

Certification of insurance coverage will be enclosed.

SINGLE SOURCE MANUFACTURER

Pierce Manufacturing, Inc. provides an integrated approach to the design and manufacture of our products that delivers superior apparatus and a dedicated support team. From our facilities, the chassis, cab weldment, cab, pump house (including the sheet metal enclosure, valve controls, piping and operators panel) body and aerial device will be entirely designed, tested, and hand assembled to the customer's exact specifications. The electrical system either hardwired or multiplexed, will be both designed and integrated by Pierce Manufacturing. The warranties relative to these major components (excluding component warranties such as engine, transmission, axles, pump, etc.) will be provided by Pierce as a single source manufacturer. Pierce's single source solution adds value by providing a fully engineered product that offers durability, reliability, maintainability, performance, and a high level of quality.

Your apparatus will be manufactured in Appleton, Wisconsin.

NFPA 2016 STANDARDS

This unit will comply with the NFPA standards effective January 1, 2016, except for fire department directed exceptions. These exceptions will be set forth in the Statement of Exceptions.

Certification of slip resistance of all stepping, standing and walking surfaces will be supplied with delivery of the apparatus.

All horizontal surfaces designated as a standing or walking surface that are greater than 48.00" above the ground must be defined by a 1.00" wide line along its outside perimeter. Perimeter markings and designated access paths to destination points will be identified on the customer approval print and are shown as approximate. Actual location(s) will be determined based on materials used and actual conditions at final build. Access paths may pass through hose storage areas and opening or removal of covers or restraints may be required. Access paths may require the operation of devices and equipment such as the aerial device or ladder rack.

A plate that is highly visible to the driver while seated will be provided. This plate will show the overall height, length, and gross vehicle weight rating.

The manufacturer will have programs in place for training, proficiency testing and performance for any staff involved with certifications.

An official of the company will designate, in writing, who is qualified to witness and certify test results.

NFPA COMPLIANCY

Apparatus proposed by the bidder will meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current edition at time of contract execution. Fire department's specifications that differ from NFPA specifications will be indicated in the proposal as "non-NFPA".

VEHICLE INSPECTION PROGRAM CERTIFICATION

To assure the vehicle is built to current NFPA standards, the apparatus, in its entirety, will be third-party, audit-certified through Underwriters Laboratory (UL) that it is built and complies to all applicable standards in the current edition of NFPA 1901. The certification will include: all design, production, operational, and performance testing of not only the apparatus, but those components that are installed on the apparatus.

A placard will be affixed in the driver's side area stating the third party agency, the date, the standard and the certificate number of the whole vehicle audit.

INSPECTION CERTIFICATE

A third party inspection certificate for the aerial device will be furnished upon delivery of the aerial device. The certificate will be Underwriters Laboratories Inc. Type 1 and will indicate that the aerial device has been inspected on the production line and after final assembly.

Visual structural inspections will be performed on all welds on both aluminum and steel ladders.

On critical weld areas, or on any suspected defective area, the following tests will be conducted:

- Magnetic particle inspection will be conducted on steel aerials to assure the integrity of the weldments and to detect any flaws or weaknesses. Magnets will be placed on each side of the weld while iron powder is placed on the weld itself. The powder will detect any crack that may exist. This test will conform to ASTM E709 and be performed prior to assembly of the aerial device.
- A liquid penetrant test will be conducted on aluminum aerials to assure the integrity of the weldments and to detect any flaws or weaknesses. This test will conform to ASTM E165 and be performed prior to assembly of the aerial device.
- Ultrasonic inspection will be conducted on all aerials to detect any flaws in pins, bolts and other critical mounting components.

In addition to the tests above, functional tests, load tests, and stability tests will be performed on all aerials. These tests will determine any unusual deflection, noise, vibration, or instability characteristics of the unit.

PUMP TEST

The pump will be tested, approved and certified by Underwriter's Laboratory at the manufacturer's expense. The test results and the pump manufacturer's certification of hydrostatic test; the engine manufacturer's certified brake horsepower curve; and the manufacturer's record of pump construction details will be forwarded to the Fire Department.

GENERATOR TEST

If the unit has a generator, the generator will be tested, approved, and certified by Underwriters Laboratories at the manufacturer's expense. The test results will be provided to the Fire Department at the time of delivery.

BREATHING AIR TEST

If the unit has breathing air, Pierce Manufacturing will draw an air sample from the air system and certify that the air quality meets the requirements of NFPA 1989, *Standard on Breathing Air Quality for Fire and Emergency Services Respiratory Protection*.

BID BOND

A bid bond as security for the bid in the form of a 10% bid bond will be provided with the proposal. This bid bond will be issued by a Surety Company who is listed on the U.S. Treasury Departments list of acceptable sureties as published in Department Circular 570. The bid bond will be issued by an authorized representative of the Surety Company and will be accompanied by a certified power of attorney dated on or before the date of bid. The bid bond will include language which assures that the bidder/principal will give a bond or bonds, as may be specified in the bidding or contract documents,

with good and sufficient surety for the faithful performance of the contract, including the Basic One (1) Year Limited Warranty, and for the prompt payment of labor and material furnished in the prosecution of the contract.

Notwithstanding any document or assertion to the contrary, any surety bond related to the sale of a vehicle will apply only to the Basic One (1) Year Limited Warranty for such vehicle. Any surety bond related to the sale of a vehicle will not apply to any other warranties that are included within this bid (OEM or otherwise) or to the warranties (if any) of any third party of any part, component, attachment or accessory that is incorporated into or attached to the vehicle. In the event of any contradiction or inconsistency between this provision and any other document or assertion, this provision will prevail.

PERFORMANCE BOND NOT REQUESTED

A performance bond will not be included. If requested at a later date, one will be provided to you for an additional cost and the following will apply:

The successful bidder will furnish a Performance and Payment bond (Bond) equal to 100 percent of the total contract amount within 30 days of the notice of award. Such Bond will be in a form acceptable to the Owner and issued by a surety company included within the Department of Treasury's Listing of Approved Sureties (Department Circular 570) with a minimum A.M. Best Financial Strength Rating of A and Size Category of XV. In the event of a bond issued by a surety of a lesser Size Category, a minimum Financial Strength rating of A+ is required.

Bidder and Bidder's surety agree that the Bond issued hereunder, whether expressly stated or not, also includes the surety's guarantee of the vehicle manufacturer's Bumper to Bumper warranty period included within this proposal. Owner agrees that the penal amount of this bond will be simultaneously amended to 25 percent of the total contract amount upon satisfactory acceptance and delivery of the vehicle(s) included herein. Notwithstanding anything contained within this contract to the contrary, the surety's liability for any warranties of any type will not exceed three (3) years from the date of such satisfactory acceptance and delivery, or the actual Bumper to Bumper warranty period, whichever is shorter.

APPROVAL DRAWING

A drawing of the proposed apparatus will be prepared and provided to the purchaser for approval before construction begins. The Pierce sales representative will also be provided with a copy of the same drawing. The finalized and approved drawing will become part of the contract documents. This drawing will indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc.

A "revised" approval drawing of the apparatus will be prepared and submitted by Pierce to the purchaser showing any changes made to the approval drawing.

ELECTRICAL WIRING DIAGRAMS

Two (2) electrical wiring diagrams, prepared for the model of chassis and body, will be provided.

DASH CF CHASSIS

The Dash® CF is a custom chassis developed exclusively for the fire service. Chassis provided will be a new, tilt-type, cab-forward, custom fire apparatus. The chassis and cab will be manufactured in the apparatus body builder's facility eliminating any split warranty responsibility. To ensure years of reliable service, capacity for the intended load to be sustained, and the type of service required, the chassis will be designed and manufactured for heavy-duty service, utilizing heavy duty 13.00" frame rails, crossmembers, and cab construction as described elsewhere in this proposal.

WHEELBASE

The wheelbase of the vehicle will be 267.50".

GVW RATING

The gross vehicle weight rating will be 84,000 #.

FRAME

The chassis frame will be built with two (2) steel channels bolted to five (5) cross members or more, depending on other options of the apparatus. The side rails will have a 13.38" tall web over the front and mid sections of the chassis, with a continuous smooth taper to 10.75" over the rear axle. Each rail will have a section modulus of 25.992 cubic inches and a resisting bending moment (rbm) of 3,119,040 in-lb over the critical regions of the frame assembly, with a section modulus of 18.96 cubic inches with an rbm of 2,275,200 in-lb over the rear axle. The frame rails will be constructed of 120,000 psi yield strength heat-treated 0.38" thick steel with 3.50" wide flanges.

FRAME REINFORCEMENT

In addition, a full-length mainframe internal "C" liner will be provided. The liner will be an internal "C" design that steps to a smaller internal "C" design over the rear axle. It will be heat-treated steel measuring 12.50" x 3.00" x 0.25" through the front "C" portion of the liner, stepping to 9.38" x 3.00" x 0.25" through the rear "C" portion of the liner. Each liner will have a section modulus of 13.58 cubic inches, yield strength of 110,000 psi, and rbm of 857,462 in-lb. Total rbm at wheelbase center will be 4,391,869 in-lb.

The frame liner will be mounted inside of the chassis frame rail and extend the full length of the frame.

FRONT NON DRIVE AXLE

The Oshkosh TAK-4® front axle will be of the independent suspension design with a ground rating of 24,000 lb.

Upper and lower control arms will be used on each side of the axle. Upper control arm castings will be made of 100,000-psi yield strength 8630 steel and the lower control arm casting will be made of 55,000-psi yield ductile iron.

The center cross members and side plates will be constructed out of 80,000-psi yield strength steel.

Each control arm will be mounted to the center section using elastomer bushings. These rubber bushings will rotate on low friction plain bearings and be lubricated for life. Each bushing will also have a flange end to absorb longitudinal impact loads, reducing noise and vibrations.

There will be nine (9) grease fittings supplied, one (1) on each control arm pivot and one (1) on the steering gear extension.

The upper control arm will be shorter than the lower arm so that wheel end geometry provides positive camber when deflected below rated load and negative camber above rated load.

Camber at load will be zero degrees for optimum tire life.

The ball joint bearing will be of low friction design and be maintenance free.

Toe links that are adjustable for alignment of the wheel to the center of the chassis will be provided.

The wheel ends must have little to no bump steer when the chassis encounters a hole or obstacle.

The steering linkage will provide proper steering angles for the inside and outside wheel, based on the vehicle wheelbase.

The axle will have a third party certified turning angle of 45 degrees. Front discharge, front suction, or aluminum wheels will not infringe on this cramp angle.

FRONT SUSPENSION

Front Oshkosh TAK-4™ independent suspension will be provided with a minimum ground rating of 24,000 lb.

The independent suspension system has been designed to provide maximum ride comfort. The design will allow the vehicle to travel at highway speeds over improved road surfaces and at moderate speeds over rough terrain with minimal transfer of road shock and vibration to the vehicle's crew compartment.

Each wheel will have a torsion bar type spring. In addition, each front wheel end will also have energy absorbing jounce bumpers to prevent bottoming of the suspension.

The suspension design will be such that there is at least 10.00" of total wheel travel and a minimum of 3.75" before suspension bottoms.

The torsion bar anchor lock system allows for simple lean adjustments, without the use of shims. One can adjust for a lean within 15 minutes per side. Anchor adjustment design is such that it allows for ride height adjustment on each side.

The independent suspension was put through a durability test that simulated 140,000 miles of inner city driving.

FRONT SHOCK ABSORBERS

KONI heavy-duty telescoping shock absorbers will be provided on the front suspension.

FRONT OIL SEALS

Oil seals with viewing window will be provided on the front axle.

FRONT TIRES

Front tires will be Goodyear 425/65R22.50 radials, 20 ply G296 tread, rated for 24,400 lb maximum axle load and 68 mph maximum speed.

The tires will be mounted on Alcoa© 22.50" x 12.25" Dura-Bright® polished aluminum disc type wheels with a ten (10) stud, 11.25" bolt circle.

REAR AXLE

The rear axle will be a Meritor™, Model RT58-185, tandem axle assembly with a capacity of 60,000 lb.

An inter-axle differential, which divides torque evenly between axles, will be provided, with an indicator light mounted on the cab instrument panel.

TOP SPEED OF VEHICLE

A rear axle ratio will be furnished to allow the vehicle to reach a top speed of 60 mph.

REAR SUSPENSION

Rear suspension will be a Hendrickson Model FMX 622 EX, air ride with a ground rating of 62,000 lb. The suspension will have the following features:

- Outboard vertical mounted heavy-duty shock absorbers
- Utilizes track bars and torque rods to restrict lateral axle movement and maintain constant pinion angles
- Super heavy-duty transverse beam to help reduce axle stress while increasing roll stability or resistance to lean
- Low spring rate air springs for excellent ride quality
- Dual height control valves to maintain level vehicle from side to side

REAR OIL SEALS

Oil seals will be provided on the rear axle(s).

REAR TIRES

Rear tires will be eight (8) Goodyear 315/80R22.5 radials, load range L, all position G751 tread, rated for 66,160 lb maximum axle load and 68 mph maximum speed.

The outside tires will be mounted on Alcoa© 22.50" x 9.00" polished aluminum, with Dura-Bright® finish, disc wheels with a ten (10) stud, 11.25" bolt circle.

The inside tires will be mounted on 22.50" x 9.00" steel disc wheels with a ten (10) stud, 11.25" bolt circle.

TIRE BALANCE

All tires will be balanced with Counteract balancing beads. The beads will be inserted into the tire and eliminate the need for wheel weights.

TIRE PRESSURE MANAGEMENT

There will be a VECSAFE LED tire alert pressure management system provided that will monitor each tire's pressure. A chrome plated brass sensor will be provided on the valve stem of each tire for a total of 10 tires.

The sensor will calibrate to the tire pressure when installed on the valve stem for pressures between 20 and 120 psi. The sensor will activate an integral battery operated LED when the pressure of that tire drops 8 psi.

Removing the cap from the sensor will indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED will immediately start blinking.

FRONT HUB COVERS

Stainless steel hub covers will be provided on the front axle. An oil level viewing window will be provided.

REAR HUB COVERS

Stainless steel, high hat, hub covers will be provided on the rear axle hubs.

CHROME LUG NUT COVERS

Chrome lug nut covers will be supplied on front and rear wheels.

VALVE STEM EXTENDERS

RealWheel® stainless steel braided hooked valve stem extenders will be installed on the valve stems of the rear outside wheels. The extenders will allow the tire pressure monitor cap to face the outside.

MUD FLAPS

Mud flaps with a Pierce logo will be installed behind the front and rear wheels.

WHEEL CHOCKS

There will be one (1) pair of folding Ziamatic, Model SAC-44-E, aluminum alloy, Quick-Choc wheel blocks, with easy-grip handle provided.

WHEEL CHOCK BRACKETS

There will be one (1) pair of Zico, Model SQCH-44-H, horizontal mounting wheel chock brackets provided for the Ziamatic, Model SAC-44-E, folding wheel chocks. The brackets will be made of aluminum and consist of a quick release spring loaded rod to hold the wheel chocks in place. The brackets will be mounted forward of the left side rear tire.

ELECTRONIC STABILITY CONTROL

A vehicle control system will be provided as an integral part of the ABS brake system from Meritor Wabco.

The system will monitor and update the lateral acceleration of the vehicle and compare it to a critical threshold where a side roll event may occur. If the critical threshold is met, the vehicle control system will automatically reduce engine RPM, engage the engine retarder (if equipped), and selectively apply brakes to the individual wheel ends of the front and rear axles to reduce the possibility of a side roll event.

The system will monitor directional stability through a lateral accelerometer, steer angle sensor and yaw rate sensor. If spinout or drift out is detected, the vehicle control system will selectively apply brakes to the individual wheel ends of the front and rear axles to bring the vehicle back to its intended direction.

ANTI-LOCK BRAKE SYSTEM

The vehicle will be equipped with a Wabco 6S6M, anti-lock braking system. The ABS will provide a six (6) channel anti-lock braking control on both the front and rear wheels. A digitally controlled system that utilizes microprocessor technology will control the anti-lock braking system. Each wheel will be monitored by the system. When any wheel begins to lockup, a signal will be sent to the control unit. This control unit will then reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system will eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.

AUTOMATIC TRACTION CONTROL

An anti-slip feature will be included with the ABS. The Automatic Traction Control will be used for traction in poor road and weather conditions. The Automatic Traction Control will act as an electronic differential lock that will not allow a driving wheel to spin, thereby supplying traction at all times. The ABS electronic control unit (ECU) will work with the engine ECU, sharing information concerning wheel slip. Engine ECU will use information to control engine speed, allowing only as much throttle application as required for the available traction, regardless of how much the driver is asking for. A "mud/snow" switch will be provided on the instrument panel. Activation of the switch will allow additional tire slip to let the truck climb out and get on top of deep snow or mud.

BRAKES

The service brake system will be full air type.

The front brakes will be Knorr/Bendix disc type with a 17.00" ventilated rotor for improved stopping distance.

The brake system will be certified, third party inspected, for improved stopping distance.

The rear brakes will be Meritor™ 16.50" x 7.00" cam operated with automatic slack adjusters. Dust shields will be provided.

AIR COMPRESSOR, BRAKE SYSTEM

The air compressor will be a Bendix®, Model BA-921, with 15.80 cubic feet per minute output at 1,250 rpm.

BRAKE SYSTEM

The brake system will include:

- Bendix dual brake treadle valve with vinyl covered foot surface
- Heated automatic moisture ejector on air dryer
- Total air system capacity of 8,108 cubic inches
- Two (2) air pressure gauges with a red warning light and an audible alarm, that activates when air pressure falls below 60 psi
- Spring set parking brake system
- Parking brake operated by a push-pull style control valve
- A parking "brake on" indicator light on instrument panel
- Park brake relay/inversion and anti-compounding valve, in conjunction with a double check valve system, will be provided with an automatic spring brake application at 40 psi
- A pressure protection valve will be provided to prevent all air operated accessories from drawing air from the air system when the system pressure drops below 80 psi (550 kPa)
- 1/4 turn drain valve on each air tank

The air tank will be primed and painted to meet a minimum 750 hour salt spray test.

To reduce the effects of corrosion, the air tank will be mounted with stainless steel brackets.

BRAKE SYSTEM AIR DRYER

The air dryer will be WABCO System Saver 1200 with spin-on coalescing filter cartridge and 100 watt heater.

BRAKE LINES

Color-coded nylon brake lines will be provided. The lines will be wrapped in a heat protective loom in the chassis areas that are subject to excessive heat.

AIR INLET/OUTLET

One (1) air inlet/outlet will be installed with the female coupling located on the driver side pump panel. This system will tie into the "wet" tank of the brake system and include a check valve in the inlet line

and an 85 psi pressure protection valve in the outlet line. The air outlet will be controlled by a needle valve.

A mating male fitting will be provided with the loose equipment.

The air inlet will allow a shoreline air hose to be connected to the vehicle. This will allow station air to be supplied to the brake system of the vehicle to insure constant air pressure.

ALL WHEEL LOCK-UP

An additional all wheel lock-up system will be installed which applies air to the front brakes only. The standard spring brake control valve system will be used for the rear.

AIR COMPRESSOR - BRAKE SYSTEM MAINTENANCE

A Gast, Model 4HCC-10-M450X, air compressor will be provided. It will be driven by the 110-volt shoreline electrical system. The compressor will maintain the air pressure in the chassis air brake system while the vehicle is not in use. A pressure switch will sense when the system pressure drops and automatically start the compressor, which then will run until pressure is restored. It will be located in compartment in the DS crew cab step area storage compartment.

AUTOMATIC MOISTURE EJECTOR(S)

Six (6) automatic moisture ejectors will be installed in the brake system.

The moisture ejector(s) will be provided on the on all brake reservoir(s).

COMPRESSION FITTINGS ONLY

Any nylon tube on the apparatus that is pneumatic will be plumbed with compression type fittings where applicable. Push lock fittings will not be acceptable for any pneumatic nylon tube plumbing.

ENGINE

The chassis will be powered by an electronically controlled engine as described below:

Make:	Detroit™
Model:	DD13®
Power:	525 hp at 1625 rpm
Torque:	1850 lb-ft at 1075 rpm
Governed Speed:	Full Load - 1900 rpm Road/2080 rpm Parked PTO
Emissions Certification:	EPA 2016 (GHG17)
Fuel:	Diesel
Cylinders:	Six (6)
Displacement:	781 cubic inches (12.8L)
Starter:	Delco Remy 39MT™
Fuel Filters:	Dual cartridge style with check valve, water separator, and water in fuel sensor

The engine will include On-board diagnostics (OBD), which provides self diagnostic and reporting. The system will give the owner or repair technician access to state of health information for various vehicle sub systems. The system will monitor vehicle systems, engine and after treatment. The system will illuminate a malfunction indicator light on the dash console if a problem is detected.

REPTO DRIVE

A rear engine power take off will be provided to drive the water pump. A vibration dampener will be provided between the REPTO and water pump. Transmission PTO's used to drive the water pump will not be allowed due to their lower torque ratings. The rear engine power take off will be the same as used extensively throughout the construction industry. Rear engine PTO's allow for continuous 240 hp and 480 lb-ft torque ratings needed for large pump applications. The rear engine power take off will have the same warranty as the engine provided by the engine manufacturer.

LOCATION OF FILTERS

For ease of serviceability, the following filters will be mounted together, on a single bracket, along the left side frame rail:

- PUC Pump Transmission Oil Filter
- Foam System Hydraulic Filter (if equipped)

The following filters will be located in one (1) central location on the engine:

- Engine Oil Filter
- Fuel Pre-Filter
- Fuel Final Filter

The filters will be accessible while standing on the ground with the cab tilted.

HIGH IDLE

A high idle switch will be provided, inside the cab, on the instrument panel, that will automatically maintain a preset engine rpm. A switch will be installed, at the cab instrument panel, for activation/deactivation.

The high idle will be operational only when the parking brake is on and the truck transmission is in neutral. A green indicator light will be provided, adjacent to the switch. The light will illuminate when the above conditions are met. The light will be labeled "OK to Engage High Idle."

ENGINE BRAKE

A Jacobs® engine brake is to be installed with the controls located on the instrument panel within easy reach of the driver.

The driver will be able to turn the engine brake system on/off and have a high, medium and low setting.

The engine brake will be installed in such a manner that when the engine brake is slowing the vehicle the brake lights are activated.

The ABS system will automatically disengage the auxiliary braking device when required.

HYDRAULIC FAN

To reduce fan noise, provide on-demand cooling, and maximize cab space, the cooling will be provided by a remote mounted hydraulic driven fan.

The fan speed will be able to be controlled independent of the engine speed for higher cooling rates at low engine speeds when needed.

The hydraulic pump will be driven from the engine's accessory drive to free up PTO's for other applications.

The hydraulic fan and cooling system will be similar in design as those systems used in severe duty application such as construction, agriculture, forestry, mining, and rail industries.

ENGINE AIR INTAKE

To facilitate deeper fording capabilities while protecting the engine, the air intake with ember separator will be mounted on the right side of the apparatus. It will be located above the cab wheelwell yet below the window line so as not to limit sight lines and cause blistering inside the cab. The ember separator is designed to prevent road dirt and recirculating hot air from entering the engine.

The ember separator will be easily accessible without tilting the cab.

The air intake filter will be located above the front axle directly above the frame rail so as not to require blistering of the cab interior and to provide easy access while standing on the ground for inspection and maintenance.

EXHAUST SYSTEM

The exhaust system will include a diesel particulate filter (DPF) and a selective catalytic reduction (SCR) device to meet current EPA standards. The exhaust system will be stainless steel from the turbo to the inlet of the SCR device and will be 5.00" in diameter. An insulation wrap will be provided on all exhaust pipes between the turbo and SCR to minimize the transfer of heat to the cab. The exhaust will terminate horizontally ahead of the right side rear wheels. A tailpipe diffuser will be provided to reduce the temperature of the exhaust as it exits. Heat deflector shields will be provided to isolate chassis and body components from the heat of the tailpipe diffuser.

RADIATOR

The radiator and the complete cooling system will meet or exceed the engine manufacturer cooling system standards.

The radiator core will have a minimum frontal area of 1755 square inches. Steel supply and return tanks will be mounted to the core headers and steel side channels to complete the radiator assembly. The radiator will be compatible with commercial antifreeze solutions.

The radiator will be mounted in a location directly behind the cab and at the top of the body. This position will allow for maximum room in the cab, improved visibility through lower windshields, and unobstructed access to repair or replace the radiator should the need occur.

The radiator will include an integral de-aeration tank, with a remote mounted overflow tank. For visual coolant level inspection, the radiator will have a built-in sight glass. The radiator will be equipped with a 15 psi pressure relief cap.

A drain port will be located at the lowest point of the cooling system and/or the bottom of the radiator to permit complete flushing of the coolant from the system.

A heavy-duty fan will draw in fresh, cool air through the radiator. Shields or baffles will be provided to prevent recirculation of hot air to the inlet side of the radiator.

COOLANT LINES

Gates® silicone hoses will be used for all engine/heater coolant lines installed by the chassis manufacturer.

The chassis manufacturer will also use Gates brand hose on other heater, defroster and auxiliary coolant circuits. There will be some areas in which an appropriate Gates product is not available. In those instances a comparable silicone hose from another manufacturer will be used.

Hose clamps will be stainless steel constant torque type to prevent coolant leakage. They will react to temperature changes in the cooling system and expand or contract accordingly while maintaining a constant clamping pressure on the hose.

FUEL TANK

A 65 gallon fuel tank will be provided and mounted at the rear of the chassis. The tank will be constructed of 12-gauge, hot rolled steel. It will be equipped with swash partitions and a vent. To eliminate the effects of corrosion, the fuel tank will be mounted with stainless steel straps.

A 0.75" drain plug will be located in a low point of the tank for drainage.

A fill inlet will be located on the left hand side of the body and is covered with a hinged, spring loaded, stainless steel door that is marked "Ultra Low Sulfur - Diesel Fuel Only."

A 0.50" diameter vent will be installed from tank top to just below fuel fill inlet.

The fuel tank will meet all FHWA 393.67 requirements including a fill capacity of 95 percent of tank volume.

All fuel lines will be provided as recommended by the engine manufacturer.

DIESEL EXHAUST FLUID TANK

A 4.5 gallon diesel exhaust fluid (DEF) tank will be provided and mounted in the driver's side body forward of the rear axle.

A 0.50" drain plug will be provided in a low point of the tank for drainage.

A fill inlet will be located on the driver's side of the body and be covered with a hinged, spring loaded, polished stainless steel door that is marked "Diesel Exhaust Fluid Only".

The tank will meet the engine manufacturers requirement for 10 percent expansion space in the event of tank freezing.

The tank will include an integrated heater unit that utilizes engine coolant to thaw the DEF in the event of freezing.

FUEL COOLER

An air to fuel cooler will be installed in the engine fuel return line.

TRANSMISSION

An Allison 5th generation, Model EVS 4500P, electronic, torque converting, automatic transmission will be provided.

The transmission will be equipped with prognostics to monitor oil life, filter life, and transmission health. A wrench icon on the shift selector's digital display will indicate when service is due.

Two (2) PTO openings will be located on left side and top of converter housing (positions 8 o'clock and 1 o'clock).

A transmission temperature gauge with red light and buzzer will be installed on the cab instrument panel.

TRANSMISSION SHIFTER

A six (6)-speed push button shift module will be mounted to right of driver on console. Shift position indicator will be indirectly lit for after dark operation.

The transmission ratio will be 1st - 4.70 to 1.00, 2nd - 2.21 to 1.00, 3rd - 1.53 to 1.00, 4th - 1.00 to 1.00, 5th - 0.76 to 1.00, 6th - 0.67 to 1.00, R - 5.55 to 1.00.

TRANSMISSION PROGRAMMING

The transmission will be programmed to automatically shift the transmission to neutral when the parking brake is set to simplify operation and increase operational safety.

TRANSMISSION COOLER

A Modine plate and fin transmission oil cooler will be provided using engine coolant to control the transmission oil temperature.

DOWNSHIFT MODE (W/ENGINE BRAKE)

The transmission will be provided with an aggressive downshift mode.

This will provide earlier transmission downshifts to 3rd gear from 6th gear, resulting in improved engine braking performance.

TRANSMISSION FLUID

The transmission will be provided with TranSynd, or other Allison approved TES-295 heavy duty synthetic transmission fluid.

DRIVELINE

Drivelines will be a heavy-duty metal tube and be equipped with Spicer® 1810 universal joints.

The shafts will be dynamically balanced before installation.

A splined slip joint will be provided in each driveshaft. The slip joint will be coated with Glidecoat® or equivalent.

STEERING

Dual Sheppard, Model M110, steering gears, with integral heavy-duty power steering, will be provided. For reduced system temperatures, the power steering will incorporate an air to oil cooler and an Eaton, Model VN20, hydraulic pump with integral pressure and flow control. All power steering lines will have wire braded lines with crimped fittings.

A tilt and telescopic steering column will be provided to improve fit for a broader range of driver configurations.

STEERING WHEEL

The steering wheel will be 18.00" in diameter, have tilting and telescoping capabilities, and a 4-spoke design.

LOGO AND CUSTOMER DESIGNATION ON DASH

The dash panel will have an emblem containing the Pierce logo and customer name. The emblem will have three (3) rows of text for the customer's department name. There will be a maximum of eight (8) characters in the first row, 11 characters in the second row and 11 characters in the third row.

The first row of text will be: Round

The second row of text will be: Rock

The third row of text will be: Fire Dept.

BUMPER

A one (1)-piece bumper manufactured from .25" formed steel with a .38" bend radius will be provided. The bumper will be a minimum of 10.00" high with a 1.50" top and bottom flange, and will extend 22.00" from the face of the cab. The bumper will be 95.28" wide with 45 degree corners and side plates. The bumper will be metal finished and painted job color.

To provide adequate support strength, the bumper will be mounted directly to the front of the C channel frame. The frame will be a bolted modular extension frame constructed of 50,000 psi tensile steel.

GRAVEL PAN

A gravel pan, constructed of bright aluminum treadplate, will be furnished between the bumper and the cab face. The pan will be properly supported from the underside to prevent flexing and vibration.

HOSE TRAY

A hose tray, constructed of aluminum, will be placed in the center of the bumper extension.

The tray will have a capacity of 100' of 1.75" double jacket cotton-polyester hose.

Black rubber grating will be provided at the bottom of the tray. Drain holes are also provided.

CENTER HOSE TRAY COVER

A bright aluminum treadplate cover will be provided over the center hose tray.

The cover will be "notched" allowing the hose to be pre connected to hose connection.

The cover will be attached with a stainless steel hinge.

A D-ring latch will secure the cover in the closed position and a pneumatic stay arm will hold the cover in the open position.

LIFT AND TOW MOUNTS

Mounted to the frame extension will be lift and tow mounts. The lift and tow mounts will be designed and positioned to adapt to certain tow truck lift systems.

The lift and tow mounts with eyes will be painted the same color as the frame.

TOW HOOKS

No tow hooks are to be provided. This truck will be equipped with a lift and tow package with integral tow eyes.

LICENSE PLATE (MOUNTING HOLES)

Four (4) mounting holes will be provided in the center of the front bumper for the customer to mount a license plate.

FRONT BUMPER LINE-X COATING

Protective black Line-X® coating will be provided on the outside exterior of the top front bumper flange. It will not be sprayed on the underside of the flange.

The lining will be properly installed by an authorized Line-X dealer.

CAB

The cab will be designed specifically for the fire service and will be manufactured by the chassis and body builder.

The cab will be built by the apparatus manufacturer in a facility located on the manufacturer's premises.

The cab will be a cab-forward design that positions the driver and officer ahead of the engine tunnel, providing the greatest amount of room for the front occupants.

For reasons of structural integrity and enhanced occupant protection, the cab will be of heavy duty design, constructed to the following minimal standards.

The cab will have 12 main vertical structural members located in the A-pillar (front cab corner post), B-pillar (side center posts), C-pillar (rear corner posts) and rear wall areas. The A-pillar will be constructed of .25" heavy wall extrusions joined by a solid A356-T6 aluminum joint casting. The B-pillar and C-pillar will also be constructed from .25" heavy wall extrusions. The rear wall will be constructed of 4.00" x 2.00" aluminum extrusions. All main vertical structural members will run from the floor to 5.50" x 3.50" x .1875" thick roof extrusions to provide a cage-like structure with the A-pillar and roof extrusions being welded into a .50" thick corner casting at each of the front corners of the roof assembly.



The front of the cab will be constructed of a .25" thick firewall, covered with a .125" front skin (for a total thickness of .38"), and reinforced with a 95.00" wide x 13.00" deep x .50" thick cross-cab support located just below the windshield. The cross-cab support will run the full width of the cab and weld to each A-pillar, the .25" thick firewall, and the front skin.

The cab floors will be constructed of .1875" thick aluminum plate and reinforced at the firewall with an additional .25" thick cross-floor support providing a total thickness of .44" of structural material at the front floor area. The front floor area will also be supported with 4.00" x 8.00" x 1.00" thick tubing that also provides the mounting point for the cab lift. This tubing will run from the front of the cab to the .38" thick engine tunnel, creating the structure to support the forces created when lifting the cab.

The cab will be 96.00" wide (outside door skin to outside door skin) to maintain maximum maneuverability.

The overall height (from the cab roof to the ground) will be approximately 99.00". The overall height listed will be calculated based on a truck configuration with a 41.00" frame height. The cab skirt height will be approximately 23.00" ahead of the front wheels and 21.00" behind the front wheels.

An 11.00" raised roof will be provided. The raised portion will start at the most forward point of the B-pillar and continue rearward to the back of the cab.

The raised roof section of the crew cab will have a 58.00" wide x 11.00" deep square notch in the center section of the roof. Within this notch, will be a second notch that is approximately 18.50" long x 9.00" wide x 4.00" deep, starting from the front edge of the cab.

The crew cab will be of the totally enclosed design with access doors constructed in the same manner as the driver and passenger doors.

The cab will be a full tilt cab style. The engine will be easily accessible and capable of being removed with the cab tilted.

The cab will have a three (3)-point cab mount system with rubber isolators.

CAB ROOF DRIP RAIL

For enhanced protection from inclement weather, a drip rail will be furnished on the sides of the cab. The drip rail will be constructed of bright polished extruded aluminum, and be bonded to the sides of the cab. The drip rail will extend the full length of the cab roof.

INTERIOR CAB INSULATION

The cab will include 1.50" insulation in the ceiling and side walls, and 2.00" insulation in the rear wall to maximize acoustic absorption and thermal insulation.

FENDER LINERS

Full circular inner fender liners in the wheel wells will be provided.

WINDSHIELD

A curved safety glass windshield will be provided. The windshield will be bonded in place to prevent leaks and to increase safety within the cab (reference NHTSA report number DOT HS 806 693). For the greatest visibility, the windshield will be a minimum of 34.75" tall, be of one (1) piece design, and wrap approximately 8.00" around each end of the A-pillars. The bottom of the windshield will be no higher than 61.00" from the ground.

All cab glass will be tinted.



WINDSHIELD WIPERS

Windshield wipers with washer will be provided that meet FMVSS and SAE requirements.

The windshield wipers will sweep past the center of the windshield so as to provide maximum cover in inclement weather. The wipers will clean a minimum of 85 percent of the forward facing area of the windshield.

The washer reservoir will be able to be filled while standing on the ground and without raising the cab.

ENGINE TUNNEL

Engine hood side walls are structural elements of the cab and will be constructed of .38" aluminum. The top will be constructed of .19" aluminum and will be tapered at the top for increased cab space.

The engine tunnel will be no higher than 70.00" off the ground (calculated with a 41.00" frame height) and no higher than 32.00" off the crew cab floor.

The forward portion of the cab will have a flat floor ahead of the engine tunnel area that will be transverse from the driver's door to the officer's door. This portion of the floor will be no greater than 36.00" from the ground.

The engine hood will be insulated for protection from heat and sound. The noise insulation keeps the dBA level below the limits stated in the current NFPA series 1900 pamphlet.

CAB REAR WALL EXTERIOR COVERING

The exterior surface of the rear wall of the cab will be overlaid with bright aluminum treadplate except for areas that are not typically visible when the cab is lowered.

CAB LIFT

A hydraulic cab lift system will be provided, consisting of an electric-powered hydraulic pump, fluid reservoir, dual lift cylinders, remote cab lift controls and all necessary hoses and valves. The hydraulic pump will have a backup manual override, for use in the event of an electrical failure.

The cab lift controls will be located on the pump panel or front area of the body in a convenient location. The controls will include a permanently mounted raise/lower switch.

The cab will be capable of tilting 35 degrees and 80 degrees with crane assist to accommodate engine maintenance and removal.



The rear of the cab will be locked down by a two (2)-point, automatic, hydraulic, double hook mechanism that fully engages after the cab has been lowered (self-locking). The dual 2.25 " diameter hydraulic cylinders will be equipped with a velocity fuse that protects the cab from accidentally descending when the cab is in the tilt position.



For increased safety, a redundant mechanical stay arm will be provided on the same side of the apparatus as the cab lift controls, between the chassis and cab frame when cab is in the raised position.

Cab Lift Interlock

The cab lift safety system will be interlocked to the parking brake. The cab tilt mechanism will be active only when the parking brake is set and the ignition switch is in the on position. If the parking brake is released, the cab tilt mechanism will be disabled.

GRILLE

A bright finished aluminum mesh grille screen, inserted behind a bright finished grille surround, will be provided on the front center of the cab.

DOOR JAMB SCUFFPLATES

All cab door jambs will be furnished with a polished stainless steel scuffplate, mounted on the striker side of the jamb.

TRIM BAND ON CAB FACE

A 10.00" band of 22 gauge patterned stainless steel trim will be installed across the front of the cab, from door hinge to door hinge. The trim band will be centered on the headlights and applied with two-sided tape. A 0.625" self-adhesive trim strip will be applied around the perimeter of the trim band.

SIDE OF CAB MOLDING

Chrome molding will be provided on both sides of cab.

MIRRORS

A Retrac Aerodynamic, Model 613295, dual vision, motorized, west coast style mirror with chrome finish will be mounted on each side of the front cab door with spring loaded retractable arms. The flat glass and convex glass will be adjustable with a remote control within reach of the driver.

DOORS

To enhance entry and egress to the cab, the forward cab doors will be a minimum of 37.50" wide x 62.37" high. The crew cab doors will be located on the sides of the cab and will be constructed in the same manner as the forward cab doors. The crew cab doors will measure a minimum of 34.75" wide x 72.00" high.

The forward cab and crew cab doors will be constructed of extruded aluminum with a nominal material thickness of .125". The exterior door skins will be constructed from .090" aluminum.

The forward cab door windows will include a drop area at the front to enhance visibility.

A customized, vertical, pull-down type door handle will be provided on the exterior of each cab door. The exterior handle will be designed specifically for the fire service to prevent accidental activation, and will provide 4.00" wide x 2.00" deep hand clearance for ease of use with heavy gloved hands. Each door will also be provided with an interior flush, open style paddle handle that will be readily operable from fore and aft positions, and be designed to prevent accidental activation. The interior handles will provide 4.00" wide x 1.25" deep hand clearance for ease of use with heavy gloved hands.



[Exterior Door Handle]

The cab doors will be provided with both interior (rotary knob) and exterior (keyed) locks exceeding FMVSS standards. The keys will be Model [Key Model, Cab Doors]. The locks will be capable of activating when the doors are open or closed. The doors will remain locked if locks are activated when the doors are opened, then closed.



[Interior Door Handle]

A full length, heavy duty, stainless steel, piano-type hinge with a .38" pin and 11 gauge leaf will be provided on all cab doors. There will be double automotive-type rubber seals around the perimeter of the door framing and door edges to ensure a weather-tight fit.

A chrome grab handle will be provided on the inside of each cab and crew cab door.

The cab steps at each cab door location will be located below the cab doors and will be exposed to the exterior of the cab.

DOOR PANELS

There will be a full height brushed aluminum door panel installed on the inside of all cab doors. The cab door panels will be removable.

RECESSED POCKET WITH ELASTIC COVER

To provide organized storage (clutter control) in the cab for miscellaneous equipment, the cab interior will be provided with recessed storage pockets. The pockets will be 6.50" wide x 2.12" high x 6.00" deep. The pockets will be provided with a perforated elastic material cover to secure the equipment in

the pocket. The pockets will be installed in all available locations on the lower instrument panel console.

ELECTRIC OPERATED CAB DOOR WINDOWS

All four (4) cab doors will be equipped with electric operated windows with one (1) flush mounted automotive style switch on each door. The driver's side door will have four (4) switches, one (1) to control each door window.

Each switch will allow intermittent or auto down operation for ease of use. Auto down operation will be actuated by holding the window down switch for approximately 1 second.

The window switches will be connected directly to the battery power. This allows the windows to be raised and lowered when the battery switch is in the off position.

CAB STEPS

The forward cab and crew cab access steps will be a full size two (2)-step design to provide the largest possible stepping surfaces for safe ingress and egress. The bottom steps will be designed with grip strut inserts to provide support, slip resistance, and drainage. The bottom steps will be a bolt-in design to minimize repair costs should they need to be replaced. The front cab steps will be a minimum of 30.00" wide. The distance from the ground to the first cab step will be approximately 20.00". The crew cab steps will be 26.50" wide. The distance from the ground to the first crew cab step will be approximately 22.00". All bottom steps will have a depth of approximately 11.00". The distance from the bottom steps to the floor will be approximately 16.00" in height and be limited to two (2) steps. The leading edge of the top step will be approximately 10.00" inboard from the leading edge of the bottom step to provide a user-friendly angled (stair stepped) step. A slip-resistant handrail will be provided adjacent to each cab door opening to assist during cab ingress and egress.

CAB AND CREW CAB STEP LIGHTS

There will be four (4) white 12 volt DC 9.00" LED light strips provided. The lights will be installed recessed for protection into the top of the step extrusion:

- One (1) strip will be installed in the driver's door step well.
- One (1) strip will be installed in the passenger's door step well.
- One (1) strip will be installed in the passenger's side crew cab door step well.
- One (1) strip will be installed in the driver's side crew cab door step well.

The lights will be activated when the battery switch is on and the adjacent door is opened.

FENDER CROWNS

Stainless steel fender crowns will be installed at the cab wheel openings. The fender crowns will have a radius outside corner that will allow the fender crown to extend out further than the standard width crown, thus extending beyond the sidewall of the front tires and allow the crew cab doors to open fully.

CREW CAB WINDOWS

One (1) fixed window with tinted glass will be provided on each side of the cab, to the rear of the front cab door. The windows will be sized to enhance light penetration into the cab interior and visibility to the exterior. The windows will be approximately 29.00" wide x 32.00" high. The top of the window will align with the top of the glass in the rear doors. The bottom of the glass will align with the bottom of the crew cab door window.

**WINDOW TINT**

Crew cab windows will be tinted with 8 percent light transmission tint (will block 92 percent of visible light). The following windows are included:

- Crew cab side windows
- Crew cab door, roll-up windows
- Top fixed window in crew cab doors
- Rear opera windows (If applicable)
- All windows in raised roof (If applicable)

STORAGE COMPARTMENTS

Provided on each side of the crew cab, under the floor and accessible from the step area, will be a storage compartment.

The driver side compartment dimensions will be approximately 26.00" wide x 15.00" high x 10.25" deep with a clear door opening of 22.75" wide x 10.00" high.

The passenger side compartment dimensions will be approximately 26.00" wide x 15.00" high x 16.00" deep with a clear door opening of 22.75" wide x 10.00" high. There will be a 8.00" x 8.00" 45 degree notch in the left rear corner of this compartment for engine exhaust clearance.



The doors will be located in the stepwell area of the crew cab steps and will be made of treadplate with the compartment interior painted to match the cab interior.

COVER

A one (1) painted aluminum cover will be located over the Trimble unit behind the officers seat.

EQUIPMENT MOUNTING TRAY(S)

There will be one (1) tray(s) for mounting of equipment located centered 2" ahead of the engine tunnel transition - 36" wide and as deep as possible front to back (note: drain tube option added)..

Each tray will have a 4.00" lip on four (4) sides.

Each tray will be fabricated from aluminum and will be painted to match the cab interior.

Tray not intended for storage of loose equipment. Items stored on tray will be permanently attached to meet NFPA requirements.

MOUNTING PLATE(S)

There will be two (2) full width x 8" to mount flashlights 0.188" aluminum mounting plate(s) provided and installed (1) at the forward most portion of the engine tunnel - full width x 8" to mount flashlights and (1) on the front of the engine tunnel - full width and as high as the angled transition. The mounting surface will be painted to match the cab interior. The plates(s) will be mounted on .75" spacer stand-offs.

COMPUTER MOUNTING

There will be a swivel bracket mounted to the top of the center instrument panel. There will be a manufactured arm and mounting plate attached to the swivel for a computer docking station (not provided).



CAB INTERIOR

The cab interior will be constructed of primarily metal (painted aluminum) to withstand the severe duty cycles of the fire service.

The officer side dash and center console will be a flat top design with an upper beveled edge to provide easy maintenance and will be constructed out of painted aluminum.

The switch panel area located to the right of the driver will be constructed of painted aluminum with the switch panel being brushed stainless steel.

The engine tunnel will be painted aluminum.

Only the instrument cluster will be surrounded with a high impact ABS plastic contoured to the same shape of the instrument cluster.

The headliner will be installed in both forward and rear cab sections. Headliner material will be Turnout Tuff fabric. A sound barrier will be part of its composition. Material will be installed on aluminum sheet and securely fastened to interior cab ceiling.

All wiring will be placed in metal raceways.



[Interior Cab Wire Raceways]

CAB HEADLINER UPHOLSTERY

The cab headliner upholstery will be gray.

INTERIOR PAINT (CAB)

A rich looking interior will be provided by painting all the metal surfaces inside the cab gray, vinyl texture paint.

The top of the center console, officer dash, and driver instrument cluster housing will be a flat dark charcoal gray color to reduce windshield glare.

CAB FLOOR

The cab and crew cab floor areas will be covered with Polydamp™ acoustical floor mat consisting of a black pyramid rubber facing and closed cell foam decoupler.

The top surface of the material has a series of raised pyramid shapes evenly spaced, which offer a superior grip surface. Additionally, the material has a 0.25" thick closed cell foam (no water absorption) which offers a sound dampening material for reducing sound levels.

CAB DEFROSTER

To provide maximum defrost and heating performance, a 54,961 BTU heater-defroster unit with 558 SCFM of air flow will be provided inside the cab. The defroster unit will be strategically located under the forward portion of the center console. For easy access, a removable metal cover will be installed over the defroster unit. The defroster will include an integral aluminum frame air filter, high performance dual scroll blowers, and ducts designed to provide maximum defrosting capabilities for the 1-piece windshield. The defroster ventilation will be built into the design of the cab dash instrument panel and will be easily removable for maintenance. The defroster will be capable of clearing 98 percent of the windshield and side glass when tested under conditions where the cab has been cold soaked at 0 degrees Fahrenheit for 10 hours, and a 2 ounce per square inch layer of frost/ice has been able to build up on the exterior windshield. The defroster system will meet or exceed SAE J382 requirements.

CAB/CREW CAB HEATER

Two (2) 36,702 BTU auxiliary heaters with 276 SCFM (each unit) of air flow will be provided inside the crew cab, one (1) in each outboard rear facing seat riser for easy service access. The heaters will include high performance dual scroll blowers, one (1) for each unit. Outlets for the heaters will be located below each rear facing seat riser and below the fronts of the driver and passenger seats, for efficient airflow. An extruded aluminum plenum will be incorporated in the cab structure that will transfer heat to the forward cab seating positions.



The heater/defroster and crew cab heaters will be controlled by an integral electronic control panel. The heater control panel will allow the driver to control heat flow to the front and rear independently. The control panel will include variable adjustment for temperature and fan control, and be conveniently located in the center console in clear view of the driver. The control panel will include highly visible, progressive LED indicators for both fan speed and temperature.



AIR CONDITIONING

Due to the large space inside the cab, a high-performance, customized air conditioning system will be furnished. A 19.10 cubic inch compressor will be installed on the engine.

The air conditioning system will be capable of cooling the average cab temperature from 100 degrees Fahrenheit to 64 degrees Fahrenheit in the forward section of the cab, and 69 degrees Fahrenheit in the rear section of the cab, at 50 percent relative humidity within 30 minutes. The cooling performance test will be run only after the cab has been heat soaked at 100 degrees Fahrenheit for a minimum of 4 hours.

A roof-mounted condenser with a 63,000 BTU output that meets and exceeds the performance specification will be installed on the cab roof. The condenser cover and mounting legs to be painted white as provided by manufacturer.

The evaporator unit will be installed in the rear portion of the cab ceiling over the engine tunnel. The evaporator will include two (2) high performance cores and plenums with multiple outlets, one (1) plenum directed to the front and one (1) plenum directed to the rear of the cab.

The evaporator unit will have a 49,000 BTU (4.08 tons) rating that meets and exceeds the performance specifications.

Adjustable air outlets will be strategically located on the evaporator cover per the following:

- Four (4) will be directed towards the drivers location
- Four (4) will be directed towards the officers location

- Nine (9) will be directed towards crew cab area

The air conditioner refrigerant will be R-134A and will be installed by a certified technician.

The air conditioner will be controlled by dual zone integral electronic control panels for the heater, defroster and air conditioner. The cab control panel will be located in the center console. For ease of operation, the control panels will include variable adjustment for temperature and fan control.

INTERIOR CAB INSULATION

The cab walls, ceiling and engine tunnel will be insulated in all strategic locations to maximize acoustic absorption and thermal insulation. The cab will be insulated with 2.00" insulation in the rear wall, 3.00" insulation in the side walls, and 1.50" insulation in the ceiling. Headliners will be constructed from a 0.20" high density polyethylene corrugated material. Each headliner will be wrapped with a 0.25" thick foil faced poly damp low emissivity foam insulation barrier for acoustic and thermal control.

Designed for maximum sound absorption and thermal insulation, the rear cab wall will be insulated with a 1.50" thick open cell acoustical foam. The thermal protection of the foam will provide an R-value of 4 per 1.00" thickness.

SPECIAL DRAIN TUBES

Two (2) condensate drain tubes will be provided for the air conditioning evaporator. The drip pan will have two (2) drain tubes plumbed separately to allow for the condensate to exit the drip pan.

SUN VISORS

Two (2) smoked Lexan™ sun visors provided. The sun visors will be located above the windshield with one (1) mounted on each side of the cab.

There will be no retention bracket provided to help secure each sun visor in the stowed position.

GRAB HANDLES

A handrail approximately 24.00" long and contoured to follow the shape of the cab windshield post will be mounted to the forward portion of the driver and officer door openings.

A grab handle shall be mounted by the driver and passenger side crew cab doors to assist in entering the cab. The grab handle will be securely mounted to the hinge side of the door frame.



[Cab and Crew Cab]

ENGINE COMPARTMENT LIGHTS

There will be one (1) Truck-Lite Model 44308C 4.00" white LED light(s) with Model 40700 grommet(s) installed under the engine hood for use as engine compartment illumination.

These light(s) will be activated automatically when the cab is raised and deactivated when the cab is lowered.

ACCESS TO ENGINE DIPSTICKS

To encourage preventive maintenance, the engine oil and transmission fluid dipsticks, will be accessible through a door on the engine tunnel, inside the crew cab. The door will be on the driver's side of the engine tunnel and will be easily accessible while standing on the ground.

The engine oil dipstick will allow for checking only. The transmission dipstick will allow for both checking and filling. An additional port will be provided for filling the engine oil.

The door will have a rubber seal for thermal and acoustic insulation. One (1) flush latch will be provided on the access door.

For ease of handling in a fire station bay, the engine dipstick will be no longer than 3' in length and the transmission dipstick will be no longer than 6' in length.



one (1) custom made map/storage console will be supplied and mounted by Siddons-Martin Fire Apparatus maintenance facility. The console shall be designed by the Fire Department to accommodate their needs and installed in the desired location.

EQUIPMENT DRAWER

A slide-out storage drawer will be provided below the center seat riser, between the driver and officer seats. The drawer will be approximately 21.00" wide x 10.00" high x 15.00" deep. A D-ring latch will be used to secure the drawer in the closed position. A guard will be provided behind the D-ring latch for protection from items falling against it when the cab is tilted. The face of the drawer will cover the entire opening in the seat riser.

The drawer will be constructed of 0.125" aluminum and painted to match the cab interior.

CAB SAFETY SYSTEM

The cab will be provided with a safety system designed to protect occupants in the event of a side roll or frontal impact, and will include the following:

- A supplemental restraint system (SRS) sensor will be installed on a structural cab member behind the instrument panel. The SRS sensor will perform real time diagnostics of all critical subsystems and will record sensory inputs immediately before and during a side roll or frontal impact event.
- A slave SRS sensor will be installed in the cab to provide capacity for eight (8) crew cab seating positions.
- A fault-indicating light will be provided on the vehicle's instrument panel allowing the driver to monitor the operational status of the SRS system.
- A driver side front air bag will be mounted in the steering wheel and will be designed to protect the head and upper torso of the occupant, when used in combination with the three (3)-point seat belt.
- A passenger side knee bolster air bag will be mounted in the modesty panel below the dash panel and will be designed to protect the legs of the occupant, when used in combination with the three (3)-point seat belt.
- Air curtains will be provided in the outboard bolster of outboard seat backs to provide a cushion between occupant and the cab wall.
- Suspension seats will be provided with devices to retract them to the lowest travel position during a side roll or frontal impact event.
- Seat belts will be provided with pre-tensioners to remove slack from the seat belt during a side roll or frontal impact event.

FRONTAL IMPACT PROTECTION

The SRS system will provide protection during a frontal or oblique impact event. The system will activate when the vehicle decelerates at a predetermined G force known to cause injury to the occupants. The cab and chassis will have been subjected, via third party test facility, to a crash impact during

frontal and oblique impact testing. Testing included all major chassis and cab components such as mounting straps for fuel and air tanks, suspension mounts, front suspension components, rear suspensions components, frame rail cross members, engine and transmission and their mounts, pump house and mounts, frame extensions and body mounts. The testing provided configuration specific information used to optimize the timing for firing the safety restraint system. The sensor will activate the pyrotechnic devices when the correct crash algorithm, wave form, is detected.

The SRS system will deploy the following components in the event of a frontal or oblique impact event:

- Driver side front air bag.
- Passenger side knee bolster air bag.
- Air curtains mounted in the outboard bolster of outboard seat backs.
- Suspension seats will be retracted to the lowest travel position.
- Seat belts will be pre-tensioned to firmly hold the occupant in place.

SIDE ROLL PROTECTION

The SRS system will provide protection during a fast or slow 90-degree roll to the side, in which the vehicle comes to rest on its side. The system will analyze the vehicle's angle and rate of roll to determine the optimal activation of the advanced occupant restraints.

The SRS system will deploy the following components in the event of a side roll:

- Air curtains mounted in the outboard bolster of outboard seat backs.
- Suspension seats will be retracted to the lowest travel position.
- Seat belts will be pre-tensioned to firmly hold the occupant in place.

SEATING CAPACITY

The seating capacity in the cab will be six (6).

DRIVER SEAT

A Pierce PS6® seat will be provided in the cab for the driver. The seat design will be a cam action type with air suspension. For increased convenience, the seat will include electric controls to adjust the rake (15 degrees), height (1.12" travel) and horizontal (7.75" travel) position. Electric controls will be located below the forward part of the seat cushion. To provide flexibility for multiple driver configurations, the seat will have a reclining back, adjustable from 20 degrees back to 45 degrees forward. Providing for maximum comfort, the seat back will be a high back style with manual lumbar adjustment lever, for lower back support, and will include minimum 7.50" deep side bolster pads for maximum support. The lumbar adjustment lever will be easily located at the lower outboard position of the seat cushion. For optimal comfort, the seat will be provided with 17.00" deep dual density foam cushions designed with EVC (elastomeric vibration control).

The seat will include the following features incorporated into the side roll protection system:

- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.
- A suspension seat safety system will be included. When activated in the event of a side roll, this system will pretension the seat belt and retract the seat to its lowest travel position.

The seat will be furnished with a 3-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the female buckle and seat belt webbing length will meet or exceed the current NFPA 1901 edition and CAN/ULC - S515 standards. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

To provide proper shoulder, elbow, and hip room, the driver seat will be positioned such that the center line of the lower cushion is no less than 15.00" from the door pan and the edge of the cushion is approximately 4.00" away from the door pan providing more room to reach the seat belt buckle and encourage seat belt use.

OFFICER SEAT

A Pierce PS6® seat will be provided in the cab for the passenger. The seat will be a fixed type with no suspension. For optimal comfort, the seat will be provided with 17.00" deep foam cushions. To ensure safe operation, the seat will be equipped with seat belt sensors in the seat cushion and belt receptacle that will activate an alarm indicating a seat is occupied but not buckled. The seat back will be an SCBA back style with 7.50 degree fixed recline angle and will include minimum 4.50" wide x 7.50" deep side bolster pads for maximum support. The SCBA cavity will be adjustable from front to rear in 1.00" increments to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat will include the following features incorporated into the side roll protection system:

- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.
- A suspension seat safety system will be included. When activated this system will pretension the seat belt and retract the seat to its lowest travel position.

The seat will be furnished with a 3-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the female buckle and seat belt webbing length will meet or exceed the current NFPA 1901 edition and CAN/ULC - S515 standards. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

The officer seat will have 24.00" of leg room as measured from the front of the seat cushion to the modesty panel below the officer dash. Furthermore, to provide proper shoulder, elbow, and hip room, the officer seat will be positioned such that the center line of the lower cushion is no less than 13.75" from the door pan and the edge of the cushion is approximately 4.00" away from the door pan providing more room to reach the seat belt buckle and encourage seat belt use.

RADIO COMPARTMENT

A radio compartment will be provided under the officer's seat.

The inside compartment dimensions will be 16.81" wide x 7.50" high x 16.43" deep.

A drop-down door with a chrome plated lift and turn latch will be provided for access.

The compartment will be constructed of smooth aluminum and painted to match the cab interior.

REAR FACING DRIVER SIDE OUTBOARD SEAT

There will be one (1) rear facing, Pierce PS6® seat provided at the driver side outboard position in the crew cab. For optimal comfort, the seat will be provided with 17.00" deep dual density foam cushions designed with EVC (elastomeric vibration control). To ensure safe operation, the seat will be equipped with seat belt sensors in the seat cushion and belt receptacle. It will activate an alarm indicating a seat is occupied but not buckled.

The seat back will be an SCBA back style with 7.5 degree fixed recline angle, and will include minimum 4.50" wide x 7.50" deep side bolster pads for maximum support. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat will include the following features incorporated into the side roll protection system:

- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.
- A seat safety system will be included. When activated this system will pretension the seat belt around the occupant to firmly hold them in place in the event of a side roll.

The seat will be furnished with a 3-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the female buckle and seat belt webbing length will meet or exceed the current NFPA 1901 edition and CAN/ULC - S515 standards. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

To provide proper shoulder, elbow, and hip room, the crew area seat will be positioned such that the center line of the lower cushion is no less than 13.75" from the door pan.

REAR FACING PASSENGER SIDE OUTBOARD SEAT

There will be one (1) rear facing, Pierce PS6® seat provided at the passenger side outboard position in the crew cab. For optimal comfort, the seat will be provided with 17.00" deep dual density foam cushions designed with EVC (elastomeric vibration control). To ensure safe operation, the seat will be equipped with seat belt sensors in the seat cushion and belt receptacle that will activate an alarm indicating a seat is occupied but not buckled. The seat back will be an SCBA back style with 7.50 degree fixed recline angle, and will include minimum 4.50" wide x 7.50" deep side bolster pads for

maximum support. The SCBA cavity will be adjustable from front to rear in 1.00" increments to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat will include the following features incorporated into the side roll protection system:

- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.
- A seat safety system will be included. When activated, this system will pretension the seat belt and firmly hold the occupant in the event of a side roll.

The seat will be furnished with a 3-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the female buckle and seat belt webbing length will meet or exceed the current NFPA 1901 edition and CAN/ULC - S515 standards. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

To provide proper shoulder, elbow, and hip room, the crew area seat will be positioned such that the center line of the lower cushion is no less than 13.75" from the door pan.

FORWARD FACING DRIVER SIDE OUTBOARD SEAT

There will be one (1) forward facing, Pierce PS6® foldup seat provided at the driver side outboard position in the crew cab. To maximize accessibility to the crew cab, the seat will be a minimum of 15.00" from the front of the cushion to the face of the seat back and the seat back will be provided with 0 degree fixed recline angle. To ensure safe operation, the seat will be equipped with seat belt sensors in the seat cushion and belt receptacle that will activate an alarm indicating a seat is occupied but not buckled.

The seat back will be an SCBA back style and be recessed into the rear wall. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat will include the following features incorporated into the side roll protection system:

- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.
- A seat safety system will be included. When activated, this system will pretension the seat belt around the occupant to firmly hold them in place in the event of a side roll.

The seat will be furnished with a 3-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the female buckle and seat belt webbing length will meet or exceed the current NFPA 1901 edition and CAN/ULC - S515 standards. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

To provide proper shoulder, elbow, and hip room, the crew area seat will be positioned such that the center line of the lower cushion is no less than 13.75" from the door pan.

FORWARD FACING CENTER EMS COMPARTMENT

A forward facing EMS compartment will be provided in the crew cab on top of the engine tunnel.

The compartment will be 26.50" wide x 27.50" high x 20.00" deep. The compartment will be separated into two (2) sections.

The upper section will be approximately 15.50" high with web netting provided on all three (3) sides. The netting is to be made with 1.00" wide nylon material with 2.00" openings. The nylon webbing will be permanently fastened at the bottom side of the compartment and have 1.00" side release fasteners on the opposite side to secure it

A Medi-Kool, Model MK Saline SS, cabinet will be provided in the lower section of the compartment, facing forward. The cabinet exterior will be approximately 22.50" wide x 19.50" deep x 11.75" high with the compressor on the right side. The door will be hinged on the bottom. The driver and passenger sides of the compartment will be louvered for ventilation. A lip will be provided on the sides of the Medi-Kool to prevent items from falling between the compartment and the Medi-Kool cabinet.

There shall be a CompX, Model WS-ICKP-FRG-V, electronic lock provided on the Medi-Kool.

The compartment will be constructed of smooth aluminum and painted to match the cab interior.

Compartment Light

There will be no lighting installed in the compartment.

FORWARD FACING PASSENGER SIDE OUTBOARD SEAT

There will be one (1) forward facing, foldup, Pierce PS6® seat provided at the passenger side outboard position in the crew cab. To maximize accessibility to the crew cab, the seat will be a minimum of 15.00" from the front of the cushion to the face of the seat back and the seat back will be provided with 0 degree fixed recline angle. To ensure safe operation, the seat will be equipped with seat belt sensors in the seat cushion and belt receptacle, that will activate an alarm indicating a seat is occupied but not buckled.

The seat back will be an SCBA back style and be recessed into the rear wall. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat will include the following features incorporated into the side roll protection system:

- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.

- A seat safety system will be included. When activated, this system will pretension the seat belt around the occupant to firmly hold them in place in the event of a side roll.

The seat will be furnished with a 3-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the female buckle and seat belt webbing length will meet or exceed the current NFPA 1901 edition and CAN/ULC - S515 standards. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

To provide proper shoulder, elbow, and hip room, the crew area seat will be positioned such that the center line of the lower cushion is no less than 13.75" from the door pan.

LOUVERS

There will be one (1) louvers provided in the DS crew cab step well compartment EMS compartment(s) for ventilation.

SEAT UPHOLSTERY

All seat upholstery will be gray Turnout Tuff material.

AIR BOTTLE HOLDERS

All SCBA type seats in the cab will have a "Hands-Free" auto clamp style bracket in its backrest. For efficiency and convenience, the bracket will include an automatic spring clamp that allows the occupant to store the SCBA bottle by simply pushing it into the seat back. For protection of all occupants in the cab, in the event of an accident, the inertial components within the clamp will constrain the SCBA bottle in the seat and will exceed the NFPA standard of 9G. Bracket designs with manual restraints (belts, straps, buckles) that could be inadvertently left unlocked and allow the SCBA to move freely within the cab during an accident, will not be acceptable.

There will be a quantity of five (5) SCBA brackets.

ARM REST(S)

The officer seat will have a folding arm rest installed on inboard side only.

ARM REST(S)

The driver seat will have a folding arm rest installed on inboard side only.

SHOULDER HARNESS HEIGHT ADJUSTMENT

All seating positions furnished with 3-point shoulder type seat belts will include a height adjustment. This adjustment will optimize the belts effectiveness and comfort for the seated firefighter.

A total of six (6) seating positions will have the adjustable shoulder harness.

SEAT BELTS

All seating positions in the cab and crew cab will have red seat belts.

HELMET STORAGE

Helmet storage will be located in a body compartment.

CAB DOME LIGHTS

There will be four (4) Weldon 808* series, dual LED dome lights with black bezels provided. Two (2) lights will be mounted above the inside shoulder of the driver and officer and two (2) lights will be installed and located, one (1) on each side of the crew cab.

The color of the LED's will be red and white .

The white LED's will be controlled by the door switches and the lens switch.

The color LED's will be controlled by the lens switch.

HAND HELD SPOTLIGHT

There will be four (4) Streamlight, Model Survivor 90509, LED flashlights with 12 volt DC chargers provided and installed (2) on the mount plate on top of the engine tunnel - outside of the Vulcan flashlights, one to the right of the driver and one to the left of the officer on the flat space between the seats..

ADDITIONAL HAND HELD LIGHT

There will be two (2) lights additional 12v Streamlight, Model #44451, Fire Vulcan LED light(s) will be provided and mounted on the mount plate on top of the engine tunnel with the light facing forward. Each light will be provided with a 12 volt direct wire vehicle mounting rack.

Each light housing will be orange in color and be provided with a single C4 LED bulb and two (2) "ultra bright blue tail-light LEDs". The tail-light LEDs will have a dual mode of blinking or steady.

CAB INSTRUMENTATION

The cab instrument panel will consist of gauges, an LCD display, telltale indicator lights, alarms, control switches, and a diagnostic panel. The function of instrument panel controls and switches will be identified by a label adjacent to each item. Actuation of the headlight switch will illuminate the labels in low light conditions. Telltale indicator lamps will not be illuminated unless necessary. The cab instruments and controls will be conveniently located within the forward cab section directly forward of the driver. Gauge and switch panels will be designed to be removable for ease of service and low cost of ownership.

GAUGES

The gauge panel will include the following ten (10) ivory gauges with chrome bezels to monitor vehicle performance:

- Voltmeter gauge (Volts)

- Low volts (11.8 VDC)

Amber indicator on gauge assembly with alarm

High volts (15 VDC)

Amber indicator on gauge assembly with alarm

Very low volts (11.3 VDC)

Amber indicator on gauge assembly with alarm

Very high volts (16 VDC)

Amber indicator on gauge assembly with alarm

- Tachometer (RPM)

- Speedometer (Primary (outside) MPH, Secondary (inside) Km/H)

- Fuel level gauge (Empty - Full in fractions)

Low fuel (1/8 full)

Amber indicator on gauge assembly with alarm

Very low fuel (1/32) fuel

Amber indicator on gauge assembly with alarm

- Engine oil pressure gauge (PSI)

Low oil pressure to activate engine warning lights and alarms

Red indicator on gauge assembly with alarm

- Front air pressure gauge (PSI)

Low air pressure to activate warning lights and alarm

Red indicator on gauge assembly with alarm

- Rear air pressure gauge (PSI)

Low air pressure to activate warning lights and alarm

Red indicator on gauge assembly with alarm

- Transmission oil temperature gauge (Fahrenheit)

High transmission oil temperature activates warning lights and alarm

Amber indicator on gauge assembly with alarm

- Engine coolant temperature gauge (Fahrenheit)

High engine temperature activates an engine warning light and alarm

Red indicator on gauge assembly with alarm

- Diesel Exhaust Fluid Level Gauge (Empty - Full in fractions)

Low fluid (1/8 full)

Amber indicator on gauge assembly with alarm

All gauges and gauge indicators will perform prove out at initial power-up to ensure proper performance.

INDICATOR LAMPS

To promote safety, the following telltale indicator lamps will be integral to the gauge assembly and are located above and below the center gauges. The indicator lamps will be "dead-front" design that is only visible when active. The colored indicator lights will have descriptive text or symbols.

The following amber telltale lamps will be present:

- Low coolant
- Trac cntl (traction control) (where applicable)
- Check engine
- Check trans (check transmission)
- Aux brake overheat (Auxiliary brake overheat)
- Air rest (air restriction)
- Caution (triangle symbol)
- Water in fuel
- DPF (engine diesel particulate filter regeneration)
- Trailer ABS (where applicable)
- Wait to start (where applicable)
- HET (engine high exhaust temperature) (where applicable)
- ABS (antilock brake system)

- MIL (engine emissions system malfunction indicator lamp) (where applicable)
- SRS (supplemental restraint system) fault (where applicable)
- DEF (low diesel exhaust fluid level)

The following red telltale lamps will be present:

- Warning (stop sign symbol)
- Seat belt
- Parking brake
- Stop engine
- Rack down

The following green telltale lamps will be provided:

- Left turn
- Right turn
- Battery on

The following blue telltale lamp will be provided:

- High beam

ALARMS

Audible steady tone warning alarm: A steady audible tone alarm will be provided whenever a warning message is present.

Audible pulsing tone caution alarm: A pulsing audible tone alarm (chime/chirp) will be provided whenever a caution message is present without a warning message being present.

Alarm silence: Any active audible alarm will be able to be silenced by holding the ignition switch at the top position for three (3) to five (5) seconds. For improved safety, silenced audible alarms will intermittently chirp every 30 seconds until the alarm condition no longer exists. The intermittent chirp will act as a reminder to the operator that a caution or warning condition still exists. Any new warning or caution condition will enable the steady or pulsing tones respectively.

INDICATOR LAMP AND ALARM PROVE-OUT

Telltale indicators and alarms will perform prove-out at initial power-up to ensure proper performance.

CONTROL SWITCHES

For ease of use, the following controls will be provided immediately adjacent to the cab instrument panel within easy reach of the driver.

Emergency master switch: A molded plastic push button switch with integral indicator lamp will be provided. Pressing the switch will activate emergency response lights and siren control. A green lamp on the switch provides indication that the emergency master mode is active. Pressing the switch again disables the emergency master mode.

Headlight / Parking light switch: A three (3)-position maintained rocker switch will be provided. The first switch position will deactivate all parking lights and the headlights. The second switch position will activate the parking lights. The third switch position will activate the headlights.

Panel backlighting intensity control switch: A three (3)-position momentary rocker switch will be provided. The first switch position decreases the panel backlighting intensity to a minimum level as the switch is held. The second switch position is the default position that does not affect the backlighting intensity. The third switch position increases the panel backlighting intensity to a maximum level as the switch is held.

The following standard controls will be integral to the gauge assembly and are located below the right hand gauges. All switches have backlit labels for low light applications.

High idle engagement switch: A two (2)-position momentary rocker switch with integral indicator lamp will be provided. The first switch position is the default switch position. The second switch position will activate and deactivate the high idle function when pressed and released. The "Ok To Engage High Idle" indicator lamp must be active for the high idle function to engage. A green indicator lamp integral to the high idle engagement switch will indicate when the high idle function is engaged.

"Ok To Engage High Idle" indicator lamp: A green indicator light will be provided next to the high idle activation switch to indicate that the interlocks have been met to allow high idle engagement.

The following standard controls will be provided adjacent to the cab gauge assembly within easy reach of the driver. All switches will have backlit labels for low light applications.

Ignition switch: A three (3)-position maintained/momentary rocker switch will be provided. The first switch position will deactivate vehicle ignition. The second switch position will activate vehicle ignition. The third momentary position will disable the Command Zone audible alarm if held for three (3) to five (5) seconds. A green indicator lamp will be activated with vehicle ignition.

Engine start switch: A two (2)-position momentary rocker switch will be provided. The first switch position is the default switch position. The second switch position will activate the vehicle's engine. The switch actuator is designed to prevent accidental activation.

4-way hazard switch: A two (2)-position maintained rocker switch will be provided. The first switch position will deactivate the 4-way hazard switch function. The second switch position will activate the 4-way hazard function. The switch actuator will be red and includes the international 4-way hazard symbol.

Heater, defroster, and optional air conditioning control panel: A control panel with membrane switches will be provided to control heater/defroster temperature and heater, defroster, and air conditioning fan speeds. A green LED status bar will indicate the relative temperature and fan speed settings.

Turn signal arm: A self-canceling turn signal with high beam headlight and windshield wiper/washer controls will be provided. The windshield wiper control will have high, low, and intermittent modes.

Parking brake control: An air actuated push/pull park brake control valve will be provided.

Chassis horn control: Activation of the chassis horn control will be provided through the center of the steering wheel.

CUSTOM SWITCH PANELS

The design of cab instrumentation will allow for emergency lighting and other switches to be placed within easy reach of the operator thus improving safety. There will be positions for up to four (4) switch panels in the overhead console on the driver's side, up to four (4) switch panels in the engine tunnel console facing the driver, up to four (4) switch panels in the overhead console on the officer's side and up to two (2) switch panels in the engine tunnel console facing the officer. All switches will have backlit labels for low light applications.

DIAGNOSTIC PANEL

A diagnostic panel will be accessible while standing on the ground and located inside the driver's side door left of the steering column. The diagnostic panel will allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches will allow engine and ABS systems to provide blink codes should a problem exist.

The diagnostic panel will include the following:

- Engine diagnostic port
- Transmission diagnostic port
- ABS diagnostic port
- SRS diagnostic port (where applicable)
- Command Zone USB diagnostic port
- Engine diagnostic switch (blink codes flashed on check engine telltale indicator)
- ABS diagnostic switch (blink codes flashed on ABS telltale indicator)

- Diesel particulate filter regeneration switch (where applicable)
- Diesel particulate filter regeneration inhibit switch (where applicable)

CAB LCD DISPLAY

A digital four (4)-row by 20-character dot matrix display will be integral to the gauge panel. The display will be capable of showing simple graphical images as well as text. The display will be split into three (3) sections. Each section will have a dedicated function. The upper left section will display the outside ambient temperature.

The upper right section will display, along with other configuration specific information:

- Odometer
- Trip mileage
- PTO hours
- Fuel consumption
- Engine hours

The bottom section will display INFO, CAUTION, and WARNING messages. Text messages will automatically activate to describe the cause of an audible caution or warning alarm. The LCD will be capable of displaying multiple text messages should more than one caution or warning condition exist.

AIR RESTRICTION INDICATOR

A high air restriction warning indicator light LCD message with amber warning indicator and audible alarm shall be provided.

"DO NOT MOVE APPARATUS" INDICATOR

A flashing red indicator light, located in the driving compartment, will be illuminated automatically per the current NFPA requirements. The light will be labeled "Do Not Move Apparatus If Light Is On."

The same circuit that activates the Do Not Move Apparatus indicator will activate a steady tone alarm when the parking brake is released.

DO NOT MOVE TRUCK MESSAGES

Messages will be displayed on the Command Zone™, color display located within sight of the driver whenever the Do Not Move Truck light is active. The messages will designate the item or items not in the stowed for vehicle travel position (parking brake disengaged).

The following messages will be displayed (where applicable):

- Do Not Move Truck
- DS Cab Door Open (Driver Side Cab Door Open)

- PS Cab Door Open (Passenger's Side Cab Door Open)
- DS Crew Cab Door Open (Driver Side Crew Cab Door Open)
- PS Crew Cab Door Open (Passenger's Side Crew Cab Door Open)
- DS Body Door Open (Driver Side Body Door Open)
- PS Body Door Open (Passenger's Side Body Door Open)
- Rear Body Door Open
- DS Ladder Rack Down (Driver Side Ladder Rack Down)
- PS Ladder Rack Down (Passenger Side Ladder Rack Down)
- Deck Gun Not Stowed
- Lt Tower Not Stowed (Light Tower Not Stowed)
- Hatch Door Open
- Fold Tank Not Stowed (Fold-A-Tank Not Stowed)
- Aerial Not Stowed (Aerial Device Not Stowed)
- Stabilizer Not Stowed
- Steps Not Stowed
- Handrail Not Stowed

Any other device that is opened, extended, or deployed that creates a hazard or is likely to cause major damage to the apparatus if the apparatus is moved will be displayed as a caution message after the parking brake is disengaged.

SWITCH PANELS

The emergency light switch panel will have a master switch for ease of use plus individual switches for selective control. Each switch panel will contain eight (8) membrane-type switches each rated for one million (1,000,000) cycles. Panels containing less than eight (8) switch assignments will include non-functioning black appliques. Documentation will be provided by the manufacturer indicating the rated cycle life of the switches. The switch panel(s) will be located in the overhead position above the windshield on the driver side overhead to allow for easy access.

Additional switch panel(s) will be located in the overhead position(s) above the windshield or in designated locations on the lower instrument panel layout.

The switches will be membrane-type and also act as an integral indicator light. For quick, visual indication the entire surface of the switch will be illuminated white whenever back lighting is activated and illuminated green whenever the switch is active. An active illuminated switch will flash when interlock requirements are not met or device is actively being load managed. For ease of use, a two (2)-ply, scratch resistant laser engraved Gravoply label indicating the use of each switch will be placed in the center of the switch. The label will allow light to pass through the letters for ease of use in low light conditions.

WIPER CONTROL

For simple operation and easy reach, the windshield wiper control will be an integral part of the directional light lever located on the steering column. The wiper control will include high and low wiper speed settings, a one (1)-speed intermittent wiper control and windshield washer switch. The control will have a "return to park" provision, which allows the wipers to return to the stored position when the wipers are not in use.

HOURLMETER - AERIAL DEVICE

An hourmeter for the aerial device will be provided and located within the cab display or instrument panel.

AERIAL MASTER

There will be a master switch for the aerial operating electrical system provided.

AERIAL PTO SWITCH

A PTO switch for the aerial with indicator light will be provided.

SPARE CIRCUIT

There will be one (1) pair of wires, including a positive and a negative, installed on the apparatus.

The above wires will have the following features:

The positive wire will be connected directly to the battery power.

The negative wire will be connected to ground.

Wires will be protected to 40 amps at 12 volts DC.

Power and ground will terminate behind the officers seat.

Termination will be with a 10-place bus bar with screws and removable cover.

Wires will be sized to 125% of the protection.

This circuit(s) may be load managed when the parking brake is set.

SPARE CIRCUIT

There will be one (1) pair of wires, including a positive and a negative, installed on the apparatus.

The above wires will have the following features:

- The positive wire will be connected directly to the battery power
- The negative wire will be connected to ground
- Wires will be protected to 15 amps at 12 volts DC
- Power and ground will terminate officer side dash area
- Termination will be with 15 amp, power point plug with rubber cover

- Wires will be sized to 125 percent of the protection

The circuit(s) may be load managed when the parking brake is set.

SPARE CIRCUIT

There will be one (1) pair of wires, including a positive and a negative, installed on the apparatus.

The above wires will have the following features:

- The positive wire will be connected directly to the battery power
- The negative wire will be connected to ground
- Wires will be protected to 30 amps at 12 volts DC
- Power and ground will terminate D4 in the upper forward portion of the compartment - back wall
- Termination will be with a 10-place bus bar with screws and removable cover
- Wires will be sized to 125% of the protection

This circuit(s) may be load managed when the parking brake is set.

INSTRUMENT PANEL CUTOUT

In the overhead instrument panel, the overhead location #5 will have a 8.00" x 8.00" cutout to have quick access to their radio from underneath. The panel will have a hinge on the forward position and a flat paddle latch on the rear portion.

SPECIAL PUC GAUGE LOCATION

The pump pressure gauge and water/foam level gauges will be located on the center dash area to the left of the differential lock.

INFORMATION CENTER

An information center employing a 7.00" diagonal touch screen color LCD display will be encased in an ABS plastic housing.

The information center will have the following specifications:

- Operate in temperatures from -40 to 185 degrees Fahrenheit
- An Optical Gel will be placed between the LCD and protective lens
- Five weather resistant user interface switches
- Grey with black accents
- Sunlight Readable
- Linux operating system
- Minimum of 1000nits rated display
- Display can be changed to an available foreign language
- A LCD display integral to the cab gauge panel will be included as outlined in the cab instrumentation area.

- Programmed to read US Customary

GENERAL SCREEN DESIGN

Where possible, background colors will be used to provide "At a Glance" vehicle information. If information provided on a screen is within acceptable limits, a green background will be used.

If a caution or warning situation arises the following will occur:

- An amber background/text color will indicate a caution condition
- A red background/text color will indicate a warning condition
- The information center will utilize an "Alert Center" to display text messages for audible alarm tones. The text messages will be written to identify the item(s) causing the audible alarm to sound. If more than one (1) text message occurs, the messages will cycle every second until the problem(s) have been resolved. The background color for the "Alert Center" will change to indicate the severity of the "warning" message. If a warning and a caution condition occur simultaneously, the red background color will be shown for all alert center messages.
- A label for each button will exist. The label will indicate the function for each active button for each screen. Buttons that are not utilized on specific screens will have a button label with no text or symbol.

HOME/TRANSIT SCREEN

This screen will display the following:

- Vehicle Mitigation (if equipped)
- Water Level (if equipped)
- Foam Level (if equipped)
- Seat Belt Monitoring Screen
- Tire Pressure Monitoring (if equipped)
- Digital Speedometer
- Active Alarms

ON SCENE SCREEN

This screen will display the following and will be auto activated with pump engaged (if equipped):

- Battery Voltage
- Fuel
- Oil Pressure
- Coolant Temperature
- RPM
- Water Level (if equipped)
- Foam Level (if equipped)
- Foam Concentration (if equipped)

- Water Flow Rate (if equipped)
- Water Used (if equipped)
- Active Alarms

VIRTUAL BUTTONS

There will be four (4) virtual switch panel screens that match the overhead and lower lighting and HVAC switch panels.

PAGE SCREEN

The page screen will display the following and allow the user to progress into other screens for further functionality:

- Diagnostics
 - Faults
 - Listed by order of occurrence
 - Allows to sort by system
 - Interlock
 - Throttle Interlocks
 - Pump Interlocks (if equipped)
 - Aerial Interlocks (if equipped)
 - PTO Interlocks (if equipped)
 - Load Manager
 - A list of items to be load managed will be provided. The list will provide a description of the load.
 - The lower the priority numbers the earlier the device will be shed should a low voltage condition occur.
 - The screen will indicate if a load has been shed (disabled) or not shed.
 - "At a glance" color features are utilized on this screen.
 - Systems
 - Command Zone
 - Module type and ID number
 - Module Version
 - Input or output number
 - Circuit number connected to that input or output
 - Status of the input or output
 - Power and Constant Current module diagnostic information
 - Foam (if equipped)
 - Pressure Controller (if equipped)
 - Generator Frequency (if equipped)
 - Live Data
 - General Truck Data

- Maintenance
 - Engine oil and filter
 - Transmission oil and filter
 - Pump oil (if equipped)
 - Foam (if equipped)
 - Aerial (if equipped)
- Setup
 - Clock Setup
 - Date & Time
 - 12 or 24 hour format
 - Set time and date
 - Backlight
 - Daytime
 - Night time
 - Sensitivity
 - Unit Selection
 - Home Screen
 - Virtual Button Setup
 - On Scene Screen Setup
 - Configure Video Mode
 - Set Video Contrast
 - Set Video Color
 - Set Video Tint
- Do Not Move
 - The screen will indicate the approximate location and type of item that is open or is not stowed for travel. The actual status of the following devices will be indicate
 - Driver Side Cab Door
 - Passenger's Side Cab Door
 - Driver Side Crew Cab Door
 - Passenger's Side Crew Cab Door
 - Driver Side Body Doors
 - Passenger's Side Body Doors
 - Rear Body Door(s)
 - Ladder Rack (if applicable)
 - Deck Gun (if applicable)
 - Light Tower (if applicable)
 - Hatch Door (if applicable)
 - Stabilizers (if applicable)
 - Steps (if applicable)
- Notifications

- View Active Alarms
 - Shows a list of all active alarms including date and time of the occurrence is shown with each alarm
 - Silence Alarms - All alarms are silenced
- Timer Screen
- HVAC (if equipped)
- Tire Information (if equipped)

Button functions and button labels may change with each screen.

VEHICLE DATA RECORDER

There will be a vehicle data recorder (VDR) capable of reading and storing vehicle information provided.

The information stored on the VDR can be downloaded through a USB port mounted in a convenient location determined by cab model. A USB cable can be used to connect the VDR to a laptop to retrieve required information. The program to download the information from the VDR will be available to download on-line.

The vehicle data recorder will be capable of recording the following data via hardwired and/or CAN inputs:

- Vehicle Speed - MPH
- Acceleration - MPH/sec
- Deceleration - MPH/sec
- Engine Speed - RPM
- Engine Throttle Position - % of Full Throttle
- ABS Event - On/Off
- Seat Occupied Status - Yes/No by Position
- Seat Belt Buckled Status - Yes/No by Position
- Master Optical Warning Device Switch - On/Off
- Time - 24 Hour Time
- Date - Year/Month/Day

Seat Belt Monitoring System

A seat belt monitoring system (SBMS) will be provided on the Command Zone™ color display. The SBMS will be capable of monitoring up to 10 seating positions indicating the status of each seat position per the following:

- Seat Occupied & Buckled = Green LED indicator illuminated
- Seat Occupied & Unbuckled = Red LED indicator with audible alarm
- No Occupant & Buckled = Red LED indicator with audible alarm

- No Occupant & Unbuckled = No indicator and no alarm

The seat belt monitoring screen will become active on the Command Zone color display when:

- The home screen is active:
 - and there is any occupant seated but not buckled or any belt buckled with an occupant.
 - and there are no other Do Not Move Apparatus conditions present. As soon as all Do Not Move Apparatus conditions are cleared, the SBMS will be activated.

The SBMS will include an audible alarm that will warn that an unbuckled occupant condition exists and the parking brake is released, or the transmission is not in park.

INTERCOM SYSTEM

A six (6) position David Clark, Model U3800, intercom system with single radio interface capability at the driver and officer positions will be provided. The driver will have a remote push-to-transmit momentary rocker switch, and the officer will have a remote push-to-transmit button located the far right rocker switch in panel #10 and between panels 5 and 6 overhead in front of the officer - match 28623.. Four (4) outboard crew cab seating positions will have intercom only.

The following components will be supplied with this system:

- One (1) U3805 Radio Cord Junction Module
- Two (2) U3815 Radio Interface Modules (Driver, Officer)
- One (1) Momentary push-to-talk rocker switches (Driver)
- One (1) Remote PTT (Officer)
- One (1) U3800 Intercom Unit (1 Crew)
- Two (2) U3802 Single Intercom Headset Stations (2 Crew)
- One (1) U3801 Single Intercom Headset Station (1 Crew)
- One (1) C3820 Power Cable
- All necessary interconnect cables and connectors

RADIO / INTERCOM INTERFACE INCLUDED

All radio interfaced stations will have universal radio interfaces installed. The interface wiring will be routed within the cab to behind the panel in the center instrument panel .

UNDER THE HELMET HEADSET

There will be four (4) under the helmet, headset(s) provided driver, officer and both rear facing crew cab seats.

Each David Clark, Model H3442, headset will feature:

- 5' Coiled cord
- Noise cancelling electric microphone



- Flexible microphone boom rotates 200 degrees for left or right dress
- Microphone on/off button
- Comfort Gel Earseals
- 23 dB noise reduction

HEADSET HANGERS

There will be six (6) headset hanger(s) installed driver's seat, officer's seat, driver's side outboard forward facing seat, driver's side outboard rear facing seat, passenger's side outboard forward facing seat and passenger's side outboard rear facing seat. The hanger(s) will meet NFPA 1901, Section 14.1.11, requirement for equipment mounting.

COMPLETE MDT INSTALLATION

There will be one (1) customer supplied Mobile Data Terminal (MDT), Docking station, Mounting bracket, power supply, antenna, GPS, modem, and all cabling sent to the apparatus manufacturers preferred installer to be installed MDC and docking station on the swivel mount in the center console - the Trimble unit to be installed behind the officers seat (match 28623), . Specific shipping requirements will be followed.

TWO WAY RADIO SPEAKER INSTALLATION

There will be one (1) customer supplied two way radio speakers sent to the apparatus manufacturers preferred third party installer to be installed centered in the overhead instrument panel - forward of the warning light.

Specific shipping requirements will be followed.

TWO WAY RADIO INSTALLATION

There will be one (1) customer supplied two way radio(s) sent to the apparatus manufacturers preferred radio installer to be installed location #5 per the shipping document.

No antenna mount or whip will be included in this option.

Specific radio shipping requirements will be followed.

RADIO ANTENNA MOUNT

There will be one (1) standard 1.125", 18 thread antenna-mounting base(s) installed overhead switch panel in front of the officer on the cab roof with high efficiency, low loss, coaxial cable(s) routed to the overhead switch area. A weatherproof cap will be installed on the mount.



VEHICLE CAMERA SYSTEM

There will be a color vehicle camera system provided with the following:

- One (1) camera located at the rear of the apparatus, pointing rearward, displayed automatically with the vehicle in reverse

- One (1) camera located on the passenger side of the apparatus, pointing rearward, displayed automatically with the passenger side turn signal

The camera images will be displayed on the driver's color Mux display. Audio from the microphone on the rear camera will be emitted by an amplified speaker with volume control in the blank panel to the right of the steering column.

The following components will be included:

- One (1) SV-CW134639CAI Camera
- One (1) CS134404CI Side camera
- One (1) Amplified speaker (if applicable)
- All necessary cables

VEHICLE CAMERA GUARD

There will be one (1) aluminum treadplate guard(s) fastened over the vehicle camera(s) located match relocated location of job 29099 at the very rear of the truck .

KNOX-BOX MOUNTING BRACKET

A Knox-Box 60 degree mounting bracket, Model 2696, will be provided. The bracket will be mounted to the key storage located on a bracket installed on the engine tunnel between the AC drains angled towards the officers seat - match 29099., within the cab.

KNOX-BOX

There will be a Knox-Box® KeySecure® 4, Model 2660B*, with key pad access provided. The system will allow all administration functions to be performed via WiFi, Ethernet cable or USB port. It will have a blue strobe light to warn when the master key is in an unsecured position. The box will be surface mounted and installed on a bracket installed on the engine tunnel between the AC drains angled towards the officers seat - match 29099., within the cab. The antenna will be located on the right side of the box.

ELECTRICAL POWER CONTROL SYSTEM

The primary power distribution will be located forward of the officer's seating position and be easily accessible while standing on the ground for simplified maintenance and troubleshooting. Additional electrical distribution centers will be provided throughout the vehicle to house the vehicle's electrical power, circuit protection, and control components. The electrical distribution centers will be located strategically throughout the vehicle to minimize wire length. For ease of maintenance, all electrical distribution centers will be easily accessible. All distribution centers containing fuses, circuit breakers and/or relays will be easily accessible.

Distribution centers located throughout the vehicle will contain battery powered studs for supplying customer installed equipment thus providing a lower cost of ownership.

Circuit protection devices, which conform to SAE standards, will be utilized to protect electrical circuits. All circuit protection devices will be rated per NFPA requirements to prevent wire and component damage when subjected to extreme current overload. General protection circuit breakers will be Type-I automatic reset (continuously resetting). When required, automotive type fuses will be utilized to protect electronic equipment. Control relays and solenoid will have a direct current rating of 125 percent of the maximum current for which the circuit is protected per NFPA.

SOLID-STATE CONTROL SYSTEM

A solid-state electronics based control system will be utilized to achieve advanced operation and control of the vehicle components. A fully computerized vehicle network will consist of electronic modules located near their point of use to reduce harness lengths and improve reliability. The control system will comply with SAE J1939-11 recommended practices.

The control system will operate as a master-slave system whereas the main control module instructs all other system components. The system will contain patented Mission Critical software that maintains critical vehicle operations in the unlikely event of a main controller error. The system will utilize a Real Time Operating System (RTOS) fully compliant with OSEK/VDX™ specifications providing a lower cost of ownership.

For increased reliability and simplified use the control system modules will include the following attributes:

- Green LED indicator light for module power
- Red LED indicator light for network communication stability status
- Control system self test at activation and continually throughout vehicle operation
- No moving parts due to transistor logic
- Software logic control for NFPA mandated safety interlocks and indicators
- Integrated electrical system load management without additional components
- Integrated electrical load sequencing system without additional components
- Customized control software to the vehicle's configuration
- Factory and field re programmable to accommodate changes to the vehicle's operating parameters
- Complete operating and troubleshooting manuals
- USB connection to the main control module for advanced troubleshooting

To assure long life and operation in a broad range of environmental conditions, the solid-state control system modules will meet the following specifications:

- Module circuit board will meet SAE J771 specifications
- Operating temperature from -40C to +70C
- Storage temperature from -40C to +70C
- Vibration to 50g

IP67 rated enclosure (Totally protected against dust and also protected against the effect of temporary immersion between 15 centimeters and one (1) meter)

Operating voltage from eight (8) volts to 16 volts DC

The main controller will activate status indicators and audible alarms designed to provide warning of problems before they become critical.

CIRCUIT PROTECTION AND CONTROL DIAGRAM

Copies of all job-specific, computer network input and output (I/O) connections will be provided with each chassis. The sheets will indicate the function of each module connection point, circuit protection information (where applicable), wire numbers, wire colors and load management information.

ON-BOARD ELECTRICAL SYSTEM DIAGNOSTICS

Advanced on-board diagnostic messages will be provided to support rapid troubleshooting of the electrical power and control system. The diagnostic messages will be displayed on the information center located at the driver's position.

The on-board information center will include the following diagnostic information:

- Text description of active warning or caution alarms
- Simplified warning indicators
- Amber caution indication with intermittent alarm
- Red warning indication with steady tone alarm

TECH MODULE WITH WIFI

An in cab module will provide Wifi wireless interface and data logging capability. (No Exception) The Wifi interface will comply with IEEE 802.11 b/g/n capabilities while communicating at 2.4 Gigahertz. The module will provide an external antenna connection allowing a line of site communication range of up to 300 feet with a roof mounted antenna.

The module will transmit a password protected web page to a wifi enabled device (i.e. most smart phones, tablets or laptops) allowing two levels of user interaction. The firefighter level will allow vehicle monitoring of the vehicle and firefighting systems on the apparatus. The technician level will allow diagnostic access to inputs and outputs installed on the Command Zone™, control and information system.

The data logging capability will record faults from the engine, transmission, ABS and Command Zone, control and information systems as they occur. No other data will be recorded at the time the fault occurs. The data logger will provide up to 2 Gigabytes of data storage.

A USB connection will be provided on the Tech Module. It will provide a means to download data logger information and update software in the device.

PROGNOSTICS

A software based vehicle tool will be provided to predict remaining life of the vehicles critical fluid and events (no exceptions).

The system will send automatic indications to the Command Zone, color display and/or wireless enabled device to proactively alert of upcoming service intervals.

Prognostics will include:

- Engine oil and filter
- Transmission oil and filter
- Pump oil (if equipped)
- Foam oil (if equipped)
- Aerial oil and filter (if equipped)

ADVANCED DIAGNOSTICS

An advanced, Windows-based, diagnostic software program will be provided for this control system. The software will provide troubleshooting tools to service technicians equipped with a Windows-based computer or wireless enabled device.

The service and maintenance software will be easy to understand and use and have the ability to view system input/output (I/O) information.

INDICATOR LIGHT AND ALARM PROVE-OUT SYSTEM

A system will be provided which automatically tests basic indicator lights and alarms located on the cab instrument panel.

VOLTAGE MONITOR SYSTEM

A voltage monitoring system will be provided to indicate the status of the battery system connected to the vehicle's electrical load. The system will provide visual and audible warning when the system voltage is below or above optimum levels.

The alarm will activate if the system falls below 11.8 volts DC for more than two (2) minutes.

DEDICATED RADIO EQUIPMENT CONNECTION POINTS

There will be three (3) studs provided in the primary power distribution center located in front of the officer for two-way radio equipment.

The studs will consist of the following:

- 12-volt 40-amp battery switched power
- 12-volt 60-amp ignition switched power
- 12-volt 60-amp direct battery power

There will also be a 12-volt 100-amp ground stud located in or adjacent to the power distribution center.

ENHANCED SOFTWARE

The solid-state control system will include the following software enhancements:

All perimeter lights and scene lights (where applicable) will be deactivated when the parking brake is released.

Cab and crew cab dome lights will remain on for ten (10) seconds for improved visibility after the doors close. The dome lights will dim after ten (10) seconds or immediately if the vehicle is put into gear.

Cab and crew cab perimeter lights will remain on for ten (10) seconds for improved visibility after the doors close. The dome lights will dim after ten (10) seconds or immediately if the vehicle is put into gear.

EMI/RFI PROTECTION

To prevent erroneous signals from crosstalk contamination and interference, the electrical system will meet, at a minimum, SAE J551/2, thus reducing undesired electromagnetic and radio frequency emissions. An advanced electrical system will be used to ensure radiated and conducted electromagnetic interference (EMI) or radio frequency interference (RFI) emissions are suppressed at their source.

The apparatus will have the ability to operate in the electromagnetic environment typically found in fire ground operations to ensure clean operations. The electrical system will meet, without exceptions, electromagnetic susceptibility conforming to SAE J1113/25 Region 1, Class C EMR for 10Khz-1GHz to 100 Volts/Meter. The vehicle OEM, upon request, will provide EMC testing reports from testing conducted on an entire apparatus and will certify that the vehicle meets SAE J551/2 and SAE J1113/25 Region 1, Class C EMR for 10Khz-1GHz to 100 Volts/Meter requirements. Component and partial (incomplete) vehicle testing is not adequate as overall vehicle design can impact test results and thus is not acceptable by itself.

EMI/RFI susceptibility will be controlled by applying appropriate circuit designs and shielding. The electrical system will be designed for full compatibility with low-level control signals and high-powered two-way radio communication systems. Harness and cable routing will be given careful attention to minimize the potential for conducting and radiated EMI/RFI susceptibility.

ELECTRICAL

All 12-volt electrical equipment installed by the apparatus manufacturer will conform to modern automotive practices. All wiring will be high temperature crosslink type. Wiring will be run, in loom or conduit, where exposed and have grommets where wire passes through sheet metal. Automatic reset circuit breakers will be provided which conform to SAE Standards. Wiring will be color, function and number coded. Function and number codes will be continuously imprinted on all wiring harness conductors at 2.00" intervals. Exterior exposed wire connectors will be positive locking, and

environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids.

Electrical wiring and equipment will be installed utilizing the following guidelines:

1. All holes made in the roof will be caulked with silicon, rope caulk is not acceptable. Large fender washers, liberally caulked, will be used when fastening equipment to the underside of the cab roof.
2. Any electrical component that is installed in an exposed area will be mounted in a manner that will not allow moisture to accumulate in it. Exposed area will be defined as any location outside of the cab or body.
3. Electrical components designed to be removed for maintenance will not be fastened with nuts and bolts. Metal screws will be used in mounting these devices. Also a coil of wire will be provided behind the appliance to allow them to be pulled away from mounting area for inspection and service work.
4. Corrosion preventative compound will be applied to all terminal plugs located outside of the cab or body. All non-waterproof connections will require this compound in the plug to prevent corrosion and for easy separation (of the plug).
5. All lights that have their sockets in a weather exposed area will have corrosion preventative compound added to the socket terminal area.
6. All electrical terminals in exposed areas will have silicon (1890) applied completely over the metal portion of the terminal.

All lights and reflectors, required to comply with Federal Motor Vehicle Safety Standard #108, will be furnished. Rear identification lights will be recessed mounted for protection. Lights and wiring mounted in the rear bulkheads will be protected from damage by installing a false bulkhead inside the rear compartments.

An operational test will be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order.

The results of the tests will be recorded and provided to the purchaser at time of delivery.

BATTERY SYSTEM

Five (5) 12 volt, Exide, Model 31S950X3W, group 31 batteries that include the following features will be provided:

- 950 CCA, cold cranking amps
- 190 amp reserve capacity
- High cycle
- Rating of 4750 CCA at 0 degrees Fahrenheit
- 950 minutes of reserve capacity
- Threaded stainless steel studs

Each battery case will be a black polypropylene material with a vertically ribbed container for increased vibration resistance. The cover will be manifold vented with a central venting location to allow a 45 degree tilt capacity.

The inside of each battery will consist of a "maintenance free" grid construction with poly wrapped separators and a flooded epoxy bottom anchoring for maximum vibration resistance.

ISOLATED BATTERY

One (1) 12 volt, Exide, Model 31S950X3W, battery will be provided for voltage sensitive components. A battery isolator appropriately suited for the battery capacity will be supplied.

BATTERY SYSTEM

There will be a single starting system with an ignition switch and starter button provided and located on the cab instrument panel.

MASTER BATTERY SWITCH

There will be a master battery switch provided within the cab within easy reach of the driver to activate the battery system.

An indicator light will be provided on the instrument panel to notify the driver of the status of the battery system.

BATTERY COMPARTMENTS

Batteries will be stored in a well-ventilated location under the cab, between the chassis frame rails, ahead of the front wheels. The battery compartments will be constructed of 3/16" steel plate and be designed to accommodate a maximum of six (6) group 31 batteries in each compartment. The battery hold-downs will be of a non-corrosive material. All bolts and nuts will be stainless steel.

Heavy-duty battery cables will be used to provide maximum power to the electrical system. Cables will be color-coded.

Battery terminal connections will be coated with anti-corrosion compound. Battery solenoid terminal connections will be encapsulated with semi-permanent rubberized compound.

JUMPER STUDS

One (1) set of battery jumper studs with plastic color-coded covers will be remotely located at the front left side corner of the cab for easy jumper cable access.

BATTERY CHARGER

A Xantrex TrueCharge2, Model 804-1240, battery charger will be provided.

This charging system will include the remote panel Xantrex, Model 80-8040-01.

The charger will have a maximum output of 40 amps and is able to charge up to three (3) battery banks.

The battery charger will be wired to the 120-volt shoreline to activate automatically when power is connected.

Battery charger will be located DS crew cab step well compartment.

The battery charger indicator will be located near the driver's seat riser with special bracketry.

AUTO EJECT FOR SHORELINE

There will be one (1) Kussmaul™, Model 091-55-20-120, 20 amp 120 volt AC shoreline inlet(s) provided to operate the dedicated 120 volt AC circuits on the apparatus.

The shoreline inlet(s) will include red weatherproof flip up cover(s).

There will be a release solenoid wired to the vehicle's starter to eject the AC connector when the engine is starting.

The shoreline(s) will be connected to battery charger and air compressor.

There will be a mating connector body supplied with the loose equipment.

There will be a label installed near the inlet(s) that state the following:

- Line Voltage
- Current Rating (amps)
- Phase
- Frequency

The shoreline receptacle will be located on the driver side of cab, above wheel.

ALTERNATOR

A Delco Remy®, Model 55SI, alternator will be provided. It will have a rated output current of 430 amps, as measured by SAE method J56. The alternator will feature an integral regulator and rectifier system that has been tested and qualified to an ambient temperature of 257 degrees Fahrenheit (125 degrees Celsius). The alternator will be connected to the power and ground distribution system with heavy-duty cables sized to carry the full rated alternator output.

DUAL USB SOCKET

There will be one (1) Kussmaul, 091-219, dual USB type A charger sockets installed officers side dash . Power will be directly to the battery power .

ELECTRONIC LOAD MANAGER

An electronic load management (ELM) system will be provided that monitors the vehicles 12-volt electrical system, automatically reducing the electrical load in the event of a low voltage condition, and automatically restoring the shed electrical loads when a low voltage condition expires. This ensures the integrity of the electrical system.



For improved reliability and ease of use, the load manager system will be an integral part of the vehicle's solid state control system requiring no additional components to perform load management tasks. Load management systems which require additional components will not be allowed.

The system will include the following features:

- System voltage monitoring.
- A shed load will remain inactive for a minimum of five minutes to prevent the load from cycling on and off.
- Sixteen available electronic load shedding levels.
- Priority levels can be set for individual outputs.
- High Idle to activate before any electric loads are shed and deactivate with the service brake.
 - If enabled:
 - "Load Man Hi-Idle On" will display on the information center.
 - Hi-Idle will not activate until 30 seconds after engine start up.
- Individual switch "on" indicator to flash when the particular load has been shed.
- The information center indicates system voltage.

The information center, where applicable, includes a "Load Manager" screen indicating the following:

- Load managed items list, with priority levels and item condition.
- Individual load managed item condition:
 - ON = not shed
 - SHED = shed

SEQUENCER

A sequencer will be provided that automatically activates and deactivates vehicle loads in a preset sequence thereby protecting the alternator from power surges. This sequencer operation will allow a gradual increase or decrease in alternator output, rather than loading or dumping the entire 12 volt load to prolong the life of the alternator.

For improved reliability and ease of use, the load sequencing system will be an integral part of the vehicle's solid state control system requiring no additional components to perform load sequencing tasks. Load sequencing systems which require additional components will not be allowed.

Emergency light sequencing will operate in conjunction with the emergency master light switch. When the emergency master switch is activated, the emergency lights will be activated one by one at half-second intervals. Sequenced emergency light switch indicators will flash while waiting for activation.

When the emergency master switch is deactivated, the sequencer will deactivate the warning light loads in the reverse order.

Sequencing of the following items will also occur, in conjunction with the ignition switch, at half-second intervals:

- Cab Heater and Air Conditioning
- Crew Cab Heater (if applicable)
- Crew Cab Air Conditioning (if applicable)
- Exhaust Fans (if applicable)
- Third Evaporator (if applicable)

HEADLIGHTS

There will be four (4) JW Speaker®, rectangular LED lights mounted in the front quad style, chrome housing on each side of the cab grille:

- The outside light on each side will contain a Model 8800-12V - DOT/ECE LB LED, low beam module.
- The inside light on each side will contain a Model 8800 -12V - DOT/ECE HB LED, high beam module.

DIRECTIONAL LIGHTS

There will be two (2) Whelen 600® series, LED combination directional/marker lights provided. The lights will be located on the outside cab corners, next to the headlights.

The color of the lenses will be clear.

CAB CLEARANCE/MARKER/ID LIGHTS

There will be seven (7) amber LED lights provided to indicate the presence and overall width of the vehicle in the following locations:

- Three (3) amber LED identification lights will be installed in the center of the cab above the windshield.
- Two (2) amber LED clearance lights will be installed, one (1) on each outboard side of the cab above the windshield.
- Two (2) amber LED marker lights will be installed, one (1) on each side above the cab doors.

INTERMEDIATE LIGHT

There will be two (2) Weldon, Model 9186-8580-29, amber LED turn signal marker lights furnished, one (1) each side, in the rear fender panel. The light will double as a turn signal and marker light.

PLATFORM CLEARANCE/MARKER/ID LIGHTS

There will be five (5) amber LED lights provided to indicate the presence and overall width of the vehicle in the following locations:

- Three (3) amber LED identification lights will be installed on the front of the aerial basket, centered.
- Two (2) amber LED clearance/marker lights will be installed, one (1) on each corner of the aerial basket visible from the side and the front of the vehicle.

FRONT CAB SIDE DIRECTIONAL/MARKER LIGHTS

There will be two (2) Truck-Lite®, Model 19036Y, amber LED lights installed to the outside of the chrome wrap around bezel, one (1) on each side of the cab.

The lights will activate as marker lights with the headlight switch and directional lights with the corresponding directional circuit.

REAR CLEARANCE/MARKER/ID LIGHTING

There will be three (3) LED identification lights located at the rear installed per the following:

- As close as practical to the vertical centerline
- Centers spaced not less than 6.00" or more than 12.00" apart
- Red in color
- All at the same height

There will be two (2) LED lights installed at the rear of the apparatus used as clearance lights located at the rear of the apparatus per the following:

- To indicate the overall width of the vehicle
- One (1) each side of the vertical centerline
- As near the top as practical
- Red in color
- To be visible from the rear
- All at the same height

There will be two (2) LED lights installed on the side of the apparatus used as marker lights as close to the rear as practical per the following:

- To indicate the overall length of the vehicle
- One (1) each side of the vertical centerline
- As near the top as practical
- Red in color
- To be visible from the side
- All at the same height

The lights will be mounted with an aluminum guard.

There will be two (2) red reflectors located on the rear of the truck facing to the rear. One (1) each side, as far to the outside as practical, at a minimum of 15.00", but no more than 60.00", above the ground.

There will be two (2) red reflectors located on the side of the truck facing to the side. One (1) each side, as far to the rear as practical, at a minimum of 15.00", but no more than 60.00", above the ground.

Per FMVSS 108 and CMVSS 108 requirements.

MARKER LIGHTS

There will be one (1) pair of amber and red LED marker lights with rubber arm, located at the rear of the apparatus. The amber lens will face the front and the red lens will face the rear of the truck.

These lights will be activated with the running lights of the vehicle.

REAR FMVSS LIGHTING

The rear stop/tail and directional LED lighting will consist of the following:

- Two (2) Whelen®, Model M6BTT, red LED stop/tail lights
- Two (2) Whelen, Model M6T, amber LED arrow turn lights

The lights shall be provided with clear lenses.

The lights will be mounted in a polished combination housing.

There will be two (2) Whelen Model M6BUW, LED backup lights provided in the tail light housing.

LICENSE PLATE BRACKET

There will be one (1) license plate bracket mounted on the rear of the body.

A white LED light will illuminate the license plate. A polished stainless steel light shield will be provided over the light that will direct illumination downward, preventing white light to the rear.

LIGHTING BEZEL

There will be two (2) Whelen, Model M6FCV4P, four (4) place chromed ABS housings with Pierce logos provided for the rear M6 series stop/tail, directional, back up, scene lights or warning lights.

BACK-UP ALARM

A PRECO, Model 1040, solid-state electronic audible back-up alarm that actuates when the truck is shifted into reverse will be provided. The device will sound at 60 pulses per minute and automatically adjust its volume to maintain a minimum ten (10) dBA above surrounding environmental noise levels.

CAB PERIMETER SCENE LIGHTS

There will be four (4) Amdor LumaBar H2O, Model AY-9500-020, 20.00" white LED strip lights provided, one (1) for each cab door.

These lights will be activated automatically when the battery switch is on and the exit doors are opened or by the same means as the body perimeter scene lights.

PUMP HOUSE PERIMETER LIGHTS

There will be two (2) Amdor LumaBar H2O, Model AY-9500-020, 20.00" LED weatherproof strip lights with brackets provided under the pump panel running boards, one (1) each side.

The lights will be controlled by the same means as the body perimeter lights.

BODY PERIMETER SCENE LIGHTS

There will be one (1) Amdor LumaBar H2O™, Model AY-9500-020, 20.00" 12 volt DC LED strip light provided under the side turntable access steps.

The perimeter scene lights will be activated when the parking brake is applied.

ADDITIONAL PERIMETER LIGHTS

There will be four (4) lights Amdor® Luma Bar® H2O, Model AY-9500-020, 20.00" LED perimeter light sticks provided one (1) light under compartment D1, one (1) light under compartment P1, one (1) light under compartment D4 and one (1) light under compartment P5.

The lights will be activated by the same means as the body perimeter lights.

STEP LIGHTS

Two (2) white LED step lights will be provided, one (1) on each side of the front body.

In order to ensure exceptional illumination, each light shall provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light.

The lights will be actuated when the parking brake is set.

All other steps on the apparatus will be illuminated per the current edition of NFPA 1901.

12 VOLT LIGHTING

There will be two (2) HiViz, Model FT-B-72-*, 21,067 effective lumens 2.56" high x 72.69" long x 2.45" deep 12 volt LED light(s) provided on the side sheets of the hosebed in the center of the truck - one each side.

The black.

The light(s) will be controlled by two (2) master battery activated momentary switches located one (1) on the driver's side cab instrument panel and one (1) on the officer's side cab instrument panel with a tap feature to cycle through different scene light modes:

- tapping a switch the first time will activate all the LEDs

- tapping a switch the second time will activate the 60-90 degree scene LEDs and the 25-40 degree LEDs
- tapping a switch the third time will activate the 60-90 degree scene LEDs
- tapping the switch a fourth time will deactivate all lights

The lights may be load managed when the parking brake is applied.

DECK LIGHTS

There shall be two (2) Whelen®, Model MPBB, black 12 volt DC LED floodlights with stud bail mount provided at the rear of the hose bed, one (1) each side.

The lights will be activated by a control from a switch at the rear of the truck and a switch located at the driver side switch panel.

WALKING SURFACE LIGHTS

There will be Two (2) Amdor Model LumaBar, white 12 volt DC LED strip light provided in the cargo area to illuminate the interior surface of the cargo area. Light(s) will be located under the top flange of the cargo area.

The light will be activated when the body step lights are on.

WATER TANK

It will have a capacity of 300 gallons and will be constructed of polypropylene plastic in a rectangular shape. There will be a special L-shape notch at the front of the tank for a reel.

The joints and seams will be nitrogen welded inside and out.

The tank will be baffled in accordance with NFPA Bulletin 1901 requirements.

The baffles will have vent openings at both the top and bottom of each baffle to permit movement of air and water between compartments.

The longitudinal partitions will be constructed of .38" polypropylene plastic and extend from the bottom of the tank through the top cover to allow positive welding.

The transverse partitions extend from 4" off the bottom to the underside of the top cover.

All partitions interlock and will be welded to the tank bottom and sides.

The tank top will be constructed of .50" polypropylene.

It will be recessed .38" and will be welded to the tank sides and the longitudinal partitions.

It will be supported to keep it rigid during fast filling conditions.

Construction will include 2.00" polypropylene dowels spaced no more than 30.00" apart and welded to the transverse partitions.

Two of the dowels will be drilled and tapped (.50" diameter, 13.00" deep) to accommodate lifting eyes.

A sump will be provided at the bottom of the water tank. The sump will include a drain plug and the tank outlet.

Tank will be installed in a fabricated "cradle" assembly constructed of structural steel.

Sufficient crossmembers are provided to properly support bottom of tank.

Crossmembers are constructed of steel bar channel or rectangular tubing.

Tank "floats" in cradle to avoid torsional stress caused by chassis frame flexing.

Rubber cushions, .50" thick x 3.00" wide, will be placed on all horizontal surfaces that the tank rests on.

Stops are provided to prevent an empty tank from bouncing excessively while moving vehicle.

Tank mounting system is approved by the manufacturer.

Fill tower will be constructed of .50" polypropylene and will be a minimum of 8.00" wide x 14.00" long.

Fill tower will be furnished with a .25" thick polypropylene screen and a hinged cover.

An overflow pipe, constructed of 4.00" schedule 40 polypropylene, will be installed approximately halfway down the fill tower and extend through the water tank and exit to the rear of the rear axle.

one (1) notch(es) will be provided in the poly water tank to accommodate 300 gallons of water and a 30 gallon non-reduced foam cell.

One (1) sleeve will be provided in the water tank for a 3.00" pipe to the rear.

HOSE BED

The hose body will be fabricated of .125"-5052 aluminum with a nominal 38,000 psi tensile strength.

The hose bed will be located between the tank and the side compartments on the passenger's.

The sides will not form any portion of the fender compartments.

The hose body width will be as wide as possible inside.

The hose bed will be located ahead of the ladder turntable.

Hose removal will be via "chute(s)" at rear of the body under turntable area. The hose chutes will be enclosed with a full height smooth aluminum door with a spring hinge at the top of the door.

Flooring of the hose bed will be removable aluminum grating with the top surface corrugated to aid in hose aeration.

The grating slats will be .50" x 4.50" with spacing between slats for hose ventilation.

Hose capacity will be a minimum of 500' of 5" hose.

AERIAL HOSE BED HOSE RESTRAINT

The hose in the hose bed will be restrained by one (1) black nylon Velcro® strap at the top of the hose bed. The strap will be installed to the top of the hose bed side sheets.

HOSE BED CROSS DIVIDER

There will be one (1) cross divider(s) provided in the hose bed to isolate the generator.

RUNNING BOARDS

A running board will be provided on each side of the front body to allow access to the backboard/crosslay storage area. The running boards will be designed with a grip pattern punched into .125" bright aluminum treadplate material providing support, slip resistance, and drainage.

The runningboard will have a flip out section design that allows easier access to the full width equipment area above. The flip out section will be tied to the "do not move truck indicator" with a sensor when it is flipped out. There will be a latch provided that secures the flip out section when not in use.

HANDRAILS

The handrails will be 1.25" diameter anodized aluminum extrusion, with a ribbed design, to provide a positive gripping surface.

Chrome plated end stanchions will support the handrail. Plastic gaskets will be used between end stanchions and any painted surfaces.

Drain holes will be provided in the bottom of all vertically mounted handrails.

- Two (2) handrails will be provided, one above each running board.

TURNTABLE STEPS

Steps to access the turntable from the driver side will be provided just behind the compartmentation. The steps will be a swing-down design, with the stepping area made of Morton Tread-Grip® channel. The step height for the bottom step (the distance from the top surface of the step to the ground) will not exceed 24.00" with the step in its extended position. No step height (the distance between the top surfaces of any two (2) adjacent steps) will be greater than 14.00". The stepwell will be lined with bright aluminum treadplate to act as scuffplates. The steps will be connected to the "Do Not Move Truck" indicator. The sides of each step package will be modified to allow the rear handrail to be recessed. The rear handrail will not protrude past the body side sheets or above the rear deck.

STEP LIGHTS

There will be three (3) white LED step lights provided for the aerial turntable access steps.

In order to ensure exceptional illumination, each light shall provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light.

The step lights will be actuated by the aerial master switch in the cab.

SMOOTH ALUMINUM REAR WALL

The rear wall will be smooth aluminum.

TOW EYES

Two (2) rear painted tow eyes will be located at the rear of the apparatus and will be mounted directly to the torque box. The inner and outer edges of the tow eyes will be radiused.

COMPARTMENTATION

Compartmentation will be fabricated of .125" 5052 aluminum. The side compartments are an integral assembly with the rear fenders. Fully enclosed rear wheel housings will be provided to prevent rust pockets and for ease of maintenance. Due to the severe loading requirements of this aerial, a method of compartment body support suitable for the intended load will be provided.

The backbone of the support system will be the chassis frame rail, which is the strongest component of the chassis and is designed for sustaining maximum loads.

A support system will be used which will incorporate a floating substructure by using Neoprene Elastomer isolators to allow the body to remain rigid while the chassis goes through its natural flex. The isolators will have a broad range of proven viability in vehicular applications, be of a fail safe design, and allow for all necessary movement in three (3) transitional and rotational modes. This will result in a 500 lb equipment rating for each lower compartment of the body.

The compartmentation in front of the rear axle will include a 3.00" steel support assemblies which are bolted to the chassis frame rails. A steel framework will be mounted to the body above these support assemblies connected to the support assemblies with isolators. There will be one support assembly mounted to each chassis frame rail.

The compartmentation behind the rear axle will include 3.00" steel support assemblies which are bolted to the chassis frame rails and extend underneath to the outside edge of the body. The support assembly will be coated to isolate the dissimilar metals before it is bolted to the body. There will be one (1) support assembly mounted to each chassis frame rail.

Compartment flooring will be of the sweep out design with the floor higher than the compartment door lip. The compartment door openings are framed by flanging the edges in 1.75" and bending out again .75" to form an angle. Drip protection is provided over all door openings by means of bright aluminum

extrusion or formed bright aluminum treadplate. Side compartment tops will be covered with bright aluminum treadplate with a 1.00" rolled over edge on the front, rear and outward side. The covers are fabricated in one (1) piece and have the corners welded. A bright aluminum treadplate cover will be provided on the front wall of each side compartment. All screws and bolts, which protrude into a compartment, will have acorn nuts at the ends to prevent injury.

The body design has been fully tested. Proven engineering and test techniques such as finite element analysis, model analysis, stress coating and strain gauging have been performed with special attention given to fatigue life and structural integrity of the compartment body and substructure.

AGGRESSIVE WALKING SURFACE

All exterior surfaces designated as stepping, standing, and walking areas will comply with the required average slip resistance of the current NFPA standards.

LOUVERS

All body compartments will have a minimum of one (1) set of louvers stamped into a wall to provide the proper airflow inside the compartment and to prevent water from dripping into the compartment. These louvers will be formed into the metal and not added to the compartment as a separate plate.

COMPARTMENTATION, DRIVER SIDE

A full height roll-up door compartment, ahead of the rear wheels, will be provided. The compartment will be 41.75" wide x 64.00" high x 24.25" deep inside the lower 61.00" and 12.00" in the upper portion with a clear door opening of 38.75" wide x 56.38" high.

One (1) roll-up door compartment will be located above the fender compartments and over the rear axles. The compartment will be 72.13" wide x 33.25" high x 24.25" deep inside the lower 30.25" and 12.00" in the upper portion with a clear door opening of 63.75" wide x 25.50" high.

The retracted roll-up door will consume approximately 8.00" in height and 12.00" in depth of the upper outboard portion of each compartment.

A compartment with a single pan stainless steel door will be located above the front stabilizer. The compartment will be 24.25" wide x 15.50" high x 24.25" deep inside the lower 12.50" and 12.00" in the upper portion with a door opening of 18.50" wide x 12.75" high.

A full height roll-up door compartment, behind the rear wheels, will be provided. The compartment will be 43.75" wide x 49.25" high x 21.25" deep with a door opening of 40.75" wide x 41.62" high.

The retracted roll-up door will consume approximately 8.00" in height and 12.00" in depth of the upper outboard portion of each compartment.

One (1) lap door compartment will be located below the turntable. The compartment will be 39.38" wide x 18.38" high x 12.00" deep inside with a door opening of 35.00" wide x 14.88" high.

PASSENGER SIDE COMPARTMENTATION

A full height roll-up door compartment ahead of the rear wheels will be provided. The compartment will be 41.75" wide x 64.00" high x 24.25" deep inside the lower 29.75" and 12.00" deep inside the upper portion with a clear door opening of 38.75" wide x 56.38" high.

One (1) roll-up door compartment will be located above the fender compartments and over the rear axles. The compartment will be 72.13" wide x 33.25" high x 12.00" deep inside with a clear door opening of 63.75" wide x 25.50" high.

The retracted roll-up door will consume approximately 8.00" in height and 12.00" in depth of the upper outboard portion of each compartment.

A compartment with a single pan stainless steel door will be located above the front stabilizer. The compartment will be 24.25" wide x 15.50" high x 24.25" deep with a door opening of 18.50" wide x 12.75" high. The compartment will have an aluminum 4-way cover with access to the top of the cord reel and will be extended above the catwalk to accommodate the reel.

A trough style hose bed will be located behind the compartments. This hose bed will not extend into the compartment above the front stabilizers.

A full height roll-up door compartment behind the rear wheels will be provided. The compartment will be 43.75" wide x 49.25" high x 21.25" deep inside the lower 29.75" and 12.00" deep in the upper portion with a door opening of 40.75" wide x 41.62" high.

The retracted roll-up door will consume approximately 8.00" in height and 12.00" in depth of the upper outboard portion of each compartment.

One (1) compartment will be located below the turntable with a lift-up door. The compartment will be 39.38" wide x 18.38" high x 12.00" deep inside with a door opening of 35.00" wide x 14.88" high.

COMPARTMENT IN PLACE OF TURNTABLE STEPS, PASSENGER SIDE

A roll-up door compartment will be provided in place of the turntable steps. The compartment will be 20.88" wide x 48.25" high x 12.00" deep inside with a door opening of 15.25" wide x 40.62" high.

The retracted roll-up door will consume approximately 8.00" in height and 12.00" in depth of the upper outboard portion of the compartment.

ROLL-UP DOOR, SIDE COMPARTMENTS

There will be nine (9) compartment doors installed on the side compartments. The doors will be double faced aluminum construction, an anodized satin finish and manufactured by A&A Manufacturing (Gortite).

Lath sections will be an interlocking rib design and will be individually replaceable without complete disassembly of door.

Between each slat at the pivoting joint will be a PVC inner seal to prevent metal to metal contact and prevent dirt or moisture from entering the compartments. Seals will allow door to operate in extreme temperatures ranging from plus 180 to minus 40 degrees Fahrenheit. Side, top and bottom seals will be provided to resist ingress of dirt and weather and be made of Santoprene.

All hinges, barrel clips and end pieces will be nylon 66. All nylon components will withstand temperatures from plus 300 to minus 40 degrees Fahrenheit.

A polished stainless steel lift bar to be provided for each roll-up door. Lift bar will be located at the bottom of door and have latches on the outer extrusion of the doors frame. A ledge will be supplied over lift bar for additional area to aid in closing the door.

Doors will be constructed from an aluminum box section. The exterior surface of each slat will be flat. The interior surfaces will be concave to provide strength and prevent loose equipment from jamming the door from inside.

To conserve space in the compartments, the spring roller assembly will not exceed 3.00" in diameter.

The header for the roll-up door assembly will not exceed 4.00".

A heavy-duty magnetic switch will be used for control of open compartment door warning lights.

COMPARTMENT BLISTER

A blister in the compartment ahead of the rear wheels will be provided to clear the front bracket of the Firemaax suspension. This blister will take away some of the interior area of the compartment.

REAR BUMPER

An 8.00" rear bumper will be furnished. The bumper will be constructed of steel framework and will be covered with polished aluminum treadplate. The bumper will be 7.00" deep x 5.00" high and will be spaced away from the body approximately 1.00". The corners of the bumper will be angled at 30 degrees. It will extend the full width of the body. The driver's side 12.00" portion will be notched to allow clearance for the elbow on the aerial inlet.

DOOR GUARD

There will be nine (9) compartment doors that will include a guard/drip pan designed to protect the roll-up door from damage when in the retracted position and contain any water spray. The guard will be fabricated from stainless steel and installed in all compartments.

COMPARTMENT LIGHTING

There will be 11 compartments with Amdor, Model AY-9220, white 12 volt DC LED compartment light strips. The lights will be mounted with mechanical fasteners.

There will be two (2) strip lights installed vertically in each compartment opening per the latest NFPA requirements.

The lights will be activated when the battery switch is on and the respective compartment door is opened.

COMPARTMENT LIGHTING

Metal clamps will be used to retain the strip lighting in all body compartments.

MOUNTING TRACKS

There will be six (6) sets of tracks for mounting shelf(s) in D3, D1, P2, D4, P5 and P7. These tracks will be installed vertically to support the adjustable shelf(s), and will be full height of the compartment. The tracks will be unpainted with a natural finish.

ADJUSTABLE SHELVES

There will be six (6) shelves with a capacity of 500 lb provided.

The shelf construction will consist of .188" aluminum painted spatter gray with 2.00" sides.

Each shelf will be infinitely adjustable by means of a threaded fastener, which slides in a track.

The shelves will be held in place by .12" thick stamped plated brackets and bolts.

The location(s) will be in D1 at the transition point, in P1 at the transition point, in P2 in the upper third, in P5 in the lower third, in P5 in the upper third, in P7 in the upper third and in P7 in the lower third.

SLIDE-OUT ADJUSTABLE HEIGHT TRAY

There will be one (1) slide-out tray provided.

Each tray will have 2.00" high sides and a minimum capacity rating of 500 lb in the extended position.

Each tray will be constructed of aluminum painted spatter gray.

Each tray will be mounted on a pair of side mounted slides. The slide mechanisms will have ball bearings for ease of operation and years of dependable service. The slides will be mounted to shelf tracks to allow the tray to be adjustable up and down within the designated mounting location.

An automatic lock will be provided for both the in and out tray positions. The lock trip mechanism will be located at the front of the tray and will be easily operated with a gloved hand.

The location(s) will be in D1 centered between the floor and ceiling

ONE WAY HOSE TRAY

one (1) slide-out tray 120.00" long slide-out hose tray will be provided on the in the left side of the torque box side in the torque box. The tray will be approximately 8.50" wide by 13.75" high.

The capacity rating will be 500 pounds in the extended position.

Tray will slide out in one (1) direction only; 120.00" of its length.

The construction will consist of .188" thick aluminum for the sides and inside end of the tray. The outside end of the tray will be left open for hose deployment.

The top 7.00" of the outside of the tray will be hinged and flip down when the tray is fully extended. This will aid in the repacking of the hose.

There will be a handle provided to aid in removable of the hose tray.

Tray will be supported by a 130.00" Innovative Industries SlideMaster slide system.

Locks will be provided for both the in and out tray positions.

SLIDE-OUT/TILT-DOWN TRAY

There will be two (2) slide-out trays provided.

The bottom of each tray will be constructed of 0.188" thick aluminum painted spatter gray while special aluminum extrusions will be utilized for the tray sides, ends, and tracks. The corners will be welded to form a rigid unit.

A spring loaded lock will be provided on each side at the front of the tray. Releasing the locks will allow the tray to slide out approximately two-thirds (2/3) of its length from the stowed position and tip 30 degrees down from horizontal. The tray will be equipped with ball bearing rollers for smooth operation.

Rubber padded stops will be provided for the tray in both the stowed and extended positions.

The capacity rating of the tray will be a minimum of 215 lb in the extended position.

The vertical position of the tray within the compartment will be adjustable.

The location(s) will be in D3 in the upper third and in D4 in the upper third.

SLIDE-OUT FLOOR MOUNTED TRAY

There will be two (2) floor mounted slide-out tray(s) provided.

Each tray will have 2.00" high sides and a minimum capacity rating of 500 lb in the extended position.

Each tray will be constructed of aluminum painted spatter gray

There will be two undermount-roller bearing type slides rated at 250lb each provided. The pair of slides will have a safety factor rating of 2.

To ensure years of dependable service, the slides will be coated with a finish that is tested to withstand a minimum of 1,000 hours of salt spray per ASTM B117.

To ensure years of easy operation, the slides will require no more than a 50lb force for push-in or pull-out movement when fully loaded after having been subjected to a 40 hour vibration (shaker) test under full load. The vibration drive file will have been generated from accelerometer data collected from a

heavy truck chassis driven over rough gravel roads in an unloaded condition. Proof of compliance will be provided upon request.

Automatic locks will be provided for both the "in" and "out" positions. The trip mechanism for the locks will be located at the front of the tray for ease of use with a gloved hand.

The location(s) will be D1 and P7.

SLIDE-OUT TOOLBOARD

There will be one (1) slide-out toolboard(s) provided.

The toolboard will be a minimum of 0.188" thick with .203" diameter holes in a pegboard pattern with 1.00" centers between holes.

A 1.00" x 1.00" aluminum tube frame will be welded to the edge of the pegboard.

The board will be mounted on an under-mount roller bearing type slide rated at 250 lb with a factor of safety of 2.

To ensure years of dependable service the slides will be coated with a finish that is tested to withstand a minimum of 1,000 hours of salt spray per ASTM B117.

To ensure years of easy operation, the slides will require no more than a 50 pound force for push-in or pull-out movement when fully loaded after having been subjected to a 40 hour vibration (shaker) test under full load. The vibration drive file will have been generated from accelerometer data collected from a heavy truck chassis driven over rough gravel roads in an unloaded condition. Proof of compliance will be provided upon request.

The slide will be mounted on adjustable tracks side to side within the compartment.

The board will have positive lock in the stowed and extended position.

The toolboard(s) will be spatter gray painted and installed in D4, 32.00" from the forward door frame.

COMPARTMENT FLOOR SCUFFPLATE

Smooth aluminum will be provided on the floor of one (1) compartments. The scuffplate(s) will be .188" thick with a "DA" finish. The locations will be D4.

The edges of the aluminum scuffplate will be completely caulked before installation to prevent corrosion.

DRAWER ASSEMBLY

A slideout drawer assembly will be installed D4 on the forward portion of the partition on the drawer assembly.

The clear dimensions of the first drawer starting at the top will be 2.25" with a face plate that is 3.00" high x 21.00" deep. The clear dimensions of the second drawer will be 5.75" with a face plate that is 6.00" high x 21.00" deep. The clear dimensions of the third drawer will be 7.75" with a face plate that is 8.00" high x 21.00" deep. Each drawer will be the same width and not exceed 24.00".

The drawers will have a capacity of 250 pounds.

The drawers will be mounted in a cabinet housing constructed of light gray powder coated aluminum with anodized aluminum frames. The housing will be 24.00" deep, and completely enclose the drawer.

A full-length aluminum extruded rail will be provided at the top edge of each drawer. This rail will act as the latching mechanism as well as the handle for each drawer.

There will be a total of one (1) provided.

COMPARTMENT IPO HOSE CHUTE

There will be one (1) compartment(s) located on the drivers side of the body at the rear, in place of the hose chute. Each compartment will be approximately 46.00" deep x 16.00" high x 10.00" wide. Each compartment will have a smooth aluminum lift up door with a spring-loaded hinge and a pawl latch.

OIL DRY HOPPER

There will be a slide-out floor mounted oil dry hopper installed in the P1 compartment. A door will be provided on the front of the oil dry bin to allow refilling of the bin. The bin will be sized for storage of 150 lbs of oil dry absorbent material. The hopper will include a hand valve located beneath the bin to control the release of the material.

FOAM

There will be one piece of foam provided on the bottom of cabinet drawers. The total number of drawers to have foam will be three (3). The foam will be located on the cabinets CTECH cabinet. The foam will be 2.2lb density, 2.00" thick and charcoal in color.

VERTICAL COMPARTMENT PARTITION

One (1) partition will be provided.

The partition construction will consist of .125" aluminum painted spatter gray. Each partition will be the full vertical height of the compartment.

The location(s) will be in D4, 24.00" from the forward door frame.

ALUMINUM PEGBOARD

Two (2) horizontally installed tracks, with 0.19" aluminum pegboard will be installed on the back wall of three (3) compartments. The holes will be .203" diameter, punched 1.00" on center. The pegboard will be spatter gray painted. The pegboard(s) will be located in P4, P5 and P7.

Retainers will be used to mount the pegboard to the tracks.

REAR WALL

The entire rear surface of the apparatus and all the doors will be covered with smooth aluminum.

PERMANENTLY MOUNTED SHELF, INVERTED

A permanently mounted compartment shelf constructed of .19" smooth aluminum shall be provided.

Each shelf shall have an inverted lip all the way around.

A total of one (1) shall be installed in D4 - 15" from the Scuffplate on the floor to the bottom of the shelf (need no less than 15" clear opening top to bottom)..

RUB RAIL

Bottom edge of the side compartments will be trimmed with a bright aluminum extruded rub rail.

Trim will be 2.12" high with 1.38" flanges turned outward for rigidity.

The rub rails will not be an integral part of the body construction, which allows replacement in the event of damage.

BODY FENDER CROWNS

Stainless steel fender crowns will be provided around the rear wheel openings.

A rubber welting will be provided between the body and the crown to seal the seam and restrict moisture from entering.

HARD SUCTION HOSE

Hard suction hose will not be required.

FOUR AIR BOTTLE STORAGE COMPARTMENT

A total of two (2) air bottle compartments will be provided and located one (1) on the driver's side and one (1) on the passenger's side centered between the tandem rear wheels. The air bottle compartment will consist of individual bins each designed to hold an air bottle with a maximum diameter of 7.63" and a maximum depth of 26.00".

Each compartment will hold a total of four (4) air bottles. The compartment will accommodate three (3) bottles across the top and one (1) centered below. The bottom air bottle will be accessible only when the top center bottle is removed and the hinged partition over the bottom bottle is lifted up. Each bottle will be separated by a partition.

Flooring will be rubber lined and have a drain hole. A drop down door with support cables with pair of flush lift & turn latches will be provided for each compartment. The door will be polished stainless steel. A dielectric barrier will be provided between the door hinge, hinge fasteners and the body sheet metal.

AIR BOTTLE COMPARTMENT STRAP

Straps will be provided in the air bottle compartment(s) to help contain the air bottles. The straps will wrap around the neck of each bottle and attach to the wall of the compartment.

EXTINGUISHER STORAGE

A total of two (2) extinguisher compartments will be provided. one forward and one rearward of the rear axles, PS. The extinguisher compartment will be in the form of a square tube (8.25" minimum) and of adequate depth to accommodate different size extinguishers. Flooring will be rubber lined and have a drain hole. A stainless steel door with a chrome plated latch will be provided to contain the air bottle. A dielectric barrier will be provided between the door hinge, hinge fasteners (screws) and the body sheet metal.

EXTENSION LADDER

There will be one (1) 35' two (2) section aluminum Duo-Safety Series 1200-A extension ladder(s) provided.

AERIAL EXTENSION LADDER

There will be one (1) 24' two (2) section aluminum Series 900-A extension ladder(s) provided and located in the ladder storage compartment.

ROOF LADDER

There will be one (1) 14' aluminum, Duo-Safety, Series 775-DR roof ladder(s) provided. The ladder(s) will have roof hooks on both ends.

ADDED ROOF LADDER

There will be one (1) 16' roof, aluminum, Series 875-A-DR provided.

AERIAL FOLDING LADDER

There will be one (1) 10' aluminum Duo-Safety Series 585-A folding ladder(s) provided and located in the aerial torque box.

GROUND LADDER STORAGE

The ground ladders are stored within the torque box and are removable from the rear.

Ladders will be enclosed to prevent road dirt and debris from fouling or damaging the ladders.

The ladders rest in full length stainless steel slides and are arranged in such a manner that any one ladder can be removed without having to move or remove any other ladder.

The rear most vertical support will be moved forward to allow hand clearance to access ladders.

A Gortite rollup door will be provided at the rear, double faced, aluminum construction and an anodized satin finish. The latching mechanism will consist of a full length lift bar lock with latches on the outer extrusion of the door frame.

A stainless plate with a two bend flange and a stainless steel hinge will be provided to secure the aerial ladder complement. The plate assembly will be mounted to the bottom of the entrance of the torque box ladder storage area along with a polyethylene wear plate to prevent ladders from being scuffed by contacting metal parts.

When the plate is vertical, it will secure the ladders and prevent them from migrating to the rear of the apparatus. When the plate is down, the rollup door cannot close, which will activate the "Open Door Indicator Light" within the cab. The rollup door, together with hinge friction, will secure the plate in place during driving operations.

A door guard will be provided to prevent tools inside the torque box from damaging the rollup door.

LADDER STORAGE LIGHTING

There will be 21.00" white 12 volt DC LED strip lights in the torque box ladder storage compartment. One (1) light will be provided on each side of the ladder storage area.

The lights will be activated when the ladder storage compartment door is opened.

DURA-SURF LADDER SLIDES

Black Dura-Surf friction reducing material will be added to the stainless steel slides, on the bottom horizontal surfaces, of the ladder storage rack.

NESTED LADDER STORAGE

There will be nested ladders on the right side of the ladder storage compartment.

BACKBOARD STORAGE

Provisions will be made for storage of one (1) backboard(s) in the torque box ladder storage area. The size of the backboard(s) will be 75" long X 18" wide X 3.5" high.

PIKE POLES - 12FT

There will be one (1) 12 foot Nupla YPD-12 pike pole(s) with featherlight handles provided. The pike pole(s) will be stored in tubular holders located in the ground ladder storage compartment.

8' PIKE POLE

There will be one (1) Fire Hooks Unlimited, New York Hook, 8' long roof hook with steel shaft and chisel (pry) end provided. The poles will be located in the rear ladder storage.

ADDITIONAL PIKE POLE(S)

There will be one (1) 6' long trash hook(s), Fire Hooks Unlimited TRH-6, with fiberglass shaft and "D" handle provided. The D-handle will be turned 90 degrees from standard.

6' PIKE POLE

There will be one (1) 6' long Fire Hooks Unlimited Gatorback Hook, GBST with D handle end provided.

8' PIKE POLE

There will be one (1) 8' long Fire Hooks Unlimited Gatorback Hook, GBST with D handle end provided.

- one (1) 10 foot Nupla YPD-10 "Featherlight" Pike Pole(s): Fiberglass handles

PIKE POLE STORAGE

Stainless steel U-shaped trough be used for the storage of three (3) pike poles, with D-handle style grip, will be provided and installed two on the left side of the torque box up high and one on the right - just to the right of the folding ladder storage.

PIKE POLE STORAGE

Aluminum tubing will be used for the storage of two (2) pike poles and will be located in ladder storage compartment. If the head of a pike pole can come in contact with a painted surface, a stainless steel scuffplate will be provided.

PIKE POLE STORAGE MODIFICATION

The pike pole storage in the torque box/ladder storage area will be modified to provide for mounting of three (3) pike poles from the top of the torque box.

PUMP

Pump will be a Pierce, low profile, 1500 gpm single stage midship mounted centrifugal type, mounted below the cab. The pump will have a 15 percent reserve capacity to allow for extended time between pump rebuild. To ensure efficient pump/vehicle design the capacity to weight ratio will not be less than 1.5:1.

The pump casing will consist of three (3) discharge outlets, one (1) to each side in line with the impeller and one (1) to the rear. The pump casing will incorporate two (2) water strippers to maintain radial balance.

Pump will be the Class A type.

Pump will be certified to deliver the percentage of rated discharge from draft at pressure indicated below:

- 100 percent of rated capacity at 150 psi net pump pressure

-70 percent of rated capacity at 200 psi net pump pressure

-50 percent of rated capacity at 250 psi net pump pressure

The pump will have the capacity to deliver the percentage of rated discharge from a pressurized source as indicated below:

- 135 percent of rated capacity at 100 psi net pump pressure from a 5 psi source

Pump body will be fine-grained gray iron. Pump will incorporate a heater/cooling jacket integral to the pump housing.

The impeller will be high strength vacuum cast bronze alloy accurately machine balanced and splined to a 10 spline stainless steel pump shaft for precision fit, exceptional durability, and efficiency. Double replaceable reverse flow labyrinth type bronze wear ring design will help to minimize end thrust. The impeller will be a twisted vane design to create higher lift.

The pump will include o-ring gaskets throughout the pump.

Deep groove radial type oversize ball bearings will be provided. The bearings will be protected at the openings from road dirt and water with an oil seal and a water slinger.

The pump will have a flat, patterned area on the top of the pump intake wye to allow standing for plumbing maintenance. The main inlet manifold will be 6.00" in diameter and will have a low profile design to facilitate low crosslays and high flows.

For ease of service, the pump housing, intake wye, impeller, mechanical seal, and gear case will be accessible from above the chassis frame by tilting the cab. The intake wyes will be removable without having to remove the main intake casting. Removal of the main inlet wyes will provide access to the impeller, mechanical seal, and wear ring.

PUMP MOUNTING

Pump will be mounted to the chassis frame rails directly below the crew cab, to minimize wheelbase and facilitate service, using rubber isolators in a modified V pattern that include two (2) central mounted isolators located between the frame rails, and one (1) on each side outside the frame rails. The mounting will allow chassis frame rails to flex independently without damage to the fire pump. Each isolator will be 2.55" in total outside diameter and will be rated at 490 lb. The pump will be completely accessible by tilting the cab with no piping located directly above the pump.

MECHANICAL SEALS

Silicon carbide mechanical seals will be provided. The seals will be spring loaded and self-adjusting. The seals will have a minimum thermal conductivity of 126 W/m*K to run cooler. Seals will have a minimum hardness of 2800 kg/mm² to be more resistant to wear, and have thermal expansion characteristics of no more than 4.0 X10⁻⁶mm/mm*K to be more resistant to thermal shock.

PUMP GEAR CASE

The pump gear case will be a pressure-lubricated to cool, lubricate, and filter the oil. The gear case will include an auxiliary PTO opening. The gear case will be constructed of lightweight aluminum, and

impregnated with resin in accordance to MIL Spec MIL-I-17563. A dipstick, accessible by tilting the cab, will be provided for easy fluid level checks. A filter screen will be provided for long life.

The gear case will consist of two (2) gears to drive the pump impeller and one (1) for the auxiliary PTO.

The auxiliary PTO opening will provide for the addition of PTO driven accessories.

The pump will be driven through the rear engine power take-off and clutch. The rear engine power take-off drive will be live at all times to allow for pump and roll applications. Rear engine power take-off's allow for high horsepower and torque ratings needed for large pump applications, and is a proven drive system throughout the rugged construction industry. (no exception).

CLUTCH

There will be a heavy-duty electric clutch mounted directly to the front of the pump to engage and disengage the pump without gear clash. The clutch will be a multiple disc design for maximum torque. The clutch will be fully self-adjusting to provide automatic wear compensation, and consistent torque throughout the life of the clutch. Positive engagement and disengagement will be provided through a high efficient and dependable magnetic system to assure superior performance. The clutch will have a 500 lb-ft rating. Clutch will be of a time-tested design used in critical military applications. (no exception).

PUMPING MODE

Pump will provide for both pump and roll mode and stationary pumping mode.

Stationary pumping mode will be accomplished by stopping the vehicle, setting the parking brake and engaging the water pump switch on the cab switch panel. The transmission will shift to "Neutral" range automatically when the parking brake is set. The "OK to Stationary Pump" indicator will also illuminate when the parking brake is set. If the vehicle is equipped with a foam system or CAFS system, these systems will be engaged from the cab switch panel as well.

Pump and roll mode will be accomplished by the use of the main pump and will not require the use of a secondary pump. Pump and roll mode will use the same operation sequence as stationary pumping mode with a few additional steps. After the vehicle is setup for stationary pumping, the operator will leave the cab and set-up the pump panel to discharge at the desired outlet(s). Upon returning to the cab, the operator will disengage the parking brake. An "OK to Pump & Roll" indicator will illuminate on the cab switch panel. First gear on the transmission gear selector will be selected by the operator for pump and roll operations. The operator as needed will apply the foot throttle. Pump and roll mode will be maintained unless the transmission shifts out of first gear.

Stopping either stationary pumping mode or pump and roll mode will be accomplished by pressing the "Water Pump" switch down to disengage the pump.

PUMP SHIFT

Pump will be engaged in not more than two steps, by simply setting the parking brake, which will automatically put the transmission into neutral, and activating a rocker switch in the cab. Switches in the cab will also allow for water, foam, or CAFS if equipped, and activate the appropriate system to preset parameters. The engagement will provide simple two-step operation, enhance reliability, and completely eliminate gear clash. The shift will include the indicator lights as mandated by NFPA. A direct override switch will be located behind a door in the lower pump operator's panel. The switch will automatically disengage when the door is closed.

As the parking brake is applied, the pump panel throttle will be activated and deactivate the chassis foot throttle for stationary operation.

Pump and roll operation will be available by releasing the parking brake with the pump in the pumping mode. Releasing the parking brake will activate the chassis foot throttle, and deactivate the pump panel throttle. To protect from accidental pump overheating, the pump will automatically disengage when the truck transmission shifts into second gear.

TRANSMISSION LOCK UP

Transmission lock up is not required as transmission will automatically shift to neutral as soon as the parking brake is set.

AUXILIARY COOLING SYSTEM

A supplementary heat exchange cooling system will be provided to allow the use of water from the discharge side of the pump for cooling the engine water. A water-to-coolant heat exchanger will be used.

INTAKE RELIEF VALVE

A Trident Air Max intake relief valve will be installed on the suction side of the pump preset at 125 psig.

Relief valve will have a working range of 50 psig to 350 psig.

Outlet will terminate below the frame rails with a 2.50" National Standard hose thread adapter and will have a "do not cap" warning tag.

An adjustable air regulator and pressure indicating gauge will be located at the pump operator's panel.

PRESSURE CONTROLLER

A Pierce Pressure Governor will be provided. An electric pressure governor will be provided which is capable of automatically maintaining a desired preset discharge pressure in the water pump. When operating in the pressure control mode, the system will automatically maintain the discharge pressure set by the operator (within the discharge capabilities of the pump and water supply) regardless of flow, within the discharge capacities of the water pump and water supply.

A pressure transducer will be installed in the water discharge of the pump. The transducer continuously monitors pump pressure sending a signal to the Electronic Control Module (ECM).

The governor can be used in two (2) modes of operation, RPM mode and pressure modes.

In the RPM mode, the governor can be activated after vehicle parking brake has been set. When in this mode, the governor will maintain the set engine speed, regardless of engine load (within engine operation capabilities).

In the pressure mode, the governor system can only operate after the fire pump has been engaged and the vehicle parking brake has been set. When in the pressure mode, the pressure controller monitors the pump pressure and varies engine speed to maintain a precise pump pressure. The pressure controller will use a quicker reacting J1939 database for engine control.

A preset feature allows a predetermined pressure or rpm to be set.

A pump cavitation protection feature is also provided which will return the engine to idle should the pump cavitate. Cavitation is sensed by the combination of pump pressure below 30 psi and engine speed above 2000 rpm for more than five (5) seconds.

The throttle will be a vernier style control, with a large control knob for use with a gloved hand. A throttle ready light will be provided adjacent to the throttle control. A large 0.75" RPM display will be provided to be visible at a glance.

Check engine, and stop engine indicator lights will be provided for easy viewing.

Large 0.75" push buttons will be provided for menu, mode, preset, and silence selections.

The water tank level indicator will be incorporated in the pressure governor.

A fuel level indicator will be incorporated in the pressure controller.

A pump hour meter will be incorporated in the pressure controller.

The pressure controller will incorporate monitoring for engine temperature, oil pressure, fuel level alarm, and voltage. Pump monitoring will include, pump gearcase temperature, error codes, diagnostic data, pump service reminders, and time stamped data logging, to allow for fast accurate trouble shooting. It will also notify the driver/engineer of any problems with the engine and the apparatus. Complete understandable messages will be provided in a 20-character display, providing for fewer abbreviations in the messages. An automatic dim feature will be included for night operations.

The pressure controller will include a USB port for easy software upgrades, which can be downloaded through a USB memory stick, eliminating the need for a laptop for software installations.

A complete interactive manual will be provided with the pressure controller.

PRIMING PUMP

The priming pump will be a Trident Emergency Products compressed air powered, high efficiency, multistage venturi based AirPrime System, conforming to standards outlined in the current edition of NFPA 1901.

All wetted metallic parts of the priming system are to be of brass and stainless steel construction.

One (1) priming control will open the priming valve and start the pump primer.

PUMP MANUALS

There will be a total of two (2) pump manuals provided by the pump manufacturer and furnished with the apparatus. The manuals will be provided by the pump manufacturer in the form of two (2) CDs. Each manual will cover pump operation, maintenance, and parts.

PLUMBING, STAINLESS STEEL AND HOSE

All inlet and outlet lines will be plumbed with either stainless steel pipe, flexible polypropylene tubing or synthetic rubber hose reinforced with hi-tensile polyester braid. All hose's will be equipped with brass or stainless steel couplings. All stainless steel hard plumbing will be a minimum of a schedule 10 wall thickness.

Where vibration or chassis flexing may damage or loosen piping or where a coupling is required for servicing, the piping will be equipped with victaulic or rubber couplings.

Plumbing manifold bodies will be ductile cast iron or stainless steel.

All piping lines are to be drained through a master drain valve or will be equipped with individual drain valves. All drain lines will be extended with a hose to drain below the chassis frame.

All water carrying gauge lines will be of flexible polypropylene tubing.

All piping, hose and fittings will have a minimum of a 500 PSI hydrodynamic pressure rating.

MAIN PUMP INLETS

A 6.00" pump manifold inlet will be provided on each side of the vehicle. The suction inlets will include removable die cast zinc screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.

Main pump inlets will not be located on the main operator's panel and will maintain a low connection height by terminating below the top of the chassis frame rail.

MAIN PUMP INLET CAP

The main pump inlets will have National Standard Threads with a long handle chrome cap.

The cap will be the Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

**INLET BUTTERFLY VALVE**

There will be one (1) butterfly valve provided on the driver's side main pump inlet.

The 6.00" inlet valve will be recessed behind the pump panel.

A built-in, adjustable pressure relief valve and a 3/4" bleeder valve will be provided on the inlet side of the valve. The bleeder valve controls will be located at the threaded connection and at the pump operator's panel.

An Akron 9323 electric valve controller will be provided.

The controller unit will be of true position feedback design, requiring no clutches in the motor or current limiting. The controller will be completely sealed with two (2) button open and close valve position capability and a full color LCD display with backlight.

The electric actuator will be furnished with a manual over ride, extended to the pump panel. A wrench will be provide to manually open or close the valve.

VALVES

All ball valves will be Akron® Brass. The Akron valves will be the 8000 series heavy-duty style with a stainless steel ball and a simple two-seat design. No lubrication or regular maintenance is required on the valve.

Valves will have a **ten (10) year** warranty.

LEFT SIDE INLET

There will be one (1) auxiliary inlet with a 2.50" valve at the left side pump panel, terminating with a 2.50" (F) National Standard hose thread adapter.

The auxiliary inlet will be provided with a strainer, chrome swivel and plug.

The location of the valve for the one (1) inlet will be recessed behind the pump panel.

ADAPTER, INLET

One (1) adapter for the inlet will be furnished for the main pump inlet(s) with 6.00"" female NST threads converting to 5.00" Storz. A 5.00" Storz cap will be provided to match the adapter.

ANODE, INLET

A pair of sacrificial zinc anodes will be provided in the water pump inlets to protect the pump from corrosion.

INLET CONTROL

The side auxiliary inlet(s) will incorporate a quarter-turn ball valve with the control located at the inlet valve. The valve operating mechanism will indicate the position of the valve.

INLET BLEEDER VALVE

A 0.75" bleeder valve will be provided for each side gated inlet. The valves will be located behind the panel with a swing style handle control extended to the outside of the panel. The handles will be chrome plated and provide a visual indication of valve position. The swing handle will provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. The water discharged by the bleeders will be routed below the chassis frame rails.

TANK TO PUMP

The booster tank will have a 3.00" outlet and be connected to the intake side of the pump with heavy duty 4.00" piping and a quarter turn 3.00" full flow line valve with the control located at the operator's panel. A rubber coupling will be included in this line to prevent damage from vibration or chassis flexing.

A check valve will be provided in the tank to pump supply line to prevent the possibility of "back filling" the water tank.

TANK REFILL

A 1.50" combination tank refill and pump re-circulation line will be provided, using a quarter-turn full flow ball valve controlled from the pump operator's panel.

LEFT SIDE DISCHARGE OUTLETS

There will be two (2) discharges with a 2.50" valves on the left side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter. Discharges will be located below the cab, and will be no higher than the top of the chassis frame rail. Discharges will not be located on the pump operator's panel. Lever controls will be provided at the valve.

RIGHT SIDE DISCHARGE OUTLETS

There will be one (1) discharge outlet with a 2.50" valve on the right side of the apparatus, terminating with a male 2.50" National Standard hose thread adapter. The discharge will be located below the crew cab, and will be no higher than the top of the chassis frame rail.

There will be an Akron® 9325 Navigator Pro electric valve controller provided at the pump panel. The controller unit will be of true position feedback design, requiring no clutches in the motor or current limiting. The controller will be completely sealed with two (2) button open and close valve position

capability and a full color LCD display with backlight. In addition to valve position, each controller will include a pressure display.

LARGE DIAMETER DISCHARGE OUTLET

There will be a 4.00" discharge outlet with a 4.00" Akron valve body installed on the right side of the apparatus, terminating with a 4.00" (M) National Standard hose thread. The discharge will be located below the crew cab, and will be no higher than the top of the chassis frame rail.

There will be an Akron 9325 Navigator Pro electric valve controller provided at the pump panel. The controller unit will be of true position feedback design, requiring no clutches in the motor or current limiting. The controller will be completely sealed with two (2) button open and close valve position capability and a full color LCD display with backlight. In addition to valve position, each controller will include a pressure display.

FRONT DISCHARGE OUTLET

There will be one (1) 2.50" discharge outlet piped to the front of the apparatus and located on the top of the right side of the front bumper.

Plumbing will consist of 2.50" piping and flexible hose with a 2.50" full flow valve with control at the pump operator's panel. A fabricated weldment made of stainless steel pipe will be used in the plumbing where appropriate. The piping will terminate with a 2.50" NST with 90 degree stainless steel swivel.

There will be Class 1 automatic drains provided at all low points of the piping.

DISCHARGE CAPS

Chrome plated, rocker lug, caps with chains will be furnished for all side discharge outlets.

The caps will be the Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

OUTLET BLEEDER VALVE

A 0.75" bleeder valve will be provided for each outlet 1.50" or larger. Automatic drain valves are acceptable with some outlets if deemed appropriate with the application.

The valves will be located behind the panel with a swing style handle control extended to the outside of the side pump panel. The handles will be chrome plated and provide a visual indication of valve position. The swing handle will provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. Bleeders will be located at the bottom of the pump panel. They will be properly labeled identifying the discharge they are plumbed in to. The water discharged by the bleeders will be routed below the chassis frame rails.

LARGE DIAMETER OUTLET ADAPTER

one (1) 4.00" outlet will be furnished with a 4.00" (F) National Standard hose thread x 5.00" Storz adapter. A 5.00" Storz cap and chain will be provided with the adapter.

ADAPTERS

There will be one (1) adapter with 2.50" FNST x 1.50" MNST threads installed on on the front outlet.

DISCHARGE OUTLET CONTROLS

The discharge outlets will incorporate a quarter-turn ball valve with the control located at the pump operator's panel. The valve operating mechanism will indicate the position of the valve or an indicator will be provided to show when the valve is closed.

The passenger side discharges will be controlled by an Akron 9325 Navigator Pro electric valve controllers with the manual override located on the passenger side pump panel. The controller unit will be of true position feedback design, requiring no clutches in the motor or current limiting. The controller will be completely sealed with two (2) button open and close valve position capability and a full color LCD display with backlight. In addition to valve position, each controller will include a pressure display.

All other outlets will have manual swing handles that operate in a vertical up and down motion. These handles will be able to lock in place to prevent valve creep under pressure.

AERIAL OUTLET

The aerial waterway will be plumbed from the pump to the water tower line with 4.00" pipe and a 4.00" Akron valve. Electric controls for the waterway will be located at the pump operator's panel.

An indicator will be provided to show the position of the valve.

The foam system will be plumbed into the aerial waterway plumbing. The water/foam piping will include a 2.50" ball valve.

CROSSLAY HOSE BEDS

Two (2) crosslays with 1.50" outlets will be provided. Each bed to be capable of carrying 200 feet of 1.75" double jacketed hose and will be plumbed with 2.00" i.d. schedule 10 304L welded or formed stainless steel pipe and gated with a 2.00" quarter turn ball valve. Threaded pipe will not be acceptable. Crosslays will be low mounted with the bottom of both crosslay trays no more than 19.25" above the frame rails for simple, safe reloading and deployment.

The hose beds will be full width of the body compartments.

Outlets to be equipped with a 1.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

The crosslay controls will be at the pump operator's panel.

A removable tray will be provided for the crosslay hosebed. The crosslay tray will be constructed of black poly to provide a lightweight sturdy tray. Two (2) hand holes will be in the floor and additional hand holes will be provided in the sides for easy removal and installation from the compartment. The floor of the trays will be perforated to allow for drainage and hose drying. Trays will be held in place by

a mechanical spring loaded stainless steel latch that automatically deploys upon loading the trays to hold the trays in place during transit.

SPEEDLAY HOSE RESTRAINT

A black 1.00" nylon webbing design with 2.00" box pattern will be provided across each end of two (2) speedlay(s) to secure the hose during travel. The webbing will be permanently attached at the bottom of the speedlay opening. There will be spring clip and hook fasteners located at the opposite end of the permanently attached webbing.

FOAM PROPORTIONER

A foam proportioning system will be provided that is an on demand, automatic proportioning, single point, direct injection system suitable for all types of Class A and B foam concentrates, including the high viscosity (6000 cps), alcohol resistant Class B foams. Operation will be based on direct measurement of water flow, and remain consistent within the specified flows and pressures. The system will automatically balance and proportion foam solution at rates from .1 percent to 9.9 percent regardless of variations in water pressure and flow, up to the maximum rated capacity of the foam concentrate pump.

The design of the system will allow operation from draft, hydrant, or relay operation. This will provide a versatile system to meet the demands at a fire scene.

SYSTEM CAPACITY

The system will have the ability to deliver the following minimum foam solution flow rates that meet or exceed NFPA requirements at a pump rating of 250 psi.

200 gpm @ 6 percent

400 gpm @ 3 percent

1200 gpm @ 1 percent

The foam concentrate setting may be adjusted in .1 percent increments from .1 percent to 9.9 percent. Typical settings are .3 percent, .5 percent and 1.0 percent (The maximum capacity will be limited to the plumbing and water pump capacity).

CONTROL SYSTEM

The system will be equipped with a digital electronic control display located on the pump operators panel. Push button controls will be integrated into the panel to turn the system on/off, control the foam percentage, direct which foam to use on a multi-tank system, and to set the operation modes (automatic, manual, draft, calibration, or flush).

The percent of injection will have presets for Class A or Class B foam. These presets can be changed at the fire department as desired. The percent of injection will be able to be easily changed at the scene to adjust to changing demands.

In order to minimize the use of abbreviations and interpretations, system information will be displayed on the panel by way of .50 tall LEDs that total 14 characters (two (2) lines of seven (7) each). System on and foam pump on indicator lights will also be included. Information displayed will include mode of operation (automatic, manual, draft, calibration, or flush), foam supply selected (Class A or Class B), water total, foam total, foam percentage, remaining gallons, and time remaining.

The control display will direct a microprocessor, which receives input from the systems water flow meter while also monitoring the position of the foam concentrate pump. The microprocessor will compare the values of the water flow versus the position/rate of the foam pump, to ensure the proportion rate is accurate. One (1) check valve will be installed in the plumbing to prevent foam from contaminating the water pump.

LOW LEVEL, FOAM TANK

The control head will display a warning message when the foam tank in use is below a quarter tank.

HYDRAULIC DRIVE SYSTEM

The foam concentrate pump will be powered by a hydraulic drive system, which is automatically activated, whenever the vehicle water pump is engaged. A system that drives the foam pump via an electric motor will not be acceptable. A large parasitic electric load used to power the foam pump can cause an overload of the chassis electrical system.

Hydraulic oil cooler will be provided to automatically prevent overheating of the hydraulic oil, which is detrimental to system components. The oil/water cooler will be designed to allow continuous system operation without allowing hydraulic oil temperature to exceed the oil specifications.

The hydraulic oil reservoir will be of four (4) gallons minimum capacity and will also be of sufficient size to minimize foaming and be located to facilitate checking oil level or adding oil without spillage or the need to remove access panels.

FOAM CONCENTRATE PUMP

The foam concentrate pump will be of positive displacement, self-priming; linear actuated design, driven by the hydraulic motor. The pump will be constructed of brass body; chrome plated stainless steel shaft, with a stainless steel piston. In order to increase longevity of the pump, no aluminum will be present in its construction.

A relief system will be provided which is designed to protect the drive system components and prevent over pressuring the foam concentrate pump.

The foam concentrate pump will have minimum capacity for 12 gpm with all types of foam concentrates with a viscosity at or below 6000 cps including protein, fluoroprotein, AFFF, FFFP, or AR-AFFF. The system will deliver only the amount of foam concentrate flow required, without recirculating foam back to the storage tank. Recirculating foam concentrate back to the storage tank can cause agitation and premature foaming of the concentrate, which can result in system failure. The foam concentrate pump

will be self-priming and have the ability to draw foam concentrate from external supplies such as drums or pails.

EXTERNAL FOAM CONCENTRATE CONNECTION

An external foam pick-up will be provided to enable use of a foam agent that is not stored on the vehicle. The external foam pick-up will be designed to allow continued operation after the on-board foam tank is empty. The external foam pick-up will be designed to allow use with training foam or colored water for training purposes.

PANEL MOUNTED STRAINER/EXTERNAL PICK-UP CONNECTION

A bronze body strainer/connector unit will be provided. The unit will be mounted to the pump panel. The external foam pick-up will be one (1) 1.00" male connection with chrome-plated cap integrated to a 2.00" strainer cleanout cap. A check valve will be installed in the pick-up portion of the cleanout cap. A basket style stainless steel screen will be installed in the body of the strainer/connector unit. Removal of the 2.00" cleanout cap will be all that is required to gain access to and remove the stainless steel basket screen. The strainer/connector unit will be ahead of the foam concentrate pump inlet port to insure that all agent reaching the foam pump has been strained.

PICK-UP HOSE

A 1.00" flexible hose with an end for insertion into foam containers will be provided. The hose will be supplied with a 1.00" female swivel NST thread swivel connector. The hose will be shipped loose.

DISCHARGES

When the foam system is engaged, all outlets plumbed from the PUC Manifold will have foam. Any side discharge below the cab, plumbed from the PUC pump will not have foam capability.

SYSTEM ELECTRICAL LOAD

The foam proportioning will not impose an electrical load on the vehicle electrical system any greater than five (5) amps at 12VDC.

FOAM SUPPLY VALVE

An electric valve will be used for the foam supply valve. The foam supply valve will be controlled at the foam system control head for ease of operation. The supply valve will be electric, remote controlled, to eliminate air pockets in the foam tank supply hose.

MAINTENANCE MESSAGE

A message will be displayed on the control head to advise when system maintenance needs to be performed. The message will display interval for cleaning the foam strainer, cleaning for the water strainers, and changing the hydraulic oil.

FLUSH SYSTEM

The system will be designed such that a flush mode will be provided to allow the system to flush all foam concentrate with clear water. The flush circuit control logic will ensure the foam tank supply

valve is closed prior to opening the flush valve. The flush valve will be operated at the foam system control head for ease of operation. The valve will be electrically controlled and located as close to the foam tank supply valve as possible. A manual flush drain valve will be labeled and conveniently located.

SINGLE FOAM TANK REFILL

The foam system's proportioning pump will be used to fill the Class A foam tank. This will allow use of the auxiliary foam pick-up to pump the foam from pails or a drum on the ground into the foam tank. A foam shut-off switch will be installed in the fill dome of the tank to shut the system down when the tank is full. The fill operation will be controlled by a mode in the foam system controller stating TANK FILL. While the proportioner pump is filling the tank, the controller will display FILL TANK. When the tank is full, as determined by the float switch in the tank dome, the pump will stop and the controller will display TANK FULL.

The fire department will order the fire apparatus with a foam system. A demonstration will be provided at the manufacturer, on the operation of the foam system.

This demonstration will include:

- A hands on foam system start-up and discharge session.
- The demonstration will be done with foam to simulate real conditions.

FOAM CELL

The foam cell will be an integral portion of the polypropylene water tank. The cell will have a capacity of 30 gallons of foam with the intended use of Class A foam. The brand of foam stored in this tank will be Phoschek. The foam cell will not reduce the capacity of the water tank. The foam cell will have a screen in the fill dome and a breather in the lid.

FOAM TANK DRAIN

A system of 1.00" foam tank drains will be provided, integrated into the foam systems strainer and tank to foam pump valve management system. The tank to pump hoses running from the tank(s) to the panel mounted strainer will 1.00" diameter. The foam system controller will have a mode that allows for a given foam valve to be opened at will. Flow of foam from the tank valve to the strainer will be usable as a tank drain mode.

An adaptor will be supplied, that allows the 1.00" foam intake screen to assembly to be used as a drain outlet. The standard supplied 1.00" foam pick up hose will be attached to the screen assembly by way of the adapter. The drain mode will allow the operator to open and close the tank valve as required from the control head, to drain foam and re-fill foam containers through the connected hose, without foam spillage beneath the vehicle.

PUC MODULE

The pump module will be separate from the hose body and compartments so that each may flex independently of the other. It will be a fabricated assembly of aluminum tubing, angles and channels which supports both the plumbing and the side running boards.

The pump module will be mounted on the chassis frame rails with standard body angles in four places to allow for chassis frame twist.

Pump module, plumbing and gauge panels will be removable from the chassis in a single assembly.

PUMP CONTROL PANELS (LEFT SIDE CONTROL)

Pump controls and gauges will be located midship at the left (driver's) side of the apparatus and properly identified.

The main pump operator's control panel will be completely enclosed and located immediately forward of the front stabilizer. There will be a roll up door to protect against road debris and weather elements. The pump operator's panels will be no more than 34.50" wide, and made in four (4) sections with the center section easily removable with simple hand tools. For the safety of the pump operator, there will be no discharge outlets or pump inlets located on the main pump operators panel.



Layout of the pump control panel will be ergonomically efficient and systematically organized. The upper section will contain the master gauges. This section will be angled down for easy visibility. The center section will contain the pump controls aligned in two horizontal rows. The pressure control device, engine monitoring gauges, electrical switches, and foam controls (if applicable) will be located on or adjacent to the center panel, on the side walls for easy operation and visibility. The lower section will contain the outlet drains.

Manual controls will be easy moving 8" long lever style controls that operate in a vertical, up and down swing motion. These handles will have a 2.25" diameter knob and be able to lock in place to prevent valve creep under any pressure. Bright finish bezels will encompass the opening, be securely mounted to the pump operator's panel, and will incorporate the discharge gauge bezel. Bezel will be bolted to the panel for easy removal and gauge service. The driver's side discharges will be controlled directly at the valve. There will be no push-pull style control handles. (no exception)

Identification tags for the discharge controls will be recessed within the same bezel. The discharge identification tags will be color coded, with each discharge having its own unique color.

All remaining identification tags will be mounted on the pump panel in chrome-plated bezels.

All discharge outlets will be color coded and labeled to correspond with the discharge identification tag.

The pump panels for the discharge and intake ports will be located ahead of the pump module with no side discharge or intake higher than the frame rail. The pump panels will be easily removable with simple hand tools.

PASSENGER SIDE PUC MODULE COMPARTMENT

A full height compartment with a roll-up door ahead of the front stabilizer will be provided, as convenient large storage compartment for often used items for the crew. The interior dimensions of this compartment will be approximately 33.75" wide x 51.50" high x 25.12" deep in the lower 43.00" of the compartment and approximately 12.00" deep in the remaining upper portion. The depth of the compartment will be calculated with the compartment door closed. The compartment interior will be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment will be 31.50" wide x 51.50 high.

Closing of the door will not require releasing, unlocking, or unlatching any mechanism and will easily be accomplished with one hand.

PUMP PANEL CONFIGURATION

The pump panel configuration will be arranged and installed in an organized manner that will provide user-friendly operation.

PUMP OPERATOR'S PLATFORM

A pull out, flip down platform will be provided at the pump operator's control panel.

The front edge and the top surface of the platform will be made of DA finished aluminum with a Morton Cass insert.

The platform will be approximately 13.75" deep when in the stowed position and approximately 22.00" deep when extended. The platform will be as wide as possible. The platform will lock in the retracted and the extended position.

The platform will be wired to the "step not stowed" indicator in the cab.

PUMP OPERATOR'S PLATFORM PERIMETER LIGHT

There will be an On Scene Solutions, Model Night Stick Access, 20.00" white 12 volt DC LED strip light provided to illuminate the ground area.

PUMP AND GAUGE PANEL

The pump operator's panel and gauge panels will be constructed of stainless steel with a brushed finish.

The side control panels will be constructed of stainless steel with a brushed finish for durability and ease of maintenance.

PUMP AND PLUMBING ACCESS

Simple access to the plumbing will be provided through the front of the body area by raising the cab for complete plumbing service and valve maintenance. Access to valves will not require removal of operator panels or pump panels. Access for rebuilding of the pump will not require removal of more than the tank to pump line and a single discharge line. This access will allow for fast, easy valve or pump rebuilding, making for reduced out of service times. Steps will be provided for access to the top of the pump.



Access to the pump will be provided by raising the cab. The pump will be positioned such that all maintenance and overhaul work can be performed above the frame and under the tilted cab. The service and overhaul work on the pump will not require the removal of operator panels or pump panels. Complete pump casing and gear case removal will require no more than removal of the intake and discharge manifolds, driveline, coolers and a single discharge line. The pump case and gear case will be able to be removed by lifting upward without interference from piping and be removable in less than 3 hours.

PUMP COMPARTMENT LIGHTING

There will be one (1) Truck-Lite, Model 44308C 4.00" white LED light(s) with Model 40700 grommet provided inside the pump enclosure for pump compartment lighting.

The light(s) will be controlled by a switch located in the pump compartment.

Engine monitoring graduated LED indicators will be incorporated with the pressure controller.

AIR HORN SWITCH

An air horn control switch will be provided at the pump operator's control panel. This switch will be red and properly labeled. The button will be located within easy reach of the operator in the electrical switch panel.

There will be a switch at the pump operators panel that can deactivate the warning light in that vicinity.

This switch will only be active when the parking brake is applied and the pump is shifted into gear.

VACUUM AND PRESSURE GAUGES

The pump vacuum and pressure gauges will be liquid filled and manufactured by Class 1 Incorporated ©.

The gauges will be a minimum of 4.00" in diameter and will have white faces with black lettering, with a pressure range of 30.00"-0-600#.

Gauge construction will include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

The pump pressure and vacuum gauges will be installed adjacent to each other at the pump operator's control panel.

Test port connections will be provided at the pump operator's panel. One will be connected to the intake side of the pump, and the other to the discharge manifold of the pump. They will have 0.25 in. standard pipe thread connections and non-corrosive polished stainless steel or brass plugs. They will be marked with a label.

This gauge will include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

PRESSURE GAUGES

The individual "line" pressure gauges for the discharges will be Class 1© interlube filled.

They will be a minimum of 2.00" in diameter and have white faces with black lettering.

Gauge construction will include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

Gauges will have a pressure range of 30"-0-400#.

The individual pressure gauge will be installed as close to the outlet control as practical.

This gauge will include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

WATER LEVEL GAUGE

An electric water level gauge will be incorporated in the pressure controller that registers water level by means of nine (9) LEDs. They will be at 1/8 level increments with a tank empty LED. The LEDs will be a bright type that is readable in sunlight, and have a full 180-degree of clear viewing.

To further alert the pump operator, the gauge will have a warning flash when the tank volume is less than 25 percent. The gauge will have down chasing LEDs when the tank is almost empty.

The level measurement will be ascertained by sensing the head pressure of the fluid in the tank or cell.

MINI SLAVE UNIT

An electric water level gauge will be provided in the cab that registers water level by means of five (5) LEDs. They will be at 1/4 level increments with a tank empty LED. The LEDs will be a bright type that are readable in sunlight and have a full 180-degree of clear viewing.

The water level gauge in the cab will be activated when the pump is in gear.

FOAM LEVEL GAUGE

A Pierce electric foam level gauge will be provided on the operator's panel, that registers foam level by means of nine (9) LEDs. There will also be a mini foam level gauge with five (5) LEDs in the cab. They will be at 1/8 level increments with a tank empty LED. The LEDs will be a bright type that is readable in sunlight, and have a full 180 degree of clear viewing. The gauge will match the water level gauge in the pressure controller.

To further alert the pump operator, will have a warning flash when the tank volume is less than 25 percent, and will have Down Chasing LEDs when the tank is almost empty.

The level measurement will be ascertained by sensing the head pressure of the fluid in the tank or cell. This method provides accuracy with an array of multi-viscosity foams.

The foam level gauge in the cab will be activated by pump is in gear.

SIDE CONTROL PUMP OPERATOR'S/PUMP PANEL LIGHTING

Illumination will be provided for controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus and the equipment provided on it. External illumination will be a minimum of five (5) foot-candles on the face of the device. Internal illumination will be a minimum of four (4) footlamberts.

The pump panels will be illuminated by four (4) Truck-Lite, Model 6060C white LED lights installed on the back of the cab, two (2) on the driver's side and two (2) on the passenger's side.

The pump operator's panel will utilize the same LED strip lighting at the forward doorframe as all other compartment lighting.

There will be a small white LED pump engaged indicator light installed overhead.

AIR HORN SYSTEM

Two (2) Grover, Stutter Tone, air horns will be recessed in the front bumper. The horn system will be piped to the air brake system wet tank utilizing 0.38" tubing. A pressure protection valve will be installed in-line to prevent loss of air in the air brake system.

Air Horn Location

The air horns will be located on each side of the bumper, just outside of the frame rails.

AIR HORN CONTROL

The air horns will be actuated by a push button located on officer side instrument panel and by the horn button in the steering wheel. The driver will have the option to control the air horns or the chassis horns from the horn button by means of a selector switch located on the instrument panel.

ELECTRONIC SIREN

There shall be a Whelen, Model 295SL 101, 100 or 200 watt electronic siren with noise canceling plug-in microphone will be provided.

This siren to be active when the battery switch is on and that emergency master switch is on.

Electronic siren head will be recessed in the overhead console above the engine tunnel on the driver side.

The electronic siren will be controlled on the siren head only. No horn button or foot switches will be provided.

SPEAKERS

There will be two (2) Whelen, Model SA315P, black nylon composite, 100-watt, speakers with through bumper mounting brackets provided. Each speaker will be connected to the siren amplifier.

The speakers will be recessed in each side of the front bumper, towards the outside.

AUXILIARY MECHANICAL SIREN

A Federal Q2B® siren will be furnished. A siren brake button will be installed on the switch panel.

The control solenoid will be powered up after the emergency master switch is activated.

The mechanical siren will be mounted on the bumper deck plate. It will be mounted on the left side. A reinforcement plate will be furnished to support the siren.

MECHANICAL SIREN CONTROL

The mechanical siren Will be actuated by a push button located on the officer's side instrument panel and by a foot switch on the driver's side.

SIREN BRAKE SWITCH

A second siren brake switch will be installed on the officers side overhead. The switch will be a membrane style switch.

FRONT ZONE UPPER WARNING LIGHTS

There will be two (2) 21.50" Whelen Freedom IV lightbars mounted on the cab roof, one (1) on each side above the driver's and passenger's door mounted at a 30 degree angle.

The driver's side lightbar will include the following:

- One (1) red flashing LED module in the outside end position.
- One (1) blue flashing LED module in the outside front corner position.
- One (1) white flashing LED module in the outside front position.
- One (1) blue flashing LED module in the inside front position.
- One (1) red flashing LED module in the inside front corner position.

The passenger's side lightbar will include the following:

- One (1) red flashing LED module in the inside front corner position.
- One (1) blue flashing LED module in the inside front position.
- One (1) white flashing LED module in the outside front position.
- One (1) blue flashing LED module in the outside front corner position.
- One (1) red flashing LED module in the outside end position.

There will be clear lenses included on the lightbar.

There will be a switch in the cab on the switch panel to control the lightbars.

The white LED's will be disabled when the parking brake is applied.

The two (2) red flashing LED modules in the inside front corner positions and the two (2) blue flashing LED modules in the front positions may be load managed when the parking brake is applied.

FRONT ZONE UPPER LIGHTING, PLATFORM

There will be four (4) Whelen®, Model M7#, 3.37" high x 7.62" long x 1.37" deep flashing LED warning lights with chrome trim and clear lenses provided on the front of the basket below the basket bumper per the following:

- the driver's side outside light to be red to the outside and blue to the inside
- the driver's side inside light to be red to the outside and blue to the inside
- the passenger's side inside light to be red to the outside and blue to the inside
- the passenger's side outside light to be red to the outside and blue to the inside

There will be a switch in the cab on the switch panel to control the lights.

White LEDs will be deactivated when the parking brake is applied.

The lights will be deactivated when the boom is lifted out of the cradle.

ADDITIONAL WARNING LIGHTS

There will be two (2) Whelen, Model M7* LED flashing warning light(s) that include a chrome flange, located on the basket, one each side of the aerial platform in line with the front and angled warning lights.

The color of these lights will be red and include a lens that is clear.

The light(s) will be activated with the roof light switch and be deactivated when the boom is lifted out of the cradle.

The additional warning light(s) may be load managed if colored or will be deactivated if white, when the parking brake is set.

ADDITIONAL BASKET WARNING LIGHTS

There will be two (2) Whelen, Model M7* split color LED flashing warning lights with a chrome flange, located on the basket, on the lower angled portion of the aerial basket.

The color of these lights will be red to the right and blue to the left and include a clear lens.

The lights will be activated with the roof light switch and be deactivated when the boom is lifted out of the cradle.

The additional warning lights may be load managed if colored or will be deactivated if white, when the parking brake is applied.

COVER, TRAFFIC LIGHT CONTROLLER

There will be a stainless steel cover provided over the Opticom traffic light controller for protection.

TRAFFIC LIGHT CONTROLLER

There will be a GTT, Model 794* LED Opticom traffic light controller with national standard high priority remote mounted on the front edge of the platform basket, on the front of the aerial basket.

The Opticom traffic light controller will be activated by a cab switch with emergency master control.

The Opticom traffic light controller will have no momentary activation switch.

The Opticom traffic light controller will be disabled when the parking brake is applied.

CAB FACE WARNING LIGHTS

There will be four (4) Whelen®, Model M6*C, LED flashing warning lights installed on the cab face, above the headlights, mounted in a common bezel.

- The driver's side front outside warning light to be red
- The driver's side front inside warning light to be blue
- The passenger's side front inside warning light to be blue
- The passenger's side front outside warning light to be red

All four (4) lights will include a clear lens.

There will be a switch located in the cab, on the switch panel, to control the four (4) lights.

The inside lights may be load managed if colored or disabled if white, when the parking brake is set.

HEADLIGHT FLASHER

The high beam headlights will flash alternately between the left and right side.

There will be a switch installed in the cab on the switch panel to control the high beam flash. This switch will be live when the battery switch and the emergency master switches are on.

The flashing will automatically cancel when the hi-beam headlight switch is activated or when the parking brake is set.

SIDE ZONE LOWER LIGHTING

There will be six (6) Whelen®, Model M6*C, flashing LED warning lights with chrome trim installed per the following:

- Two (2) lights, one (1) each side on the bumper extension. The side front lights to be red.
- Two (2) lights, one (1) each side of cab rearward of crew cab doors. The side middle lights to be blue.
- Two (2) lights, one (1) each side located between the tandems. The side rear lights to be red.
- The lights will include clear lenses.

There will be a switch in the cab on the switch panel to control the lights.

INTERIOR COMPARTMENT DOOR WARNING LIGHTS

There will be four (4) Whelen®, Model 50*03Z*R, LED warning light(s) with Model 5EFLANGE, chrome flange(s) provided on the compartment doors of the following compartment(s), on the inside of each cab door.

The color of the lights will be red.

The lens color to be clear.

Each light will be activated by the door jam switch of the associated door.

ADDITIONAL SIDE UPPER LIGHTS

There will be six (6) Whelen, Model M4**, 3.38" high x 5.50" long x 1.38" deep LED surface mount flashing lights with chrome trim provided on the outside corner radius of the cab roof over the crew cab doors.

- The side front lights to be red.
- The side middle lights to be red.
- The side rear lights to be red.
- The color of the lenses will be clear.

The lights will be installed on two (2) painted bracket that are attached to the cab roof. Three (3) lights on the driver's side and three (3) lights installed on the passenger's side.

There will be a switch in the cab on the switch panel to control the lights.

White LED's will be disabled when the parking brake is applied. Colored LED's may be load managed when the parking brake is applied.

REAR ZONE LOWER LIGHTING

There will be two (2) Whelen, Model M6* LED flashing warning lights located at the rear of the apparatus.

The driver's side rear light to be red to the outside and blue to the inside.

The passenger's side rear light to be red to the outside and blue to the inside.

Both lights will include a lens that is clear.

There will be a switch located in the cab on the switch panel to control the lights.

REAR BODY WARNING LIGHTS

There will be two (2) Whelen, Model M6*C, LED flashing warning light(s) with Whelen, Model M6FC, chrome bezel(s) provided just below the rear upper warning lights with blue on driver side and red on passenger side.

The color of these light(s) will be one (1) red, one (1) blue.

These light(s) will be controlled with the rear upper warning switch.

These light(s) will include a lens that is clear.

The light(s) may be load managed when the parking brake is applied.

WARNING LIGHTS (REAR AND SIDE UPPER ZONES)

Four (4) Whelen, model M6*C LED flashing warning lights will be provided at the rear of the apparatus.

The side rear upper light(s) on the driver's side to be blue.

The rear upper light(s) on the driver's side to be red.

The rear upper light(s) on the passenger's side to be blue.

The side rear upper light(s) on the passenger's side to be red.

These lights will include a lens that is clear.

There will be a switch located in the cab on the switch panel to control the lights.

ELECTRICAL SYSTEM GENERAL DESIGN FOR ALTERNATING CURRENT

The following guidelines will apply to the 120/240 VAC system installation:

General

Any fixed line voltage power source producing alternating current (ac) line voltage will produce electric power at 60 cycles plus or minus 3 cycles.

Except where superseded by the requirements of NFPA 1901, all components, equipment and installation procedures will conform to NFPA 70, National Electrical Code (herein referred to as the NEC).

Line voltage electrical system equipment and materials included on the apparatus will be listed and installed in accordance with the manufacturer's instructions. All products will be used only in the manner for which they have been listed.

Grounding

Grounding will be in accordance with Section 250-6 "Portable and Vehicle Mounted Generators" of the NEC. Ungrounded systems will not be used. Only stranded or braided copper conductors will be used for grounding and bonding.

An equipment grounding means will be provided in accordance with Section 250-91 (Grounding Conductor Material) of the NEC.

The grounded current carrying conductor (neutral) will be insulated from the equipment grounding conductors and from the equipment enclosures and other grounded parts. The neutral conductor will be colored white or gray in accordance with Section 200-6 (Means of Identifying Grounding Conductors) of the NEC.

In addition to the bonding required for the low voltage return current, each body and driving or crew compartment enclosure will be bonded to the vehicle frame by a copper conductor. This conductor will have a minimum amperage rating of 115 percent of the nameplate current rating of the power source specification label as defined in Section 310-15 (amp capacities) of the NEC. A single conductor properly sized to meet the low voltage and line voltage requirements will be permitted to be used.

All power source system mechanical and electrical components will be sized to support the continuous duty nameplate rating of the power source.

Operation

Instructions that provide the operator with the essential power source operating instructions, including the power-up and power-down sequence, will be permanently attached to the apparatus at any point where such operations can take place.

Provisions will be made for quickly and easily placing the power source into operation. The control will be marked to indicate when it is correctly positioned for power source operation. Any control device used in the drive train will be equipped with a means to prevent the unintentional movement of the control device from its set position.

A power source specification label will be permanently attached to the apparatus near the operator's control station. The label will provide the operator with the information detailed in Figure 19-4.10.

Direct drive (PTO) and portable generator installations will comply with Article 445 (Generators) of the NEC.

Overcurrent protection

The conductors used in the power supply assembly between the output terminals of the power source and the main over current protection device will not exceed 144.00" (3658 mm) in length.

For fixed power supplies, all conductors in the power supply assembly will be type THHW, THW, or use stranded conductors enclosed in nonmetallic liquid tight flexible conduit rated for a minimum of 194 degree Fahrenheit (90 degrees Celsius).

For portable power supplies, conductors located between the power source and the line side of the main overcurrent protection device will be type SO or type SEO with suffix WA flexible cord rated for 600-volts at 194 degrees Fahrenheit (90 degrees Celsius).

Wiring Methods

Fixed wiring systems will be limited to the following:

- Metallic or nonmetallic liquid tight flexible conduit rated at not less than 194 degrees Fahrenheit (90 degrees Celsius)
- or
- Type SO or Type SEO cord with a WA suffix, rated at 600 volts at not less than 194 degrees Fahrenheit (90 degrees Celsius)

Electrical cord or conduit will not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring. In addition the wiring will be run as follows.

- Separated by a minimum of 12.00" (305 mm), or properly shielded, from exhaust piping
- Separated from fuel lines by a minimum of 6.00" (152 mm) distance

Electrical cord or conduit will be supported within 6.00" (152 mm) of any junction box and at a minimum of every 24.00" (610 mm) of continuous run. Supports will be made of nonmetallic materials or corrosion protected metal. All supports will be of a design that does not cut or abrade the conduit or cable and will be mechanically fastened to the vehicle.

Wiring Identification

All line voltage conductors located in the main panel board will be individually and permanently identified. The identification will reference the wiring schematic or indicate the final termination point. When prewiring for future power sources or devices, the unterminated ends will be labeled showing function and wire size.

Wet Locations

All wet location receptacle outlets and inlet devices, including those on hardwired remote power distribution boxes, will be of the grounding type provided with a wet location cover and installed in accordance with Section 210-7 "Receptacles and Cord Connections" of the NEC.

All receptacles located in a wet location will be not less than 24.00" (610 mm) from the ground. Receptacles on off-road vehicles will be a minimum of 30.00" (762 mm) from the ground.

The face of any wet location receptacle will be installed in a plane from vertical to not more than 45 degrees off vertical. No receptacle will be installed in a face up position.

Dry Locations

All receptacles located in a dry location will be of the grounding type. Receptacles will be not less than 30.00" (762 mm) above the interior floor height.

All receptacles will be marked with the type of line voltage (120-volts or 240-volts) and the current rating in amps. If the receptacles are direct current, or other than single phase, they will be so marked.

Listing

All receptacles and electrical inlet devices will be listed to UL 498, Standard for Safety Attachment Plugs and Receptacles, or other appropriate performance standards. Receptacles used for direct current voltages will be rated for the appropriate service.

Electrical System Testing

The wiring and associated equipment will be tested by the apparatus manufacturer or the installer of the line voltage system.

The wiring and permanently connected devices and equipment will be subjected to a dielectric voltage withstand test of 900-volts for one (1) minute. The test will be conducted between live parts and the

neutral conductor, and between live parts and the vehicle frame with any switches in the circuit(s) closed. This test will be conducted after all body work has been completed.

Electrical polarity verification will be made of all permanently wired equipment and receptacles to determine that connections have been properly made.

Operational Test per Current NFPA 1901 Standard

The apparatus manufacturer will perform the following operation test and ensure that the power source and any devices that are attached to the line voltage electrical system are properly connected and in working order. The test will be witnessed and the results certified by an independent third-party certification organization.

The prime mover will be started from a cold start condition and the line voltage electrical system loaded to 100 percent of the nameplate rating.

The power source will be operated at 100 percent of its nameplate voltage for a minimum of two (2) hours unless the system meets category certification as defined in the current NFPA 1901 standard.

Where the line voltage power is derived from the vehicle's low voltage system, the minimum continuous electrical load as defined in the current NFPA 1901 standard will be applied to the low voltage electrical system during the operational test.

GENERATOR

The apparatus will be equipped with a complete AC (alternating current) electrical power system. The generator will be a Harrison, Model MSV, 6,000 watt hydraulic driven unit with vertical exhaust.

The generator will be driven by a transmission power take off unit, through a hydraulic pump and motor.

The hydraulic engagement supply will be operational at any time (no interlocks).

An electric/hydraulic valve will supply hydraulic fluid to the clutch engagement unit provided on the chassis PTO drive.

Generator Instruments and Controls

To properly monitor the generator performance, a voltmeter will be furnished near the breaker box.

GENERATOR LOCATION

The generator will be mounted in the driver's side rear hosebed area above the torque box. The flooring in this area will be either reinforced or constructed, in such a manner, that it will handle the additional weight of the generator.

GENERATOR START

There will be a switch provided on the cab instrument panel to engage the generator.

CIRCUIT BREAKER PANEL

The smallest size practical circuit breaker panel will be located P5 recessed in forward wall.

RECESSED CIRCUIT BREAKER BOX

The circuit breaker box will be recessed into the compartment wall. P5 recessed in forward wall.

GENERATOR PTO MOUNTING LOCATION

The generator PTO will be mounted to the top port on the pump.

REMOTE LIGHT SWITCH

A remote on/off actuation switch with a green indicator light will be provided to actuate a 120/240 volt solenoid switch for each quartz light.

The two (2) switches will be located in the cab at the driver position. The switches will control the lights on the front of the basket and the two lights below the basket.

ELECTRIC CORD REEL

Furnished with the 120 volt AC electrical system will be a Hannay, Series 1600, cord reel. The reel will be provided with a 12-volt electric rewind switch, that is guarded to prevent accidental operation and labeled for its intended use. The switch will be protected with a fuse and installed at a height not to exceed 72.00" above the operators standing position.

The exterior finish of the reel(s) will be painted #269 gray from the reel manufacturer.

A Nylatron guide to be provided to aid in the payout and loading of the reel. A ball stop will be provided to prevent the cord from being wound on the reel.

A label will be provided in a readily visible location adjacent to the reel. The label will indicate current rating, current type, phase, voltage and total cable length.

A total of one (1) cord reel will be provided one (1) over the passenger's side front stabilizer compartment on the body.

The cord reel will be configured with three (3) conductors.

CORD

Provided for electric distribution will be one (1) length installed on the reel of 200 feet of yellow 10/3 electrical cord, weather resistant 105 degree Celsius to -50 degree Celsius, 600 volt jacketed SOOW cord. No connector will be installed on the end of the cord.

PORTABLE JUNCTION BOX

There will be one (1) Circle D electrical junction box(es) provided.

There will be a cable strain relief and direct connection, no plug provided for each box. Each box will be yellow powder coated .

Each box will be provided with the following:

- two (2) 15/20 amp 120 volt AC straight blade duplex receptacle with flip up covers
- two (2) 20 amp 120 volt AC Fire Power FP11 receptacles with flip up covers
- a 120 volt AC light on top of the box

THREE SECTION 100 FOOT AERIAL PLATFORM

GENERAL INFORMATION

It is the intent of these specifications to describe a telescoping, elevating platform. The unit will consist of a three (3) section, aluminum ladder with a self-leveling basket attached, to the ladder fly section.

OPERATION ON GRADES

The aerial unit will be capable of operating safely, on any slope up to 10 degrees at full capacities. (Operation beyond this limit will be at the operator's discretion.)

CONSTRUCTION STANDARDS

The ladder will be constructed to meet all of the requirements as described in the current edition of NFPA 1901 standards. Some portions of this specification exceed minimum NFPA recommendations. They will be considered a minimum requirement to be met.

A safety factor of 2:1 is required for environmental loading (wind plus .25" of ice build-up). This structural safety factor will apply to all structural aerial components including turntable and torque box stabilizer components. Definition of the structural safety factor will be as outlined in NFPA standards:

DL = Dead load stress. Stress produced by the weight of the aerial device and all permanently attached components.

RL = Rated capacity stress. Stress produced by the rated capacity load of the ladder.

WL = Water load stress. Stress produced by nozzle reaction force and the weight of water in the water delivery system.

FY = Material yield strength. The stress at which material exhibits permanent deformation.

$2.25 \times DL + 2.25 \times RL + 2.25 \times WL$ equal to/less than FY. The minimum NFPA specification is exceeded here by providing a safety factor above 2:1 while flowing water.

$2.0 \times DL + 2.0 \times RL + 2.0 \times WL + 2.0 \times \text{wind loading}$ equal to/less than FY.

The RL is reduced with a .25" ice build up to maintain a minimum 2:1 structural safety factor.

An independent engineering firm will verify the aerial safety factor. Design verification will include computer modeling and analysis, and extensive strain gauge testing witnessed by an independent

registered professional engineer. Verification will include written certification from the independent engineering firm made available by the manufacturer upon request from the purchaser.

All welding of aerial components, including the aerial ladder sections, turntable, pedestal, and outriggers will be performed by welders who are certified to American Welding Society (AWS) standards. The weldment assemblies of each production unit will be tested visually and mechanically by an ASNT certified level II non-destructive test technician to comply with NFPA standards. Testing procedures will conform to the AWS standards guide for non-destructive testing. Test methods may include dye penetrant, ultrasound, and magnetic particle where applicable.

LADDER CONSTRUCTION

The ladder will be comprised of three (3) sections and will extend to a nominal height, of 100 feet above the ground, as measured by 1901 recommendations.

The ladder will be designed to provide continuous egress for firefighters and civilians from an elevated position to the ground. To insure a high strength to weight ratio and an inherent corrosion resistance, the aerial ladder will be completely constructed of high-strength aluminum. All side rails, rungs, handrails, uprights, and K braces will be made of structural 6061T6 alloy aluminum extrusions.

All material will be tested and certified by the material supplier. All ladder sections will be semi-automatically welded by shielded arc welding methods using 5356 aluminum alloy welding wire. Structural rivets or bolts will not be utilized in the ladder weldment sections.

The aerial ladder will consist of three (3) welded, extruded aluminum telescopic ladder sections. Each ladder section will consist of two (2) extruded aluminum side rails and a combination of aluminum rungs, tubular diagonals, verticals and two (2) full-length handrails. The rungs on all sections will be K braced for maximum lateral stability. This K bracing will extend to the center of each rung to minimize ladder side deflection.

The ladder rungs will be designed to eliminate the need to replace rubber-rung covers. The rungs will be spaced on 14.00" centers and have an integral skid-resistant surface as outlined in NFPA standards. An oval shaped rung will be utilized to provide a larger step surface at low angles and more comfortable grip at elevated positions. The minimum design load will be 500 lbs. distributed over a 3.50" wide area as outlined in NFPA standards.

Each aerial ladder section will have heat sensor labels that are preset to 300 degrees Fahrenheit with expiration year. The heat labels will meet NFPA standards.

The aerial ladder will exceed NFPA standards governing the minimum ladder section width and handrail height:

- Base section: 42.38" wide x 36.00" high
- Mid-section: 32.63" wide x 31.25" high

- Fly section: 24.00" wide x 27.38" high

VERTICAL HEIGHT

The ladder will extend to a minimum height of 100' above the ground at full extension and elevation. The measurement of height will be consistent with NFPA standards.

HORIZONTAL REACH

The rated horizontal reach will be 91'9". The measurement of horizontal reach will be consistent with NFPA standards.

OPERATION RANGE

The operating range of the ladder will be 11.5 degrees below horizontal (10 degrees with deep notch cab) to 76 degrees above horizontal with the truck in a level position.

The aerial will be capable of rotating from side-to-side around the back of the truck, encompassing up to 235 degrees of continuous rotation (depending on equipment and where it is located), while the aerial device remains at 11.5 degrees below horizontal (10 degrees with a deep notch cab). This will ensure that the platform stepping surface does not exceed the NFPA recommended maximum step height during a continuous rotation of up to 235 degrees.

MOUNTING OF ELEVATING PLATFORM

The aerial device will be rear mounted, to a torque box, on the truck chassis. Midship mounted aerial devices will not be acceptable.

TORQUE BOX

A "torsion box" subframe will be installed between the two sets of stabilizers. The torque box will be constructed of a minimum .312" steel plate (50,000 pounds per square inch yield) with steel tubing reinforcement, on each side of the box, in the turntable area. The dimensions of the torque box will be 41.00" wide x 29.00" high x 247.63" long. There will be a 1/2" gap between the torque box and the frame rails to promote drying of the surfaces and reduce the effect of corrosion. The torque box subframe assembly will be capable of withstanding all torsional and horizontal loads when the unit is on the stabilizers. The torque box will be bolted to the chassis frame rails using thirty-six .750" SAE grade 8 bolts with nuts.

TURNTABLE

The turntable will be a 1.00" thick aluminum deck, covered with a non-skid, chemical resistant material in the walking areas. The stepping surfaces will meet the skid-resistance requirements of the current NFPA 1901 standard.

The turntable will measure 88.50" long x 87.88" wide. The turntable will include an enclosure for the hydraulic valves and rotation motor, which will also serve as a step, for access to the ladder.

The turntable handrails will be a minimum 42.00" high and will not increase the overall travel height of the vehicle. The handrails will be constructed out of aluminum and have a slip resistant knurled surface.

The upper turntable assembly will connect the aerial ladder to the turntable bearing. The steel structure will have a mounting position for the aerial elevation cylinders, ladder connecting pins, and upper turntable operator's position.

A 54.24" diameter turntable bearing with a 3.25" drive gear face will be bolted to the top of the bearing mounting plate with .88" diameter Grade 8 plated bolts. The gear teeth will be stub tooth form. The rated overturning moment of the turntable bearing will be a minimum of 441,400 ft. lbs.

ELEVATION SYSTEM

Dual 7.00" diameter elevating cylinders will be mounted on the underside of the base section of the ladder. Two (2) 2.50" diameter stainless steel pins will fasten the cylinder to the turntable and fasten to the ladder. The pins will have 125,000 psi minimum yield strength and will be secured with .50" Grade 8 bolts with lock nuts. The bolts are to ensure that the pins do not walk out of the mounting brackets on the turntable and base section.

The elevating cylinders will be mounted utilizing maintenance-free spherical bearings on both ends of the cylinders. The aerial base pivot bearings will be maintenance-free type bearings with no external lubrication required. The cylinders will function only to elevate the ladder and not as a structural member to stabilize the ladder side movement. The elevating cylinders will be provided with pilot-operated check valves on the barrel and rod side of the piston to prevent movement of the ladder in case of a loss of hydraulic pressure.

The operation envelope will be 11.5 degrees below horizontal (10 degrees with a deep notch cab) to 76 degrees above horizontal.

The elevation system will be designed following NFPA standards. The elevation hydraulic cylinders will incorporate cushions on the upper limit of travel.

The lift cylinders will be equipped with integral holding valves located in the cylinder to prevent the unit from descending should the charged lines be severed, at any point within the hydraulic system and to maintain the ladder in the bedded position during road travel. The integral holding valves will NOT be located in the transfer tubes.

The elevation system will be controlled by the microprocessor. The microprocessor will provide the following features:

- Collision avoidance of the elevation system to prevent accidental body damage
- Automatic deceleration when the aerial device is lowered into the cradle
- Automatic deceleration at the end of stroke, in maximum raise and lower positions
- Deceleration of the aerial device at the limits of travel

EXTENSION/RETRACTION SYSTEM

A hydraulically powered, extension and retraction system will be provided through dual hydraulic cylinders and wire ropes. Each set will be capable of operating the ladder in the event of a failure, of the other. For safety, systems that use only a single extension/retraction system will not be acceptable. The extension cylinder rod will be chrome plated to provide smooth operation of the aerial device and reduce seal wear. The extension/retraction cylinders will be equipped, with integral holding valves, to prevent the unit from retracting should the charged line be severed, at any point within the hydraulic system. The integral holding valves will NOT be located in the transfer tubes.

Wire ropes and attaching systems used to extend and retract the fly sections will have a 5:1 safety factor based on the ultimate strength under all operating conditions. The factor of safety for the wire rope will remain above 2:1 during any extension or retraction stall. The minimum ratio of the diameter of wire rope used to the diameter of the sheave used will be 1:12. Wire ropes will be constructed of seven (7) strands over an inner wire for increased flexibility. The wire rope will be galvanized to reduce corrosion.

The ladder assembly will consist of three (3) separate weldments that will extend and retract within each other. Nylatron PAG + OIL slide pads will be utilized between each section to minimize friction. Four (4) T type interlocking load transfer stations will enclose the slide pads. The transfer stations will be located at the upper portion of the base and second ladder sections. Additional guide pads will be located along the aerial section to guide the ladder during retraction and extension.

The extension/retraction system will be controlled by the microprocessor. The microprocessor will provide the following features:

- Automatic deceleration at the end of stroke, in maximum extend and retract positions
- Controls the rate of retraction while flowing water

All sheaves will be greaseless and all sheave pins and pivot pins will be polished stainless steel.

ROTATION SYSTEM

The aerial will be supplied with a powered rotation system as outlined in NFPA standards. The hydraulic rotation motor will provide continuous rotation under all rated conditions and be supplied with a brake to prevent unintentional rotation. Two (2) hydraulically driven, planetary gear boxes with drive speed reducers will be used to provide infinite and minute rotation control throughout the entire rotational travel. Two (2) spring applied, hydraulically released disc type swing brakes will be furnished to provide positive braking of the turntable assembly. Provisions will be made for emergency operation of the rotation system should complete loss of normal hydraulic power occur. The hydraulic system will be equipped with pressure relief valves which will limit the rotational torque to a nondestructive power. The gearbox will have a minimum continuous torque rating of 60,000 in. lbs. and a minimum intermittent rating of 130,000 in. lbs. The turntable bearing, ring gear teeth, pinion gear, planetary gearbox, and output shaft will be certified by the manufacturer of the components for the application.

The rotation system will be controlled by the microprocessor. The microprocessor will provide the following features:

- Envelope control of rotation system to prevent accidental body damage
- Prevent the aerial from being rotated into an unstable condition

MANUAL OVERRIDE CONTROLS

Manual override controls will be provided for all aerial and stabilizer functions.

LADDER SLIDE MECHANISM

Wear pads will be used between the telescoping ladder sections, to reduce friction for smoother operation. Slide pads will also be used to control side play between the ladder sections.

BASKET LEVELING SYSTEM

A basket leveling system will be provided and so designed, that the basket with its rated load, can be supported and maintained level, relative to the horizontal, regardless of the elevation or flexion of the ladder.

Basket leveling will be accomplished by hydraulic circuitry that is independent from the main hydraulic system. The leveling of the basket features a dual master/slave hydraulic cylinder system, with each side capable of supporting the load, while maintaining the basket level. Two (2) master cylinders are mounted between the turntable and the base ladder section, with two (2) slave cylinders mounted between the ladder fly section and the basket. The slave and master cylinders are synchronized, so as the ladder is raised or lowered, exact amounts of hydraulic fluid are transferred between the master and slave cylinders thus maintaining the basket level.

The hydraulic circuitry includes pressure operated counter balance valves, on the load side of the slave cylinders, to prevent the basket from tipping should the hydraulic lines be severed.

A momentary switch is provided, on the cab instrument panel, to level the basket should this become necessary due to ambient temperature changes. It is not necessary to start the engine and activate the main hydraulic system to level the basket.

The basket leveling system will be manually adjustable from 10 degrees below horizontal to 10 degrees above horizontal.

Manual basket leveling switches will be provided at the turntable and basket.

ROTATION INTERLOCK

The microprocessor will be used to prevent the rotation of the aerial device to the side in which the stabilizers have not been fully deployed (short-jacked). The microprocessor will allow full and unrestricted use of the aerial, in the 180 degree area, on the side(s) where the stabilizers have been fully deployed. The system will also have a manual override, to comply with NFPA 1901. SYSTEMS THAT PERMIT THE AERIAL TO ROTATE TO THE "SHORT JACK" SIDE, WITHOUT

AUTOMATICALLY STOPPING THE ROTATION AND/OR WITHOUT ACTUATION OF THE "MANUAL OVERRIDE", will NOT BE ACCEPTED. SYSTEMS THAT ONLY INCLUDE AN ALARM ARE NOT CONSIDERED AN INTERLOCK AND will NOT BE ACCEPTED.

LOAD CAPACITIES

The following load capacities will be established with the stabilizers at full horizontal extension and placed in the down position to level the truck and to relieve the weight from the tires and axles. Capacities will be based upon full extension and 360 degree rotation.

A load chart will be visible at the operator's station. The load chart will show the recommended safe load at any condition of the aerial device's elevation and extension. The ratings in the unsupported, fully extended configuration (in addition to 100 lbs. of equipment mounted at the tip) will maintain a 2:1 safety factor with a 35 mph wind.

The aerial device will have a rated capacity of 1000 lbs. consistent with standards. The rated capacity will include 1000 lbs. in personnel allowance and 100 lbs. for equipment mounted at the tip of the ladder. The aerial device will be rated in multiple configurations as outlined in NFPA standards.

35 MPH WIND CONDITIONS/WATERWAY DRY

Degrees of Elevation	-11.5 to 29*	30 to 39	40 to 49	50 to 76
Basket	1000	1000	1000	1000
Fly Tip	-	250	500	750
Mid Tip	-	250	500	750
Base	250	500	1000	1000

* -10 degrees with deep notch cab

35 MPH WIND CONDITIONS/WATERWAY CHARGED

Degrees of Elevation	-11.5 to 29*	30 to 39	40 to 49	50 to 76
Basket	500	500	500	500
Fly Tip	-	250	500	750
Mid Tip	-	250	500	750
Base	-	500	750	750

* -10 degrees with deep notch cab

Reduced loads at the fly can be redistributed to the mid or base sections as needed.

The aerial device will be able to maintain the above load capacities while flowing up to 1500 GPM and a nozzle position of 0 to 90 degrees to either side of the ladder centerline, as far above and below horizontal to the platform as nozzle design allows.

While flowing 1500 to 2000 GPM, the nozzle position will be limited to 45 degrees either side of the ladder centerline horizontal to the platform, 30 degrees above horizontal, and as far below horizontal to the platform as nozzle design allows.

Reduced loads in the basket can be redistributed in 250 lb. increments to the fly, mid, or base as needed.

LADDER CRADLE INTERLOCK SYSTEM

A ladder cradle interlock system will be provided through the microprocessor to prevent the lifting of the aerial device from the nested position until the operator places all the stabilizers in a load supporting configuration. A switch will be installed at the boom support to prevent operation of the stabilizers once the aerial has been elevated from the nested position.

BOOM SUPPORT

A heavy-duty boom support, constructed of steel, is to be provided for support of the ladder in the travel position. The boom support will be bolted to the chassis frame as close to the front axle as design allows. On the base section of the ladder, a stainless steel scuffplate will be provided where the ladder comes into contact with the boom support.

The boom support will be located just to the rear of the chassis cab.

TORQUE BOX MODIFIED

The torque box will be modified for slide-out trays.

AERIAL BOOM SUPPORT LIGHT

There will be one (1) Amdor, Model Luma Bar H2O, white LED strip light mounted on the boom support cradle. This light will be activated when the aerial master switch is activated.

BOOM SUPPORT COMPARTMENT DIRECTLY BEHIND THE CAB

A compartment will be provided on each side of the apparatus directly behind the cab. Each compartment will utilize the available depth from the face of the PUC module to the boom support.

The interior dimensions of the driver's side compartment will be approximately 8.00" wide x 13.75" deep x 23.75" high. The clear door opening will be approximately 7.00" wide x 21.88" high.

The interior dimensions of the passenger's side compartment will be approximately 8.00" wide x 13.75" deep x 21.88" high. The clear door opening will be approximately 7.00" wide x 21.88" high.

There will also be a compartment located above the crosslays and boom support compartment on the passenger side. This compartment will be approximately 24.63" wide x 12.88" deep x 14.63" high.

All compartments will be made of aluminum with single pan doors that are made from smooth aluminum and painted job color. Boom support compartments will have two (2) lift and turn latches that are spaced as evenly as possible, yet both latches will remain accessible from the ground. The crosslay compartment door will have a single lift and turn latch.

TORQUE BOX MODIFIED

The torque box will be modified to accommodate pike pole storage mounted to the top of the torque box.

AERIAL BOOM PANEL

There will be one boom panel provided on the base section on the left side of the aerial device while viewed from the turntable. This boom panel will be sized to match the storage box on the opposite side. The boom panel will be painted #90 red.

The boom panel will be designed so no mounting bolts are in the face of the panel. This will keep the lettering surface free of holes.

PIKE POLE MOUNTING BRACKETS

Mounting will be provided near the end of the fly section of the aerial ladder for one (1) pike pole(s).

The bracket will be sized to hold a Nupla 12' pike pole.

LADDER STORAGE MOUNTING BRACKETS

There will be D/A finished brackets provided near the end of the fly section of the aerial for mounting a roof ladder.

The mounting brackets will accommodate a 14' Duo-Safety 875-A-DR roof ladder as determined by the type of aerial device and the available space.

STOKES AND MISCELLANEOUS STORAGE BOX

There will be an aluminum storage box painted job color and provided at the base section of the aerial ladder on the right side of the aerial device while viewed from the turntable. The box will be located in place of the aerial boom panel. The box will have a hinged cover with rubber hood latches and gas shocks to secure the equipment. The cover will have the same finish as the box. A divider will be provided to separate the stokes basket from the other equipment. The box will have no louvers.

There will be a white LED strip light installed on the inside edge of the box in the miscellaneous storage area.

The size of the stokes basket will be 83" long X 23" wide X 7.25" tall(Ferno Model RE01189999).The outside dimensions of the box will be approximately 25.50" high x 12.00" wide x 120.00" long.

The maximum capacity of this box will be 75 lb.

PIKE POLE MOUNTING BRACKETS

Mounting will be provided near the end of the fly section of the aerial ladder for one (1) pike pole(s).

The bracket will be sized to hold a Nupla 10' pike pole.

BASKET STRUCTURE

The basket structure will be constructed of structural T6061 aluminum and integrated with the construction of the waterway to ensure a high strength-to-weight ratio. The aerial basket will be fully tested and independent third party certified.

The flooring and front decking of the basket will be multi-piece non-slip material, preventing the accumulation of water on the standing surface. The floor will measure approximately 37.19" long x 78.13" wide. The stepping surfaces will meet the skid-resistance requirements of current NFPA 1901 standard.

The outside basket steps will be at the same level as the basket floor. The steps on the front and sides are approximately 8.00" deep. The doors and front corners of the basket will be at 45 degrees to allow the basket to be maneuvered closer to buildings when approaching at an angle.

Four (4) stainless steel pompier belt safety loops will be attached to the inside of the basket. Two (2) lifting eyes will be provided on the bottom side of the basket support structure.

Two (2) rubber bumpers are provided on the bottom side of the basket structure for damage protection when setting it down on a surface.

The basket interior will be illuminated as required per the current edition of NFPA 1901. All hoses and wiring at the basket will be fully enclosed. Electrical sub-components will be mounted under the basket in a separate enclosure for easy servicing while maintaining an unobstructed basket interior.

BASKET SIDES

The sides of the basket will be of tubular aluminum construction and aluminum sheet skin with engine turned finish and, along with the basket doors, will form a continuous 42.00" high wall around the basket.

PLATFORM ENTRANCES/EXITS

Two (2) swing-in, spring-loaded, self-closing double pan doors will be of single pan aluminum construction with engine turned finish and will be provided on the 45 degree angles at the front of the platform. A paddle style door latch will allow the basket doors to be opened from the outside by applying pressure to the paddle with the hand. The rear of the basket will be equipped with a vertical self-closing gate for transfer to and from the basket's ladder device. Telescoping-type handrails will be provided as a banister to bridge the gap between the basket and the fly section at all elevations.

ACCESSORY MOUNTING RECEPTACLES

Two (2) universal accessory mounting receptacles will be permanently affixed on the front of the basket to receive the *LyfeLine*™ family of options such as the *LyfeSupport*™ rescue basket holders, *LyfeEye*™ rappelling arms, *LyfeLadder*™ roof ladder brackets, *LyfeHoist*™ winch, etc. Complete interchangeability will be required without modification to the basket.

LADDER BELT BOX AT PLATFORM

There will be a ladder belt box with a cover and rubber hood latch provided at the platform. The box will be located at the right side of the basket when viewed from the turntable and will be brushed aluminum. The box size will be 12" side to side x 8" front to back x 15" deep.

MULTIPLEX DISPLAY COVER

A cover will be provided for the multiplex display in the platform basket. The cover will be hinged at the front of the basket and when down it will cover the multiplex display. The cover will be constructed of brushed stainless steel.

The cover will be held down with a rubber hood latch.

AXE MOUNTING BRACKETS

Brackets will be provided in the aerial platform basket for mounting one (1) fire axe(s) at the left rear, inside of the basket when viewed from the turntable. The type of axe mounted here will be a flathead axe. The mounting plates for this installation will be stainless steel.

BASKET LANDING PAD EXTENSIONS

There will be extension pads provided for each of the aerial basket landing feet located on the under side of the basket

LIGHTS FOR TURNTABLE WALKWAY

There will be white LED lights provided at the aerial turntable. The lights will be located to illuminate the entire walking surface of the turntable including the area around the turntable console. These lights will be activated by the aerial master switch.

TURNTABLE CONSOLE LIGHTING

There will be one (1), Amdor Luma Bar H2O, white LED light strip mounted in the turntable console cover to illuminate the controls located on both the upper and lower portion of the turntable control station. These lights will be activated by the aerial master switch.

BASKET HEAT SHIELDS

A heat reflective shield will be provided on the front, sides and bottom of the basket.

The double pan basket access doors will form the heat shield at the front of the basket. The side heat shields will be formed by a single sheet of .063 aluminum.

Full under the basket heat shield protection, with a non-glare finish, will be provided with a swing-down door for ease of servicing.

INFORMATION CENTER

There will be an information center provided. The information center will operate in temperatures from -40 to 185 degrees Fahrenheit. The information center will employ a Linux operating system and a 7.00" (diagonal measurement) LCD display. The LCD will have a minimum 400nits rated, color display. The LCD will be sunlight readable, true digital operation, and will have improved resolution. The LCD display will be encased in an ABS, black plastic housing with a gray decal. There will be five (5), weather-resistant user interface switches provided. The LCD display can be changed to an available foreign language.

OPERATION

The information center will be designed for easy operation in everyday use. There will be a page button to cycle from one screen to the next screen in a rotating fashion. A video button will allow an NTSC signal into the information center to be displayed on the LCD. If any button is pressed while viewing a video feed, the information center will return to the vehicle information screens. There will be a menu button to provide access to maintenance, setup, and diagnostic screens. All other button labels will be specific to the information being viewed.

GENERAL SCREEN DESIGN

Where possible, background colors will be used to provide vehicle information *At A Glance*. If the information provided on a screen is within acceptable limits, a green background color will be used. If the information provided on a screen is not within acceptable limits, an amber background color will indicate a caution condition and a red background color will indicate a warning condition.

Every screen in the information center will include the aerial tip temperature, the time (12- or 24-hour mode) and a text Alert Center. The time will be synchronized between all Command Zone color displays located on the vehicle. The Alert Center will display text messages for audible alarms. The text messages will identify any items causing the audible alarm to sound. If more than one (1) audible alarm is activated, the text message for each alarm will cycle every second until the problems have been resolved. The background for the Alert Center will change to indicate the severity of the warning message. Amber will indicate a caution condition and red will indicate a warning condition. If a warning and a caution condition occur simultaneously, the red background color will be shown for all Alert Center messages.

A label will be provided for each button. The label will indicate the function for each active button for each screen. If the button is not utilized on specific screens, it will have a button label with no text.

Symbols will accurately depict the aerial device type the information pertains to such as rear mount ladder, rear mount platform, mid-mount ladder or mid-mount platform.

PAGE SCREENS

The Information center will include the following pages:

The Aerial Main and Load Chart page will indicate the following information:

- Rungs Aligned and Rungs Not Aligned will be indicated with text and respective green or red colored ladder symbols.
- Ladder Elevation will be indicated via a fire apparatus vehicle with ladder symbol with the degree of elevation indicated between the vehicle and ladder.
- Water Flow (if applicable) will be indicated via a water nozzle symbol and text indicating flow / time.
- Breathing Air Levels will be indicated via an air bottle symbol and text indicating the percent (%) of air remaining. A green bar graph shown inside the bottle will indicate oxygen levels above 20%. A red bar graph will indicate oxygen levels at or below 20%. When oxygen levels are at or below 10%, the red bar graph will flash.
- *At A Glance* color features will be utilized on this screen. Caution type conditions will be indicated via a yellow background. Warning type conditions will be indicated via a red background. Conditions operating within acceptable limits will be indicated via a green background.

The Aerial Reach and Hydraulic Systems page will indicate the following information:

- Aerial Hydraulic Oil Temperature will be indicated with symbol and text. *At A Glance* features will be utilized.
- Aerial Hydraulic Oil Pressure will be indicated with a symbol and text. *At A Glance* features will be utilized.
- The following calculations will be indicated on a representative vehicle symbol:
 - Aerial Device Extension length
 - Aerial Device Height indicating the height of the aerial device tip from the ground
 - Aerial Device Reach indicating the horizontal distance the aerial reaches from the turntable.
 - Aerial Device Angle indicating the angle from the vehicle which the device is at.
- *At A Glance* color features will be utilized on this screen. Caution type conditions will be indicated via a yellow background. Warning type conditions will be indicated via a red background. Conditions operating within acceptable limits will be indicated via a green background.

The Level Vehicle page will indicate the following information:

- The grade of the vehicle will be indicated via a fire apparatus vehicle symbol with the degree of grade shown in text format. The symbol will tilt dependent on the vehicle grade.
- The slope of the vehicle will be indicated via a fire apparatus vehicle symbol with the degree of slope shown in text format. The symbol will tilt dependent on the vehicle slope.
- Outriggers status will be indicated via a colored symbol for each outrigger present. Each outrigger status will be defined as one of the following:
 - Outrigger stowed indicated with a silver pan located close to the vehicle
 - Outrigger fully extended indicated with a fully deployed green outrigger
 - Outrigger short-jacked indicated by a yellow outrigger partially deployed
 - Outrigger not set indicated by a red outrigger that is not set on the ground
- A text box located on the vehicle symbol will be utilized to identify the overall status of the outrigger leveling system. The following status will be indicated in the text box:
 - Deployed status will indicate all outriggers are properly set on the ground at full extension
 - Shortjacked status will indicate one or more outriggers are set on the ground but not fully extended.
 - Not Set status will indicate one or more outriggers is not properly set on the ground.
 - Stowed status will indicate all outriggers are stowed for vehicle travel.
- A bedding assist alert will indicate that the aerial device is being aligned by the Command Zone system as the operator lowers the aerial device into the cradle with the joystick.
- *At A Glance* color features will be utilized on this screen. Caution type conditions will be indicated via a yellow background. Warning type conditions will be indicated via a red background. Conditions operating within acceptable limits will be indicated via a green background.

MENU SCREENS

The following screens will be available through the Menu button:

The View System Information screen will display aerial device hours, aerial PTO hours, ladder aligned for stowing, aerial rotation angle, total water flow (if applicable), and aerial waterway valve status (if applicable).

The Set Display Brightness screen will allow brightness increase and decrease and include a default setting button.

The Configure Video Mode screen will allow setting of video contrast, video color and video tint.

The Set Startup screen allows setting of the screen that will be active at vehicle power-up.

The Set Date and Time screen has a 12- or 24-hour format, and allows setting of the time and date.

The View Active Alarms screen shows a list of all active alarms including the date and time of each alarm occurrence, and shows all alarms that are silenced.

The System Diagnostics screen allows the user to view system status for each module and its respective inputs and outputs. Viewable data will include the module type and ID number; the module version; and module diagnostics information including input or output number, the circuit number connected to that input or output, the circuit name (item connected to the circuit), status of the input or output, and other module diagnostic information.

Aerial Calibrations screen indicates items that may be calibrated by the user and instructions to follow for proper calibration of the aerial device.

Button functions and button labels may change with each screen.

LOWER CONTROL STATION

A lower control station will be located, at the rear of the apparatus, in an easily accessible area. The controls and indication labels will be illuminated, for nighttime operation. The following items will be furnished at the lower control station and will be clearly identified and conveniently located for ease of operation and viewing:

- Level assist switch
- Override switch to override interlocks
- Emergency power unit switch

AERIAL DEVICE CONTROL STATIONS

There will be two (2) device control stations. One (1) will be referred to as the basket control station and the other as the turntable control station. All elevation, extension and rotation controls will operate from both of these locations. The controls will permit the operator to regulate the speed of the aerial functions, within the safe limits, as determined by the manufacturer and NFPA standards. The controls will be grouped and operate in an identical manner at both stations for similarity of operation. The controls will be clearly marked and lighted for nighttime operation.

Each control will be equipped, with a positive lock to hold the control in a neutral position, preventing accidental activation. In addition to the neutral lock, a console cover will be provided at the turntable control station. The controls will be so designed to allow the turntable control station to immediately override the basket controls, even if the ladder is being operated by the basket controls.

TURNTABLE CONTROL STATION

The turntable control station will be located, on the left side of the turntable, so the operator may easily observe the basket while operating the controls.

The front, lower access door on the turntable control station will be provided with a door that is vertically hinged on the left side

The following items will be installed at the turntable control station, clearly identified, lighted for nighttime operation and conveniently located for ease of operation and viewing:

- Electric controls for elevation, rotation, extension/retraction
- Manual electric controls for basket leveling
- Intercom controls
- Tip tracking light switch
- Emergency power unit switch
- Operator's load chart
- Three (3) position switch for selecting aerial operational speed

TURNTABLE WORK LIGHTS

There will be a minimum of two (2) 12-volt work lights installed on the turntable, to illuminate the surrounding area for nighttime operation. The work lights will be activated by the aerial master switch.

BASKET CONTROL CONSOLE

The basket instrument panel will be located at the front center, of the aerial platform. The following controls will be installed at the console and be clearly identified, illuminated for nighttime operation and conveniently located for ease of operation and viewing:

- Intercom controls
- Operator's load chart

AERIAL FUNCTION CONTROLS

The aerial function controls, elevation, rotation, extension/retraction will be mounted in a separate backlit control box, which will be attached to the front of the platform control console, by means of an easily removable slide mechanism. The aerial function control box will have three (3) fixed attachment points in the basket. The electrical connection will be by a strain relieved, coiled cord that is permanently attached to the control box. To reduce the excess cord in the basket, the coiled cord will use a deutsch style bayonet connector style plug and there will be three (3) locations in the basket. The legend for the control lever functions will be illuminated.

HIGH IDLE

The high idle will be controlled by the microprocessor. The microprocessor will automatically adjust the engine rpm, to compensate for the amount of load placed upon the system. The system will include a safety device that allows activation of the high idle, only when the parking brake is set and the transmission is placed in neutral.

STABILIZERS

Two (2) sets of extendible, out and down, "H" type stabilizers will be provided for stability. The stabilizers will have a spread of 16' 6".

The stabilizers will be the double box design, with jack cylinders, that have a 4.25" internal diameter (bore), 3.00" diameter cylinder rod and a 34.88" stroke. The jack cylinders will be equipped with integral holding valves, which will hold the cylinder in either the stowed position or the working position, should a charged line be severed at any point within the hydraulic system. For safety, the integral holding valves will be located in the cylinder base end, NOT in the transfer tube. Vertical jack cylinder rods will be fully enclosed by a telescoping inner box to protect the cylinder rods against damage that may occur.

The extension cylinders will be totally enclosed within the extension beams. The horizontal extension cylinders will be of the trombone type to eliminate wear and potential failure of hydraulic hoses (no exception).

The stabilizers will have the capability of 18.00" of ground penetration, for set-up on uneven terrain. Extension of the horizontal beams will be activated by an extension cylinder, which has a 2.25" internal diameter (bore), 1.38" diameter cylinder rod and a 48.25" stroke. The extension cylinders will be totally enclosed within the extension beams. The cylinders will be equipped with internal decelerators. The cross section dimensions will be 13.00" high x 6.81" wide.

Each stabilizer leg will have attached to the end of the leg a 16 gauge polished stainless steel shield. The stainless steel shield will be of the split-pan design and will be a maximum 13.50" wide to allow the extension of the stabilizer between parked cars. This plate will serve as a protective guard and a mounting surface for warning lights. The top, forward, and rear edges will be flanged back for added strength.

STABILIZER CONTROLS

A portable stabilizer control box will be provided. The control box will be weatherproof and oil resistant. Each function and indicator light will be labeled on a metal photo panel. The control box can be taken as far away as 15 feet from the vehicle with an extension cable.

The stabilizer control box will include the following:

- One (1) green power indicator light for stabilizer control that will be illuminated when the aerial master and "PTO" switches in the cab are activated.

- Four (4) electric joysticks for stabilizers: each toggle switch will control the extend/retract and raise/lower of its respective stabilizer to allow vehicle set up in restricted areas and/or on uneven surfaces.
- Leveling assist push button: The outrigger control system will incorporate a computerized self-leveling system in addition to the standard outrigger controls. The operator will have the option to manually or automatically level the truck. The computerized system will ensure full outrigger extension, proper jack penetration, and will level the vehicle within 1/2 a degree of level for safe operation of the aerial device.
- One (1) electric push button for the engaging the emergency power unit
- One (1) red "stabilizer not stowed" indicator light: this light will illuminate when the stabilizers are not in the fully stowed position.
- Four (4) fully extended beams green indicator lights: these lights will be illuminated when each of the respective stabilizer beams are fully extended.
- Four (4) firm on ground green indicator lights: each light will be illuminated when its respective stabilizer shoe is in the load supporting condition.

Each joystick will activate the engine fast idle automatically.

Manual override will be supplied for each stabilizer control valve.

A "Stabilizers Not Stowed" indicator will be provided in the driver's compartment. It will illuminate automatically whenever the stabilizers are not fully stowed to prevent damage to the apparatus if moved. The stabilizer system will also be wired to the "Do Not Move Indicator Light", which will flash whenever the apparatus parking brake is not fully engaged and the stabilizers are not fully stowed.

STABILIZER PADS

A one (1) position, floating stabilizer pad will be provided on each stabilizer. The pads will require no operator adjustment during set up. The stabilizer pad will have the ability to pivot, in a 360-degree plane, for set up on uneven terrain.

AUXILIARY STABILIZER PADS

A set of four auxiliary pads with handles will be provided for additional load distribution on soft surfaces. Their size will be 31.00" x 26.00" and they shall be constructed of a lightweight composite material. The ground contact area for each stabilizer will be such that a unit pressure not greater than 75 psi (500 kPa) will be exerted over the ground contact area when the apparatus is loaded to its maximum in-service weight and the aerial device is carrying its rated capacity in every position permitted by the manufacturer. The pads will be stored in a double stacked configuration, two (2) behind each rear tandem axle in a single bracket.

CRADLE INTERLOCK SYSTEM

A cradle interlock system will be provided, to prevent the lifting of the aerial from the nested position, until the operator has positioned all the stabilizers in a load-supporting configuration. A switch will be installed at the cradle, to prevent operation of the stabilizers once the aerial has been elevated from the nested position.

STABILIZER PINS

The stabilizer jacks will not have holes for the stabilizer pins.

STABILIZER CONTROL BOX ALUMINUM DOOR

A vertically hinged smooth aluminum door will be provided over each stabilizer control box. The door will be hinged outboard.

HYDRAULIC SYSTEM

All high-pressure hoses will have an abrasion resistant cover, and have a rating greater than or equal to the working pressure of the circuit in which they are installed. All hydraulic fittings will be plated to minimize corrosion. The fitting will use an O-ring face seal, where possible, to minimize hydraulic leaks. All pressure carrying hydraulic hoses will have a 4:1 safety rating based on burst pressure.

An interlock will be provided that prevents activation of the hydraulic pump until the transmission is placed in neutral and the parking brake is set as outlined in NFPA standards.

The hydraulic system will be of the load sense design to minimize heat build up and provide smooth control of the aerial ladder. The system will meet the performance requirement in NFPA standards, which requires adequate cooling after less than 2 1/2 hours of operations.

All hydraulic components that are non-sealing, where failure could result in the aerial movement, will comply with NFPA standards and have burst strength of 4:1. Dynamic sealing components, where failure could cause aerial movement, will have a margin of 2:1 on maximum operating pressure per NFPA standards. All hydraulic hoses, tubes, and connections will have minimum burst strength of 3:1 per NFPA standards.

A hydraulic oil pressure gauge will be supplied at the base control location per NFPA standards.

The aerial hydraulic system will be designed in such a manner that a hydraulic pump failure or line rupture will not allow the aerial or outriggers to lose position. Hydraulic holding valves will be mounted directly into cylinders. To insure reliable performance of holding valves, no hoses or tubing will be permitted between a holding valve and cylinder. The aerial will incorporate the use of trombone steel tubes inside the stabilizer beams to eliminate hydraulic hose wear and leaks. Hydraulic power to the ladder will be transferred from the pedestal by a hydraulic swivel.

HYDRAULIC RESERVOIR

The hydraulic system will consist of an oil reservoir mounted to the torque box and plumbed to the hydraulic pump. There will be plumbing for a supply and return line and a tank drain on the reservoir.

The hydraulic pump suction line will have a shut-off ball valve for pump servicing.

The hydraulic oil reservoir fill will be labeled per NFPA standards. The hydraulic system will use multi-weight, SAE grade oil. ISO grade will be based on geographical location. The manufacturer will certify that the oil meets or exceeds the hydraulic cleanliness rating of 18/15/13 per ISO 4406:1999 before delivery.

HYDRAULIC FILTERS

The system will incorporate the following filters to provide dependable service:

- Separate magnet (not on strainer)
- Reservoir suction strainer: 125 mesh
- Pressure filter with dirt alarm: Nominal 5 micron filter with a rating of 6.5 micron @ Beta 200 (99.5% efficiency); 7.5 micron @ Beta 1000 (99.9% efficiency)
- Return filter with dirt alarm: Nominal 5 micron filter with a rating of 6.5 micron @ Beta 200 (99.5% efficiency); 7.5 micron @ Beta 1000 (99.9% efficiency)
- Desiccant breather filter: Water capacity 4 fluid oz, 5 micron rating

HYDRAULIC CYLINDERS

All hydraulic cylinders used on the aerial device will be produced by a manufacturer that specializes in the production of hydraulic cylinders.

POWER TAKEOFF / HYDRAULIC PUMP

The apparatus will be equipped with a power takeoff driven by the chassis transmission and actuated by an electric shift located inside the cab. The power takeoff, which drives the hydraulic pump, will meet all the requirements for the aerial unit operations. The hydraulic pump will be a variable displacement piston pump, for consistent and rapid response, and be capable of supplying hydraulic oil at a nominal 50gpm flow at pressures up to 3000 psi. The system will operate up to 3000 psi with flow controls to protect hydraulic components and incorporate a relief valve set at 3150 psi to prevent over pressurization. The hydraulic pump will be solely dedicated to aerial operations. (no exception) An amber indicator light will be installed on the cab instrument panel to notify the operator that the power takeoff is engaged.

An interlock will be provided that allows operation of the aerial power takeoff shift only after the chassis spring brake has been set and the chassis transmission has either been placed in the neutral position or drive position after the driveline has been disengaged from the rear axle.

EMERGENCY PUMP

The hydraulic system will be designed with an auxiliary power unit meeting the guidelines of NFPA standards. The auxiliary power unit will be a 12-volt pump connected to the chassis electrical system.

The pump will provide operation at reduced speeds to store the aerial device and outriggers for road transportation.

Self-centering switches will be provided at the turntable and stabilizer control station to activate the system. The system will be designed to provide a minimum of 30 minutes of hydraulic power to operate functions. (no exception)

HYDRAULIC SWIVEL

The aerial ladder will be equipped with a three (3) port, high-pressure hydraulic swivel that will connect the hydraulic lines from the hydraulic pump and reservoir through the rotation point to the aerial control bank. The hydraulic swivel will allow for 360 degree continuous rotation of the aerial.

ELECTRIC SWIVEL

The ladder will be equipped with an electric swivel to allow 360 degrees rotation of the aerial while connecting all electrical circuits through the rotation point. A minimum of 36 collector rings will be provided that are capable of supplying 20 amp continuous service. All collector rings will be enclosed and protected with desiccant plugs against condensation and corrosion. No oil or silicone will be used.

WATER SWIVEL

Water will be transferred to the aerial waterway by means of a 5.00" internal diameter waterway, through the swivel, permitting 360 degree continuous rotation.

13-BIT ABSOLUTE ENCODER

The aerial ladder will be equipped with a 13-Bit Absolute Encoder, CAN-based, which provides 8192 counts per shaft turn for position and direction reference.

The 13-Bit Absolute Encoder will provide a unique binary word to reference each position and direction for all 360 degrees of rotation.

If the power is interrupted for any reason, the 13-Bit Absolute Encoder will allow power to be returned to the system without having to re-zero the settings.

The 13-Bit Absolute Encoder will be an integral part of a microprocessor based control system.

ELECTRICAL SYSTEM

The 100' platform will utilize the Pierce Command Zone™ System. The system will consist of the following components:

A tethered, CAN-based, stabilizer control will be provided. The tethered control will be weatherproof and oil resistant. The stabilizer control will be illuminated with a LED strip light in the face of the unit. The electrical connection at the tethered control will be permanently attached by a strained relieved coil cord that will allow the operator to move at least 14 feet away from the electrical connection for operation.

Remote Stabilizer Controls

Brightness control

Weatherproof and oil resistant

One (1) green "power" indicator light

One (1) red "stabilizer not stowed" indicator light

One (1) electric push button for level assist

One (1) electric push button for the emergency power unit

One (1) electric joystick for each stabilizer control:

Extend/retract function

Raise/lower function

One (1) green "stabilizer fully extended" indicator light for each stabilizer

One (1) green "firm on ground" indicator light for each stabilizer

Control System Modules

Each of the control system modules will be configured as follows:

Sealed to a NEMA 4X rating

Operating range from -40 degrees F to 156 degrees F (-40 degrees C to 70 degrees C)

Communicate using J1939 data link

Two (2) diagnostic LED lights

One (1) green light that illuminates when module has power (B+) and ground

One (1) red light that flashes to indicate the module is capable of communicating via the data link

Up to 16 diagnostic LEDs on each module

Ground matrix identification system

The following control system modules will be used:

Control Module

Main controller for the system

USB connection allows for computer diagnostics

Power Module

Built-in fault sensing

Eight (8) digital outputs

Pulse width modulating (PWM) capable

10A continuous per output

Circuit protection based on actual current draw (not affected by heat)

Current Control Module

Built-in fault sensing

Three (3) analog inputs

Eight (8) digital outputs

Pulse width modulating (PWM) capable

3A continuous per output

Closed Loop System

Circuit protection based on actual current draw (not affected by heat)

Input Module

16 software selectable (digital or analog) inputs

Output Module

16 digital outputs

Input/Output Module

Eight (8) software selectable (digital or analog) inputs

Eight (8) digital outputs

TRACKING LIGHTS

There will be two (2) Whelen Model MPB* 12 volt DC LED lights furnished on the aerial device.

- One (1) installed on the driver's side of the base section of the aerial device.
- One (1) installed on the passenger's side of the base section of the aerial device.

The painted parts of this light assembly to be black.

There will be a switch with appropriate identification labels provided at the turntable console for the tracking lights.

LIGHTING ON AERIAL LADDER

There will be TecNiq, Model D02, LED rung lighting provided on both sides of the aerial ladder base, mid, and fly sections. The lighting will be located adjacent to the ladder rungs along the lower rail of the ladder sections and will run the length of the ladder section.

The color of the sections will be:

- The base section of the ladder to be blue.
- The mid section of the ladder to be white.
- The fly section of the ladder to be red.

The LED rung lighting will be activated when the aerial master switch is activated and a switch at the turntable operator's panel is activated through the master battery switch.

The lights may be load managed when the parking brake is applied.

STABILIZER WARNING LIGHTS

There will be four (4) Whelen®, Model M9*C, LED flashing warning lights with Whelen, Model M9FC, chrome flanges installed, one (1) on each stabilizer cover panel.

- The front stabilizer pan lights will be red LED with a clear lens
- The rear stabilizer pan lights will be red LED with a clear lens

These warning lights will be activated by the same switch as the side warning lights.

STABILIZER BEAM WARNING LIGHTS

Two (2) 4.00" diameter red LED flashing lights will be mounted on each stabilizer, one (1) facing forward and one (1) facing rearward. The lights will be Grote Supernova 40 series LED lights. The lights will be recessed in the horizontal beam of the stabilizer. These warning lights will be activated with the aerial master switch.

STABILIZER SCENE LIGHTS

There will be one (1) Amdor Luma Bar H2O, Model AY-9500-012 LED strip light installed under each stabilizer beam to illuminate the surrounding area. A total of four (4) lights will be installed. The lights will be activated by the aerial master switch.

PLATFORM 120-VOLT ELECTRIC SYSTEM

Two (2) Fire Power 120-volt 20 amp three (3)-wire type with weather resisting cover receptacles with weatherproof covers will be provided in the aerial platform.

The receptacles will be located at the rear of the basket.

Each receptacle will be supplied from individual branch circuits protected by dedicated 20 amp/120-volt circuit breakers. All wiring will be sized to and conform to the latest edition of NEC standards.

The circuit will be labeled "Aerial Ckt #1"

FRONT OF PLATFORM 240 VOLT LIGHTING

There will be One (1) Fire Research Spectra, Model SPA100-J20 white LED 240 volt light(s) provided at the front of the platform basket, facing forward on the center, front of platform.

Light will be switched at the platform/tip and cab

240 VOLT UNDER PLATFORM LIGHTING

There will be two (2) Fire Research Spectra, Model SPA100-J20, 240 volt LED light(s) provided under the left and right side of the aerial basket.

Because of the internal optics and keeping the light tucked under the basket for protection, the light(s) will be hung upside down on vertically adjustable brackets at a 30 degree angle out from the front of the basket.

These light(s) will be switched at the platform/tip, turntable, and cab.

COMMUNICATION SYSTEM

An Atkinson communication system will be furnished between the platform and the turntable operator's position. The master control located at the turntable control console will have the transmitting and receiving volume controls along with the push to talk button. A self-contained "hands-off" speaker microphone will be located front and center of the platform which will require no operator attention to transmit or receive.

LYFECOMBO™BRACKETS

One (1) set of brackets will be supplied and mounted to the front of the platform basket. The brackets have been designed to increase firefighter safety and add to the functionality of the aerial device. The brackets will have three (3) functions that include: securing the roof ladder to the basket to allow firefighter access below the basket, two (2) rappelling arms to serve as an anchor point which allow rappelling from the basket, and mounting bars to allow the secure mounting of a rescue basket for transporting patients using the aerial. Each bracket will be easily removable using two (2) positively latched, 1.00" diameter aluminum pins.

LyfeLadder™ support brackets will be incorporated into the design of the 3-in-1 option brackets. The brackets will be designed to mount an 875A Duo-Safety roof ladder up to 20 feet long securely in place. The ladder will be secured through its beams and one (1) rung, by a 1.00" diameter aluminum rod capable of being positively latched in place and able to withstand a minimum of a 500lb load while maintaining a minimum of a two to one (2:1) safety factor. There will also be a latch to keep the ladder

in a vertical position at all times that will attach to a rung 28.00" below the primary attachment point. Strain gauging and testing will have been completed on the system (ladder and complete holding device) providing the above criteria has been met. A set of nylon guides will be provided to aid in positioning the roof ladder on the mounting brackets.

LyfeEye™ rappelling brackets will be provided. The **LyfeEye** brackets will be incorporated into the design of the 3-in-1 option brackets. Each bracket in the set will have a forged stainless steel eyebolt with a 1.38" inside diameter for use as a rappel line anchor. Each bracket will have a capacity of 300 lbs.

LyfeSupport™ rescue basket support bars will be provided. The bars will be incorporated into the design of the 3-in-1 option brackets. The bars will be easily removable from the 3-in-1 bracket to allow for individual storage of these bars when they are not needed. Two (2) quick clip basket straps will be used to secure the rescue basket to the brackets.

AERIAL TURNTABLE MANSAVER™ BARS

ManSaver™ bars will be installed at the aerial turntable.

AERIAL WATERWAY

The aerial waterway will be capable of being supplied by either a midship mounted pump or an external water source through a 5.00" intake at the rear of the apparatus.

A 5.00" water swivel will be installed below the aerial turntable permitting the ladder to rotate 360 degrees continuously.

A 5.00" water swivel will be installed at the aerial heel pivot pin that will permit water tower operations of -11.5 degrees to 76 degrees. The heel pivot pin will not be integral with the waterway swivel at any point. The waterway design will allow complete servicing of the waterway swivel without disturbing the heel pivot pin.

A telescoping aluminum waterway will be installed on the side of the aerial ladder sections. The waterway will consist of a 5.00" diameter tube for the base section, 4.50" diameter tube for the mid-section and 4.00" diameter tube for the fly section.

A 1.50" drain will be provided for the waterway with the control at the rear of the unit.

WATERWAY SEALS

The waterway seals will be of type-B PolyPak design, composed of nitroxile seal and a nitrile wiper, which together offer maximum stability and extrusion resistance on the waterway. The seal will be capable of withstanding pressures up to 2000 psi, temperatures in excess of 250 degrees Fahrenheit and have resistance to all foam generating solutions. The seals will be internally lubricated.

The waterway seals will have automatic centering guides constructed of synthetic thermalpolymer. The guides will provide positive centering of the extendible sections within each other and the base section to insure longer service life and smoother operation.

PLATFORM WATER SYSTEM

A 4.00" (internal diameter) water swivel will connect the fly section waterway to the platform waterway. The water swivel will permit water tower operations from -11.5 degrees to 76 degrees. The water will be routed from the swivel to a 4.00" gear operated butterfly valve on the front of the platform using a 4.00" 6061 pipe. The deluge gun will be bolted onto the butterfly valve.

A 2.50" preset pressure relief valve will be provided in the waterway system. It will be designed to protect the aerial waterway from excess pressure. It will dump water to the ground when operating.

A shower nozzle rated at 75 gpm will be provided beneath the platform for heat protection for the platform personnel. A direct linkage control for the shower nozzle will be provided.

One (1) - 2.50" preconnect will be provided at the front of the platform. The preconnect will be gated at the platform. The preconnect will be furnished with 2.50" NST threads and chrome plated cap.

AERIAL MONITOR

There will be two (2) Task Force Tips monitors provided at the platform.

One (1) will be a Y4-M21A-P double hand wheel controlled monitor with a TFT YST-4NN stacked tips.

One (1) will be Y4-E21A-P electric monitor with a TFT 2000 gpm Model M-ERP2000 electric nozzle.

The controls for the electronic monitor will be located at the platform and the turntable control console.

WATERWAY FLOWMETER

Waterway flow, including total water flowed, will be monitored by the microprocessor. An LCD display will be located at the upper and lower control stations.

REAR INLET

A 5.00" NST inlet to the aerial waterway will be provided at the rear of the apparatus, on the driver's side. It will be furnished with a 5.00" chrome plated adapter and a 5.00" chrome plated, long handle cap.

STORZ INLET ADAPTER

There will be one (1) 5.00" FNST x 5.00" Storz adapter with blind cap provided on the aerial inlet.

MANUALS

The aerial manufacturer will provide two (2) operator maintenance manuals and two (2) wiring diagrams pertaining to the aerial device.

INITIAL INSTRUCTION

On initial delivery of the fire apparatus, the contractor will supply a qualified representative to demonstrate the apparatus and provide initial instruction to the fire department regarding the operation, care, and maintenance of the apparatus for a period of three (3) days.

LOOSE EQUIPMENT

The following equipment will be furnished with the completed unit:

- One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit.

NFPA REQUIRED LOOSE EQUIPMENT PROVIDED BY FIRE DEPARTMENT

The following loose equipment as outlined in NFPA 1901, 2016 edition, section 9.9.3 and 9.9.4 will be provided by the fire department.

- 800 ft (240 m) of 2.50" (65 mm) or larger fire hose, in any combination.
- 400 ft (120 m) of 1.50" (38 mm), 1.75" (45 mm), or 2.00" (52 mm) fire hose, in any combination.
- One (1) handline nozzle, 200 gpm (750 L/min) minimum.
- Two (2) handline nozzles, 95 gpm (360 L/min) minimum.
- One (1) playpipe with shutoff and 1.00" (25 mm), 1.125" (29 mm), and 1.25" (32 mm) tips.
- One (1) SCBA complying with NFPA 1981 for each assigned seating position, but not fewer than four (4), mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer.
- One (1) spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s).
- One (1) first aid kit.
- Four (4) salvage covers, each a minimum size of 12 ft × 14 ft (3.6 m × 5.5 m).
- Four (4) combination spanner wrenches.
- Two (2) hydrant wrenches.
- One (1) double female 2.50" (65 mm) adapter with National Hose threads.
- One (1) double male 2.50" (65 mm) adapter with National Hose threads.
- One (1) rubber mallet, for use on suction hose connections.
- Four (4) ladder belts meeting the requirements of NFPA 1983.
- One (1) 150 ft (45 m) light-use life safety rope meeting the requirements of NFPA 1983.
- One (1) 150 ft (45 m) general-use life safety rope meeting the requirements of NFPA 1983.
- One (1) traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, *Standard for High Visibility Public Safety Vests*, and have a five-point breakaway feature that includes two (2) at the shoulders, two (2) at the sides, and one (1) at the front.
- Five (5) fluorescent orange traffic cones not less than 28.00" (711 mm) in height, each equipped with a 6.00" (152 mm) retro-reflective white band no more than 4.00" (152 mm) from the top of

the cone, and an additional 4.00" (102 mm) retro-reflective white band 2.00" (51 mm) below the 6.00" (152 mm) band.

- Five (5) illuminated warning devices such as highway flares, unless the five (5) fluorescent orange traffic cones have illuminating capabilities.
- One (1) automatic external defibrillator (AED).
- If the supply hose carried does not use sexless couplings, an additional double female adapter and double male adapter, sized to fit the supply hose carried, will be carried mounted in brackets fastened to the apparatus.
- If none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side will be carried. Any intake connection larger than 3.00" (75 mm) will include a pressure relief device that meets the requirements of 16.6.6.
- If the apparatus does not have a 2.50" National Hose (NH) intake, an adapter from 2.50" NH female to a pump intake will be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.
- If the supply hose carried has other than 2.50" National Hose (NH) threads, adapters will be carried to allow feeding the supply hose from a 2.50" NH thread male discharge and to allow the hose to connect to a 2.50" NH female intake, mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

SOFT SUCTION HOSE PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 9.8.2.1 requires a minimum of 20' of suction hose or 15' of supply hose will be carried.

Hose is not on the apparatus as manufactured. The fire department will provide suction or supply hose.

DRY CHEMICAL EXTINGUISHER PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 9.9.4 requires one (1) approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus.

The extinguisher is not on the apparatus as manufactured. The fire department will provide and mount the extinguisher.

WATER EXTINGUISHER PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 9.9.4 requires one (1) 2.5 gallon or larger water extinguisher mounted in a bracket fastened to the apparatus.

The extinguisher is not on the apparatus as manufactured. The fire department will provide and mount the extinguisher.

FLATHEAD AXE PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, Section 9.9.4 requires one (1) flathead axe mounted in a bracket fastened to the apparatus.

The axe is not on the apparatus as manufactured. The fire department will provide and mount the axe.

PICKHEAD AXE PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, Section 9.9.4 requires one (1) pickhead axe mounted in a bracket fastened to the apparatus.

The axe is not on the apparatus as manufactured. The fire department will provide and mount the axe.

PAINT

The exterior custom cab and body painting procedure will consist of a seven (7) step finishing process as follows:

1. Manual Surface Preparation - All exposed metal surfaces on the custom cab and body will be thoroughly cleaned and prepared for painting. Imperfections on the exterior surfaces will be removed and sanded to a smooth finish. Exterior seams will be sealed before painting. Exterior surfaces that will not be painted include; chrome plating, polished stainless steel, anodized aluminum and bright aluminum treadplate.
2. Chemical Cleaning and Pretreatment - All surfaces will be chemically cleaned to remove dirt, oil, grease, and metal oxides to ensure the subsequent coatings bond well. The aluminum surfaces will be properly cleaned and treated using a high pressure, high temperature 4 step Acid Etch process. The steel and stainless surfaces will be properly cleaned and treated using a high temperature 3 step process specifically designed for steel or stainless. The chemical treatment converts the metal surface to a passive condition to help prevent corrosion. A final pure water rinse will be applied to all metal surfaces.
3. Surfacer Primer - The Surfacer Primer will be applied to a chemically treated metal surface to provide a strong corrosion protective basecoat. A minimum thickness of 2 mils of Surfacer Primer is applied to surfaces that require a Critical aesthetic finish. The Surfacer Primer is a two-component high solids urethane that has excellent sanding properties and an extra smooth finish when sanded.
4. Finish Sanding - The Surfacer Primer will be sanded with a fine grit abrasive to achieve an ultra-smooth finish. This sanding process is critical to produce the smooth mirror like finish in the topcoat.
5. Sealer Primer - The Sealer Primer is applied prior to the Basecoat in all areas that have not been previously primed with the Surfacer Primer. The Sealer Primer is a two-component high solids urethane that goes on smooth and provides excellent gloss hold out when topcoated.
6. Basecoat Paint - Two coats of a high performance, two component high solids polyurethane basecoat will be applied. The Basecoat will be applied to a thickness that will achieve the proper

color match. The Basecoat will be used in conjunction with a urethane clear coat to provide protection from the environment.

7. Clear Coat - Two (2) coats of Clear Coat will be applied over the Basecoat color. The Clear Coat is a two-component high solids urethane that provides superior gloss and durability to the exterior surfaces. Lap style and roll-up doors will be Clear Coated to match the body. Paint warranty for the roll-up doors will be provided by the roll-up door manufacture.

Each batch of basecoat color is checked for a proper match before painting of the cab and the body. After the cab and body are painted, the color is verified again to make sure that it matches the color standard. Electronic color measuring equipment is used to compare the color sample to the color standard entered into the computer. Color specifications are used to determine the color match. A Delta E reading is used to determine a good color match within each family color.

All removable items such as brackets, compartment doors, door hinges, and trim will be removed and separately if required, to ensure paint behind all mounted items. Body assemblies that cannot be finish painted after assembly will be finish painted before assembly.

Pierce Manufacturing paint finish quality levels for critical areas of the apparatus (cab front and sides, body sides and doors, and boom lettering panels) meet or exceed the Cadillac/General Motors GMW15777 global paint requirements. Orange peel levels meet or exceed the #6 A.C.T. standard in critical areas. These requirements are met in order for the exterior paint finish to be considered acceptable. The Pierce Manufacturing written paint standards will be available upon request.

The cab will be two-tone, with the upper section painted #20 white along with a shield design on the cab face and lower section of the cab and body painted #90 red.

PAINT - ENVIRONMENTAL IMPACT

Contractor will meet or exceed all current State regulations concerning paint operations. Pollution control will include measures to protect the atmosphere, water and soil. Controls will include the following conditions:

- Topcoats and primers will be chrome and lead free.
- Metal treatment chemicals will be chrome free. The wastewater generated in the metal treatment process will be treated on-site to remove any other heavy metals.
- Particulate emission collection from sanding operations will have a 99.99% efficiency factor.
- Particulate emissions from painting operations will be collected by a dry filter or water wash process. If the dry filter is used, it will have an efficiency rating of 98.00%. Water wash systems will be 99.97% efficient
- Water from water wash booths will be reused. Solids will be removed on a continual basis to keep the water clean.
- Paint wastes are disposed of in an environmentally safe manner.
- Empty metal paint containers will be to recover the metal.

- Solvents used in clean-up operations will be recycled on-site or sent off-site for distillation and returned for reuse.

Additionally, the finished apparatus will not be manufactured with or contain products that have ozone depleting substances. Contractor will, upon demand, present evidence that the manufacturing facility meets the above conditions and that it is in compliance with his State EPA rules and regulations.

PAINT CHASSIS FRAME ASSEMBLY

The chassis frame assembly will be painted to match the lower job color before the installation of the cab and body, and before installation of the engine and transmission assembly, air brake lines, electrical wire harnesses, etc.

Components that are included with the chassis frame assembly that will be painted are:

- Frame rails
- Frame liners
- Cross members
- Axles
- Suspensions
- Steering gear
- Battery boxes
- Bumper extension weldment
- Frame extensions
- Body mounting angles
- Rear Body support substructure (front and rear)
- Pump house substructure
- Air tanks
- Fuel tank
- Castings
- Individual piece parts used in chassis and body assembly

FILM TECHNICAL PROPERTIES		
PROPERTY	TEST METHOD	PERFORMANCE
Color	—	Black
Film Thickness	—	0.5 - 1.5 Mils
Gloss - 60 Degree	ASTM D523	65 - 85
Pencil Hardness	ASTM D3363	2H Minimum
Direct Impact	ASTM D2794	100 in. - lbs. Minimum
Reverse Impact	ASTM D2794	60 in. - lbs. Minimum
Crosshatch Adhesion	ASTM D3359	4B - 5B
Humidity	ASTM D1735	1000 Hours Minimum
Water Immersion	ASTM D870	250 Hours Minimum
Gravelometer	GM9508P	6 Minimum
Throwpower	GM9535P	12 - 15 in.
Cold rolled steel lab panels, Zinc Phosphate pretreatment, 0.6 mils average film thickness, cured 20 minutes @ 350°F.		
PROPERTY	SUBSTRATE PRETREATMENT	SALT SPRAY* 1000 HOURS
Corrosion Resistance	CRS / Zinc Phos / Non-Chrome	1 - 2 mm
*Salt Spray - ASTM B117, cold rolled steel lab panels cured 20 minutes @ 350°F. (Average Total Scribe Creep)		

Components treated with epoxy E-coat protection prior to paint:

- Two (2) C-channel frame rails
- Two (2) frame liners

The E-coat process will meet the technical properties shown.

PAINT, REAR WHEELS

All wheel surfaces, inside and outside of inboard steel wheels only, will be provided with powder coat paint #101 black.

COMPARTMENT INTERIOR PAINT

The compartment interior will be painted with a gray spatter finish for ease of cleaning and to make it easier to touch up scratches and nicks.

AERIAL TURNTABLE PAINT COLOR

All aerial device structural components above the rotation point that are not chrome plated, stainless steel, or painted will have a natural swirl finish.

The sides and rear of the basket will have an engine turned finish.

All buy out components, such as monitor, nozzle, gauges, etc. will be supplied as received from the vendor.

Turntable, console, lift cylinders, and extension cylinders will be sanded to remove any metal flakes and smooth any rough surfaces. These components will be prime painted with an epoxy primer and finished with a durable, high quality red 90 paint (manufacturer's standard brand).

The support structure, rotation motor, components below the rotation point, and the stabilizers will be painted #90 red.

All the hydraulic hoses, wiring and non-ferrous metals will be masked off before painting.

REFLECTIVE STRIPES

Three (3) reflective stripes will be provided along the sides of the cab and body. The reflective band will consist of a 1.00"-6.00"-1.00" white stripe on the cab and body, with a 1.00"-6.00"-1.00" red (tomato red) stripe on the roll-up doors. All striping will include a 1.00" gap between stripes.

CHEVRON STRIPING ON THE FRONT BUMPER

There will be alternating chevron striping located on the front bumper.

The colors will be red and fluorescent yellow green diamond grade.

The size of the striping will be 4.00".

REAR CHEVRON STRIPING

There will be alternating chevron striping located on the rear-facing vertical surface of the apparatus. Covered surfaces will include the rear wall and aluminum doors. Rear compartment doors, stainless steel access doors, and the rear bumper will not be covered.

The colors will be red and fluorescent yellow green diamond grade.

Each stripe will be 6.00" in width.

This will meet the requirements of the current edition of NFPA 1901, which states that 50% of the rear surface will be covered with chevron striping.

REFLECTIVE STRIPE ON STABILIZERS

There will be 6.00" wide alternating fluorescent yellow diamond grade and red diamond grade reflective chevron stripes provided on the forward and rear facing sides of all four (4) aerial stabilizers. The stripes will be angled at a 45 degree angle.

"Z" JOG IN REFLECTIVE STRIPE

There will be two (2) "Z"-shaped jog(s) provided in the reflective stripe design.

TOOLBOARD DIAMOND GRADE CHEVRON STRIPING

A series of alternating red diamond grade and fluorescent yellow green diamond grade reflective stripes will be applied to the one (1) toolboard(s) located body.

SLIDE OUT TRAY DIAMOND GRADE CHEVRON STRIPING

A series of alternating red diamond grade and fluorescent yellow green diamond grade reflective stripes will be applied to the front and sides of six (6) slide out tray(s) located body.

DIAMOND GRADE CHEVRON STRIPE

six (6) shelves body, will have red diamond grade and Color, Reflect Band - A reflective stripe installed on the outside face.

REFLECTIVE STRIPE ON REAR FENDERS

There will be a 6.00" fluorescent yellow green and a red Diamond Grade reflective stripe provided on the rear body fender panels. The striping will consist of a series of rearward slanted stripes on each side fender panel. There will be no striping installed on any air bottle or fuel fill doors.

CHEVRON STRIPING ON THE FRONT BUMPER

There will be alternating chevron striping located on the front bumper.

The colors will be fluorescent yellow green and red diamond grade.

The size of the striping will be 6.00".

CHEVRON, INVERTED "V" STRIPING ON CABDOORS

There will be alternating chevron striping located on the inside of each cab door.

The striping will consist of the following colors:

The first color will be red diamond grade

The second color will be fluorescent yellow green diamond grade

The size of the striping will be 4.00".

LETTERING

Forty-one (41) to sixty (60) reflective lettering, 3.00" high, with outline and shade will be provided.

LETTERING

There will be reflective lettering, 5.00" high, with outline and shade provided. There will be four (4) letters provided.

LETTERING

There will be reflective lettering, 6.00" high, with outline and shade provided. There will be four (4) letters provided.

LETTERING

There will be reflective lettering, 12.00" high, with outline and shade provided. There will be four (4) letters provided.

LETTERING

There will be reflective lettering, 10.00" high, with outline and shade provided. There will be 22 letters provided.

LETTERING

There will be reflective lettering, 8.00" high, with outline and shade provided. There will be 16 letters provided.

CAB GRILLE DESIGN

A Texas flag design will be painted on the cab grille.

EMBLEM

A reflective emblem of the Customer patch shall be installed on the rear compartment roll up door.

EMBLEM

There will be two (2) reflective emblem(s), approximately 16.00" - 18.00" in size, installed on basket sides. the emblem will be modeled after the department submitted information (art, patch, etc).

EMBLEM

There will be four (4) emblem(s), approximately 12.00" - 14.00" wide in size, installed boom panels. The emblem will be modeled after the department submitted information (art, patch, etc).

PRECONSTRUCTION & FINAL INSPECTION TRIP

Siddons Fire Apparatus shall provided one (1) factory preconstruction and one (1) final inspection trip for six (6) customer representative(s). The inspection trips shall be scheduled at times mutually agreed upon between the manufacturer's representative and the customer. All costs such as travel, lodging and meals shall be the responsibility of Siddons Fire Apparatus.

4	Hose - 1.75 x 50 Double Jacket	Key	DP17-800-ECO
	Blue		

4	Hose - 1.75 x 50 Double Jacket Red	Key	DP17-800-ECO
2	Hose - 1.75 x 50 Double Jacket White	Key	DP17-800-ECO
3	Hose - 1.75 x 50 Double Jacket Orange	Key	DP17-800-ECO
3	Hose - 1.75 x 50 Double Jacket Yellow	Key	DP17-800-ECO
4	Hose 2.5" x 50 Double Jacket Green	Key	DP25-800-ECO
12	Hose 3" x 50 Double Jacket w/ 2.5" NST Couplings White	Key	DP30-800-ECO
10	Hose 5" x 100 Rubber w/ 5" Storz Yellow	Key	
2	Hose 5" x 25 w/ 5" Storz Yellow	Key	
1	Hose 3" x 20 Double Jacket White w/ 2.5" Couplings	Key	DP30-800-ECO
5	1 1/2" x 1 1/2" Shutoff with Pistol Grip (1 Red, 1 White, 1 Blue, 1 Orange, and 1 Yellow Handles)	Akron	2127
1	1" Turbojet Nozzle with Pistol Grip	Akron	1702
5	Mid-Range Turbo Jet Tip, 1.5"	Akron	1737
2	Tripod Lights, Nomad 360, Rechargeable	Fox Fury	Nomad 360

MOBILE RADIO

one (1) Motorola Model APX 6500 will be provided by Siddons-Martin Emergency Group as loose equipment and sent to the manufacture for installation.

MOBILE RADIO

one (1) Trimble Unit Model TM3000N with 15' Serial Cable and Antenna will be provided by Siddons-Martin Emergency Group as loose equipment and sent to the manufacture for installation.

FIRE APPARATUS PARTS CD MANUAL

There will be two (2) custom parts manuals for the complete fire apparatus provided in CD format with the completed unit.

The manuals will contain the following:

- Job number
- Part numbers with full descriptions
- Table of contents
- Parts section sorted in functional groups reflecting a major system, component, or assembly
- Parts section sorted in alphabetical order
- Instructions on how to locate parts

The manuals will be specifically written for the chassis and body model being purchased. It will not be a generic manual for a multitude of different chassis and bodies.

SERVICE PARTS INTERNET SITE

The service parts information included in these manuals are also available on the factory website. The website offers additional functions and features not contained in this manual, such as digital photographs and line drawings of select items. The website also features electronic search tools to assist in locating parts quickly.

CHASSIS SERVICE CD MANUALS

There will be two (2) CD format chassis service manuals containing parts and service information on major components provided with the completed unit.

The manual will contain the following sections:

- Job number
- Table of contents
- Troubleshooting
- Front Axle/Suspension
- Brakes
- Engine/Tires
- Wheels

- Cab
- Electrical, DC
- Air Systems
- Plumbing
- Appendix

The manual will be specifically written for the chassis model being purchased. It will not be a generic manual for a multitude of different chassis and bodies.

CHASSIS OPERATION CD MANUALS

There will be two (2) CD format chassis operation manuals provided.

TRANSMISSION MANUAL(S)

There will be one (1) additional maintenance/service manual(s) for an Allison 4500 Series transmission provided.

ENGINE MANUALS

There will be one (1) set(s) of maintenance/service manuals for a Detroit Diesel DD13 engine provided.

ONE (1) YEAR MATERIAL AND WORKMANSHIP

A Pierce basic apparatus limited warranty certificate, WA0008, is included with this proposal.

ENGINE WARRANTY

A Detroit Diesel **five (5) year** limited engine warranty will be provided. A limited warranty certificate, WA0180, is included with this proposal.

STEERING GEAR WARRANTY

A Sheppard **three (3) year** limited steering gear warranty shall be provided. A copy of the warranty certificate shall be submitted with the bid package.

FIFTY (50) YEAR STRUCTURAL INTEGRITY

The Pierce custom chassis frame and crossmembers limited warranty certificate, WA0038, is included with this proposal.

FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY

The Pierce TAK-4 suspension limited warranty certificate, WA0050, is included with this proposal.

REAR AXLE TWO (2) YEAR MATERIAL AND WORKMANSHIP WARRANTY

A Meritor axle limited warranty certificate, WA0046, is included with this proposal.

ABS BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY

A Meritor Wabco™ ABS brake system limited warranty certificate, WA0232, is included with this proposal.

TEN (10) YEAR STRUCTURAL INTEGRITY

The Pierce custom cab limited warranty certificate, WA0012, is included with this proposal.

TEN (10) YEAR PRO-RATED PAINT AND CORROSION

A Pierce cab limited pro-rated paint warranty certificate, WA0055, is included with this proposal.

FIVE (5) YEAR MATERIAL AND WORKMANSHIP

The Pierce Command Zone electronics limited warranty certificate, WA0014, is included with this proposal.

CAMERA SYSTEM WARRANTY

A Pierce fifty four (54) month warranty will be provided for the camera system.

COMPARTMENT LIGHT WARRANTY

The compartment lights will not offer an extended warranty.

TRANSMISSION WARRANTY

The transmission will have a **five (5) year/unlimited mileage** warranty covering 100 percent parts and labor. The warranty will be provided by Allison Transmission.

Note: The transmission cooler is not covered under any extended warranty you may be getting on your Allison Transmission. Please review your Allison Transmission warranty for coverage limitations.

TRANSMISSION COOLER WARRANTY

The transmission cooler will carry a five (5) year parts and labor warranty (exclusive to the transmission cooler). In addition, a collateral damage warranty will also be in effect for the first three (3) years of the warranty coverage and will not exceed \$10,000 per occurrence. A copy of the warranty certificate will be submitted with the bid package.

WATER TANK WARRANTY

A UPF poly water tank limited warranty certificate, WA0195, is included with this proposal.

TEN (10) YEAR STRUCTURAL INTEGRITY

The Pierce apparatus body limited warranty certificate, WA0009, is included with this proposal.

ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY

A Gortite roll-up door limited warranty will be provided. The mechanical components of the roll-up door will be warranted against defects in material and workmanship for the lifetime of the vehicle. A **six (6) year** limited warranty will be provided on painted and satin roll up doors.

The limited warranty certificate, WA0190, is included with this proposal.

SIX (6) YEAR MATERIAL AND WORKMANSHIP

A Pierce PUC pump limited warranty certificate, WA0039, is included with this proposal.

TEN (10) YEAR PUMP PLUMBING WARRANTY

The Pierce apparatus plumbing limited warranty certificate, WA0035, is included with this proposal.

FOAM SYSTEM WARRANTY

The Husky 12 foam system limited warranty certificate, WA0231, is included with this proposal.

TWENTY (20) YEAR AERIAL DEVICE STRUCTURAL INTEGRITY WARRANTY

The Pierce device limited warranty certificate, WA0052, is included with this proposal.

AERIAL SWIVEL WARRANTY

An Amity five (5) year limited swivel warranty will be provided. A copy of the warranty certificate will be submitted with the bid package.

HYDRAULIC SYSTEM COMPONENTS WARRANTY

Aerial hydraulic system components will be provided with a five (5) year material and workmanship limited warranty.

HYDRAULIC SEAL WARRANTY

Aerial hydraulic seals will be provided with a three (3) year material and workmanship limited warranty.

A copy of the warranty certificates will be submitted with the bid package.

AERIAL WATERWAY WARRANTY

An Amity ten (10) year limited waterway warranty will be provided. A copy of the warranty certificate will be submitted with the bid package.

FOUR (4) YEAR PRO-RATED PAINT AND CORROSION

A Pierce aerial device limited pro-rated paint warranty certificate, WA0047, is included with this proposal.

FIVE (5) YEAR MATERIAL AND WORKMANSHIP

The Pierce Command Zone electronics limited warranty certificate, WA0014, is included with this proposal.

SIX (6) YEAR GENERATOR MATERIAL AND WORKMANSHIP WARRANTY

A Harrison Hydra-Gen limited warranty certificate, WA0285, is included with this proposal.

TEN (10) YEAR PRO-RATED PAINT AND CORROSION

A Pierce body limited pro-rated paint warranty certificate, WA0057, is included with this proposal.

ONE (1) YEAR MATERIAL AND WORKMANSHIP

The Pierce graphics fading and deterioration limited warranty certificate, WA0168, is included with this proposal.

VEHICLE STABILITY CERTIFICATION

The fire apparatus manufacturer will provide a certification stating the apparatus complies with NFPA 1901, current edition, section 4.13, Vehicle Stability. The certification will be provided at the time of bid.

ENGINE INSTALLATION CERTIFICATION

The fire apparatus manufacturer will provide a certification, along with a letter from the engine manufacturer stating they approve of the engine installation in the bidder's chassis. The certification will be available prior to the time of bid.

POWER STEERING CERTIFICATION

The fire apparatus manufacturer will provide a certification stating the power steering system as installed meets the requirements of the component supplier. The certification will be provided at the time of bid.

CAB INTEGRITY CERTIFICATION

The fire apparatus manufacturer will provide a cab integrity certification with this proposal. The certification will state that the cab has been tested and certified by an independent third-party test facility. Testing events will be documented with photographs, real-time and high-speed video, vehicle accelerometers, cart accelerometers, and a laser speed trap. The certification must state that the cab must meet or exceed the requirements below:

- European Occupant Protection Standard ECE Regulation No.29
- SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks
- SAE J2420 COE Frontal Strength Evaluation - Dynamic Loading Heavy Trucks
- Roof Crush
 - The cab will be subjected to a roof crush force of 22,050 lbs. This value meets the ECE 29 criteria and is equivalent to the front axle rating up to a maximum of 10 metric tons.
- Additional Roof Crush
 - The same cab will be subjected to a roof crush force of 120,000 lbs. This value exceeds the ECE 29 criteria by nearly 5.4 times.
- Side Impact
 - The same cab will be subjected to dynamic preload where a 13,275 lb moving barrier slams into the side of the cab at 5.5 mph at a force of 13,000 ft-lbs. This test is part of the SAE J2422 test procedure and more closely represents the forces a cab will see in a rollover incident.
- Frontal Impact
 - The same cab will withstand a frontal impact of 32,600 ft-lbs of force using a moving barrier in accordance with SAE J2420.

The same cab will withstand all tests without any measurable intrusion into the survival space of the occupant area.

CAB DOOR DURABILITY CERTIFICATION

Robust cab doors help protect occupants. Cab doors will survive a 200,000 cycle door slam test where the slamming force exceeds 20 G's of deceleration. The bidder will certify that the sample doors similar to those provided on the apparatus have been tested and have met these criteria without structural damage, latch malfunction, or significant component wear.

WINDSHIELD WIPER DURABILITY CERTIFICATION

Visibility during inclement weather is essential to safe apparatus performance. Windshield wipers will survive a 3 million cycle durability test in accordance with section 6.2 of SAE J198 *Windshield Wiper Systems - Trucks, Buses and Multipurpose Vehicles*. The successful bidder will certify prior to delivery that the wiper system design has been tested and that the wiper system has met these criteria.

ELECTRIC WINDOW DURABILITY CERTIFICATION

Cab window roll-up systems can cause maintenance problems if not designed for long service life. The window regulator design will complete 30,000 complete up-down cycles and still function normally when finished. The bidder will certify that sample doors and windows similar to those provided on the apparatus have been tested and have met these criteria without malfunction or significant component wear.

SEAT BELT ANCHOR STRENGTH

Seat belt attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat belt anchor design will withstand 3000 lb of pull on both the lap and shoulder belt in accordance with FMVSS 571.210 Seat Belt Assembly Anchorages. The bidder will certify that each anchor design was pull tested to the required force and met the appropriate criteria.

SEAT MOUNTING STRENGTH

Seat attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat mounting design will be tested to withstand 20 G's of force in accordance with FMVSS 571.207 Seating Systems. The bidder will certify that each seat mount and cab structure design was pull tested to the required force and met the appropriate criteria.

CAB DEFROSTER CERTIFICATION

Visibility during inclement weather is essential to safe apparatus performance. The defroster system will clear the required windshield zones in accordance with SAE J381 *Windshield Defrosting Systems Test Procedure and Performance Requirements - Trucks, Buses, and Multipurpose Vehicles*. The bidder will certify that the defrost system design has been tested in a cold chamber and passes the SAE J381 criteria.

CAB HEATER CERTIFICATION

Good cab heat performance and regulation provides a more effective working environment for personnel, whether in-transit, or at a scene. The cab heaters will warm the cab 75 F from a cold-soak, within 30 minutes when tested using the coolant supply methods found in SAE J381. The bidder will certify that a substantially similar heater has been tested and has met these criteria.

CAB AIR CONDITIONING PERFORMANCE CERTIFICATION

Good cab air conditioning temperature and air flow performance keeps occupants comfortable, reduces humidity, and provides a climate for recuperation while at the scene. The cab air conditioning system will cool the cab from a heat-soaked condition at 100 degrees Fahrenheit to an average of 67 degrees Fahrenheit in 30 minutes. The bidder will certify that a substantially similar air conditioning system has been tested and has met these criteria. The certification will be available at the time of bid.

AMP DRAW REPORT

The bidder will provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.

The manufacturer of the apparatus will provide the following:

- Documentation of the electrical system performance tests.
- A written load analysis, which will include the following:
 - The nameplate rating of the alternator.
 - The alternator rating under the conditions specified per:
 - Applicable NFPA 1901 or 1906 (Current Edition).
 - The minimum continuous load of each component that is specified per:
 - Applicable NFPA 1901 or 1906 (Current Edition).
 - Additional loads that, when added to the minimum continuous load, determine the total connected load.
 - Each individual intermittent load.

All of the above listed items will be provided by the bidder per the applicable NFPA 1901 or 1906 (Current Edition).