Exhibit A

FRONT RANGE FIRE APPARATUS

7600 Miller Court
Frederick, CO 80504
303-449-9911
1-800-334-9911
www.FrontRangeFire.com

DUANE DOUCETTE
303-304-6118
DuaneD@frontrangefire.com

PERFORM. LIKE NO OTHER.

FOR FURNISHING FIRE APPARATUS

June 20, 2016

City and County of Denver

The undersigned is prepared to manufacture for you, upon an order being placed by you, for final acceptance by Pierce Manufacturing, Inc., at its home office in Appleton, Wisconsin, the apparatus and equipment herein named and for the following prices:

(1) Pierce Velocity 100' Platform (In Accordance with HGAC FS12-15) $ 1,468,518.00
Includes Radios, Hydraulic Tools and Equipment
Per attached Component List
Delivery is approximately 12.5 to 13.5 months

Option: Make 100% Prepayment of $1,398,518.00
Due in Net 30 Days of Signed Contract Deduct $70,000.00

Total $ _____

Said apparatus and equipment are to be built and shipped in accordance with the specifications hereto attached, delays due to strikes, war, or intentional conflict, failures to obtain chassis, materials, or other causes beyond our control not preventing, within about 12.5 to 13.5 months after receipt of this order and the acceptance thereof at our office at Appleton, Wisconsin, and to be delivered to you at Denver, CO

The specifications herein contained shall form a part of the final contract, and are subject to changes desired by the purchaser, provided such alterations are interlined prior to the acceptance by the company of the order to purchase, and provided such alterations do not materially affect the cost of the construction of the apparatus.

The bid document for fire apparatus conforms with all Federal Department of Transportation (DOT) rules and regulations in effect at the time of bid, and with all National Fire Protection Association (NFPA) Guidelines for Automotive Fire Apparatus as published at the time of bid, except as modified by customer specifications. Any increased costs incurred by first party because of future changes in or additions to said DOT or NFPA standards will be passed along to the customers as an addition to the price set forth above. Unless accepted within 30 days from date, the right is reserved to withdraw this proposition.

PIERCE MANUFACTURING, INC.

By: _____
Duane Doucette
SALES REPRESENTATIVE

Option List

6/21/2016

Customer:	Denver, City and County-DIA	**Bid Number:**	568
Representative	Doucette, Duane	**Job Number:**	
Organization:	Front Range Fire Apparatus, Ltd	**Number of Units:**	1
Requirements Manager:		**Bid Date:**	12-01-2014
Description:	DIA 100' Platform, with Pump	**Stock Number:**	
Body:	Aerial, Platform 100', Alum Body	**Price Level:**	35 (Current: 35)
Chassis:	Velocity Chassis, PAP/Midmount (Big Block), 2010		

Line	Option	Type	Option Description	Qty
1	0658294		Boiler Plates, Aerial 100' Platform Fire Department/Customer - Denver Fire Department Operating/In conjunction W-Service Center - Operating Miles - 50 Miles Number of Fire Dept/Municipalities - 10 Bidder/Sales Organization - Front Range Fire Apparatus Delivery - Delivery representative Dealership/Sales Organization, Service - Front Range Fire Apparatus	1
2	0018180		Single Source Compliance, Aerials	1
3	0584456		Manufacture Location: Appleton, Wisconsin	1
4	0584452		RFP Location: Appleton, Wisconsin	1
5	0588609		Vehicle Destination, US	1
6	0670275		Unit to be Similar in some Aspects, Excluding Pump Panel Fill in Blank - Velocity 100' Platform job #24895 in some aspects, pictures provided	1
7	0610784		Comply NFPA 1901 Changes Effective Jan 1, 2016, With Exceptions	1
8	0533349		Aerial Fire Apparatus	1
9	0588612		Vehicle Certification, Aerial w/Pump	1
10	0681278		Agency, Apparatus Certification, Aerial w/Pump, U.L.	1
11	0000000	STF	Inspection trip #1 - when - number of people Location - at customer location for a preconstruction conference. Qty, - 02	2
11	0000000	STF	Inspection trip #2 - when - number of people Location - at the factory for a post paint inspection. Qty, - 02	2
11	0000000	STF	Inspection trip #3 - when - number of people Location - at the factory for a delivery inspection. Qty, - 02	2
12	0092138		Highly Customized Product (HCP)	1
13	0620362		Consortium, HGAC	1
14	0537375		Unit of Measure, US Gallons	1
15	0030006		Bid Bond Not Requested	1
16	0582800		Performance Bond, 100 Percent w/25 Percent Warranty Bond, 1 Yr, and Payment Bond	1
17	0000007		Approval Drawing	1
18	0002928		Electrical Diagrams	1
19	0564213		Velocity Chassis, PAP/Midmount (Big Block), 2010	1
20	0021007		Maximum Overall Height Size - 11'9"	1
21	0000110		Wheelbase Wheelbase - 264.00"	1
22	0000070		GVW Rating GVW rating - 76,800 pounds	1
23	0000203		Frame Rails, 13.38 x 3.50 x .375, Qtm/AXT/Imp/Vel/DCF	1
24	0060637		Frame Liner, Inv "L" 12.68" x 3.00" x .25", AXT/Vel/Imp, Full Length, 56"Qval	1
25	0508846		Axle, Front, Oshkosh TAK-4, Non Drive, 24,000 lb, Velocity	1
26	0090914		Suspension, Front TAK-4, 24,000 lb, DLX/Qtm/AXT/Vel/Enf	1
27	0087572		Shock Absorbers, KONI, TAK-4, Qtm/AXT/Imp/Vel/DCF/Enf	1
28	0000322		Oil Seals, Front Axle	1
29	0679621		Tires, Front, Michelin, XZY3 (wb), 425/65R22.50, 20 ply, Fire Service Load Rtng	1
30	0019611		Wheels, Front, Alcoa, 22.50" x 12.25", Aluminum, Hub Pilot	1

Line	Option	Type	Option Description	Qty
31	0582646		Axle, Rear, Meritor RT58-185, 60,000 lb, Velocity	1
32	0671918	SP	Axle Ratio, Rear Axle, (6.14), Electronically Limited Top Speed, 60mph	1
33	0033975		Suspen, Rear, Dynalastic 202S, 60,000 lb	1
34	0000485		Oil Seals, Rear Axle	1
35	0052438		Tires, Rear, Michelin, XDN2 Grip, 315/80R22.50, 20 ply, Tandem	1
36	0019653		Wheels, Rear, Alcoa, 22.50" x 9.00", Aluminum, Hub Pilot, Tandem	1
37	0568081		Tire Balancing, Counteract Beads	1
38	0545391		Tire Pressure Monitoring Valve Cap	1
			Qty, Tire Pressure Ind - 10	
39	0002045		Mud Flaps, w/logo front & rear	1
40	0021931		Tire, "Crossfire" Air Pressure Equalization (tandem)	1
41	0601010		Chocks, Wheel, SAC-44-E, Folding, Aerials	1
			Qty, Pair - 01	
42	0601009		Mounting Brackets, Chocks, SAC-44-E, Folding, Horizontal, Aerials	1
			Qty, Pair - 01	
			Location, Wheel Chocks - Left Side Rear Tire, Forward	
43	0593759		ESC/ABS/ATC Wabco Brake System, Tandem Rear Axle, 2010	1
44	0030185		Brakes, Knorr/Bendix 17", Disc, Front, TAK-4	1
45	0000730		Brakes, Meritor, Cam, Rear, 16.50 x 7.00"	1
46	0058463		Air Compressor, Brake, Bendix 15.8 CFM	1
47	0000794		Brake Reservoirs, Six	1
48	0587033		Air Dryer, Brake, AD-9 w/heat, 2010	1
49	0000790		Brake Lines, Nylon	1
50	0000854		Air Inlet, w/Disconnect Coupling, Type H	1
			Location, Air Coupling(s) - a) DS Step Well	
			Qty, Air Coupling (s) - 1	
51	0000860		Outlet, Air, with shut off valve	1
			Location, Air Coupling(s) - o) DS Frt Body Compt	
			Qty, Air Coupling (s) - 1	
52	0004200		Hose, Air 25' length, w/air chuck	2
			Qty, - 02	
53	0070810		All Wheel Lockup (Aerial/Tanker Chassis)	1
54	0014130		Air Tank, Additional for Extra Air Horn Capacity	1
55	0610848		Engine, DDC DD13, 525 hp, 1850 lb-ft, W/OBD, EPA 2016, Velocity	1
56	0001244		High Idle w/Electronic Engine, Custom	1
57	0590299		Engine Brake, Jacobs Compression Brake, with Retarder, DD13	1
			Switch, Engine Brake - f) DD13	
58	0552334		Clutch, Fan, Air Actuated, Horton Drive Master	1
59	0123135		Air Intake, w/Ember separator, Imp/Vel	1
60	0565965		Exhaust System, 5", 2010 DD13, ISX engine, Horizontal, Right Side	1
61	0688512	SP	Exhaust, 35 Degree w/modified end for extraction system, Approval Req'd	1
62	0557543		Radiator, Impel/Velocity	1
63	0612334	SP	Cooling Hoses, Gates Silicone, To include .25" Surge Tank	1
64	0014124		Skid Plate, Radiator, All Custom Chassis	1
65	0673756		Winter Cover With Ventilation, Front Cab Grille, One Piece, Vel	1
			Color, Vinyl Cover - g) light blue	
66	0001125		Fuel Tank, 65 Gallon, Left Side Fill	1
67	0001129		Lines, Fuel	1
68	0595087		DEF Tank, 4.5 Gallon, DS Fill, Forward of Rear Axle	1
			Door, Material & Finish, DEF Tank - Polished Stainless	
69	0552777		Fuel Pump for Repriming	1
70	0552712		Not Required, Shutoff Valve, Fuel Line	1
71	0553019		Cooler, Engine Fuel, Imp/Vel, AXT/Qtm/Sab/DCF/SFR/Enf	1
72	0690880		No Selection Required From This Category	1
73	0642601		Trans, Allison 5th Gen, 4500 EVS PR, w/Prognostics, Imp/Vel/Qtm/DCF/Enf	1
			Trans. retarder capacity - e. medium/1600, 4000 EVS	
			Trans, retarder control - l) Auto 1/3, 2/3, 3/3	
74	0512762		Transmission, Shifter, 6-Spd, Push Button, 4500, Imp/Vel/Qtm/DCF/Enf	1
			Trans, ratio - 4500 EVS, 6Spd	
75	0698377		Transmission Oil Cooler, Champ Retarder Cooler, with Modine External Sump Cooler	1
76	0001375		Driveline, Spicer 1810	1

Line	Option	Type	Option Description	Qty
77	0669988		Steering, Sheppard M110 w/Tilt, TAK-4, Eaton Pump, w/Cooler	1
78	0001544		Not Required, Steering Assist Cylinder on Front Axle	1
79	0509230		Steering Wheel, 4 Spoke without Controls	1
80	0690274		Logo/Emblem, on Dash	1
			Text, Row (1) One - Denver	
			Text, Row (2) Two - Fire	
			Text, Row (3) Three - Department	
81	0034671		Lube System, Vogel, 22 Point, w/TAK-4 Suspension	1
			Location - reservoir will be in the right rear outrigger area	
82	0123624		Bumper, 16" Extended, Imp/Vel	1
83	0610312		Tray, Hose, Center, 16" Bumper, Outside AH, 13" Deep, 10" Below/3" Above,Imp/Vel	1
			Grating, Bumper extension - Grating, Rubber	
			Capacity, Bumper Tray - 20) 125' of 1.75"	
84	0633480		Cover, Aluminum Treadplate, Two (2) Flush Lift and Turn Latches, Hose Tray	1
			Stay arm, Tray Cover - b) Pneumatic Stay Arm	
85	0510226		Lift & Tow Package, Imp/Vel, AXT, Dash CF	1
86	0522573		Tow Hooks Not Required, Due to Lift and Tow Package	1
87	0566676		Notch, Bumper Tray Cover, Each	1
			Fill in Blank - center tray passenger side	
			Qty, Hose Tray Covers - 1	
88	0644904		Lights, Fog, Perlux 06001-4 Halogen (Rect) , Recess In Bumper, Hdlt Sw & Sep Sw	1
89	0565541		Cab, Velocity 2010, 8410 Raised Roof w/ Deep Notch Aerial	1
90	0646723		Engine Tunnel, Impel/Velocity	1
91	0677478		Rear Wall, Exterior, Cab, Aluminum Treadplate	1
92	0122466		Cab Lift, Elec/Hyd, w/Manual Override, Imp/Vel	1
93	0123176		Grille, Bright Finished, Front of Cab, Impel/Velocity	1
94	0002224		Scuffplates, S/S At Cab Door Jambs, 4-Door Cab	1
			Material Trim/Scuffplate - c) S/S, Polished	
95	0527032		Trim, S/S Band, Across Cab Face, Rect Lights, Velocity	1
			Material Trim/Scuffplate - b) S/S, Brushed	
			Turnsignal Covers - No Covers	
96	0087357		Molding, Chrome on Side of Cab	1
97	0521669		Mirrors, Retrac, West Coast Style, Htd/Rmt, w/Htd/Rmt Convex	1
98	0640215	SP	Door, Full Height, Velocity 4-Door Cab, Raised Roof, FR Design	1
99	0655507		Door Panel, Polished Stainless Steel, Impel/Velocity 4-Door Cab	1
100	0550229		Storage Pockets w/ Elastic Cover, Recessed, Rotomolded, Imp/Vel	1
101	0641245	SP	Controls, Electric Windows, All Cab Doors, Impel/Velocity FR Design	1
102	0555485		Steps, 4-Door Full Tilt Cab, Std, Imp/Vel	1
103	0509649		Lights, Cab and Crew Cab Access Steps, P25, LED w/Bezel, 1 Light Per Step	1
104	0002140		Fenders, S/S on Cab	1
105	0199245		Window, Side of C/C, Fixed, 84"/104" Vel/Imp	1
106	0552934		Trim, Cab Side Windows, 84" Velocity	1
107	0012090		Not Required, Windows, Front/Side of raised roof	1
108	0509287		Windows, Rear CC, (2) 8" x 14", Velocity	1
109	0553196		Trim, Cab Rear Windows, Velocity	1
110	0566045		Compt, Storage, Transverse Crew Cab, 84/104" Vel/Imp	1
			Light, Short Transverse Compt - Pierce, Left Side	
111	0606282		Shelf, Equipment Mounting, Aluminum, Lip, Size	2
			Location - one each side of the engine tunnel where the rear forward facing sear would be installed 10.00" off the seat riser. see RM for hand sketch.	
			Qty, - 02	
			Size - 20.00" front to back 28.00" wide mounted 10.00" off the floor to the bottom of the tray.	
			Material Finish, Cab Interior - Painted	
			Lip - 2.00"	
112	0199687		Cab Interior, ABS Console, Vinyl Covered Walls, Velocity/Velocity SLT	1
			Color, Cab Interior Vinyl/Fabric - a) Silver/Gray	
113	0509492		Cab Interior, paint color, Imp/Vel	1
			Color, Cab Interior Paint - a) gray	
114	0509532		Floor, Rubber Padded Cab & Crew Cab, Imp/Vel, Dash CF	1
115	0122520		Heater/defroster, Imp/Vel	1

Line	Option	Type	Option Description	Qty
116	0603349		Air Conditioning, Impel/Velocity	1
			Paint Color, A/C Condenser - Painted by OEM	
117	0028432		Brush Guard/Cover, Air Conditioning Condenser, 4-way, Cab Roof Aerial	1
118	0639675		Sun Visor, Smoked Lexan, AXT, Dash CF, Imp/Vel, Saber FR/Enforcer	1
			Sun Visor Retention - No Retention	
119	0543257		Grab Handles, Driver Door Post & Passenger Dash Panel, Imp/Vel	1
120	0002526		Light, Engine Compt, All Custom Chassis	1
121	0122516		Fluid Check Access, Imp/Vel	1
122	0583042		Side Roll and Frontal Impact Protection	1
123	0699999		Not Required, Frontal Impact Protection, 2010	1
124	0699998		Not Required, Side Roll Protection Package, 2010	1
125	0622618		Seating Capacity, 5 Seats	1
126	0697005		Seat, Driver, Pierce PS6, Premium, Air Ride, High Back, Safety	1
127	0696994		Seat, Officer, Pierce PS6, Premium, Air Ride, SCBA, Safety	1
128	0656795		Radio Compartment, Behind Officer Air Ride SCBA Seat, Imp/Vel	1
129	0102788		Not Required, Seat, Rear Facing C/C, DS Outboard	1
130	0102783		Not Required, Seat, Rr Facing C/C, Center	1
131	0102790		Not Required, Seat, Rr Facing C/C, PS Outboard	1
132	0122716		Seat, Forward Facing C/C, DS Outboard, Pierce PS6, Premium Safety, SCBA	1
133	0122745		Seat, Forward Facing C/C, Center, (1) Pierce PS6, Premium, SCBA, Safety	1
134	0122729		Seat, Forward Facing C/C, PS Outboard, Pierce PS6, Premium Safety, SCBA	1
135	0511300		Upholstery, Seats In Cab, All Imperial 1200, Pierce PS6	1
			Color, Cab Interior Vinyl/Fabric - h) Gray/Black	
136	0543991		Bracket, Air Bottle, Hands-Free II, Cab Seats	4
			Qty, - 04	
137	0603867		Seat Belt, ReadyReach	1
			Seat Belt Color - Red	
138	0604864		Seat Belt Height Adjustment, 5 Seats, Imp/Vel, Dash CF	1
139	0627014		Pick Not Required, Seat Belt Color Selected in Seat Belt Option 627339	1
140	0602464		Helmet Storage, Provided by Fire Department, NFPA 2016	1
141	0647637		Lights, Dome, Weldon Dual LED 6 Lts	1
			Color, Dome Lt - Red & White	
			Color, Dome Lt Bzl - Grey	
			Control, Dome Lt White - Door Switches and Lens Switch	
			Control, Dome Lt Color - Lens Switch	
142	0631779		Light, Map, Overhead, Round Halogen, AXT/Imp/Vel/Dash CF, Hawk EX	1
			12vdc power from - Battery switched	
142	0000000	STF	Handlights, (4), Streamlight, LiteBox, 12v, Orange, Denver	1
			Location, Lights - shipped loose	
143	0568369		Cab Instruments, Ivory Gauges, Chrome Bezels, Impel/Velocity 2010, Dash CF	1
144	0509511		Air Restriction Indicator, Imp/Vel, AXT, Dash CF, Enf MUX	1
145	0543751		Light, Do Not Move Apparatus	1
			Alarm, Do Not Move Truck - Pulsing Alarm	
146	0509042		Messages, Open Door/Do Not Move Truck, MUX w/Color Display	1
147	0611681		Switching, Cab, Membrane, Impel/Velocity/Quantum, Dash CF, AXT WiFi MUX	1
			Location, Emerg Sw Pnls - Driver's Side Overhead	
148	0555915		Wiper Control, 2-Speed with Intermittent, MUX, Impel/Velocity	1
149	0002565		Hourmeter, Aerial Inside Cab	1
150	0002615		Switch, Aerial 12V Master	1
151	0002617		PTO switch, w/light - aerial	1
152	0548009		Wiring, Spare, 20 A 12V DC 1st	2
			Qty, - 02	
			12vdc power from - Battery direct	
			Wire termination - Stud	
			Location, Spare Wiring - in the electronics box over the engine behind panel #9 rearward	
153	0548004		Wiring, Spare, 15 A 12V DC 1st	4
			Qty, - 04	
			12vdc power from - Battery direct	
			Wire termination - Butt Splice	
			Location, Spare Wiring - locate at pre-construction	

Line	Option	Type	Option Description	Qty
154	0615386		Vehicle Information Center, 7" Color Display, Touchscreen, MUX System Of Measurement - US Customary	1
155	0606247		Vehicle Data Recorder w/CZ Display Seat Belt Monitor	1
156	0003757		Antenna, Std and Add'l Mts Only, 2-way Radio,Cust,Spl Cable Routing Location - routed to officer seat box Qty, - 03 Location 1 - on cab roof just to the rear of PS lightbar, one in each far corner of the crew cab roof	3
157	0653526		Camera, Pierce, Driver Mux, Rear Camera Only Camera System Audio - Speaker on Ceiling Behind Driver	1
158	0615101		Pierce Command Zone, Advanced Electronics & Control System, Velocity, WiFi	1
159	0624254		Electrical System, Velocity	1
160	0080381		Batteries, (4) Exide Grp 31, 750 CCA ea, (1) Iso Bat, Threaded Stud	1
161	0008621		Battery System, Single Start, All Custom Chassis	1
162	0123174		Battery Compartment, Imp/Vel	1
163	0579436		Charger, Sngl Sys, Kussmaul, 1200, 091-187-12-Remote, 40 Amp	1
164	0012782		Location, Charger, Front Left Side Body Compartment Location, Battery Chrgr/Cmpr - High On Left Wall	1
165	0537512		Location, Battery Charger Indicator, Display Through Window Behind Driver Seat	1
166	0016856		Shoreline, 15A 120V, Kussmaul Auto Eject, 091-55-15-120, Super Qty, - 01 Color, Kussmaul Cover - d) yellow Connection, Shoreline - the battery charger and six place receptacle strip in the cab.	1
167	0067386		Shoreline Location, Fill-In-Blank Feature Location 1 - centered over the driver side cab wheel	1
168	0647728		Alternator, 430 amp, Delco Remy 55SI	1
169	0092582		Load Manager/Sequencer, MUX Enable/Disable Hi-Idle - e)High Idle enable	1
170	0632735		Not Required, Custom Chassis	1
171	0648713		Headlights, Rectangular LED, JW Speaker, Imp/Vel	1
172	0648425		Light, Directional, Whelen 600 LED Combination, Cab Corners, Imp/Vel/AXT/Qtm/DCF Color, Lens, LED's - m)match LED's	1
173	0648074		Lights, Clearance/Marker/ID, Front, P25 LED 7 Lts	1
174	0620055		Light, Directional/Marker, Intermediate, Truck-Lite 60115Y LED 2lts	1
175	0647993		Lights, Clearance/Marker/ID, Platform, P25 LED, 5 Lts Light Guard - Without Guard	1
176	0090155		Lights, Clearance/Marker/ID, Rear, Truck-Lite 35200R LED 7Lts	1
177	0602938		Light, Marker End Outline, Rubber Arm, LED Marker Lamp, Rear Body Qty, Lights, Pair - 1	1
178	0551870		Lights, Tail, Whelen M6BTT* Red LED Stop/Tail & M6T* Amber LED Dir w/Flange Color, Lens - Colored	1
179	0551875		Lights, Backup, Whelen M6BUW, LED	1
180	0664464		Bracket, License Plate & Light, Truck-Lite 15055 LED, Chrome Housing	1
181	0589905		Alarm, Back-up Warning, PRECO 1040	1
182	0644038		Lights, Perimeter Cab, Amdor AY-9500-012 LED 4Dr Z location -	1
183	0616663		Lights, Perimeter Pump House, Amdor AY-9500-020 LED 1lt	1
184	0616287		Lights, Perimeter Body, Amdor AY-9500-012 LED 2lts, Turntable Access Control, Perimeter Lts - Parking Brake Applied	1
185	0554198		Lights, Step, P25 LED, Aerial With Pump 2Lts, Pump Pnl Sw	1
186	0612106	SP	Light, Visor, Whelen, 12V PSL2* Pioneer LED Spotlt, Deep Notch Cab 1st Qty, - 01 Location, driver's/passenger's/center - centered Switch, Lt Control 1 DC,1 - a) DS Switch Panel Switch, Lt Control 2 DC,2 - e) No Control Switch, Lt Control 3 DC,3 - d) No Control Color, Wln Lt Housing - White Paint	1
187	0672327		Lights, Deck, Whelen (2) MPBW Micro Pioneer LED Rear Flood Lights Switch, Scene Lt Cntrl - h)switch at rear	1
188	0645676		Lights, Not Required, Hose Bed, Deck Lights At Rear	1

Line	Option	Type	Option Description	Qty
189	0645681		Lights, Not Required, Rear Work, Deck Lights At Rear	1
190	0645687		Lights, Rear Scene, Whelen, M6ZC LED, 1st Qty, - 02 Control, Rear Scene Lts - Cab Switch Panel DS Location, Scene Lights - Each Side Rear Body, High, 2lts	2
191	0709438		Light, Walking Surface, FRP Flood, LED	1
192	0036960		Switch, Radio Master, w/40 Amp Breaker	1
193	0022153		Aerial, Platform 100', Alum Body	1
194	0554269		Body Skirt Height, 18"	1
195	0015554	SP	Tank, Water, 400 Gallon, Poly, (PAP)	1
196	0003405		Overflow, 4" Water Tank, Poly	1
197	0028104		Foam Cell Required	1
198	0553729		Not Required, Restraint, Water Tank, Heavy Duty	1
199	0003429		Not Required, Direct Tank Fill	1
200	0593655		Hose Bed, Alum, Trough Syle, 100 PAP, Smooth Aluminum Door Location, driver's/passenger's/center - passenger's	1
201	0003492		Hose Bed Capacity, Special Amount, PAP/PAL Capacity, Hosebed - 1000' of 3.00"	1
202	0620997	SP	Hose Restraint, Hose Bed, Vinyl, 22oz,Top/Rr,Perm Frt,StayPut Fasteners Spacing Color, Vinyl Cover - b) yellow Vinyl flap weight - not weighted	1
203	0003509		Running Boards, PAP	1
204	0579274	SP	Turntable Steps-Morton Cass, Swing Down, Recessed Rear Handrails, DS, PS PAL/PAP	1
205	0554004		Lights, Step (6), P25 LED, Swing Down Access Steps, Each Side	1
206	0690023		Wall, Rear, Smooth Aluminum	1
207	0029503		Tow Eyes (2), Aerial	1
208	0579271	SP	Construction, Compt, Alum, 100' PAP, 23547 ONLY	1
209	0579270	SP	Compt, DS F/H F/D, Roll Drs, w/o Chute, 100' PAP, D Series Modules	1
210	0598972	SP	Compt, DS Turntable, F/H F/D, Roll Drs, 100' PAP	1
211	0023672		Compt, IPO Stairs, Not Required, DS	1
212	0649356	SP	Compt, PS F/H, Roll Drs, 100' PAP, D Series Modules	1
213	0649354	SP	Compt, PS Turntable, F/H, Roll Drs, 100' PAP, D Series Modules	1
214	0023673		Compt, IPO Stairs, Not Required, PS	1
215	0612683	SP	Doors, AMDOR, Roll-up, Side Compartments, w/ AMDOR Magnetic Open Door Switch Qty, Door Accessory - 08 Color, Roll-up Door - aaa) AMDOR satin aluminum Latch, Roll-up Door - Lift-bar	8
216	0556162		Not Req'd, Compt Blister in Front of Rear Axle	1
217	0084028		Bumper, Rear, 8" Counterweight, w/Treadplate Cover, PAP/PAL	1
218	0551416		Lights, Compt, On Scene Solutions, LED & Truck-Lite Model 79384 Location - all body compartment Qty, - 11	11
219	0587545		Lights, Compt, On Scene Solutions, LED Night Stik, 9", Additional Location, Lights - D5 and P5 outrigger compartments and the cab storage compartment on each side of extended cab, controled by an automatic door switch Qty, - 04	4
220	0603420		Shelf Tracks, Painted, Aerial Qty, Shelf Track - 06 Location, Shelf Track - D3, D1, P1, P3, D4 and P4	6
221	0600289		Shelves, Adj, 500 lb Capacity, Full Width/Depth, Predefined Locations, Aerial Qty, Shelf - 07 Material Finish, Shelf - Painted - Spatter Gray Location, Shelves/Trays, Predefined - D1-Upper Third, D2-Upper Third, D3 -Upper Third, P1-Upper Third, P3-Upper Third, D4-Upper Third and P4-Upper Third	7
222	0709690		Tray, 250 lb Slide-out, 2" Sides - Adj. Height, Predefined Locations Qty, Tray (slide-out) - 01 Location, Shelves/Trays, Predefined - D4-Lower Third Material Finish, Tray - Painted - Spatter Gray	1

Line	Option	Type	Option Description	Qty
223	0603763		Tray, Floor Mounted, Slide-Out, 500lb, 2.00" Sides, 2G Aerial Qty, - 01 Material - paint to match compt interior Location, Tray Slide-Out, Floor Mounted - P4	1
224	0540317		Toolboard, Swing-out, Alum, .188", Peg Board Finish - Painted, Compt Interior, Spatter Gray Qty - 1 Location, Pivot - Back Mounting, Toolboard - Adjustable Frt-back Location, Toolboard - D4	1
225	0004033		Rub Rail, Aluminum Extruded, Side of Body, Xtra Space (.50")	1
226	0004027		Fender Crowns, Rear, S/S, Two Pair	1
227	0519849		Not Required, Hose, Hard Suction	1
228	0626229		Handrails, Side Pump Panels, Per Print	1
229	0601235		Compt, Air Bottle, Single, Round, Fender Panel, Tandem Axle Aerials Qty, Air Bottle Comp - 7 Door Finish, Fender Compt - Polished Location, Fender Compt - Single - DS Rear, Single - PS Fwd, Single - PS Rear, Single (2) - PS Tandem and Single (2) - DS Tandem Latch, Air Bottle Compt - Flush Lift & Turn Insert, Air Bottle Compt - Rubber Matting	7
230	0004218		Ladder, 35' Duo-Safety 1200A 2-Sect Qty, - 1	1
231	0004222		Ladder, 24' Duo-Safety 900A 2-Section Qty, - 01 Location, Extension Ladder - torque box	1
232	0024232		Ladder, 16' Duo-Safety 875A Roof Qty, - 02	2
233	0044235		Ladder, 16' Duo-Safety 875A Roof Qty, - 1	1
234	0004233		Ladder, 14' Duo-Safety Fresno 701 Qty, - 1	1
235	0004246		Ladder, 10' Duo-Safety Folding, 585A Qty, - 01 Location, Folding Ladder Aerial - torque box	1
236	0579266	SP	Ladders Stored in Torque Box, Gortite Roll, w/Glide Plate, PAP, D Series Modules Color,Gortite,Roll-upDoor - Satin finish	1
237	0602100		Lights, Torque Box Ladder Storage, Pierce LED Strip Lights, 2 Lts	1
238	0653608		Ladder, Little Giant, Revolution XE 12017 - Model 17 Location - torque box	1
239	0515496	SP	Pole, Pike 3' DUO Safety, Fiberglass w/D Handle Location - ship loose along with the two (2) 3' Fire Hooks Unlimited pike poles Qty, Pike Poles - 2	2
240	0004318		Pike Pole, 12' DUO Safety, Fiberglass Qty, - 02	2
240	0000000	STF	Pike Pole, 16' DUO Safety, Fiberglass, Aerial Qty, - 1	1
241	0004347		Pike Pole, 6' DUO Safety, Fiberglass, Aerial Qty, - 02	2
242	0695625	SP	Pike Pole, 3' Fire Hooks Unlimited, National Hook w/D Handle Qty, - 02	2
243	0024388		No Steps Required, Front Of Body	1
244	0004470		Pump, Waterous, CMU, 2000 GPM, Two Stage	1
245	0004481		Packing, Grafoil, Waterous	1
246	0559769		Transmission, Pump, Waterous C20 Series	1
247	0635600		Pumping Mode, Stationary Only	1
248	0605126		Pump Shift, Air w/Manual Override, Split Shaft, Interlocked, Waterous	1
249	0003148		Transmission Lock-up, EVS	1
250	0004547		Auxiliary Cooling System	1
251	0004485		Transfer Valve, Electric, Waterous	1
252	0004513		Valve, Relief Intake, Waterous, Set @ 125 PSI	1

Line	Option	Type	Option Description	Qty
253	0546803		Controller, Pressure, Class 1 Total Pressure Governor (TPG)	1
254	0072153		Primer, Trident, Air Prime, Air Operated	1
255	0058516		Manuals, Pump (2), CD	1
256	0603128		Plumbing, Stainless Steel and Hose, Two Stage Pump	1
257	0064656		Not Required, Black Iron Pipe with Stainless Steel Plumbing	1
258	0004645		Inlets, 6.00" - 1250 GPM or Larger Pump	1
259	0004646		Cap, Main Pump Inlet, Long Handle, NST, VLH	1
260	0549882		Valve, w/Relief, DS Inlet, 6", Electric Cntrl, LED, Manual Overide, Wat Pump	1
261	0084610		Valves, Akron 8000 series- All	1
262	0004660		Inlet, Left Side, 2.50"	1
263	0004680		Inlet, Right Side, 2.50"	1
264	0004686		Valve, Inlet(s) Recess Behind Panel, Side Cntrl	2
			Qty, Inlets - 2	
265	0004700		Control, Inlet, at Valve	1
266	0092569		No Rear Inlet (Large Dia) Requested	1
267	0092696		Not Required, Cap, Rear Inlet	1
268	0064116		No Rear Inlet Actuation Required	1
269	0009648		No Rear Intake Relief Valve Required on Rear Inlet	1
270	0092568		No Rear Auxiliary Inlet Requested	1
271	0563738		Valve, .75" Bleeder, Aux. Side Inlet, Swing Handle	1
272	0029043		Tank to Pump, (1) 3.00" Valve, 3.00" Plumbing	1
273	0004905		Outlet, 1.50" Tank Fill	1
274	0004940		Outlet, Left Side, 2.50"	2
			Qty, Discharges - 02	
275	0092570		Not Required, Outlets, Left Side Additional	1
276	0004945		Outlet, Right Side, 2.50"	3
			Qty, Discharges - 03	
277	0092571		Not Required, Outlets, Right Side Additional	1
278	0654297		Outlet, 5.00" w/4.00" Valve, Right, Electric, Akron Electric Valve Controller	1
279	0649939		Outlet, Front, 1.50" w/2.00" Plumbing	1
			Fitting, Outlet - 1.50" NST with 90 degree swivel	
			Drain, Front Outlet - Class 1 Automatic	
			Location, Front, Single - top of right bumper	
280	0092575		Not Required, Outlet, Rear	1
281	0092574		Not Required, Outlet, Rear, Additional	1
282	0092573		Not Required, Outlet, Hose Bed/Running Board Tray	1
283	0085076		Caps for 1.50" to 3.00" Discharge, VLH	1
284	0563739		Valve, 0.75" Bleeder, Discharges, Swing Handle	1
285	0005091		Elbow, Left Side Outlets, 45 Degree, 2.50" FNST x 2.50" MNST, VLH	1
286	0035094		Not Required, Elbow, Left Side Outlets, Additional	1
287	0025091		Elbow, Right Side Outlets, 45 Degree, 2.50" FNST x 2.50" MNST, VLH	1
288	0089584		Not Required, Elbow, Right Side Outlets, Additional	1
289	0045099		Not Required, Elbow, Rear Outlets	1
290	0085695		Not Required, Elbow, Rear Outlets, Large, Additional	1
291	0005099		Elbow, Large Dia Outlet, 30 Deg, 5.00" FNST x 5.00" Storz	1
292	0085090		Adapter - 1.50"F NST X 1.50"M Special	2
			Qty, Adapter for Outlets - 02	
			Special Threads - NPSH	
			Location, Adapter(s) - hosebed outlets	
293	0005085		Adapter, Thread - 2.50"F NST X 2.50"M Special	1
			Qty, Adapter for Outlets - 01	
			Special Threads - NPSH	
			Location, Adapter(s) - 2.50" crosslay	
294	0039313		Adapter, Thread - 5" Storz X 2.5" MNST & Cap	1
			Qty, Adapter for Outlets - 01	
			Location, Adapter(s) - passenger side large diameter	
295	0005090		Reducer - 2.50"F NST X 1.50"M Special, w/Cap	1
			Qty, Adapter for Outlets - 01	
			Special Threads - NPSH	
			Location, Adapter(s) - front bumper discharge	
296	0062133		Control, Outlets, Manual, Pierce HW if applicable	1

Line	Option	Type	Option Description	Qty
297	0029106		Not Required, Deluge Outlet	1
298	0029302		No Monitor Requested	1
299	0029304		No Nozzle Req'd	1
300	0029107		No Deluge Mount	1
301	0005096		Waterway Outlet & Control, Waterous Handwheel, PAP	1
302	0029216		Crosslay, (1) 1.50", Spl. Cap/Arrangement Capacity, Special Xlay - 300' of 1.75"	1
303	0029203		Crosslay, (1) 2.50" Std Cap, Pan Style	1
304	0029260		Not Required, Speedlays	1
305	0591145		Hose Restraint, Crosslay/Deadlay, Top and Ends, Elastic Netting Qty, - 02	2
306	0015180		Roller, Horizl/Vertical, (2) Crosslays	1
307	0095358		Foam Sys, Husky 12, Single Agent Discharge - front bumper and both crosslays Amount of Disc. W/Foam - 3	1
308	0012126		Not Required, CAF Compressor	1
309	0552482		Refill, Foam Tank, Single Tank, Husky 12, Class B Foam	1
310	0031916		Demonstration, Foam System, At Fire Department (Domestic Customer) Vehicle, Qty, Training, D - 1 vehicle	1
311	0005448		Foam Cell, 40 Gallon, Not Reduce Water Type of Foam - Class "B" Foam, Brand Name - AR-AAFF	1
312	0505016		Drain, 1.00", Foam Tank #1, Husky 12 Foam System	1
313	0091079		Not Required, Foam Tank #2	1
314	0091112		Not Required, Foam Tank Drain	1
315	0005496		Pump House, Side Control, 45"	1
316	0035570		Pump Panel Configuration, No Match Required	1
317	0562698		Step, Slide-Out/Fold-Out, Pump Operator Platform, Aerial	1
318	0667186		Light, Slide-Out Pump Operator Step, On Scene Solutions Access LED, Short Step	1
319	0635355		Material, Pump Panels, Side Control Painted FormCoat Black Material Finish, Pump Panel, Side Control - Painted FormCoat Black Material, Pump Panel, Side Control - Aluminum	1
320	0005578		Panel, Pump Access - Pass Side Only	1
321	0035501		Pump House Structure, Std Height	1
322	0005945		Light, Pump Compt	1
323	0586382		Gauges, Engine, Included With Pressure Controller	1
324	0005601		Throttle Included w/ Pressure Controller	1
325	0549333		Indicators, Engine, Included with Pressure Controller	1
326	0005690		Gauges, 6.00" Master, Class 1, 30"-0-600psi	1
327	0005715		Gauge, 3.50" Pressure, Class 1, 30"-0-600psi	1
328	0062586		Gauge, Water Level, Class 1, Pierce Std	1
329	0060753		Water Level Gauge, Whelen PSTANK, LED 1-Light, 4-Level Qty, - 02 Activation, Water Level G - b) battery switched Location, Water Level Gauge - Each Side Custom Cab - Most Rearward	2
330	0062988		Gauge, Foam Level, (2) Tanks, Class 1	1
331	0593161		Light Shield, S/S LED	1
332	0003930		Microphone & Speaker w/Plain Door - Pump Operator's Position, Body Bulkhead	1
333	0606694		Air Horns, (2) Hadley, 6" Round, In Bumper	1
334	0606834		Location, Air Horns, Bumper, Each Side, Outside Frame, Inboard (Pos #2 & #6)	1
335	0006064		Control, Air Horn, DS & PS Foot Sw	1
336	0006100		No Electronic Siren	1
337	0046133		No Siren Location	1
338	0076155		No Siren Switch	1
339	0006188		No Speaker	1
340	0550461		Location, Not Required, No Speaker (Q2B)	1
341	0016080		Siren, Federal Q2B	1
342	0006095		Siren, Mechanical, Mounted Above Deckplate Location, Siren, Mech - a) Left	1
343	0026160		Control, Mech Siren, Horn Ring, PS Foot Sw	1

Line	Option	Type	Option Description	Qty
344	0606886	SP	Lightbar, Whelen, Freedom IV-Q, 2-21.5", RRWRR RRWRR, 30, Deg	1
			Filter, Whl Freedom Ltbrs - No Filters	
345	0553886	SP	Lights, Frnt Zn Upr, Pltform, Whelen, (6) M6 Red LED	1
			Location, Lights - each side of the basket on the door will be two (2) red lights side by side and one in front of each monitor, just below the clears, see picture of previous unit in Job24895	
			Flange Kit - w/o) with out flange	
			Color, Lens, LED's - m)match LED's	
346	0543668		Lights, Basket, Whelen, M6*, LED, Clear Lens 1st	2
			Location - forward of each monitor, clear on top red on bottom, see photo of 24895	
			Color, Light - ae) red	
			Qty, - 02	
347	0691541		Light, GTT, 792* Strobe Opticom Emitter, Mounted On Platform Basket	1
			Location - center of platform basket	
			Opticom Priority - b) High	
			Opticom Activation - Cab Switch & E-Master	
			Momentary Opticom Activation - no activation	
348	0540451		Light, Front Zone, Whelen M6* LED, Colored Lens, 4lts Q Bezel	1
			Color, Lt DS Frnt Outside - DS Front Outside Red	
			Color, Lt PS Frnt Outside - PS Front Outside Red	
			Color, Lt DS Front Inside - w) DS Front Inside White	
			Color, Lt PS Front Inside - w) PS Front Inside White	
349	0540687		Lights, Side Zone Lower, Whelen M6* LED, Colored Lens, 3pr, Ovr 25	1
			Location, Lights Front Side - b)each side bumper	
			Color, Lt Side Front - Red	
			Color, Lt Side Middle - Blue	
			Color, Lt Side Rear - Red	
			Location, Lights Mid Side - Over Front Wheels	
			Location, Lights Rear Side - Rear Fender Panel	
350	0634517		Lights, Side, Whelen M6* LED w/45 Degree Bezel, Cab Corner, pair	1
			Qty, Lights, Pair - 1	
			Control, Light - b) side warning	
			Color,Whln Sup600 LED - a) rd/rd	
			Material, Bracket - Polished S/S	
351	0540777		Lights, Rear Zone Lower, Whelen M6* LED, Colored Lens	1
			Color, Lt DS Rear - r) DS Rear Lt Red	
			Color, Lt PS Rear - r) PS Rear Lt Red	
352	0540793		Lights, Rear, Whelen M6* LED, Colored Lens	2
			Color, Light - p) one blue, one red	
			Location, Rear Lights - Above taillights	
			Qty, - 02	
			Control, Light - a) rear upper warning	
353	0098090		Light, Rear Zone Upper, Whelen B6MMR*1P, Super LED beacon	1
			Color, Dome, Rear Warning - b)both domes red	
			Control, Light - a) rear upper warning	
			Color,Whln Sup700 LED - c) am/am	
354	0006551		Not Required, Lights, Rear Upper Zone Blocking	1
355	0529685		Light, Traffic Directing, Whelen TAL85, 46.81" Long LED	1
			Activation, Traffic Dir L - Control Head Only	
356	0530072		Location, Traf Dir Lt, Surface Mounted Between Handrails Trdplt Wedge Bracket	1
357	0530282		Location, Traf Dir Lt Controller, Overhead Switch Panel DS Right End	1
358	0006646		Electrical System, 120/240VAC, General Design	1
359	0516616		Generator, Harrison 6kW MCR Hydraulic, Hotshift PTO	1
			Generator Interlocks - No Interlocks	
360	0006645		Location, Hydraulic Generator Above Pump	1
			Location, Generator(s) - Over Pump, Left Side	
361	0016752		Starting Sw, Truck Engine Powered Gen, Cab Sw Pnl	1
362	0016757		Not Required, Remote Start, Generator	1
363	0016740		Not Required, Fuel System	1
364	0016767		Not Required, Oil Drain Extension, Generator	1
365	0016771		Not Required, Routing Exhaust, Generator	1

Line	Option	Type	Option Description	Qty
366	0036738		Circuit Breaker Panel, Included With PTO Generator	1
			Location, Circuit Breaker Panel - D6, Rear Wall to the Left	
367	0656225		Light, Whelen, 150W 120V, PCP2AP1* LED Floodlt, PBAPEDA Pedestal Mt 1st	2
			Location, 120/240 Volt Lt - one (1) each side at the rear of the compartments D3 and	
			Qty, 120/240 Volt Light - 2	
			Switch, Lt Control 1 DC,1 - m) no control	
			Switch, Lt Control 2 DC,2 - e) No Control	
			Switch, Lt Control 3 DC,3 - d) No Control	
			Switch, Lt Control 4 DC,4 - d) No Control	
			Color, Wln Lt Housing - White Paint	
368	0652963		Light, Whelen P*P2AP1 LED, Ground Tripod 1st	1
			Location, 120/240 Volt Lt - top of body over D2	
			Qty, - 01	
			Color, Wln Lt Housing - White Paint	
			Lighthead, Wln AC - PCP2AP1, Spot Flood	
			Receptacle and Plug AC - 20 Amp, 120 Volt Twist Lock Recpt & Plug	
369	0638622		Light, Whelen, 120V, P*P*A*P LED, Pole Mnt 1st	2
			Location, 120/240 Volt Lt - one (1) each in the front corners (D6 and P6)	
			Qty, - 02	
			Switch, Lt Control 1 DC,1 - m) no control	
			Switch, Lt Control 2 DC,2 - e) No Control	
			Switch, Lt Control 3 DC,3 - d) No Control	
			Switch, Lt Control 4 DC,4 - d) No Control	
			Color, Wln Lt Housing - White Paint	
			Poles, W - Thru Body/Surface Mt, BttmAdjust Push-Up, w/Ind Lt	
			Handle Holder and Up Ind Sw W - Without Handle Holder	
			Pole Length W - 12.00" Outside Pole	
			Lighthead, Wln AC - PFP2AP, Flood Flood	
370	0652960		Light, Whelen P*P2AP1 LED, Ground Tripod 2nd	1
			Location, 120/240 Volt Lt - top of body over P3	
			Qty, - 01	
			Color, Wln Lt Housing - White Paint	
			Lighthead, Wln AC - PCP2AP1, Spot Flood	
			Receptacle and Plug AC - 20 Amp, 120/240 Volt Twist Lock Recpt & Plug	
371	0006825		Reel, Elect Cable, Hannay, 1600, (3) Wire	1
			Qty, Cord Reels - 1	
			Reel Guide - a) Nylatron guide	
			Finish, Reel - Painted Gray	
			Location, Electric Cord Reel - D6 Ceiling, Rear	
372	0631764	SP	Cord, Electric, 12/3 Yellow, 3 Wire 15 amp	1
			Lengths of Elect Cord - 1	
			Feet of Yellow Cord - g)300	
			Connection, Cord - No Connection	
373	0619586		Box, Junc, Akron, 3Wire, 4-15A 120V SB	1
			Qty, - 01	
			Color, Electrical Junction Box, Akron - Gray (standard)	
			Connection, Electric Plug / Inlet (Male) - Direct Connection	
374	0086799		Receptacle, 15A 120V 3-Pr 3-Wr SB Dup, Wtrprf	5
			Location, Receptacles - one each side on the extended crew cab, just above the compartment, one each side at the forward portion of each body fender, and one at the rear of the body on passenger side	
			Qty, - 05	
			AC Power Source - Generator	
375	0016794		Receptacle Strip, 15A 120V 6-Place, Shoreline	3
			Location, Receptacles - along the back of the engine dog house and in D2 (see photo) mounted high across the top rear corner and rear wall	
			Qty, - 03	
376	0519547		Brand, Hydraulic Tool System, TNT	1
377	0649753		Not Required, PTO Driven Hydraulic Tool System	1
378	0630564	SP	Power Supply, TNT, ATT-6.5, Gasoline, Simo w/Accelerator, 10,500 PSI	1
			Qty, - 01	
			Location, Power Unit - TBD	

Line	Option	Type	Option Description	Qty
379	0652365		Hose, Hydra., TNT, 100', Twin Line, Bonded, Black Qty, - 01 Color, Hydraulic Hose 1 - f) red/red Color, Hydraulic Hose 2 - n) no hose required Color, Hydraulic Hose 3 - n) no hose required Location - P5 upper rear corner Color, Hydraulic Hose 4 - n) no hose required Color, Hydraulic Hose 5 - n) no hose required Color, Hydraulic Hose 6 - n) no hose required	1
380	0649736		Not Required, Hydraulic Tools	1
381	9999999	SCC	Tool, Cutter, TNT Model CSC-40-RCV Hydraulic Qty, - 1	1
382	0798471	SP	Tool, Spreader, TNT Model S-100-32, Hydraulic	1
383	0627002	SP	Tool, Cutter, TNT Model BFC-320 Hydraulic Qty, - 1	1
384	0096469	SP	Tool, Ram, TNT Model TLS-50 Hydraulic Extension	1
385	0682194	SP	Aerial, 100' Pierce Platform, Denver	1
386	0601988		Light, Boom Support, Amdor LumaBar H2O, LED	1
387	0799569		Boom Support Compartment, Rear of Cab, Cab Height, Full Depth Latch, Door, Storage - "D" Handle Latch, Pair Hinge, Location - Forward	1
388	0000042		Boom Support, Rear of the Chassis Cab	1
389	0680821		Boom Panel, Pair Paint Color, Predefined - #20 White	1
390	0526890		Not Required, Indicator, Extension	1
391	0688232		Rung Covers, Aerial Device Rung Cover Color - Safety Yellow	1
392	0678539		Brackets Only, Roof Ladder, Aerial Fly Section Roof Ladder, Make/Model - 16' Duo-Safety 875-DR	1
393	0798982	SP	Basket, 100' PAP, Wide, NFPA 2016, Denver	1
394	0708637	SP	Sliding Handrails, Platform Basket Access	1
395	0677439		Box, Hose Storage, Platform Qty, - 01 Latch, Door, Storage - Rubber Hood Location, Aerial Basket - right Cover - cover Hose Size, Hosebox - 100' of 1.75"	1
396	0601972		Lights, Turntable Walkway, P25, LED	1
397	0601949		Light, Turntable Console, TecNiq T-10, LED Strip Light	1
398	0056905		Basket Heat Shields	1
399	0508717		Control Stations, 85'/100' PAP, Color Display	1
400	0682196	SP	Stabilizers, 100' PAP, Two Sets, Split Pan, Denver Material, Stabilizer Pad - Composite	1
401	0530817		Aerial Stabilizer Pins	1
402	0548900		Door, Stabilizer Control Box, PAP/SHDL/PAL MUX, Smooth Aluminum	1
403	0682192	SP	Hydraulic System, 100' PAP, Denver	1
404	0061893		Swivels, w/Encoder, PAL/PAP, 36 Collector Rings	1
405	0682195	SP	Electrical System, 100' PAP, D Series Modules, Denver	1
406	0626291		Lights, Wln MPB* Micro LED Trk 2lts, PCP2P LED @ Basket 1lt (PAP) Location, Sw, Arl DC Lts - m) 2 locations Color, Wln Lt Housing - White Color, Lt Housing - White	1
407	0540746		Lights, Stabilizer Warn (2) Sets, Whelen M6* LED, Colored Lens Color, Lt Rr Stabilzr Pan - r) Pan Light Red Color, Lt Fr Stabilzr Pan - r) Pan Light Red	1
408	0068701		Lights, Grote Supernova LED, Stabilizer Beam, (2) Sets	1
409	0601299		Lights, Stabilizer Scene, (2) sets, Amdor H2O, LED	1
410	0017101		120 Volt To Tip, 2-20 Amp, Household Recpt. (PAP)	1
411	0673610		Light, Whelen PFP2AC, 120 Volt LED Under Basket, PAP Qty, - 02 Location, Sw, Arl AC Lts - M)2 Pos Location, Plat/Tip AC Lts - J) Under DS/PS Down	2

Line	Option	Type	Option Description	Qty
411			Color, Wln Lt Housing - White Paint	
412	0662734		Light, Whelen PFP2AP1*, 120 Volt, Fld/Fld LED, Top Raise, Rear Basket	2
			Qty, - 02	
			Location, Sw, Arl AC Lts - A) 1 Pos	
			Location, Plat/Tip AC Lts - C) Drvr and Pass	
			Color, Wln Lt Housing - White Paint	
413	0016924		Intercom, 2-Way Atkinson (PAP)	1
414	0540922		Breathing Air to Tip, (1) 6000 PSI, 85/100 PAP	1
			Refill Hose - 100'	
			Breathing Air Fitting - CEJN	
			Breathing Air Mask Box - mask box platform	
415	0024742		Not Required, Mask, Breathing Air To Tip	1
416	0056918		Not Required, Raised Aerial Pedestal	1
417	0540605		Lyfe Brackets, 3-In-1, Wide Basket	1
			Width - 16.00"	
418	0530826		Turntable Access, ManSaver Bars, Yellow	1
419	0016950		Waterway, 100' PAP	1
420	0016952		(1) Preconnect At Platform, 2 Monitors	1
421	0540428		Monitors, (2), Elkhart Scorpion 8294-04 Electric	1
			Nozzle, Monitor 1, PAP - Elkhart SM-1000E Electric 1000 gpm	
			Nozzle, Monitor 2, PAP - Elkhart ST195 Tips/284A Shaper	
422	0086971		Flowmeter, Waterway, MUX, PAP	1
423	0036953		Not Required, Waterway Inlet	1
424	0047901		Not Required, Tools, Aerial, PAL/PAP	1
425	0559491		Manuals and Training, 3 Days, PAP	1
426	0007150		Bag of Nuts and Bolts	1
			Qty, Bag Nuts and Bolts - 1	
427	0602510		NFPA Required Loose Equipment, Aerial, NFPA 2016, Provided by Fire Department	1
428	0067022		Hose, 6.00" Soft Suction - 15 Ft. Long	1
429	0027023		No Strainer Required	1
430	0602530		Extinguisher, Dry Chemical, Aerial, NFPA 2016, Provided by Dealer	1
431	0602353		Extinguisher, 2.5 Gal. Pressurized Water, Aerial, NFPA 2016, Provided by Dealer	1
432	0007482		Not Required, Crowbars	1
433	0007484		Not Required, Claw Tools	1
434	0602674		Axes, (2) Flathead, Aerial, Provided by Dealer, NFPA 2016	1
435	0602672		Axes, (3) Pickhead, Provided by Dealer (Aerial), NFPA 2016	1
436	0007494		Not Required, Sledgehammers	1
437	0559573		Paint, Single Color, Custom	1
			Paint Color, Predefined - #40 Lime Yellow	
438	0636524	SP	Coating, Chassis Frame Assy, With Liner, Hot Dip Galvanized	1
			Paint Color, Frame Assembly - Black	
439	0693797		No Paint Required, Aluminum Front Wheels	1
440	0693792		No Paint Required, Aluminum Rear Wheels	1
441	0562621		Paint Rotation Motors To Match Aerial Device, PAP	1
442	0581434		Transit Coating, Carwell, Corrosion Protection, Including Underside	1
443	0007230		Compartment, Painted, Spatter Gray	1
444	0591433		Aerial Platform Paint	1
			Paint Color, Aerial Device - Blue White 20	
445	0544111		Reflective Band, 10"	1
			Color, Reflect Band - A - d) blue	
446	0510041		Reflective across Cab Face, Imp/Vel	1
447	0583454		Stripe, Chevron, Rear, Diamond Grade, Aerial	1
			Color, Rear Chevron DG - fluorescent yellow green	
448	0598754		Stripe, Reflective/Diamond Grade, 4.00" on Stabilizers	1
			Color, Reflect Band - A - p) fluorescent yellow green diamond grade	
449	0027341		Jog, In Reflective Stripe, Single or Multiple	1
			Qty, - 1	
450	0515348		Stripe, Black Outline, Scotchlite on Reflective Band	1
			Qty, - 1	
451	0545179		Stripe, Diamond Grade, Chevron, Front Bumper	1
			Size, Chevron Striping - 06	
			Color, Chevron DG - Red	

Line	Option	Type	Option Description	Qty
451			Color, Chevron DG - B - Yellow Green, Fluorescent	
452	0593225		Stripe, Reflective, Cab Doors Interior, Diamond Grade	1
			Color, Reflect Band - A - p) fluorescent yellow green diamond grade	
453	0033179		Lettering Specifications, Reflective	1
454	0686159		Lettering, Reflective, 3.00", (41-60)	1
			Outline, Lettering - Outline	
455	0685978		Lettering, Reflective, 18.00", Each	4
			Qty, Lettering - 04	
			Outline, Lettering - No Outline or Shade	
456	0686038		Lettering, Reflective, 2.00", (61-80)	1
			Outline, Lettering - No Outline or Shade	
457	0685058		Lettering, Reflective, 24.00", Each	2
			Qty, Lettering - 02	
			Outline, Lettering - No Outline or Shade	
458	0685991		Lettering, Reflective, 10.00", (21-40)	1
			Outline, Lettering - Outline	
459	0041534		Emblem, (3) Letter Monogram Style with Lettering, Reflective, Denver, Each	4
			Qty, - 04	
			Location, Emblem - one on each side on the cab doors and one each side on the platform basket	
			Color, Reflective - i) gold	
460	0530793		Emblem, American Flag, Flat (Not Moving), Pair, Mirror Images	2
			Qty, - 02	
			Location, Emblem - rear upper corners of crew cab each side	
			Height, Emblem - e) 8"	
461	0695610		Emblem, Reflective, Per Dept. Submittal, Each	3
			Qty, - 03	
			Location, Emblem - D2, P2 over wheels and R1	
			Size, Dept Seal, Reflect - 14" - 16"	
462	0008555		2% Handling Charge on 100' PAP	1
462	0000000	STF	Intercom & Radio Allowance for DIA Platform - 06-20-2016	1
462	0000000	STF	Service - Oil Change and Lube 5-10-99	1
462	0000000	STF	Oval Strapping Heron Rib - roll - color 07/07/2014	2
			Qty, - 02	
462	0000000	STF	Cummins Service and Parts Manual, ISX	1
			Location - *	
			Qty, - 1	
462	0000000	STF	Allison Transmission Service & Parts Manual 5-19-05	1
			Qty, - 1	
463	0031972		Manuals, Two (2), Fire Apparatus Parts, Custom Chassis	1
464	0002905		Manuals, Two (2) Chassis Service, Custom	1
465	0032433		Manuals, Two (2) Chassis Operation, Custom	1
466	0030008		Warranty, Basic, 1 Year, Apparatus, WA0008	1
467	0611136		Warranty, Chassis, 3 Year, Velocity/Impel, WA0284	1
468	0696696		Warranty, Engine, Detroit DD13, 5 Year, WA0180	1
469	0684953		Warranty, Steering Gear, Sheppard M110, 3 Year WA0201	1
470	0595767		Warranty, Frame, 50 Year, Velocity/Impel, Dash CF, WA0038	1
471	0595698		Warranty, Axle, 3 Year, TAK-4, WA0050	1
472	0530524		Warranty, Axle, 2 Year, Meritor, General Service, WA0046	1
473	0652758		Warranty, ABS Brake System, 3 Year, Meritor Wabco, WA0232	1
474	0019914		Warranty, Structure, 10 Year, Custom Cab, WA0012	1
475	0595813		Warranty, Paint, 10 Year, Cab, Pro-Rate, WA0055	1
476	0524627		Warranty, Electronics, 5 Year, MUX, WA0014	1
477	0695416		Warranty, Pierce Camera System, WA0188	1
478	0708760		Warranty, Not Applicable, LED Strip Lights	1
479	0046369		Warranty, 5-year EVS Transmission, Standard Custom, WA0187	1
480	0616487		Warranty, Transmission Cooler, Modine WA0216, Champ WA0279	1
481	0688798		Warranty, Water Tank, Lifetime, UPF, Poly Tank, WA0195	1
482	0596025		Warranty, Structure, 10 Year, Body, WA0009	1
483	0681118		Warranty, ROM, Roll-up Door, 7 Year, WA0206	1
484	0063510		Warranty, Pump, Waterous, 5 Year Parts, WA0225	1
485	0648675		Warranty, 10 Year S/S Pumbing, WA0035	1

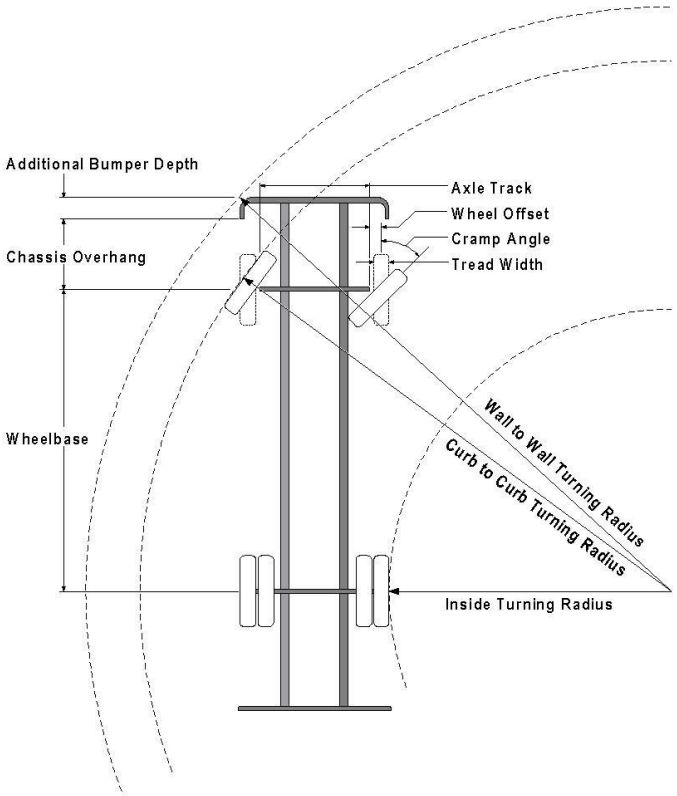
Line	Option	Type	Option Description	Qty
486	0657846		Warranty, Foam System, Husky 12, WA0231	1
487	0006999		Warranty, Structure, 20 Year, Aerial Device, WA0052	1
488	0687388		Warranty, Swivels, 5 Year, Aerial Device, WA0197	1
489	0088889		Not Required, Additional Aerial Warranty	1
490	0687327		Warranty, Waterway, 10 Year, Aerial Device, WA0198	1
491	0595860		Warranty, Paint, 4 Year, Aerial Device, Pro-Rated, WA0047	1
492	0553455		Warranty, Electronics, 5 Year, MUX, WA0014	1
493	0609981		Warranty, Harrison Generator, 6 Year, WA0285	1
494	0595820		Warranty, Paint, 10 Year, Body, Pro-Rate, WA0057	1
495	0595412		Warranty, Graphics Lamination, 1 Year, Apparatus, WA0168	1
496	0683627		Certification, Vehicle Stability, CD0089	1
497	0610837		Certification, Engine Installation, Velocity, Detroit DD13, 2016, CD0148	1
498	0686786		Certification, Power Steering, CD0098	1
499	0543951		Certification, Cab Integrity, Velocity, CD0009	1
500	0548950		Certification, Cab Door Durability, Velocity/Impel, CD0001	1
501	0548967		Certification, Windshield Wiper Durability, Impel/Velocity, CD0005	1
502	0667411		Certification, Electric Window Durability, Velocity/Impel FR, CD0004	1
503	0549273		Certification, Seat Belt Anchors and Mounting, Imp/Vel/Vel SLT, CD0018	1
504	0548947		Certification, Cab Heater and Defroster, Velocity/Impel, CD0015	1
505	0548940		Certification, Cab Air Conditioning Performance, Velocity/Impel, CD0016	1
506	0545073		Amp Draw Report, NFPA Current Edition	1
507	0002758		Amp Draw, NFPA/ULC Radio Allowance	1
508	0799248		Appleton/Florida BTO	1
509	0000033		PAP BODY	1
510	0000012		PIERCE CHASSIS	1
511	0562778		DD13 ENGINE	1
512	0046396		EVS 4000 Series TRANSMISSION	1
513	0020011		WATEROUS PUMP	1
514	0020009		POLY TANK	1
515	0028048		FOAM SYSTEM	1
516	0020006		SIDE CONTROL	1
517	0020007		AKRON VALVES	1
518	0020015		ABS SYSTEM	1
519	0658751		Manufacturing Attribute	1

Turning Performance Analysis

06/20/2016

Bid Number: 568
Department: Denver, City and County-DIA

Chassis: Velocity Chassis, PAP/Midmount (Big Block), 2010
Body: Aerial, Platform 100', Alum Body



Parameters:

Inside Cramp Angle:	*f*
Axle Track:	82.92 in.
Wheel Offset:	4.68 in.
Tread Width:	16.6 in.
Chassis Overhang:	78 in.
Additional Bumper Depth:	16 in.
Front Overhang:	139.1 in.
Wheelbase:	264.5 in.

Calculated Turning Radii:

Inside Turn:	25 ft. 2 in.
Curb to curb:	40 ft. 11 in.
Wall to wall:	48 ft. 0 in.

Comments:

Category	Option	Description
Axle, Front, Custom	0508846	Axle, Front, Oshkosh TAK-4, Non Drive, 24,000 lb, Velocity
Wheels, Front	0019611	Wheels, Front, Alcoa, 22.50" x 12.25", Aluminum, Hub Pilot
Tires, Front	0679621	Tires, Front, Michelin, XZY3 (wb), 425/65R22.50, 20 ply, Fire Service Load Rtng
Bumpers	0123624	Bumper, 16" Extended, Imp/Vel
Aerial Devices	0682194	Aerial, 100' Pierce Platform, Denver

Notes:

Actual Inside cramp angle may be less due to highly specialized options.

Curb to Curb turning radius calculated for 9.00 inch curb.

Definitions:	
Inside CrampAngle	Maximum turning angle of the front inside fire.
Axle Track	King-pin to King-pin distance of front axle.
Wheel Offset	Offset from the center line of the wheel to the King-pin.
Tread Width	Width of the tire tread.
Chassis Overhang	Distance of the center line of the front axle to the front edge of the cab. This does not include the bumper depth.
Additional Bumper Wheel	Depth that the bumper assembly adds to the front overhang.
Wheelbase	Distance between the center lines of the vehicles front and rear axles.
Inside Turning Radius	Radius of the smallest circle around which the vehicle can turn.
Curb to Curb Turning Radius	Radius of the smallest circle around which the vehicle's tires can turn. This measures assumes a curb height of 9 inches.
Wall to Wall Turning Radius	Radius of the smallest circle around which the vehicle's tires can turn. This measures takes into account any front overhang due to chassis , bumper extensions and or aerial devices.

Electrical Analysis

6/20/2016

Bid #: 568

Desc: DIA 100' Platform, with Pump

Customer: Denver, City and County-DIA

Job #:

Sales Rep: Doucette, Duane

Organization: Front Range Fire Apparatus, Ltd

Option	Description	Type*	Minimum Load	Intermittent Load	Total Connected
0000000	Handlights, (4), Streamlight, LiteBox, 12v, Orange, Denver		0.00	1.00	0.00
0001244	High Idle w/Electronic Engine, Custom		0.00	1.20	0.00
0002526	Light, Engine Compt, All Custom Chassis		0.00	1.60	0.00
0002617	PTO switch, w/light - aerial		0.00	0.00	0.08
0004485	Transfer Valve, Electric, Waterous		0.00	0.00	0.20
0005945	Light, Pump Compt		0.00	1.80	0.00
0006064	Control, Air Horn, DS & PS Foot Sw		0.00	0.83	0.00
0006825	Reel, Elect Cable, Hannay, 1600, (3) Wire		0.00	36.00	0.00
0016080	Siren, Federal Q2B		0.00	100.00	0.00
0016924	Intercom, 2-Way Atkinson (PAP)		0.00	0.00	3.00
0060753	Water Level Gauge, Whelen PSTANK, LED 1-Light, 4-Level		0.00	0.00	1.00
0062988	Gauge, Foam Level, (2) Tanks, Class 1		0.00	0.00	1.00
0072153	Primer, Trident, Air Prime, Air Operated		0.00	0.01	0.00
0080381	Batteries, (4) Exide Grp 31, 750 CCA ea, (1) Iso Bat, Threaded Stud		0.00	3.00	0.00
0086971	Flowmeter, Waterway, MUX, PAP		0.00	0.00	0.50
0095358	Foam Sys, Husky 12, Single Agent		0.00	5.00	0.00
0122466	Cab Lift, Elec/Hyd, w/Manual Override, Imp/Vel		0.00	180.00	0.00
0122520	Heater/defroster, Imp/Vel		0.00	0.00	12.10
0508717	Control Stations, 85'/100' PAP, Color Display		0.00	0.00	2.00
0540793	Lights, Rear, Whelen M6* LED, Colored Lens		0.00	1.35	0.90
0543668	Lights, Basket, Whelen, M6*, LED, Clear Lens 1st		0.00	1.46	0.79
0543751	Light, Do Not Move Apparatus		0.00	2.00	0.00
0548004	Wiring, Spare, 15 A 12V DC 1st		0.00	0.00	60.00
0548009	Wiring, Spare, 20 A 12V DC 1st		0.00	0.00	40.00
0549333	Indicators, Engine, Included with Pressure Controller		0.00	0.35	0.00
0551875	Lights, Backup, Whelen M6BUW, LED		0.00	3.20	0.00
0552777	Fuel Pump for Repriming		0.00	6.00	0.00
0587545	Lights, Compt, On Scene Solutions, LED Night Stik, 9", Additional		0.00	0.00	2.00
0589905	Alarm, Back-up Warning, PRECO 1040		0.00	0.50	0.00
0590299	Engine Brake, Jacobs Compression Brake, with Retarder, DD13		0.00	0.42	0.00
0593759	ESC/ABS/ATC Wabco Brake System, Tandem Rear Axle, 2010		0.00	6.00	0.00
0601972	Lights, Turntable Walkway, P25, LED		0.00	0.00	0.00
0612106	Light, Visor, Whelen, 12V PSL2* Pioneer LED Spotlt, Deep Notch Cab		0.00	0.00	6.00
0631779	Light, Map, Overhead, Round Halogen, AXT/Imp/Vel/Dash CF, Hawk		0.00	0.74	0.00
0634517	Lights, Side, Whelen M6* LED w/45 Degree Bezel, Cab Corner, pair		0.00	2.70	1.80
0641245	Controls, Electric Windows, All Cab Doors, Impel/Velocity FR Design		0.00	26.00	0.00
0644904	Lights, Fog, Perlux 06001-4 Halogen (Rect) , Recess In Bumper, Hdlt		0.00	7.82	0.00
0645687	Lights, Rear Scene, Whelen, M6ZC LED, 1st		0.00	0.00	4.00
0653526	Camera, Pierce, Driver Mux, Rear Camera Only		0.00	1.20	0.00
0673610	Light, Whelen PFP2AC, 120 Volt LED Under Basket, PAP		0.00	0.00	1.26
0682196	Stabilizers, 100' PAP, Two Sets, Split Pan, Denver		0.00	0.00	6.00
0709438	Light, Walking Surface, FRP Flood, LED		0.00	0.00	0.00
0603349	Air Conditioning, Impel/Velocity	LM	0.00	0.00	80.20
0002565	Hourmeter, Aerial Inside Cab	NFPA	0.10	0.00	0.00
0002615	Switch, Aerial 12V Master	NFPA	0.08	0.00	0.00
0002758	Amp Draw, NFPA/ULC Radio Allowance	NFPA	5.00	0.00	0.00
0062586	Gauge, Water Level, Class 1, Pierce Std	NFPA	1.23	0.00	0.00
0068701	Lights, Grote Supernova LED, Stabilizer Beam, (2) Sets	NFPA	3.20	0.00	0.00
0090155	Lights, Clearance/Marker/ID, Rear, Truck-Lite 35200R LED 7Lts	NFPA	0.25	0.25	0.50
0092582	Load Manager/Sequencer, MUX	NFPA	0.56	0.56	0.00

* UDMC = User Defined Mission Critical, LM = User Defined Load Managed, S = Electrical Amperage Supply

Electrical Analysis

6/20/2016

Bid #: 568

Desc: DIA 100' Platform, with Pump

Customer: Denver, City and County-DIA

Job #:

Sales Rep: Doucette, Duane

Organization: Front Range Fire Apparatus, Ltd

Option	Description	Type*	Minimum Load	Intermittent Load	Total Connected
0098090	Light, Rear Zone Upper, Whelen B6MMR*1P, Super LED beacon	NFPA	6.00	0.00	0.00
0509649	Lights, Cab and Crew Cab Access Steps, P25, LED w/Bezel, 1 Light	NFPA	1.00	0.00	0.00
0516616	Generator, Harrison 6kW MCR Hydraulic, Hotshift PTO	NFPA	19.30	0.00	0.00
0529685	Light, Traffic Directing, Whelen TAL85, 46.81" Long LED	NFPA	2.08	0.00	0.00
0540451	Light, Front Zone, Whelen M6* LED, Colored Lens, 4lts Q Bezel	NFPA	1.80	5.40	1.80
0540687	Lights, Side Zone Lower, Whelen M6* LED, Colored Lens, 3pr, Ovr 25	NFPA	5.40	8.10	0.00
0540746	Lights, Stabilizer Warn (2) Sets, Whelen M6* LED, Colored Lens	NFPA	3.60	5.40	0.00
0540777	Lights, Rear Zone Lower, Whelen M6* LED, Colored Lens	NFPA	1.80	2.70	0.00
0546803	Controller, Pressure, Class 1 Total Pressure Governor (TPG)	NFPA	1.70	0.00	0.00
0551870	Lights, Tail, Whelen M6BTT* Red LED Stop/Tail & M6T* Amber LED	NFPA	0.83	2.49	0.00
0553886	Lights, Frnt Zn Upr, Pltform, Whelen, (6) M6 Red LED	NFPA	5.40	8.10	0.00
0554004	Lights, Step (6), P25 LED, Swing Down Access Steps, Each Side	NFPA	0.30	0.00	0.00
0554198	Lights, Step, P25 LED, Aerial With Pump 2Lts, Pump Pnl Sw	NFPA	1.50	0.00	0.00
0555915	Wiper Control, 2-Speed with Intermittent, MUX, Impel/Velocity	NFPA	2.10	8.40	0.00
0565541	Cab, Velocity 2010, 8410 Raised Roof w/ Deep Notch Aerial	NFPA	6.80	10.20	0.00
0568369	Cab Instruments, Ivory Gauges, Chrome Bezels, Impel/Velocity 2010,	NFPA	1.26	0.00	0.00
0579270	Compt, DS F/H F/D, Roll Drs, w/o Chute, 100' PAP, D Series Modules	NFPA	2.70	0.00	2.70
0586382	Gauges, Engine, Included With Pressure Controller	NFPA	0.30	0.00	0.00
0587033	Air Dryer, Brake, AD-9 w/heat, 2010	NFPA	4.70	0.00	0.00
0593161	Light Shield, S/S LED	NFPA	3.00	0.00	0.00
0595087	DEF Tank, 4.5 Gallon, DS Fill, Forward of Rear Axle	NFPA	0.60	11.40	0.00
0598972	Compt, DS Turntable, F/H F/D, Roll Drs, 100' PAP	NFPA	0.90	0.00	0.90
0601299	Lights, Stabilizer Scene, (2) sets, Amdor H2O, LED	NFPA	2.00	0.00	0.00
0601949	Light, Turntable Console, TecNiq T-10, LED Strip Light	NFPA	0.20	0.00	0.00
0601988	Light, Boom Support, Amdor LumaBar H2O, LED	NFPA	0.50	0.00	0.00
0602100	Lights, Torque Box Ladder Storage, Pierce LED Strip Lights, 2 Lts	NFPA	1.00	0.00	0.00
0605126	Pump Shift, Air w/Manual Override, Split Shaft, Interlocked, Waterous	NFPA	1.00	0.00	0.00
0606886	Lightbar, Whelen, Freedom IV-Q, 2-21.5", RRWRR RRWRR, 30, Deg	NFPA	6.48	2.48	7.28
0610848	Engine, DDC DD13, 525 hp, 1850 lb-ft, W/OBD, EPA 2016, Velocity	NFPA	6.00	0.00	0.00
0615386	Vehicle Information Center, 7" Color Display, Touchscreen, MUX	NFPA	1.20	0.00	0.00
0616287	Lights, Perimeter Body, Amdor AY-9500-012 LED 2lts, Turntable	NFPA	0.20	0.00	0.00
0616663	Lights, Perimeter Pump House, Amdor AY-9500-020 LED 1lt	NFPA	0.29	0.00	0.00
0620055	Light, Directional/Marker, Intermediate, Truck-Lite 60115Y LED 2lts	NFPA	0.10	1.00	0.00
0626291	Lights, Wln MPB* Micro LED Trk 2lts, PCP2P LED @ Basket 1lt (PAP)	NFPA	19.20	0.00	0.00
0642601	Trans, Allison 5th Gen, 4500 EVS PR, w/Prognostics,	NFPA	2.00	2.00	0.00
0644038	Lights, Perimeter Cab, Amdor AY-9500-012 LED 4Dr	NFPA	0.53	0.00	0.00
0647637	Lights, Dome, Weldon Dual LED 6 Lts	NFPA	1.20	1.20	0.00
0647993	Lights, Clearance/Marker/ID, Platform, P25 LED, 5 Lts	NFPA	0.35	0.00	0.00
0648074	Lights, Clearance/Marker/ID, Front, P25 LED 7 Lts	NFPA	0.49	0.00	0.00
0648425	Light, Directional, Whelen 600 LED Combination, Cab Corners,	NFPA	0.70	0.70	0.00
0648713	Headlights, Rectangular LED, JW Speaker, Imp/Vel	NFPA	7.20	7.20	0.00
0649354	Compt, PS Turntable, F/H, Roll Drs, 100' PAP, D Series Modules	NFPA	0.90	0.00	0.90
0649356	Compt, PS F/H, Roll Drs, 100' PAP, D Series Modules	NFPA	3.60	0.00	3.60
0664464	Bracket, License Plate & Light, Truck-Lite 15055 LED, Chrome	NFPA	0.69	0.00	0.00
0667186	Light, Slide-Out Pump Operator Step, On Scene Solutions Access	NFPA	0.65	0.00	0.00
0672327	Lights, Deck, Whelen (2) MPBW Micro Pioneer LED Rear Flood Lights	NFPA	7.00	0.00	0.00
0682194	Aerial, 100' Pierce Platform, Denver	NFPA	5.00	0.00	0.00
0647728	Alternator, 430 amp, Delco Remy 55SI	S	0.00	0.00	0.00
		Load Totals:	**151.97**	**467.76**	**240.51**

* UDMC = User Defined Mission Critical, LM = User Defined Load Managed, S = Electrical Amperage Supply

Electrical Analysis

6/20/2016

Bid #: 568

Desc: DIA 100' Platform, with Pump

Customer: Denver, City and County-DIA

Job #:

Sales Rep: Doucette, Duane

Organization: Front Range Fire Apparatus, Ltd

Note: Minimum Continous Load is in "Blocking Right of Way" mode.(Reference current edition of NFPA 1901)
Note: Intermittent Load items are not factored in on any alternator load comparisons. These items are included on the report for reference only and should be looked at as amp draw exclusion items. (Reference current edition of NFPA 1901)
Note: Total Connected Load "Demand" represents Total Connected Load minus any Load Managed items

Alternator Output at Idle: 275.00

Minimum Continuous Load	
Supply:	275.00
Demand:	151.97
Variance:	123.03

Alternator Output at Governed Speed: 372.00

Total Connected Load	
Supply:	372.00
Demand:	312.28
Variance:	59.72

* UDMC = User Defined Mission Critical, LM = User Defined Load Managed, S = Electrical Amperage Supply

CONTENTS

Front Range Fire Apparatus is pleased to submit to Denver 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. This document 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 document will specify whether the fire department, manufacturer, or apparatus dealership will provide required loose equipment.

Images and illustrative material in this document 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 and 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 document.

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 ten (10) 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 Front Range Fire Apparatus 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 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.

SPECIAL INSTRUCTIONS

The apparatus will be designed and built to match the Velocity 100' Platform job #24895 in some aspects, pictures provided. However, some variation may be necessary due to changes in our manufacturing processes or our product offering. Revisions in NFPA guidelines and/or other regulations may also affect our ability to match the previous unit.

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 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 document 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 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.*

INSPECTION TRIP #1

An inspection trip will be provided for two (2) people. Trip will take place at customer location for a preconstruction conference. .

INSPECTION TRIP #2

An inspection trip will be provided for two (2) people. Trip will take place at the factory for a post paint inspection. .

INSPECTION TRIP #3

An inspection trip will be provided for two (2) people. Trip will take place at the factory for a delivery inspection. .

PRODUCT CHANGES AND IMPROVEMENTS

Our components and processes, as described in this document, are as accurate as known at the time of bid submission, but are subject to change for the purpose of product or process improvements, or changes in industry standards providing the change does not affect the meaning or definition of the bid specifications.

BID BOND NOT REQUESTED

A bid bond will not be included. If requested, the following will apply:

All bidders will provide a bid bond as security for the bid in the form of a 5% bid bond to accompany their bid. 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, 1 YEAR

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 Basic One (1) Year Limited Warranty period included within this document. 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 one (1) year from the date of such satisfactory acceptance and delivery, or the actual Basic One (1) Year Limited Warranty period, whichever is shorter.

APPROVAL DRAWING

A drawing of the 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.

VELOCITY CHASSIS

The Pierce Velocity® is the custom chassis developed exclusively for the fire service. Chassis provided will be a new, tilt-type custom fire apparatus. The chassis will be manufactured in the apparatus body builder's facility eliminating any split responsibility. The chassis will be designed and manufactured for heavy-duty service, with adequate strength and capacity for the intended load to be sustained and the type of service required. The chassis will be the manufacturer's first line tilt cab.

MAXIMUM OVERALL HEIGHT

The maximum overall height of the apparatus will be 11'9" .

WHEELBASE

The wheelbase of the vehicle will be 264.00".

GVW RATING

The gross vehicle weight rating will be 76,800 pounds .

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 mainframe inverted "L" liner will be provided. It will be heat-treated steel measuring 12.00" x 3.00" x 0.25". Each liner will have a section modulus of 7.795 cubic inches, yield strength of 110,000 psi, and rbm of 857,462 in-lb. Total rbm at wheelbase center will be 3,976,502 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 0 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 40 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 Michelin 425/65R22.50 radials, 20 ply all-position XZY3 wide base tread, rated for 24,400 lb maximum axle load and 65 mph maximum speed.

The tires will be mounted on Alcoa 22.50" x 12.25" 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 pounds.

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 of 6.14 will be furnished. The engine will be programmed to limit the overall top speed to 60 MPH.

SUSPENSION, REAR
Rear suspension will be the Ridewell Dynalastic, Model 202S, which has individually articulating torque beams pivoted to a compensator providing independent axle movement and steady load distribution.

Utilizes Ultra Torque Rod Plus torque rods.

Ground rating of the suspension to be 60,000 lb.

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

REAR TIRES
The rear tires will be eight (8) Michelin 315/80R22.50 radials, 20 ply "on/off road" XDN2 GRIP tread, rated for 66,160 lb maximum axle load and 75 mph maximum speed.

The tires will be mounted on Alcoa© 22.50" x 9.00" polished aluminum 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.

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

TIRE, AIR PRESSURE EQUALIZATION
A Crossfire air pressure equalization system will be provided on the rear dual wheels. This system will equalize the tire air pressure in the rear duals.

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)

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.

- Bendix AD-9 air dryer, with heater and coalescing filter

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

One (1) air inlet with type "H" male coupling will be provided. It will allow station air to be supplied to the apparatus brake system through a shoreline hose. The inlet will be located in the driver side lower step well of cab. A check valve will be provided to prevent reverse flow of air. The inlet will discharge into the "wet" tank of the brake system. A mating female fitting will also be provided with the loose equipment.

AIR OUTLET

One (1) air outlet will be installed with a female coupling and shut off valve, located in the front body compartment on driver side. This system will tie into the "wet" tank of the brake system and include an 85-psi pressure protection valve in the outlet line to prevent the brake system from losing all air.

Female coupling and male fitting will be .25" thread.

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

AIR HOSE

There will be two (2) 25' length(s) of air hose furnished with fittings.

An air chuck will be provided with the air hose. The air chuck will fit the valve stems that are provided on the tires.

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.

ADDITIONAL AIR TANK

An additional air tank with 1,454 cubic inch displacement will be provided to increase the capacity of the air system. This tank will be dedicated for air horn use.

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.

The output flow of the engine air compressor varies with engine rpm. Full compressor output is only achieved at governed engine speed. Engine speed may be limited by generators, pumps and other PTO driven options.

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.

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 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.

CLUTCH FAN

A Horton® fan clutch will be provided. The fan clutch will be automatic when the pump transmission is in "Road" position, and fully engaged in "Pump" position.

ENGINE AIR INTAKE

An air intake with an ember separator (to prevent road dirt, burning embers, and recirculating hot air from entering the engine) will be mounted at the front of the apparatus, on the passenger side of the engine. The ember separator will be mounted in the air intake with flame retardant, roto-molded polyethylene housing. It will be easily accessible by the hinged access panel at the front of the vehicle.

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.

EXHAUST MODIFICATION

The last 18.00" of the tail pipe will be at a 35 degree angle and without any restriction of hangers or clamps to ensure an easy deployment of an exhaust extraction hose.

RADIATOR

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

For maximum corrosion resistance and cooling performance, the entire radiator core will be constructed using long life aluminum alloy. The core will be made of aluminum fins, having a serpentine design, brazed to aluminum tubes. The tubes will be brazed to aluminum headers. No solder joints or leaded material of any kind will be acceptable in the core assembly. The radiator core will have a minimum frontal area of 1434 square inches. Supply and return tanks made of glass-reinforced nylon will be crimped on to the core assembly using header tabs and a

compression gasket to complete the radiator core assembly. The radiator will be compatible with commercial antifreeze solutions.

There will be a full steel frame around the entire radiator core assembly. The radiator core assembly will be isolated within the steel frame by rubber inserts to enhance cooling system durability and reliability. The radiator will be mounted in such a manner as to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven ground. The radiator assembly will be isolated from the chassis frame rails with rubber isolators.

The radiator assembly will include an integral deaeration tank permanently mounted to the top of the radiator framework, with a readily accessible 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.

RADIATOR SKID PLATE

A lower radiator skid plate will be supplied for protection. The skid plate shall be constructed of .25" steel plate.

VINYL WINTER FRONT

A custom one-piece light blue vinyl winter front will be provided for use in extreme cold weather. The vinyl will cover the front cab grille and will be held in place with quarter turn fasteners. There will be an 5.50" x 16.00" opening in the center for proper ventilation.

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.

AUXILIARY FUEL PUMP

An auxiliary electric fuel pump will be added to the fuel line for priming the engine. A switch located on the cab instrument panel will be provided to operate the pump.

FUEL COOLER

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

TRANSMISSION

An Allison 5th generation, Model EVS 4500PR, electronic, torque converting, automatic transmission with retarder 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 eight (8) o'clock and one (1) o'clock).

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

The transmission retarder control will be activated 33 percent by release of the accelerator pedal or 66 percent by slight application of the brake pedal, or 100 percent by heavy application of brake pedal. A second on/off switch is provided to activate and deactivate the auto apply portion.

The transmission will have the 1600 ft. lb. torque (medium) spring setting for retardation force.

The transmission retarder will have a master "on/off" switch on the instrument panel. A red indicator light will be provided to warn that the transmission is being overworked.

The retarder will be wired to the brake lights so they are energized when the retarder is slowing the vehicle down.

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

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 COOLER

A Champ shell and tube oil cooler will be provided using engine coolant to control the transmission retarder oil temperature. The cooler will have an aluminum shell and copper tubes. The cooler will be assembled using two (2) pressed in rubber tube sheets (one on each end), creating a reliable mechanical seal between the coolant and the oil.

SUMP COOLER

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

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: Denver

The second row of text will be: Fire

The third row of text will be: Department

AUTOMATIC CHASSIS LUBRICATION

A Vogel Automatic Lubrication System will be provided. The lubrication will be supplied while the vehicle ignition switch is active to allow a uniform application of grease to the locations listed. The electronic control unit that forms part of the system will activate the pump after an adjustable interval time. The unit will control and monitor pump operation and report any faults via an indicator light on the driver's dashboard of the cab.

The lubrication system reservoir, which requires a 15.00" wide x 14.50" high x 6.25" deep mounting area, will be located reservoir will be in the right rear outrigger area on the apparatus.

- TAK- 4 Control Arm Pivot Points

- Rear Axle Slack Adjusters

- Rear Axle Brake Cam Screws

- Rear Suspension Spring Pins

- Rear Suspension Shackle Pins

- Walking Beam Pins Tandem axle, if applicable

BUMPER

A one (1) piece, ten (10) gauge, 304-2B type polished stainless steel bumper, minimum of 10.00" high, will be attached to a bolted modular extension frame constructed of 50,000 psi tensile steel "C" channel mounted directly behind it to provide adequate support strength.

The bumper will be extended 16.00" from front face of cab.

Documentation will be provided, upon request to show that the options selected have been engineered for fit up and approval for this modular bumper extension. A chart will be provided to indicate the option locations and will include, but not be limited to the following options: air horns, mechanical sirens, speakers, hose trays with hose capacities, winches, lights, discharge, and suction connections.

GRAVEL PAN

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

CENTER 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 125' 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 attached with a stainless steel hinge.

There will be two (2) flush lift and turn latches provided to 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.

BUMPER COVER NOTCH

There will be one (1) hose tray notch(es) provided for the bumper tray cover(s) located center tray passenger side . Each notch will allow hose to be pre-connected to front outlets.

FOG LIGHTS

There will be two (2) Perlux, Model 06001-4 rectangular halogen fog lamps with clear lenses provided one (1) on each side recessed into the front bumper.

The fog lamps will be switched on with the headlight switch and a separate switch that will include an internal indicator. This switch will be properly identified and installed on the switch panel with in reach of the driver. The parking, tail, side marker and license plate lamps will be activated by the headlamp switch prior to the activation of these fog lights. The fog lights will be able to switch on or off independently of the low beam headlights. The front fog lights will be reset to an off position whenever the headlight switch or the vehicle ignition switch are set to the off position. The fog lights will be deactivated when the high beam headlights are activated, when the headlight switch is turned off or when the ignition switch is turned off.

CAB

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

To provide quality at the source and single source customer support, the cab will be built by the apparatus manufacturer in a facility located on the manufacturer's premises.

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 posts), B-pillar (side center posts), C-pillar (rear corner posts) and rear wall areas. The A-pillar will be constructed of 0.25" heavy wall extrusions joined by a solid A356-T6 aluminum joint casting. The B-pillar and C-pillar will also be constructed from 0.25" heavy wall extrusions. The rear wall will be constructed of two (2) 4.00" x 2.00" outer aluminum extrusions and two (2)

3.00" x 2.00" inner aluminum extrusions. All main vertical structural members will run from the floor to 7.50" x 3.50" x 0.125" thick roof extrusions to provide a cage-like structure with the A-pillar and roof extrusions being welded into a 0.75" thick corner casting at each of the front corners of the roof assembly.

The front of the cab will be constructed of a 0.25" thick firewall, covered with a 0.125" front skin (for a total thickness of 0.38"), and reinforced with 24.50" wide x 10.00" deep x 0.50" thick supports on each side of the engine tunnel. The cross-cab support will be welded to the A-pillar, 0.25" firewall, and engine tunnel, on the left and right sides.

The cab floors will be constructed of 0.1875" thick aluminum plate and reinforced at the firewall with an additional 0.25" thick cross-floor support providing a total thickness of 0.44" of structural material at the front floor area. The front floor area will also be supported with three (3) 0.50" plates bolted together that also provides the mounting point for the cab lift. This tubing will run from the front of the cab to the 0.1875" thick engine tunnel, creating the structure to support the forces created when lifting the cab.

The cab will be a full-tilt style. A three (3)-point cab mount system with rubber isolators will improve ride quality by isolating chassis vibrations from the cab.

The crew cab will be a totally enclosed design with the interior area completely open to improve visibility and verbal communication between the occupants.

The forward cab section will have an overall height (from the cab roof to the ground) of approximately 102.00". The crew cab section will have a 10.00" raised roof, with an overall cab height of approximately 112.00". The overall height listed will be calculated based on a truck configuration with the lowest suspension weight ratings, the smallest diameter tires for the suspension, no water weight, no loose equipment weight, and no personnel weight. Larger tires, wheels, and suspension will increase the overall height listed.

The cab roof will be provided with a 58.00" wide notch that lowers the center section of the cab roof by 3.00". The deep notch will continue from the front of the cab and extend full length to the rear of the cab. The deep notch will accommodate a low mount aerial device, and provide lower overall vehicle height.

The cab will have an interior width of not less than 93.50". The driver and passenger seating positions will have a minimum 24.00" clear width at knee level.

To reduce injuries to occupants in the seated positions, proper head clearance will be provided. The floor-to-ceiling height inside the forward cab will be no less than 60.25". The floor-to-ceiling height inside the crew cab will be no less than 62.95" in the center position and 68.75" in the outboard positions.

The crew cab will measure a minimum of 71.50" from the rear wall to the backside of the engine tunnel (knee level) for optimal occupant legroom.

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.

FENDER LINERS

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

PANORAMIC WINDSHIELD

A one (1)-piece safety glass windshield with more than 2,802 square inches of clear viewing area will be provided. The windshield will be full width and will provide the occupants with a panoramic view. The windshield will consist of three (3) layers: the outer light, the middle safety laminate, and the inner light. The 0.114" thick outer light layer will provide superior chip resistance. The middle safety laminate layer will prevent the windshield glass pieces from detaching in the event of breakage. The inner light will provide yet another chip resistant layer. The cab windshield will be bonded to the aluminum windshield frame using a urethane adhesive. A custom frit pattern will be applied on the outside perimeter of the windshield for a finished automotive appearance.

WINDSHIELD WIPERS

Three (3) electric windshield wipers with a washer, in conformance with FMVSS and SAE requirements, will be provided. The wiper blades will be 21.65" long and together will clear a minimum of 1,783 square inches of the windshield for maximum visibility in inclement weather.

The windshield washer fluid reservoir will be located at the front of the vehicle and be accessible through the access hood for simple maintenance.

FAST SERVICE ACCESS FRONT TILT HOOD

A full-width access hood will be provided for convenient access to engine coolant, steering fluid, wiper fluid, cab lift controls, headlight power modules, and ember separator. The hood will also provide complete access to the windshield wiper motor and components. The hood will be contoured to provide a sleek, automotive appearance. The hood will be constructed of two (2) fiberglass panels bonded together and will include reinforcing ribs for structural integrity. The hood will include air cylinders to hold the hood in open and closed positions, and a heavy duty latch system that will meet FMVSS 113 (Hood Latch System). The spring-loaded hood latch will be located at the center of the hood with a double-action release lever located behind the Pierce logo. The two (2)-step release requires the lever first be pulled to the driver side until the

hood releases from the first latch (primary latch) then to the passenger side to fully release the hood (secondary latch).

ENGINE TUNNEL

To provide structural strength, the engine tunnel sidewalls will be constructed of .50" aluminum plate that is welded to both the .25" firewall and .38" heavy wall extrusion under the crew cab floor. To maximize occupant space, the top edges will be tapered.

The engine tunnel will be insulated on both sides for thermal and acoustic absorption. The underside of the tunnel will be covered with 1.00" thick polyether foam that is reinforced with an aluminized face. Thermal rating for this insulation will be -40 degrees Fahrenheit to 300 degrees Fahrenheit. The insulation will keep noise (dBA) levels at or lower than the specifications in the current edition of the NFPA 1901 standards.

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 at the driver side front of the cab, easily accessible under the full width front access hood. The controls will include a permanently mounted raise/lower switch. For enhanced visibility during cab tilt operations, a remote control tether with on/off switch will be supplied on a coiled cord that will extend from 2.00' (coiled) to 6.00' (extended).

The cab will be capable of tilting 42 degrees and 80 degrees with crane assist to accommodate engine maintenance and removal. The cab pivots will be located 46.00" apart to provide stability while tilting the cab.

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 that must be manually put in place on the driver side between the chassis and cab frame when cab is in the raised position. This device will be manually stowed to its original position before the cab can be lowered.

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 formed bright finished grille surround, will be provided on the front center of the cab, and will serve as an air intake to the radiator.

DOOR JAMB SCUFFPLATES

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

FRONT CAB TRIM

A 10.00" band of 22 gauge brushed 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 head lights and applied with two (2)-sided tape. A 0.625" self adhesive trim strip will be applied around the perimeter of the trim band.

There will be no covers provided over the painted cab corner where the cab turn signals are located.

SIDE OF CAB MOLDING

Chrome molding will be provided on both sides of cab.

MIRRORS

A Retrac, Model 613423, 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 heated and adjustable with 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 43.59" wide x 76.46" 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 37.87" wide x 85.50" high.

The forward cab and crew cab doors will be constructed of extruded aluminum with a nominal material thickness of 0.125". The exterior door skins will be constructed from 0.090" aluminum.

The forward cab door windows will include a 7.50" high x 10.00" wide 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.

The cab doors will be provided with both interior (rotary knob) and exterior (keyed) locks exceeding FMVSS standards. 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.

A heavy duty, stainless steel, piano-type hinge with a 0.38" 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.

The cab steps at each cab door location will be located inside the cab doors to protect the steps from weather elements.

DOOR PANELS

The inner cab door panels will be constructed out of polished stainless steel. The cab door panels will be removable without disconnecting door and window mechanisms.

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 and will be constructed of rugged, impact resistant, roto-molded low-density polyethylene. 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 mounting locations of the overhead console.

ELECTRIC WINDOW CONTROLS

Each cab entry door will be equipped with an electrically operated tempered glass window. A window control panel will be located on the door panel within easy reach of the respective occupant. 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 1/2

second. The driver control panel will contain a control switch for each cab door's window. All other door control panels will contain a single switch to operate the window within that door.

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 largest possible stepping surfaces for safe ingress and egress. The bottom steps will be designed with a grip pattern punched into bright aluminum treadplate material 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 forward cab steps will be a minimum 31.00" wide, and the crew cab steps will be 24.25" wide with an 8.00" minimum depth. The inside cab steps will not exceed 18.00" in height and be limited to two (2) steps. Three (3) step entrance designs will not be acceptable due to safety concerns. A slip-resistant handrail will be provided adjacent to each cab door opening to assist during cab ingress and egress.

STEP LIGHTS

For reduced overall maintenance costs compared to incandescent lighting, there will be four (4) white LED step lights provided. The lights will be installed at each cab and crew cab door, one (1) per step. The lights will be located in the driver side front doorstep, driver side crew cab doorstep, passenger side front doorstep and passenger side crew cab doorstep.

In order to ensure exceptional illumination, each light will provide a minimum of 25 foot-candles (fc) covering an entire 15.00" x 15.00" square placed 10.00" below the light and a minimum of 1.5 fc covering an entire 30.00" x 30.00" square at the same 10.00" distance below the light.

The lights will be activated when the adjacent door is opened.

FENDER CROWNS

Stainless steel fender crowns will be installed at the cab wheel openings.

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. The windows will measure 20.00" wide x 20.50" high.

One (1) fixed window with tinted glass will be provided on each side of the cab, to the rear of the crew cab door.

WINDOWS INTERIOR TRIM
For improved aesthetics, the cab side windows will include a vacuum formed ABS interior trim panel.

WINDOWS, REAR
The rear wall of the crew cab will have two (2) windows, each being 8.00" wide x 14.00" high.

WINDOW INTERIOR TRIM
For improved aesthetics, the cab rear wall windows will include a vacuum formed ABS interior trim panel.

STORAGE COMPARTMENT
Provided under the forward facing crew cab seats will be a transverse compartment. The compartment will be divided into upper and lower sections by the cab floor. The upper section will be 21.50" wide x 13.12" high x 26.25" deep (driver side) and 24.00" deep (passenger side). The top 7.38" of the upper compartment will be full width (transverse) of the crew cab. The lower section on both sides will be 21.50" wide x 15.50" high x 20.00" deep. The compartment will extend from the bottom of the cab to top of the seat riser.

The interior finish of the compartment will match the body compartments.

There will be an access door on both sides of the cab with double pan doors.

Doors will be latched with recessed, polished stainless steel D-ring handles and Eberhard 106 locks. The doors will include gas shock style positive door holders.

There will be one (1) drop down door, single pan construction, on the forward face of the seat riser.

The drop down door will include two (2) flush quarter turn latches.

The crew cab door grab handles will be located above the side compartment doors. The cab side access doors will be painted to match the cab exterior and the drop down door inside the cab will be constructed of polished stainless steel.

EXTERIOR ACCESS LIGHTING
Exterior compartment access lighting will consist of four (4) white LED strip lights, one (1) each left side of lower and upper exterior compartment door opening.

EQUIPMENT MOUNTING SHELF
There will be two (2) shelves for permanent mounting of equipment provided.

Each shelf will have a 2.00" lip around the edge. The size of the shelves will be 20.00" front to back 28.00" wide mounted 10.00" off the floor to the bottom of the tray..

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

The shelves will be located one each side of the engine tunnel where the rear forward facing sear would be installed 10.00" off the seat riser. see RM for hand sketch..

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

CAB INTERIOR

With safety as the primary objective, the wrap-around style, high impact ABS polymer cab instrument panel will be designed with unobstructed visibility to instrumentation. The dash layout will provide the driver with a quick reference to gauges that allows more time to focus on the road. The center console will be a high impact ABS polymer, and will be easily removable for access to the defroster. The center console will include louvers strategically located for optimal air flow and defrost capability to the windshield. The passenger side dashboard will be constructed of painted aluminum for durability and low maintenance. For enhanced versatility, the passenger side dash will include a flat working surface. To provide optional (service friendly) control panels, switches and storage modules, a three (3)-piece, 4mm thick polyethylene roto-molded overhead console will also be provided. To complete the cab front interior design, painted aluminum modesty panels will be provided under the dash on both sides of the cab. The driver side modesty panel will provide mounting for the battery switch and diagnostic connectors, while the passenger side modesty panel provides a glove box, and ground access to the main electrical distribution panel via quick quarter turn fasteners.

To provide a deluxe automotive interior, the engine tunnel, side walls and rear wall will be covered by a leather grain vinyl that is resistant to oil, grease, and mildew.

The inner cab door panels will include grab handles and control panels molded into the upper section of the door panel. The door panels will extend 36.50" down from the door window.

The headliner will be installed in both forward and rear cab sections. The crew cab headliner will be one (1)-piece. The headliner panel will be a composition of a corrugated high density polyethylene panel covered with a sound barrier and upholstery. For quick, easy access of electrical wiring, or to perform other maintenance needs, the headliner will be held in place by a dual lock fastening system.

The cab structure will include designated raceways for electrical harness routing from the front of the cab to the rear upper portion of the cab. Raceways will be extruded in the forward door frame, floor, walls and overhead in the area where the walls meet the ceiling. The raceways

located in the floor will be covered by aluminum extrusion, while the vertical and overhead raceways will be covered by a decorative composite panel. The raceways will improve harness integrity by providing a continuous harness path that eliminates wire chafing and abrasion associated with exposed wiring or routing through drilled metal holes. Harnesses will be laid in place, not pulled through holes drilled in aluminum tubing. Once laid in place, all harnesses will be held in position by a hook and loop fastening system. The hook and loop system will allow for bracket fastener points to not puncture harnesses. The raceways will include removable covers, providing maintenance personnel with quick and easy access for trouble shooting, or the addition of accessories. Harnesses will be located within the raceway behind the wire way cover.

CAB INTERIOR UPHOLSTERY

The cab interior upholstery will be dark silver gray. All cab interior materials will meet FMVSS 302 (flammability of interior materials).

INTERIOR PAINT (CAB)

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

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 center forward portion of the roto-molded instrument panel. For easy access, a removable roto-molded 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) within each rear facing seat riser. 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 a single integral electronic control panel. The heater control panel will allow the driver to control heat flow to the front and rear simultaneously. The control panel will include variable adjustment for temperature and fan control, and be conveniently located on the dash in clear view of the driver. The control panel will include highly visible, progressive LED indicators for both fan speed and temperature.

AIR CONDITIONING

A high-performance, customized air conditioning system will be furnished inside the cab and crew cab. 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 cab, located in the center 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 rating that meets and exceeds the performance specifications.

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

- Two (2) will be directed towards the drivers location
- Two (2) will be directed towards the officers location
- Six (6) 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 a single integral electronic control panel for the heater, defroster and air conditioner. For ease of operation, the control panel will include variable adjustment for temperature and fan control, and be conveniently located on the dash in clear view of the driver. The control panel will include highly visible, progressive LED indicators for both fan speed and temperature.

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. For ease of installation and removal, all headliners will be held in place by a dual lock fastening system.

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 and R-value of 4 per 1.00" thickness.

AIR CONDITIONING CONDENSER BRUSH GUARD/COVER

A brush guard/cover will be provided over the air conditioning condenser, on the cab roof. The brush guard will protect the air conditioning condenser from tree limbs, etc. The guard will also allow a fire fighter or maintenance personnel to step over the condenser without damaging the fiberglass housing.

The brush guard/cover will be constructed of aluminum treadplate. The guard will have several 1.00" x 2.00" knockouts to allow for adequate airflow around condenser.

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 HANDLE

A black rubber covered grab handle will be mounted on the door post of the driver side cab door to assist in entering the cab. The grab handle will be securely mounted to the post area between the door and windshield.

A long rubber grab handle will be mounted on the dash board in front of the officer.

ENGINE COMPARTMENT LIGHT

An engine compartment light will be installed under the engine hood, of which the switch is an integral part. Light will have a .125" diameter hole in its lens to prevent moisture retention.

ACCESS TO ENGINE DIPSTICKS

For access to the engine oil and transmission fluid dipsticks, there will be a door on the engine tunnel, inside the crew cab. The door will be on the rear wall of the engine tunnel, on the vertical surface. The door will be 17.75" wide x 12.75" high and be flush with the wall of the engine tunnel.

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.

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 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 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 five (5).

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. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

OFFICER SEAT

A Pierce PS6® seat will be provided in the cab for the passenger. The seat will be a cam action type with air suspension. For increased convenience, the seat will include a manual control to adjust the horizontal position (6.00" travel). The manual horizontal control will be a towel-bar style located below the forward part 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). 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 belted.

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 suspension seat safety system will be included. When activated, this system will pretension the seat belt and then retract the seat to its lowest travel position.

The seat will be furnished with a 3-point, shoulder type seat belt. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

RADIO COMPARTMENT

A compartment for the radio amplifier will be located on the floor of the cab behind the front passenger seat. A lift-up 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.

FORWARD FACING DRIVER SIDE OUTBOARD SEAT

There will be one (1) forward 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, that 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. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

FORWARD FACING CENTER SEAT

There will be one (1) forward facing, Pierce PS6® seat provided at the center 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 7.5 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 feature incorporated into the side roll protection system:

- 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. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

FORWARD FACING PASSENGER SIDE OUTBOARD SEAT

There will be one (1) forward 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 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. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

SEAT UPHOLSTERY

All Pierce PS6 seat upholstery will be gray woven with black Imperial 1200 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 four (4) SCBA brackets.

SEAT BELTS

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

To provide quick, easy use for occupants wearing bunker gear, the female buckle and seat belt webbing length will meet or exceed the current edition of NFPA 1901 and CAN/ULC - S515 standards.

The 3-point shoulder type seat belts will also include the ReadyReach D-loop assembly to the shoulder belt system. The ReadyReach feature adds an extender arm to the D-loop location placing the D-loop in a closer, easier to reach location.

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 five (5) seating positions will have the adjustable shoulder harness.

HELMET STORAGE PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 14.1.7.4.1 requires a location for helmet storage be provided.

There is no helmet storage on the apparatus as manufactured. The fire department will provide a location for storage of helmets.

CAB DOME LIGHTS

There will be six (6) Weldon 808* series, dual LED dome lights with grey bezels provided. Two (2) lights will be mounted above the inside shoulder of the driver and officer and four (4) 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.

OVERHEAD MAP LIGHTS

There will be two (2) white halogen, round adjustable map lights installed in the cab:

- One (1) overhead in front of the driving position.
- One (1) overhead in front of the passenger's position.

Each light will include a switch on the light housing.

The light switches will be connected directly to the battery switched power.

HAND HELD LIGHT

There will be four (4) Streamlight LiteBox lights with an orange thermoplastic body provided. The location will be shipped loose.

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 pulsing 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 appliqués. 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.

HOURMETER - 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 four (4) 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 locate at pre-construction
- Termination will be with heat shrinkable butt splicing
- 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 two (2) 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 20 amps at 12 volts DC
- Power and ground will terminate in the electronics box over the engine behind panel #9 rearward
- Termination will be with 3/8" studs and plastic covers
- Wires will be sized to 125% of the protection

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

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.

RADIO ANTENNA MOUNT

There will be three (3) standard antenna-mounting base(s), Model MATM, with 17 feet of coax cable and weatherproof cap provided for a two (2)-way radio installation. The standard mount will be located on the cab roof, just to the rear of the officer seat and the additional mount(s) will be located on cab roof just to the rear of PS lightbar, one in each far corner of the crew cab roof. The cable(s) will be routed routed to officer seat box .

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

The camera images will be displayed on the driver's Command Zone™, color display. Audio from the microphone on the active camera will be emitted by an amplified speaker on the ceiling behind the driver.

The following components will be included:

- One (1) SV-CW134639CAI, camera
- One (1) amplified speaker (if applicable)
- All necessary cables

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

Four (4) 12 volt, Exide Model 31S750X3W, group 31 batteries that include the following features will be provided:

- 750 CCA, cold cranking amps
- 180 amp reserve capacity
- High cycle
- Rating of 3000 CCA at 0 degrees Fahrenheit
- 720 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 31S750X3W, 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

The batteries will be stored in well-ventilated compartments that are located under the cab and bolted directly to the chassis frame. The battery compartments will be constructed of 3/16" steel plate and be designed to accommodate a maximum of three (3) group 31 batteries in each compartment. The compartments will include formed fit heavy-duty roto-molded polyethylene battery tray inserts with drains on each side of the frame rails. The batteries will be mounted inside of the roto-molded trays.

JUMPER STUDS

One (1) set of battery jumper studs with plastic color-coded covers will be installed on the battery box on the driver's side. This will allow enough room for easy jumper cable access.

BATTERY CHARGER

There will be a Kussmaul™ 1200, Model 091-187-12-Remote, battery charger provided. A bar graph display indicating the state of charge will be provided.

The charger will have a maximum output of 40 amps and a fully automatic regulation.

The battery charger will be wired to the AC shoreline inlet through an AC receptacle adjacent to the battery charger.

The battery charger will be located in the left body compartment mounted on the left wall as high as possible.

The battery charger indicator will be diplayed through the window behind the driver seat. The display will be mounted on a bracket so that it is visible from outside the apparatus in the front lower corner of the window.

KUSSMAUL AUTO EJECT FOR SHORELINE

There will be one (1) Kussmaul Model 091-55-15-120, 15 amp 120 volt AC shoreline inlet(s) provided to operate the dedicated 120 volt AC circuits on the apparatus without the use of the generator.

The shoreline inlet(s) will include yellow 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 the battery charger and six place receptacle strip in the cab. .

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 Ratting (amps)
- Phase
- Frequency

The shoreline receptacle will be located centered over the driver side cab 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.

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 trim 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 the same color as the LED's.

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) Truck-Lite®, Model 60115Y, amber LED lights furnished, one (1) each side, horizontally in the rear fender panel. The light will double as a turn signal and marker light.

A stainless steel trim will be included with this installation.

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.

REAR CLEARANCE/MARKER/ID LIGHTING

There will be three (3) Truck-Lite®, Model 35200R, LED lights used as identification lights located at the rear of the apparatus 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) Truck-Lite, Model 35200R, 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) Truck-Lite, Model 35200R, LED lights installed on the side of the apparatus 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

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 most lower corner of the body. 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 color lenses.

Each light will be installed separately at the rear with Whelen, Model M6FC, chrome flanges.

There will be two (2) Whelen Model M6BUW, LED backup lights with chrome trim provided.

LICENSE PLATE BRACKET

There will be one (1) Weldon, Model 0J10-0393-00, license plate bracket mounted on the rear of the body.

A Truck-Lite, Model 15055, LED white light with chrome housing will illuminate the license plate.

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 Model AY-9500-012, 12.00" white LED strip lights provided.

- One (1) under the driver's side cab access step.
- One (1) under the passenger's side cab access step.
- One (1) under the passenger's side crew cab access step.
- One (1) under the driver's side crew cab access step.

The lights will be activated when the battery switch is on and the respective door is open and whenever control has been selected for the body perimeter lights.

PUMP HOUSE PERIMETER LIGHTS

There will be one (1) Amdor LumaBar H2O, Model AY-9500-020, 20.00" LED weatherproof strip light with bracket provided under the passenger's side pump panel running board.

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

BODY PERIMETER SCENE LIGHTS

There will be two (2) Amdor LumaBar H2O™, Model AY-9500-012, 12.00" 12 volt DC LED strip lights provided.

The lights will be mounted in the following locations:

- One (1) light under the driver's side turntable access steps
- One (1) light under the passenger's side turntable access steps

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

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 with the pump panel light switch.

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

12 VOLT LIGHTING

There will be one (1) Whelen® Pioneer™ SlimLine™, Model PSL2*, 12 volt LED spotlight(s) provided on the front visor, centered.

The painted parts of this light assembly to be white.

The light(s) will be controlled by the following:

- a switch at the driver's side switch panel
- no additional switch location
- no additional switch location

These light(s) may be load managed when the parking brake is applied.

DECK LIGHTS

There shall be two (2) Whelen®, Model MPBW, white 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.

REAR SCENE LIGHT(S)

There will be two (2) Whelen®, Model M6ZC, LED scene light(s) with chrome flange(s) installed at the rear of the apparatus, one (1) each side high on rear body bulkhead.

The light(s) will be controlled by a switch at the driver's side switch panel.

The light(s) may be load managed when the parking brake is applied.

WALKING SURFACE LIGHT

There will be Model FRP, 4" round black 12 volt DC LED floodlight with bolt mount provided to illuminate the entire designated walking surface on top of the body.

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

SWITCH, RADIO MASTER W/40 AMP BREAKER

A master switch will be provided for the radio operating electrical system to include a 40 amp breaker. The wiring will terminate beneath the officers seat, in the radio compartment.

WATER TANK

It will have a capacity of 400 gallons and will be constructed of polypropylene plastic in a rectangular shape.

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, willl 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.

HOSE BED

The hose body will be fabricated of 0.125"-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 side. The hose chute will have a full-height smooth aluminum door at the rear, with a spring-loaded hinge at the top of the door.

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

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

The upper edges of side panels will have a double break for rigidity.

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.

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 0.50" x 4.50" with spacing between slats for hose ventilation.

Hose capacity will be a minimum of 1000' of 3.00".

HOSEBED HOSE RESTRAINT

A 22 oz yellow hosebed cover will be furnished with permanent attachment at the front and STAYPUT™ shock cord loop fasteners on the sides. There will be STAYPUT™ shock cord loop fasteners at the bottom of the rear body sheet below the hosebed. The STAYPUT™ shock cord loop fasteners will be spaced at 12.00" intervals as practical along the sides and rear of the cover. The flap at the rear will be not weighted.

RUNNING BOARDS

The running boards will be fabricated of 0.125" bright aluminum treadplate and supported by structural steel angle assemblies bolted to the chassis frame rails.

Running boards will be11.75" deep and are spaced away from the body 0.50".

A splash guard will be provided to keep road dirt or water from splashing up onto the pump panels.

The running boards will have a riser on the body to protect the painted surface from damage by stepping on the running boards.

The entire surface of the running boards will be covered with bright aluminum treadplate.

TURNTABLE STEPS

Steps to access the turntable from the driver side and passenger 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 handrails to be recessed.The sides of each step package shall be modified to allow the rear most handrail on each side to be recessed. The rear handrails 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 each set of aerial turntable access steps.

In order to ensure exceptional illumination, each light will 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 pound 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 support assembly mounted to each chassis frame rail.

A design with body compartments hanging off the chassis frame in an unsupported fashion will not be acceptable.

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 piece and have the corners "Tungsten Inert Gas" 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 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 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.

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.

There will be one (1) roll-up door compartment located below the turntable. The compartment will be 39.38" wide x 18.38" high x 21.25" deep with a door opening of 33.75" wide x 10.75" 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.

COMPARTMENTATION, PASSENGER 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 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 12.00" deep 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 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.

There will be one (1) roll-up door compartment located below the turntable. The compartment will be 39.38" wide x 18.38" high x 12.00" deep with a door opening of 33.75" wide x 10.75" 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.

ROLL-UP DOOR, SIDE COMPARTMENTS

There will be eight (8) compartment doors installed on the side compartments, double faced, aluminum construction, satin aluminum and manufactured by AMDOR™ brand roll-up doors.

Door(s) will be constructed using 1.00" extruded double wall aluminum slats which will feature a flat smooth interior surface to provide maximum protection against equipment hang-up. The slats will be connected with a structural driven ball and socket hinge designed to provide maximum curtain diaphragm strength. Mounting and adjusting the curtain will be done with a clip system that connects the curtain to the balancer drum allowing for easy tension adjustment without tools. The slats will be mounted in reusable slat shoes with positive snap-lock securement.

Each slat will incorporate weather tight recessed dual durometer seals. One (1) fin will be designed to locate the seal within the extrusion. The second will serve as a wiping seal which will also allow for compression to prevent water ingression.

The doors will be mounted in a one (1)-piece aluminum side frame with recessed side seals to minimize seal damage during equipment deployment. All seals including side frames, top gutters and bottom panel are to be manufactured utilizing non-marring materials.

Bottom panel flange of roll-up door will be equipped with two (2) cut-outs to allow for easier access with gloved hands.

A stainless steel lift bar to be provided for opening the door and located at the bottom of each door with latches on the outer extrusion of the door frame. A ledge to be supplied over lift bar for additional area to aid in closing the door. The lift bar will be located at the bottom of door with striker latches installed at the base of the side frames. Side frame mounted door strikers will include support beneath the stainless steel lift bar to prevent door curtain bounce, improve bottom seal life expectancy and to avoid false door ajar signals.

All injection molded roll-up door wear components will be constructed of Type 6 nylon.

Each roll-up door will have a 3.00 inch diameter balancer/tensioner drum to assist in lifting the door.

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

An AMDOR magnetic switch will be used for control of open compartment door warning lights.

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 4.50" high and will be spaced away from the body approximately 1.00". It will extend the full width of the body.

COMPARTMENT LIGHTING

There will be 11 compartments with On Scene Solutions LED compartment light strips. The compartments with these strip lights will be located all body compartment. Two (2) strip lights will be installed vertically, one (1) each side of the compartment door opening. The lights will be sized to accommodate the compartment door opening.

The remaining compartments will include 6.00" diameter Truck-Lite, Model: 79384, lights in each enclosed compartment. Each light will have a number 1076 one filament, two wire bulb.

Opening the compartment door, will automatically turn the compartment lighting on.

COMPARTMENT LIGHTING, ADDITIONAL

There will be four (4) On Scene Solutions, Model Night Stik LED light(s) provided in the compartment(s) located D5 and P5 outrigger compartments and the cab storage compartment on each side of extended cab, controled by an automatic door switch. Each light will be 9.00" in length.

Opening the compartment door(s) will automatically turn the compartment lighting on.

MOUNTING TRACKS

There will be six (6) sets of tracks for mounting shelf(s) in D3, D1, P1, P3, D4 and P4. These tracks will be installed vertically to support the adjustable shelf(s), and will be full height of the compartment. The tracks will be painted to match the compartment interior.

ADJUSTABLE SHELVES

There will be seven (7) 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 in the upper third, in D2 in the upper third, in D3 in the upper third, in P1 in the upper third, in P3 in the upper third, in D4 in the upper third and in P4 in the upper 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 250 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 D4 in the lower third

SLIDE-OUT FLOOR MOUNTED TRAY

There will be one (1) floor mounted slide-out tray(s) with 2.00" sides provided in compartment(s) P4. Each tray will be rated for up to 500lb in the extended position. The tray(s) will be constructed of a minimum 0.13" aluminum with welded corners. The finish will be painted to match compartment interior.

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.

SWING OUT TOOLBOARD

A swing out aluminum toolboard will be provided.

It will be a minimum of .188" thick with .20" 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 a pivoting device at the back of the compartment on the top and bottom to allow easy movement in and out of the compartment. The maximum tool load will be 400 pounds.

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

The board will be mounted on adjustable tracks from front to back within the compartment.

There will be One (1) toolboard(s) provided. The toolboard(s) will be painted spatter gray to match compartment interior and installed D4.

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.

The rub rails will be spaced out far enough to protect the lift bars on the rollup doors.

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.

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.

Handrails will be provided to meet NFPA 1901 section 15.8 requirements. The handrails will be installed as noted on the sales drawing.

SINGLE AIR BOTTLE STORAGE COMPARTMENT

A quantity of seven (7) air bottle compartments, 7.75" in diameter x 26.00" deep, will be provided on the driver side rearward of the rear wheels, on the passenger side forward of the rear wheels, on the passenger side rearward of the rear wheels, on the passenger side, two single compartments between the tandem rear wheels and on the driver side, two single compartments between the tandem rear wheels. A polished stainless steel door with a chrome plated flush lift & turn latch will be provided to contain the air bottle. A dielectric barrier will be provided between the door hinge, hinge fasteners and the body sheet metal.

Inside the compartment, black rubber matting will be provided.

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 aerial torque box.

ROOF LADDER

There will be two (2) 16' aluminum Duo-Safety Series 875-A roof ladder(s) provided.

ADDED ROOF LADDER

There will be one (1) 16' roof, aluminum, Series 875-A provided.

AERIAL ATTIC EXTENSION LADDER

There will be one (1) 14' Fresno aluminum Duo-Safety Series 701 attic extension ladder(s) 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 roll-up 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 roll-up door cannot close, which will activate the "Open Door Indicator Light" within the cab. The roll-up 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 roll-up 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.

ADDITIONAL FOLDING LADDER

One (1) Revolution XE Model 12017 Little Giant folding ladder will be provided. The stored dimensions will be 55.50" high x 23.75" wide x 9.25" deep. The weight will be 31.50lb.

The ladder will be located torque box.

PIKE POLE, 3'

Two (2) pike poles 3' long Duo-Safety, with "D" handle, will be provided and shall be located ship loose along with the two (2) 3' Fire Hooks Unlimited pike poles.

PIKE POLES

There will be two (2) 12 foot pike pole(s) with fiberglass handles provided. The pike pole(s) will be stored in tubular holders located in the ground ladder storage compartment.

PIKE POLE 16 FT

There will be one (1) 16 foot pike pole(s) with fiberglass handles provided. The pike pole(s) will be stored in tubular holders located in the ground ladder storage compartment.

PIKE POLE 6 FT

There will be two (2) 6 foot pike pole(s) with fiberglass handles provided. The pike pole(s) will be stored in tubular holders located in the ground ladder storage compartment.

PIKE POLE 3 FT

There will be two (2) Fire Hooks Unlimited National Hook pike pole(s), with D-handle and fiberglass pole provided.

PUMP

Pump will be a Waterous CMU 2000 gpm two (2) stage midship mounted centrifugal type.

Pump will be the class "A" type.

Pump will deliver the percentage of rated discharge at pressures indicated below:

- 100% of rated capacity at 150 psi net pump pressure.

-70% of rated capacity at 200 psi net pump pressure.

-50% of rated capacity at 250 psi net pump pressure.

Pump body will be close-grained gray iron, bronze fitted, and horizontally split in two (2) sections for easy removal of the entire impeller shaft assembly (including wear rings).

Pump will be designed for complete servicing from the bottom of the truck, without disturbing the pump setting or apparatus piping.

Pump case halves will be bolted together on a single horizontal face to minimize a chance of leakage and facilitate ease of reassembly. No end flanges will be used.

Discharge manifold of the pump will be cast as an integral part of the pump body assembly and will provide a minimum of three (3) 3.50" openings for flexibility in providing various discharge outlets for maximum efficiency.

The three (3) 3.5" openings will be located as follows: one (1) outlet to the right of the pump, one (1) outlet to the left of the pump, and one (1) outlet directly on top of the discharge manifold.

Impeller shaft will be stainless steel, accurately ground to size. It will be supported at each end by sealed, anti-friction ball bearings for rigid precise support. Impeller will have flame plated hubs assuring maximum pump life and efficiency despite any presence of abrasive matter in the water supply.

Bearings will be protected from water and sediment by suitable stuffing boxes, flinger rings, and oil seals. No special or sleeve type bearings will be used.

Stuffing boxes will be of the conventional two (2) piece, split-gland type, to permit adjustment or replacement of Grafoil packing without disturbing the pump. Water will be fed into stuffing box lantern rings for proper lubrication and cooling when the pump is operating.

Lantern rings will be located at the inner ends of the stuffing boxes, to avoid having to remove them when replacing pump packing.

Wear rings will be bronze and easily replaceable to restore original pump efficiency and eliminate the need to replace the entire pump casing due to wear.

PUMP TRANSMISSION

The pump transmission will be made of a three (3) piece, aluminum, horizontally split casing. Power transfer to pump will be through a high strength Morse HY-VO silent drive chain. By the use of a chain rather than gears, 50% of the sprocket will be accepting or transmitting torque, compared to two (2) or three (3) teeth doing all the work.

Drive shafts will be 2.35" diameter hardened and ground alloy steel and supported by ball bearings. The case will be designed to eliminate the need for water cooling.

PUMPING MODE

An interlock system will be provided to ensure that the pump drive system components are properly engaged so that the apparatus can be safely operated. The interlock system will be designed to allow stationary pumping only.

AIR PUMP SHIFT

Pump shift engagement will be made by a two (2) position sliding collar, actuated pneumatically (by air pressure), with a three (3) position air control switch located in the cab. A manual back-up shift control will also be located on the left side pump panel.

Two (2) indicator lights will be provided adjacent to the pump shift inside the cab. One (1) green light will indicate the pump shift has been completed and be labeled "pump engaged". The second green light will indicate when the pump has been engaged, and that the chassis transmission is in pump gear. This indicator light will be labeled "OK to pump".

Another green indicator light will be installed adjacent to the hand throttle on the pump panel and indicate either the pump is engaged and the road transmission is in pump gear, or the road transmission is in neutral and the pump is not engaged. This indicator light will be labeled "Warning: Do not open throttle unless light is on".

The pump shift will be interlocked to prevent the pump from being shifted out of gear when the chassis transmission is in gear to meet NFPA requirements.

The pump shift control in the cab will be illuminated to meet NFPA requirements.

TRANSMISSION LOCK-UP

The direct gear transmission lock-up for the fire pump operation will engage automatically when the pump shift control in the cab is activated.

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. The heat exchanger will be cylindrical type and will be a separate unit. The heat exchanger will be installed in the pump or engine compartment with the control located on the pump operator's control panel. Exchanger will be plumbed to the master drain valve.

TRANSFER VALVE

Transfer valve design will be of the latest ball type, of all bronze construction and incorporate a hydraulically balanced seal assembly, minimizing leakage around the ball and assuring maximum pump efficiency.

Transfer valve will operate smoothly and without sticking, even when exposed to sandy or dirty water.

Transfer valve will be operated electrically with a control switch mounted on the pump operator's control panel, with two (2) indicator lights which will indicate "pressure" or "volume".

Transfer valve will have the ability to change from series (pressure) operation to parallel (volume) operation without reducing the operating speed of the engine regardless of the operating pressure of the pump, thus maintaining an effective fire stream at the nozzle at all times.

A manual override will be provided in the event of electrical malfunction. The manual override system operates with the use of a removable hand crank located at the left (driver's) side pump panel.

INTAKE RELIEF VALVE

A Waterous relief valve, an integral part of the fire pump, will be installed on the suction side of the pump, preset at 125 psig.

Outlet will terminate below the frame rails with a 2.50" National Standard hose thread adapter and an "intake pressure relief outlet - do not cap" warning tag.

Relief valve will have a working range of 75 psig to 250 psig.

A control mechanism to adjust the pressure will be located behind an access door at the right (passenger) side pump panel.

PRESSURE GOVERNOR

This apparatus will be equipped with a Class1 "Total Pressure Governor" engine/pump governor/throttle system that is connected directly to the Electronic Control Module (ECM) mounted on the engine. The "Total Pressure Governor" is to operate as a pressure sensor (regulating) governor (PSG).

A special preset feature will permit a predetermined pressure of RPM to be set. The preset pressure or RPM will be displayed on the message display of the "Total Pressure Governor". The preset will be easily adjustable by the operator

The pressure sensor governor system will be operable only after the vehicle parking brake has been set, the transmission is the pumping mode, and the fire pump has been engaged.

The pressure sensor governor system will have two (2) modes of operation: pressure mode or rpm mode.

When in the pressure mode, the PSG system will automatically maintain the discharge pressure set by the operator regardless of flow (within engine/pump operating capabilities).

In the rpm mode, the PSG system will automatically maintain a set engine speed, regardless of engine load (within engine operation capabilities).

A pump cavitation protection feature will be provided which will return the engine to idle should the pump cavitate.

The pressure controller will incorporate monitoring for engine coolant temperature, oil pressure, and battery voltage.

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, hydraulic type hose 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 hydraulic type hose.

All piping, hose and fittings will have a minimum of a 700 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 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 partially recessed behind the pump panel with a "key hole" shaped stainless steel trim ring around the opening.

A built-in, adjustable pressure relief valve and a 3/4" bleeder valve will be provided on the inlet side of the valve.

Valve will be electrically operated. An electric actuator, with seven (7) valve position LED indicator lights will be provided at the pump operator's panel.

The electric actuator will be furnished with a manual over ride, extended to the pump panel.

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.

RIGHT SIDE INLET

There will be one (1) auxiliary inlet with a 2.50" valve at the right 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 two (2) inlets will be behind the pump panel.

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 be connected to the intake side of the pump with heavy duty piping and a quarter turn 3.00" full flow line valve with the control remotely located at the operator's panel. Tank to pump line will run straight (no elbows) from the pump into the front face of the water tank and angle down into the tank sump. 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) discharge outlets with a 2.50" valve on the left side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter.

RIGHT SIDE DISCHARGE OUTLETS

There will be three (3) discharge outlets with a 2.50" valve on the right side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter.

LARGE DIAMETER DISCHARGE OUTLET

There will be a 5.00" discharge outlet with a 4.00" Akron valve installed on the right side of the apparatus, terminating with a 5.00" (M) National Standard hose thread.

There will be an Akron electric valve controllers 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.

FRONT DISCHARGE OUTLET

There will be one (1) 1.50" 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 2.00" piping and flexible hose with a 2.00" ball 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 1.50" 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 BLEEDERS

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.

LEFT SIDE OUTLET ELBOWS

The 2.50" discharge outlets located on the left side pump panel will be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow.

The elbow will be Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

RIGHT SIDE OUTLET ELBOWS

The 2.50" discharge outlets located on the right side pump panel will be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow.

The elbow will be Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

LARGE DIAMETER OUTLET ELBOWS
The 5.00" outlet will be furnished with a 5.00" (F) National Standard hose thread x 5.00" Storz elbow adapter with Storz cap.

ADAPTER
There will be two (2) adapters with 1.50" FNST X NPSH. These adapters will be installed on hosebed outlets.

ADAPTER
There will be one (1) adapter provided with NPSH installed on 2.50" crosslay.

ADAPTER, STORZ
There will be one (1) adapter with 5.00" Storz x 2.50" MNST with cap, installed passenger side large diameter.

SPECIAL THREAD ADAPTERS
There will be one (1) adapter with NPSH and cap. These adapters will be installed on front bumper discharge.

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.

If a handwheel control valve is used, the control will be a minimum of a 3.9" diameter stainless steel handwheel with a dial position indicator built in to the center of the handwheel.

AERIAL OUTLET
The aerial waterway will be plumbed from the pump to the water tower line with 5.00" pipe and a 3.50" Waterous valve. The control for the waterway valve will be located at the pump operator's panel.

A pin indicator will be provided to show when the valve is in the "open" or "closed" position.

CROSSLAY HOSE BED, 1.50"
One (1) crosslay with 1.50" outlets will be provided. The bed to be capable of carrying 300' of 1.75" and will be plumbed with 2.00" i.d. pipe and gated with a 2.00" quarter turn ball valve.

Outlet 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 control will be at the pump operator's panel.

Vertical scuffplates, constructed of stainless steel, will be provided at the front and rear ends of the bed on each side of vehicle.

Crosslay bed flooring will consist of removable perforated brushed aluminum.

2.50" CROSSLAY HOSE BED

One (1) crosslay with a 2.50" outlet will be provided. The bed will be capable of carrying 200 feet of 2.50" double jacketed hose and will be plumbed with 2.50" i.d. pipe and gated with a 2.50" quarter turn ball valve.

The outlet will be equipped with a 2.50" 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 control will be at the pump operator's panel.

If needed, the center crosslay dividers will be a pan style, fabricated of .090 aluminum and will provide adjustment from side to side. The divider will be painted job color.

The remainder of the crosslay bed will be painted job color.

Crosslay bed flooring will consist of removable perforated brushed aluminum.

CROSSLAY/DEADLAY HOSE RESTRAINT

Elastic netting will be provided across the top and ends of two (2) crosslay/deadlay opening(s) to secure the hose during travel. The netting will be permanently attached at the top center of the crosslay/deadlay bed and removable on each end.

CROSSLAY ROLLER

A stainless steel roller will be mounted horizontally and vertically at each crosslay opening to aid in hose removal. The vertical rollers will be installed on the dividers and to the front and rear of the crosslays.

FOAM PROPORTIONER

A Pierce Husky™ 12 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 agents 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

The foam system will be plumbed to three (3) discharges. The discharges capable of dispensing foam will be front bumper and both crosslays.

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 located under the driver's side running board.

REFILL, SINGLE FOAM TANK

The foam system's proportioning pump will be used to fill the Class B 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 one (1) vehicle with this foam system. A demonstration will be provided at the fire department, on the operation of the foam system.

This demonstration will include:

- Review of the foam system manual, highlighting key areas.

- A walk around review of the system components, on the finished truck.

- A hands on foam system start-up and foam discharge session.

- Instructions on the use of the manual overrides.

- The proper way to shutdown and flush the foam system.

FOAM TANK

The foam tank will be an integral portion of the polypropylene water tank. The cell will have a capacity of 40 gallons of foam with the intended use of Class B foam. The brand of foam stored in this tank will be AR-AAFF. 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.

PUMP COMPARTMENT

The pump compartment 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 steel tubing, angles and channels which supports both the fire pump and the side running boards.

The pump compartment will be mounted on the chassis frame rails with rubber biscuits in a four point pattern to allow for chassis frame twist.

Pump compartment, pump, plumbing and gauge panels will be removable from the chassis in a single assembly.

PUMP CONTROL PANELS (SIDE CONTROL)

All pump controls and gauges will be located at the left (driver's) side of the apparatus and properly marked.

The pump panel on the right (passenger's) side is removable with lift and turn type fasteners. The left (driver's) side is fastened with screws.

The control panels will be 45.00" wide.

The gauge and control panels will be two (2) separate panels for ease of maintenance.

Polished stainless steel trim collars will be installed around all inlets and outlets.

All push/pull valve controls will have 1/4 turn locking control rods with polished chrome plated zinc tee handles. Guides for the push/pull control rods will be chrome plated zinc castings securely mounted to the pump panel. Push/pull valve controls will be capable of locking in any position. The control rods will pull straight out of the panel and will be equipped with universal joints to eliminate binding.

The identification tag for each valve control will be recessed in the face of the tee handle.

All discharge outlets will have color coded identification tags, with each discharge having its own unique color. Color coding will include the labeling of the outlet and the drain for each corresponding discharge.

All line pressure gauges will be mounted in individual chrome plated castings with the identification tag recessed in the casting below the gauge. All remaining identification tags will be mounted on the pump panel in chrome plated bezels. Mounting of the castings and identification bezels will be done with a threaded peg cast on the back side of the bezel or screws.

PUMP PANEL CONFIGURATION
The pump panel configuration will be neat and orderly.

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 35.00" wide. 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 and gauge panels will be constructed of aluminum with a painted FormCoat black finish. A polished aluminum trim molding will be provided around each panel.

The passenger's side pump panel will be removable and fastened with swell type fasteners.

PUMP COMPARTMENT LIGHT
A pump compartment light will be provided inside the right side pump enclosure and accessible through a door on the pump panel.

A .125" weep hole will be provided in each light lens, preventing moisture retention.

Engine monitoring graduated LED indicators will be incorporated with the pressure controller.

Also provided at the pump panel will be the following:

- Master Pump Drain Control

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 6.00" in diameter and will have white faces with black lettering, with a pressure range of 30.00"-0-600#.

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 polished stainless steel plugs. They will be marked with a label.

PRESSURE GAUGES

The individual "line" pressure gauges for the discharges will be interlube filled and manufactured by Class 1©.

The gauges will be a minimum of 3.50" in diameter and will have white faces with black lettering.

Gauges will be compound type with a vacuum/pressure range of 30.00"-0-600#.

The individual pressure gauge will be installed as close to the outlet control as practical.

WATER LEVEL GAUGE

There will be an electronic water level gauge provided on the operator's panel that registers water level by means of five (5) colored LED lights. The lights will be durable, ultra-bright five (5) LED design viewable through 180 degrees. The water level indicators will be as follows:

- 100 percent = Green
- 75 percent = Yellow
- 50 percent = Yellow
- 25 percent = Yellow
- Refill = Red

The light will flash when the level drops below the given level indicator to provide an eighth of a tank indication. To further alert the pump operator, the lights will flash sequentially when the water tank is empty.

The level measurement will be based on the sensing of head pressure of the fluid in the tank.

The display will be constructed of a solid plastic material with a chrome plated die cast bezel to reduce vibrations that can cause broken wires and loose electronic components. The encapsulated design will provide complete protection from water and environmental elements. An industrial pressure transducer will be mounted to the outside of the tank. The field calibratable display measures head pressure to accurately show the tank level.

WATER LEVEL GAUGE

There will be two (2) additional water level indicator, Whelen®, Model PSTANK, LED module installed one (1) each side rearward of crew cab doors, locate 2.5" - 2.75" from rear wall.

This light module will include four (4) colored levels, and function similar to the water level indicator located at the operators panel:

- First green module indicates a full water level
- Second blue module indicates a water level above 3/4 full
- Third amber module indicates a water level above 1/2 full
- Last red module indicates a water level above 1/4 full and empty
    - Above 1/4 this light will be steady burning
    - At empty this light will be flashing

This module will be activated when the battery switch is on.

FOAM LEVEL GAUGE

An electronic foam level gauge will be provided on the operator's panel for each foam tank, that registers foam level by means of five colored LED lights. The lights will be durable, ultra-bright five LED design viewable through 180 degrees. The foam level indicators will be as follows:

- 100% = Green

- 75% = Yellow

- 50% = Yellow

- 25% = Yellow

- Refill = Red

The light will flash when the level drops below the given level indicator to provide an eighth of a tank indication. To further alert the pump operator, the lights will flash sequentially when the foam tank is empty.

The level measurement will be based on the sensing of head pressure of the fluid in the tank.

The display will be constructed of a solid plastic material with a chrome plated die cast bezel to reduce vibrations that can cause broken wires and loose electronic components. The encapsulated design will provide complete protection from foam and environmental elements. An industrial pressure transducer will be mounted to the outside of the tank. The field calibratable display measures head pressure to accurately show the tank level.

LIGHT SHIELD

There will be a polished, 16 gauge stainless steel light shield installed over the pump operator's panel.

- There will be 12 volt DC white LED lights installed under the stainless steel light shield to illuminate the controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus. These lights will be activated by the pump panel light switch. Additional lights will be included every 18.00" depending on the size of the pump house.
- One (1) pump panel light will come on when the pump is in ok to pump mode.

There will be a light activated above the pump panel light switch when the parking brake is set. This is to afford the operator some illumination when first approaching the control panel.

There will be a green pump engaged indicator light activated on at the operator's panel when the pump is shifted into gear from inside the cab.

MICROPHONE AND SPEAKER COMPARTMENT

A microphone and speaker compartment with a polished stainless steel door will be furnished adjacent to the pump operator's panel. The compartment size will be 12.00" high x 9.00" wide x 6.00" deep.

AIR HORN SYSTEM

Two (2) Hadley round air horns with 6.00" bell 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 two (2) foot switches, one (1) located on the officer's side and one (1) on the driver's side.

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.

The mechanical siren will be actuated by a foot switch on the officer's side and by the horn button in the steering wheel. The driver will have the option to control the siren or the chassis horns from the horn button by means of a selector switch located on the instrument panel.

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 at a 30 degree outward angle from the front of the cab.

The driver's side lightbar will include the following:

- One (1) red flashing LED module in the outside end position.
- One (1) red flashing LED module in the outside front corner position.
- One (1) white flashing LED module in the outside front position.
- One (1) red 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) red flashing LED module in the inside front position.
- One (1) white flashing LED module in the outside front position.
- One (1) red 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.

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 and the two red flashing LED modules in the inside front corner positions may be load managed when the parking brake is applied.

FRONT ZONE UPPER LIGHTING, PLATFORM

Six (6) Whelen model M6R, red flashing LED lights will be located at the front of the platform basket facing forward. The color of the lenses will be the same color as the LED's.

These lights are required to meet or exceed the NFPA Front upper zone optical warning light requirements.

These lights will be deactivated when the ladder is lifted from the stowed position.

The lights will be controlled by the same switch as the lightbars. The rocker switch will be provided on the cab instrument panel.

The lights will be located each side of the basket on the door will be two (2) red lights side by side and one in front of each monitor, just below the clears, see picture of previous unit in Job24895 and be provided without a flange.

ADDITIONAL WARNING LIGHTS

There will be two (2) Whelen, Model M6* LED flashing warning light(s) that include a chrome flange, located on the basket, forward of each monitor, clear on top red on bottom, see photo of 24895.

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.

TRAFFIC LIGHT CONTROLLER

There will be a GTT, Model 792* strobe Opticom traffic light controller with national standard high priority remote mounted on the front edge of the platform basket, center of platform 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*, 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 white
- The passenger's side front inside warning light to be white
- The passenger's side front outside warning light to be red

All four (4) lights will include a colored lens that is the same color of the LED's.

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.

SIDE ZONE LOWER LIGHTING

There will be six (6) Whelen®, Model M6*, 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 above the front wheels. The side middle lights to be blue.
- Two (2) lights, one (1) each side on the rear fender panel. The side rear lights to be red.
- The lights will include lenses that is the same color of the LEDs.

There will be a switch in the cab on the switch panel to control the lights.

SIDE WARNING LIGHTS

There will be one (1) pair of Whelen, Model M6* LED flashing lights provided.

The lights will be located on the cab corner each side and will be activated with the side warning switch.

The color of the lights will be red Super LED/red lens.

The lights will be mounted on a 45 degree angled forward polished stainless steel bezels.

Any white light will terminate when the parking brake is applied.

REAR ZONE LOWER LIGHTING

Two (2) Whelen, Model M6* LED flashing warning lights with bezels will be located at the rear of the apparatus.

The driver's side rear light to be red.

The passenger's side rear light to be red.

Both lights will include a lens that is the same color as the LED's.

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*, LED flashing warning light(s) with a chrome flange provided above the taillights.

The color of these light(s) will be one (1) blue light on the right and one (1) red light on the left.

These light(s) will be controlled with the rear upper warning switch.

These light(s) will include a lens that is the same color as the LED's.

WARNING LIGHTS (REAR OF HOSE BED)

Two (2) Whelen model B6MM**P Super LED beacon with lower Super LED flashing warning lights will be provided at the rear of the truck, one (1) each side.

Each light will include a Super LED flashing beacon and a model 70*02F*R Super LED flashing light, mounted in a polished aluminum housing.

The beacons will have red LEDs and be provided with both domes red.

The color of the LED flashing lights will be amber Super LED/amber lens.

A switch will be provided in the cab, on the switch panel to control the beacons. The lower Super 700 LEDs will be activated with the rear upper warning switch.

TRAFFIC DIRECTING LIGHT

There will be one (1) Whelen model TAL85 46.81" long x 2.84" high x 2.24" deep, amber LED traffic directing light installed at the rear of the apparatus.

The Whelen model TACTLD1 control head will be included with this installation.

The auxiliary warning mode will be activated with the control head only.

This traffic directing light will be surface mounted between the handrails on a treadplate wedge bracket at the rear of the apparatus.

The traffic directing light control head will be located in the driver side overhead switch panel in the right panel position.

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 electrical power system. The generator will be a Harrison Model MCR Stealth 6.0 kW Hydraulic unit. The wiring and generator installation will conform to the present National Electrical Codes Standards of the National Fire Protection Association. The installation will be designed for continuous operation without overheating and undue stress on components.

Generator Performance

- Nominal Rating: 6,000 watts

- Continuous Duty Rating: 6,000 watts

- Nominal Volts: 120/240

- Amperage: 50 @ 120volts, 25 @ 240 volts

- Phase: Single

- Cycles: 60 hertz

- Engine Speed at Engagement: Idle

The generator will be driven by a transmission power take off unit, through a hydraulic pump and motor.

The generator will include an electrical control inside the cab. 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.

The generator hydraulic circuit will include a soft start valve to protect the generator components during PTO engagement.

Generator Instruments and Controls

To properly monitor the generator performance a digital meter panel will be furnished and mounted next to the circuit breaker panel. The meter will indicate the following items:

- Voltage

- Amperage for both lines

- Frequency

- Generator run hours

- Over current indication

- Over temperature indication

- "Power On" indication

- Two (2) fuse holders with two (2) amp fuses (for indicator light protection)

The gauges and controls will be installed near eye level in the compartment. Instruments will be flush mounted in an appropriate sized weatherproof electrical enclosure. All instruments used will be accurate within +/- two (2) percent. The load center will have a circuit breaker to assure overload protection. The breaker furnished will be properly sized to the generator output.

Generator Wiring

The system will be installed by highly qualified electrical technicians to assure the required level of safety and protection to the fire apparatus operators. The wiring, electrical fixtures and components will be to the highest industry quality standards available on the domestic market. The equipment will be the type as designed for mobile type installations subject to vibration, moisture and severe continuous usage. The following electrical components will be the minimum acceptable quality standards for this apparatus:

Wiring:

All electrical wiring will be fine stranded copper type. The wire will be sized to the load and circuit breaker rating; ten (10) gauge on 30 amp circuits, 12 gauge on 20 amp circuits and 14 gauge on 15 amp circuits. The cable will be run in corner areas and extruded aluminum pathways built into the body for easy access.

Load Center:

The main load center will be Cutler-Hammer with circuit breakers rated to load demand.

Circuit Breakers:

Individual breakers will be provided for all on-line equipment to isolate a tripped breaker from affecting any other on-line equipment.

GENERATOR LOCATION

The generator will be mounted in the in the area over the pump on the left side. 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 circuit breaker panel will be located high on the rear wall of compartment D6 to the left side.

AC POWERED TRIPOD LIGHTING

There will be one (1) Whelen, ground tripod light assemblies installed on the apparatus.

The light head(s) will be Whelen, Model PCP2AP1, 150 watt 120 volt AC light(s) with switches on the light heads.

The painted parts of this light assembly to be white.

The light(s) will be installed on white ground portable tripods, located top of body over P3.

The light(s) selected above will include a 20 amp, 120/240 volt twist lock receptacle and plug.

120 VOLT LIGHTING

There will be Two (2) Whelen®, Model PCP2AP1*, 120 volt AC LED light(s) with a switch on the light head and Model PBAPEDA, pedestal mounting bracket(s) installed one (1) each side at the rear of the compartments D3 and .

The painted parts of this light assembly to be white.

The light(s) selected above will be controlled by the circuit breaker(s) located in the breaker panel as well as the following:

- no additional switch location
- no additional switch location

- no additional switch location
- no additional switch location

120 VOLT LIGHTING

There will be two (2)Whelen, Model PFP2AP, 150 watt 120 volt AC LED light(s) installed on the apparatus.

The painted parts of this light assembly to be white.

The lights will be installed one (1) each in the front corners (D6 and P6).

The light(s) to be installed on a thru body/surface mount bottom adjust push-up pole(s) connected to the Do Not Move Truck Indicator circuit in the cab.

The length of the outside pole to be 12.00".

The inside pole length to be 57.00" long or as long as practical to fit in the location selected.

The light pole(s) to be installed without handle holder(s).

The light(s) selected above will be controlled by the AC circuit breaker as well as the following:

- no additional switch location.
- no additional switch location.
- no additional switch location.
- no additional switch location.

AC POWERED TRIPOD LIGHTING

There will be one (1) Whelen, ground tripod light assemblies installed on the apparatus.

The light head(s) will be Whelen, Model PCP2AP1, 150 watt 120 volt AC light(s) with switches on the light heads.

The painted parts of this light assembly to be white.

The light(s) will be installed on white ground portable tripods, located top of body over D2.

The light(s) selected above will include a 20 amp, 120 volt twist lock receptacle and plug.

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) in compartmant D6 hanging from the ceiling in the rear position.

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 300 feet of Carol Super Vu-Tron II yellow 12/3 electrical cord. No connector, terminate each conductor with butt splice will be installed on the end of the cord.

PORTABLE JUNCTION BOX

There will be a total of one (1) electrical junction box(es), listed for use in wet locations and provided with light to indicate power on. Each box will be designed to keep the exterior electrical components above 2.00" of standing water, protected from corrosion, and capable of being carried with a gloved hand.

There will be a cable strain relief and direct connection, no plug provided for each box. Each box will be gray .

Each Akron, EJBX, box will be provided with the following receptacles:

- Four (4) 120 vac, 15 amp single straight blade receptacles

120 VOLT RECEPTACLE

There will be five (5), 15 amp 120 volt AC three (3) wire straight blade duplex receptacle(s) with waterproof flip up cover(s) installed one each side on the extended crew cab, just above the compartment, one each side at the forward portion of each body fender, and one at the rear of the body on passenger side . The NEMA configuration for the receptacles will be 5-15R.

The receptacle(s) will be powered from the on board generator.

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

- Line Voltage

- Current Ratting (amps)
- Phase
- Frequency
- Power Source

POWER OUTLET STRIP

There will be three (3) receptacle strip(s) with six (6) 15 amp 120 volt AC straight blade receptacles provided along the back of the engine dog house and in D2 (see photo) mounted high across the top rear corner and rear wall.

The strip(s) selected will be powered from the shoreline inlet.

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

- Line Voltage
- Current Ratting (amps)
- Phase
- Frequency
- Power Source

HYDRAULIC POWER SUPPLY

A TNT, Model ATT-6.5 hydraulic power supply will be provided. The hydraulic power supply will have a 6.5 hp gasoline driven motor with a two (2) stage pump capable of outputting up to 10,500 psi maximum operating pressure.

The power supply will be provided with a quick disconnects for the hydraulic lines.

The power supply will supply two (2) tools with simultaneous operation.

The dimensions of the power supply will be 21.20" long x 15.50" wide x 15.00" high and it will weigh 80.8 lb.

A total of one (1) will be provided TBD.

HYDRAULIC HOSE

A 100' section of TNT high pressure bonded black twin hose will be provided.

The hose will be one (1) continuous length, without unions, and equipped with quick connection type fittings at the tool end.

A total of one (1) section(s) of hose will be provided.

The color of the hose ends(s) will be:

hose 1 red/red

hose 2 n/a

hose 3 no hose required

hose 4 no hose required

hose 5 no hose required

hose 6 no hose required

The hose(s) will be located P5 upper rear corner .

HYDRAULIC CUTTER TOOL

A TNT Model CSC-40 confined space hydraulic cutter tool and RCV hand valve will be provided.

The tool will have a maximum cutting force of 35,000lb in the center of the blade. The tool will have a cutter opening of 7.75".

The tool will be 12.00" long x 3.20" wide x 5.20" high. The weight of the tool will be 11.0lb.

A total of one (1) will be provided.

HYDRAULIC SPREADER TOOL

A TNT Model S-100-32 hydraulic spreader tool will be provided.

The tool will have a spreading force of 50,692 lb and a pulling force of 23,041 lb. The tool will have a spreading distance of 32.00".

The weight of the tool will be 45.4 lb.

HYDRAULIC CUTTER TOOL

A TNT Model BFC-320 hydraulic cutter tool will be provided.

The tool will have a maximum cutting force of 320,000lb in the center of the blade. The tool will have a cutter opening of 7.75".

The tool will be 30.00" long x 10.75" wide x 7.00" high. The weight of the tool will be 49.7lb.

A total of one (1) will be provided.

HYDRAULIC RAM

A TNT Model TLS-50 hydraulic ram will be provided.

The tool will have a spreading force of 51,500lb. The tool will have a spreading distance of 50.00".

The tool dimensions will be 21.50" long by 4.75" wide by 8.50" high. The weight of the tool will be 47lb.

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, steel 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 current NFPA 1901 standard.

These capabilities will be established in an unsupported configuration.

All structural load supporting elements of the aerial device that are made of a ductile material will have a design stress of not more than 50% of the minimum yield strength of the material based on the combination of the live load and the dead load. This 2:1 structural safety factor meets the current NFPA 1901 standard.

All structural load supporting elements of the aerial device that are made of non-ductile material will have a design stress of not more than 20% of the minimum ultimate strength of the material, based on the combination of the rated capacity and the dead load. This 5:1 safety factor meets the current NFPA 1901 standard.

The aerial device will be capable of sustaining a static load one and one-half times its rated tip load capacity (live load) in every position in which the aerial device can be placed when the vehicle is on a firm level surface.

The aerial device will be capable of sustaining a static load one and one-third times its rated tip load capacity (live load) in every position the aerial device can be placed when the vehicle is on a slope of five degrees downward in the direction most likely to cause overturning.

With the aerial device out of the cradle in the in the fully extended position at zero degrees elevation, a test load will be applied in a horizontal direction normal to the centerline of the

ladder. The turntable will not rotate and the ladder will not deflect beyond what the product specification allows.

All welding will be in compliance with the American Welding Society standards. All welding personnel will be certified, as qualified under AWS welding codes.

All material and welds will have a structural safety factor of 2:1. This will be derived from taking into account structure weight, payload, wind load, ice load, and nozzle reactions.

The aerial device will be capable of operating in wind conditions of up to 50 mph and icing conditions of up to a .25" coating over the aerial structure.

All of the design criteria must be supported by the following test data:

- Strain gage testing of the complete aerial device

- Analysis of deflection data taken while the aerial device was under test load

The following standards for materials are to be used in the design of the aerial device:

- Materials are to be certified by the mill that manufactured the material

- Materials that are certified or recertified by vendors other than the mill will not be acceptable

- Material testing that is performed after the mill test will be for verification only and not with the intent of changing the classification.

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 (handrails, baserails, trusses, k-braces and rungs) will be constructed of welded, high strength steel certified by the manufacturer as being a minimum of 70,000 pounds per square inch of yield strength. Each section will be trussed diagonally, vertical and horizontally using round steel tubing. All critical points will be reinforced, for extra rigidity, and to provide a high strength-to-weight ratio. All ladder rungs will be round and welded to each section in two (2) places with "K" bracing for lateral and torsional rigidity.

The inside width dimensions of the ladder will be:

-Base Section 38.75"

-Mid Section 28.88"

-Fly Section 21.50"

The height of the handrails above the centerline of the rungs will be:

-Base Section 31.31"

-Mid Section 26.82"

-Fly Section 22.75"

VERTICAL HEIGHT

The height of the unit will extend to no less than 100', as measured by a plumb line from the top surface of the basket handrail assembly to the ground, with the basket raised to a 75 degree angle. The aerial device will be measured, in this manner, for accurate comparison.

HORIZONTAL REACH

The rated horizontal reach will be 93'. The measurement of horizontal reach will be consistent with NFPA standards.

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 .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 253.50" long. 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-two .750" SAE grade 8 bolts with nuts.

TURNTABLE

The turntable will be a 1.00" thick steel deck, coated 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 81.00" long x 96.00" 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 from aluminum and have a slip resistant knurled surface.

ELEVATION SYSTEM

Two (2) double acting, lift cylinders will be utilized to provide smooth, precise elevation from 5 degrees below horizontal to 75 degrees above horizontal. The lift cylinder will be attached to each side of the base section. The lift cylinder rod will be chrome plated, to provide smooth operation of the aerial and reduce seal wear. 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 from 0 to -5 degrees

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 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

A 54.00" external tooth, monorace swing circle bearing will be used for the rotation system and will provide 360 degree continuous rotation. To insure proper bearing installation, both the open base bearing plate and the turntable bearing plate will be milled surfaces. The bearing will be bolted to the turntable and the base plate by a minimum of sixty grade 8, .88" bolts. 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 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

UHMW polyethylene wear pads will be used between the telescoping ladder sections, to provide greater bearing surface area for load transfer. Adjustable 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 it's rated load, can be supported and maintained level, relative to the turntable, 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 100% matched, 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.

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.

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, visible at the operator's station, will be provided. The load chart will show the recommended safe load at any condition of the aerial device's elevation and extension.

50 MPH WIND CONDITIONS/DRY

Degrees of Elevation	-5 to 29	30 to 39	40 to 49	50 to 75
Basket	1000	1000	1000	1000
Fly	-	-	250	500
Mid	-	250	500	750
Base	250	500	750	1000

WATER TOWER OPERATION

The following capacities will be based upon continuous 360 degree rotation and full extension.

50 MPH WIND CONDITIONS/WATER CHARGED

Degrees of Elevation	-5 to 29	30 to 39	40 to 49	50 to 75
Basket	500	500	500	500
Fly	-	-	250	500

Mid	-	250	500	500
Base	-	500	500	750

ELEVATION -5 TO +75 DEGREES

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.

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 side of the cab to the boom support.

Compartment will be made of aluminum treadplate. The interior dimensions of each compartment will be approximately 8.00" wide x 22.75" deep. The height of the compartment will be determined by the height of the cab (to the raised roof if applicable).

A single pan aluminum treadplate door will be provided for each compartment. Each door will be hinged along the forward edge.

There will be a pair of D-handle latches provided on each door. Latches will be spaced as evenly as possible, yet both latches will remain accessible from the ground.

The boom support will be located just to the rear of the chassis cab.

AERIAL BOOM PANEL

There will be one boom panel provided on each side of the aerial ladder base section. The boom panel will be painted #20 white.

The boom panels will be designed so no mounting bolts are in the face of the panel. This will keep the lettering surface free of holes.

AERIAL DEVICE RUNG COVERS

Each rung will be covered with a secure, heavy-duty, fiberglass pultrusion that incorporates an aggressive, no-slip coating.

The rung covers will be glued to each rung, and will be easily replaceable should the rung cover become damaged.

The center portion of each rung cover will be black and the outside 2.00" edge at each side will be safety yellow.

Under no circumstances will the rung covers be fastened to the rungs using screws or rivets.

The rung covers will have a 10-year, limited warranty.

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 16' Duo-Safety 875-DR roof ladder as determined by the type of aerial device and the available space.

BASKET STRUCTURE

The complete basket structure will be constructed of welded high strength steel certified by the manufacturer to have a minimum of 46,000 pounds per square inch yield strength. Modular construction of the aerial platform basket will allow for easy component replacement should the basket become damaged during use. The aerial basket will be fully tested and independent third party certified.

The flooring and front decking of the basket will be multi-piece Morton Cass material, preventing the accumulation of water on the standing surface. The floor will measure

approximately 34.00" long x 92.00" wide.The stepping surfaces will meet the skid-resistance requirements of current NFPA 1901 standard.

The outside basket steps used for transferring in and out of the basket will be at the same level as the basket floor. The steps on the front are approximately 16.00" deep. The front corners of the basket step will be mitered at 45 degrees to allow the basket to be maneuvered closer to buildings when approaching at an angle. A heavy extruded rubber bumper strip will be fastened to the outside edge of the step.

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 at the rear of 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 solid single pan aluminum construction and, along with the basket doors, will form a continuous 42.00" high wall around the basket. The modular design of the basket will allow for easy replacement of components in case of damage.

BASKET ENTRANCES/EXITS

Two (2) swing-in, spring-loaded, self-closing double pan doors constructed of aluminum will be provided at the front of the basket. The ***Lyfe*Latch™** impact release door latches will be provided on the basket doors. The ***Lyfe*Latch** door latches will allow the basket doors to be opened from outside the basket by applying pressure to the outside of the door, either with the foot or the hand. A treadplate scuffplate will be provided at the bottom exterior of the doors. 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 ***Lyfe*Line™** family of options such as the ***Lyfe*Support™** rescue basket holders, ***Lyfe*Eye™** rappelling arms, ***Lyfe*Ladder™** roof ladder brackets, ***Lyfe*Hoist™** winch, etc. Complete interchangeability will be required without modification to the basket.

BASKET ACCESS HANDRAILS

There will be one (1) extendable handrail provided on each side of the platform basket. The handrails will aid in climbing and gaining access to the platform basket. A dock style bumper will be provided on the outer edge of each handrail.

HOSE BOX AT PLATFORM

There will be one (1) hose storage box(es) with a cover and rubber hood latch provided at the platform. The box(es) will be located at the right side of the basket when viewed from the turntable and will match the finish of the aerial device. The box(es) will be sized to fit 100' of 1.75" diameter hose.

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), TecNiq Model T10, 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 area between the access doors and behind the monitor(s) will be shielded with a horizontally hinged single pan aluminum fold down panel. The side heat shields will be formed by a single sheet of .090" aluminum. These heat shields will be painted to match the aerial device.

Full under the basket heat shield protection with a non-glare finish will be provided with dual swing-down doors for ease of servicing and clean out.

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. 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 graphs 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.

- The Aerial Load Chart will indicate the load limit on each section of the ladder based on actual ladder position and water flow (if applicable).

- *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 it's 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 microprocessor

- 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 following items will be installed at the turntable control station, clearly identified and lighted for nighttime operation and conveniently located for ease of operation and viewing:

- Electric controls for elevation, rotation, extension/retraction

- Intercom controls

- Tip tracking light switch

- Emergency power unit switch

- Operator's load chart

- A three (3) position switch for selecting aerial operational speed.

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 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 infinite positions along with three (3) fixed attachment points in the basket. The electrical connection will be by a permanently attached, strain relieved, coiled cord. 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 18'.

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 63.25" 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 plates with handles will be provided for additional load distribution on soft surfaces. Their size will be 31.00" x 26.00" and they will 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. Two (2) auxiliary plates will be stored on each side of the vehicle.

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 SCENE LIGHTS

A 4.00" diameter, clear floodlight will be mounted at each stabilizer, to illuminate the surrounding area. The light will activate with the aerial master switch.

STABILIZER PINS

The stabilizer jacks will 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 which 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.

12-BIT ABSOLUTE ENCODER

The aerial ladder will be equipped with a 12-Bit Absolute Encoder which provides 4096 counts per shaft turn for position and direction reference.

The 12-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 12-Bit Absolute Encoder will allow power to be returned to the system without having to re-zero the settings.

The 12-Bit Absolute Encoder will be an integral part of a micro-processor based control system.

ELECTRICAL SYSTEM

The 100' platform will utilize the Pierce Command ZoneTM 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+) andground

One (1) red light that flashes to indicate the module is capable ofcommunicating 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

AERIAL FLOODLIGHTS

There will be three (3) Whelen®, 12 volt DC LED lights provided on the aerial device below the top edge of the so the overall height of the unit isn't increased.

- One (1) Model MPB*, 12 volt DC LED light with bail mount installed on the driver's side of the base section of the ladder as a tracking light.
- One (1) Model MPB*, 12 volt DC LED light with bail mount installed on the passenger's side of the base section of the ladder as a tracking light.
- One (1) Model PCP2P, 12 volt DC LED light installed on the front of the basket.

Power to the tracking lights will be controlled by a master on/off switch at the turntable control operator's position.

The light at the platform will be controlled by platform/tip and turntable.

The painted parts of the tracking lights will be white.

The painted parts of the tip lights will be white.

STABILIZER WARNING LIGHTS

There will be four (4) Whelen®, Model M6*, LED flashing warning lights with Whelen, Model M6FC, chrome flanges installed, one (1) on each stabilizer cover panel.

- The front stabilizer pan lights will be red LED with a lens color the same as the LEDs
- The rear stabilizer pan lights will be red LED with a lens color the same as the LEDs

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), 20 amp, 120-volt, three (3)-prong household receptacles with weatherproof covers will be provided in the aerial platform. One (1) receptacle will be located at the platform control console and one (1) 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.

120 VOLT UNDER PLATFORM LIGHTING

There will be two (2) Whelen, Model PFP2AC, LED 120 volt floodlight(s) installed in semi-recessed housing(s) Model PBA203, provided under the platform basket, under the driver and passenger side, facing down.

The painted parts of this light assembly to be white.

Light(s) will be switched at the platform/tip and turntable.

120 VOLT PLATFORM FLOODLIGHTS

There will be two (2) Whelen, Model PFP2AP1, 120 volt AC LED floodlight(s).

There will be a Whelen, Model 86930CA1, pull up pole with light switch included with each light head.

The painted parts of this light assembly to be white.

The light(s) will be installed at the rear of the aerial platform on the driver and passenger side.

Light(s) will be switched at the lighthead only.

The pole(s) will include a switch to be connected to the Do Not Move Truck Indicator. This indicator will be activated if the parking brake is released and the light poles are not in a stowed position.

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.

BREATHING AIR

Breathing air will be supplied to the aerial platform. The air system will incorporate one (1) 510 cubic foot, 6000-psi cylinder. To allow the turntable operator an unobstructed view of the platform the cylinder will be mounted directly in front of the turntable and below the ladders. The air cylinder will be interconnected through a pressure regulator located at the air cylinder. A shutoff valve with guard will be provided on the cylinder. The air will be routed to the basket using hose especially designed for use in breathing air systems. At the platform, the breathing air will be accessible via two (2) quick couplings for air masks. These will have a CEJN brass series 344 coupling. One (1) coupling will be located at the front of the basket on the right side and one (1) coupling will be located at the rear of the basket on the left hand side. There will be a weather resistant storage compartment for two (2) air masks provided in the basket. A 100' recharge hose will be provided for refilling the air cylinder without having to remove the tank from its mounting.

The breathing air cylinder will be designed and constructed to conform to the requirements of the United Nations (UN) on the transportation of dangerous goods.

BREATHING AIR LEVEL AND WARNING SYSTEM

The level of breathing air remaining will be visible on the LCD display at all operating positions. The display will incorporate a low-pressure warning circuit that activates an audible alarm when 20% maximum air cylinder capacity remains. A second, louder audible alarm will activate when the remaining air level drops to 10% of maximum air cylinder capacity.

*LYFE*COMBO™BRACKETS

One (1) set of brackets will be supplied which will have the following three (3) options combined into one (1) set of brackets.

***Lyfe*Ladder™**brackets will be provided for use at the front of the platform basket to increase the safety of firefighters during fireground and rescue operations. ***Lyfe*Ladder**brackets will be capable of holding up to a 20' Duo-Safety roof ladder securely in place. The roof ladder will be 16.00" wide. The ladder will be secured through its beams and one (1) rung, by a bar capable of being latched in place and able to withstand a minimum of a 500 pound load while maintaining a minimum of a two to one (2:1) safety factor. The complete system will maintain and exceed this criteria as well. There will also be a latching pawl to keep the ladder in a vertical position at all times and will latch on a rung, at least two (2) rungs below the primary attachment point. There has been appropriate strain gauging and testing completed on the system, (ladder and complete holding device), proving the above criteria has been satisfied. Additionally there is a letter on file from the roof ladder manufacturer, (Duo-Safety Corporation), stating that their standard roof ladder is approved for such an application.

***Lyfe*Eye™**rappelling arms will be provided. The ***Lyfe*Eye** brackets will mount to the front of the platform basket, one (1) each side over the monitor/s and will be held in place with four (4) hardened 1.00" hitch pins, two (2) for each bracket. The ***Lyfe*Eye**brackets will be easily removable for storage. Each ***Lyfe*Eye**rappelling arm will have a capacity of 300#.

***Lyfe*Support™** rescue basket support brackets will be provided. The ***Lyfe*Support** brackets will mount to the front of the platform basket, one (1) each side over the monitor/s and will be held in place with four (4) hardened 1.00" hitch pins, two (2) for each bracket. The ***Lyfe*Support**brackets will be easily removable for storage. Two (2) quick clip basket straps will be used to secure the basket to the ***Lyfe*Support**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 -5 degrees to 75 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 beneath the center of the aerial ladder. 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 -5 degrees to 75 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" tube. 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 MONITORS

Two (2) Elkhart monitors with auto stow will be provided at the platform. Both will be model 8294-04 electronic control monitors.

The controls for the electronic monitors will be located at the platform and the turntable control console. Only one (1) monitor can be maneuvered electronically at a time due to the amp draw required by each monitor.

One monitor will be supplied with a Elkhart 1000 gpm Model SM-1000E electric nozzle and the other monitor will be supplied with a Elkhart ST-195 stacked tips and 284A stream shaper.

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.

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

All loose equipment listed below will be installed on the unit and mounting if required.

Item Description	Quantity
TOOL A-TOOL	1
TOOL K-TOOL	1
TOOL AXE FLAT HEAD 6LB HEAD 36 IN LENGTH FIBERGLASS HANDLE	1
TOOL AXE PIKE HEAD 6LB HEAD 36 IN LENGTH FIBERGLASS HANDLE	1
TOOL AXE HEAD BRACKET HANDLE CHROME PLATED	2
TOOL HALLIGAN PRO BAR 24" LENGTH 1PC DROP FORGED	1
TOOL HALLIGAN PRO BAR 30" LENGTH 1PC DROP FORGED	2
TOOL HALLIGAN PRO BAR 36" LENGTH 1PC DROP FORGED	2
TOOL PRY BAR 1" X 48"	1
TOOL TNT 40" LENGTH 8.5 LB HEAD	1
TOOL TNT 35" LENGTH 8.5 LB HEAD	1
TOOL TNT 35" LENGTH 6.5 LB HEAD	1
TOOL TNT 30" LENGTH 6.5 LB HEAD	1
TOOL HAMMER DOUBLE JACK 16# SLEDGE	1
TOOL BOLT CUTTER 30" LENGTH	1
TOOL BOLT CUTTER 36" LENGTH	1
TOOL SHOVEL ALUMINUM SCOOP 27" FIBERGLASS SHAFT D HANDLE	2

TOOL SHOVEL ROUND NOSE LONG HANDLE	1
TOOL SHOVEL SQUARE NOSE LONG HANDLE	1
TOOL HOOK DENVER HOOK 6' LENGTH	1
TOOL HOOK NY ROOF 6' LENGTH	1
TOOL HOOK NY ROOF 8' LENGTH	1
TOOL HOOK NY ROOF 10' LENGTH	1
TOOL PIKE POLE 8' LENGTH FIBERGLASS SHAFT	1
TOOL PIKE POLE 10' LENGTH FIBERGLASS SHAFT	1
TOOL PIKE POLE 12' LENGTH FIBERGLASS SHAFT	1
TOOL PIKE POLE 14' LENGTH FIBERGLASS SHAFT	1
TOOL PIKE POLE 16' LENGTH FIBERGLASS SHAFT	1
TOOL HOOK GATOR BACK 6' PIKE D HANDLE	1
TOOL HOOK GATOR BACK 8' PIKE D HANDLE	1
TOOL HOOK GATOR BACK 10' PIKE D HANDLE	1
TOOL AIR BAG HIGH PRESSURE 15" X 15" X .75" 13.7 TON CAP	2
TOOL AIR BAG HIGH PRESSURE 24" X 24" X .75" 38 TON CAP	2
TOOL AIR BAG HIGH PRESSURE CONTROLLER PACKAGE	1
TOOL AIR BAG MEDIUM PRESSURE SET	1
TOOL HYDRAULIC RESCUE TOOL ELECTRIC	1
TOOL CORDLESS HAMMER DRILL SAWZALL CIRC LITE 4 PC 36V DEWALT	1
TOOL CORDLESS IMPACT WRENCH 36V LITHIUM ION DEWALT	1
TOOL BATTERY 36V LITHIUM ION DEWALT	1
TOOL BATTERY CHARGER 36V DEWALT	1
TOOL FIRE EXTINGUISHER AFFF 2.5 GAL	1
TOOL FIRE EXTINGUISHER CARBON DIOXIDE 15LBS	1
TOOL FIRE EXTINGUISHER DRY CHEMICAL MULTI PURPOSE 20LBS	1
TOOL FLASHLIGHT STRION HPL	2
TOOL FLASHLIGHT VULCAN LED	2
TOOL THERMAL IMAGER BULLARD T4X W\POWERHOUSE VEHICLE CHARGER	1
TOOL THERMAL IMAGER BULLARD RETRACTABLE STRAPS	1
TOOL BLOWER 20 INCH GASOLINE HONDA	1
TOOL LOCK PICK COMBO KIT	1
TOOL LADDER LITTLE GIANT ALUMINUM	1
TOOL LADDER TELESCOPIC	1
TOOL HYDRA RAM II 6-INCH MAX THRUST	1
TOOL SALVAGE COVER 10' X 14" 12 OZ CANVAS	2
TOOL SALVAGE COVER 12' X 18" 12 OZ CANVAS	1

TOOL EXTRICATION GLASS REMOVAL RESCUE TOOL	1
TOOL MSA ALTAIR 4X MULTIGAS DETECTOR, PHOSPHORESCENT CASE	1
TOOL PARTNER K 1260 CIRCULAR SAW	2
TOOL TNT HYDRAULIC SPREADER, STANDARD, 32-INCH	1
TOOL TNT HYDRAULIC CUTTER, HEAVY DUTY, BRUTE FORCE	1
TOOL TNT HYDRAULIC POWER UNIT, 6.5 HP HONDA, 2-TOOL	1
TOOL TNT HYDRAULIC RAM, TELESCOPING	1
TOOL TNT CHAIN PACKAGE	1
TOOL TNT EXTENSION HOSE, BLUE	1
TOOL WARFARE THREAT DETECTION KIT, PROSTRIP SKU PS-5T (10 PACK)	1
BACKPACK, RUSH MOAB 10, BLACK 019	3
CHEST SEAL, SAM, VENTED,SKU 50-0109	30
TOOL ROPE STATIC-PRO LIFELINE, RED 7/16" (11mm) SEWN EYE TERM	300
TOOL ROPE STATIC-PRO LIFELINE, ORANGE 7/16" (11mm) SEWN EYE TERM	300
TOOL ANCHOR STRAPS X-LARGE BLUE	4
TOOL MPD 11mm	2
TOOL ROPE BAG, ORANGE, LARGE	2
TOOL CARABINERS, ProTech™ ALUMINUM KEY LOCK , AUTO LOCK, RED	25
TOOL CARBINERS ProSeries® XL ALUM LADDER HOOK AUTO LOCK	2
TOOL FASTLINK PICKOFF STRAP, BLUE	2
TOOL PMP SWIVEL PULLEY 1.1	4
TOOL MICRO ANCHOR PLATE	2
TOOL CMC MULTI-LOOP STRAPS MEDIUM, YELLOW	2
TOOL CMC RESCUE ROPE ENDS	2
TOOL DEUS "O" #4	2
TOOL DEUS EDGE PRO™ DELUXE EDGE PROTECTOR	2
TOOL CLASS III HARNESS, DEUS X CLASS RESCUE HARNESS	2
TOOL 1.5” OMNI-BLOC DOUBLE SHEAVE PULLEY, STANDARD COLOR	2
TOOL 1.1” OMNI-BLOC SINGLE SHEAVE PULLEY, STANDARD COLOR	2
TOOL SLING LINK, STANDARD DUTY, (MEN1-31X5X2)	4
TOOL SLING LINK RAPID DEPLOYMENT POUCH RDP-TAC, BLACK	4
TOOL RESCUE LITTER, SKEDCO TACTICAL SKED RESCUE	1

SYSTEM	
TOOL RESCUE LITTER, SKEDCO SKED RESCUE SYST. W/ COBRA BUCK	1
TOOL REBAR CUTTER 5/8", 17.6 LBS, 110VOLT	1
TOOL 1/2' DRIVE SAE SOCKET & RATCHET SET, PART #5NAX2	1
TOOL 1/2' DRIVE METRIC SOCKET & RATCHET SET, PART #5NAX5	1
TOOL 3/8" DRIVE SAE SOCKET & RATCHET SET, PART #5NAW4	1
TOOL 3/8" DRIVE METRIC SOCKET & RATCHET SET, PART #5C883	1
TOOL, DIE GRINDER, DEWALT PART #4LF08	1
TOOL CUTOFF WHEEL 2-1/2" DIAMETER, .035 THICK PART #25TZ20	12
TOOL CUTOFF WHEEL 2-1/2" DIAMETER, .062 THICK PART #4F875	12
TOOL AIR CHISEL, ITEM #9HYU4	1
TOOL TOOL BOX, 14-INCH PROTO, 6" DEEP ITEM #40JD29	1
TOOL COMBINATION WRENCH SET, SAE,15 PC, 12 PT. ITEM#6A541	1
TOOL COMBINATION WRENCH SET, METRIC, 18 PC. 12PT ITEM#6A542	1
TOOL NOZZLE 2-1/2" SHUTOFF W/ ORANGE PISTOL GRIP	2
TOOL NOZZLE 1-1/2" SHUTOFF W/ YELL PISTOL GRIP	4
TOOL NOZZLE 2-1/2" FOG 250 GPM, 75PSI, ORANGE W/ ORANGE HNDL	1
TOOL NOZZLE 1-3/4" FOG 175 GPM 75PSI PISTOL GRIP YELLOW HNDL	4
TOOL,NOZZLE TIP, 1-INCH SMOOTH BORE	2
TOOL NOZZLE TIP, 15/16" SMOOTH BORE	2
TOOL NOZZLE TIP, PYROLITE,STACKED 1",1-1/8",1-1/4"	1
TOOL APPLIANCE 2-1/2" DOUBLE MALE PYROLITTE	2
TOOL APPLIANCE 2-1/2" DOUBLE FEMALE PYROLITE	2
TOOL APPLIANCE 2-1/2"-1-1/2" REDUCER PYROLITE	2
TOOL 3-WAY SUCTION SIAMESE W/ 6INCH STEAMER CONNECT	1
TOOL ALUMINUM WRENCH HOLDER W/3 WRENCHES	2
TOOL HOSE CLAMP	2
TOOL HOSE CLAMP BRACKET	2
TOOL 60 DEGREE ELBOW PYROLITE	2
TOOL PLASTIC CRIBBING 4x4 HYBRID,	12

TOOL PLASTIC CRIBBING 2X4 (24-18)	4
TOOL PLASTIC CRIBBING 4 INCH WEDGE	4
TOOL CRIBBING TOTER	2
TOOL SCENE LIGHTING, PORTABLE LED	2
TOOL SCENE LIGHT MOUNTING BRACKET	2
TOOL SCENE LIGHT EXTENDA-POD WITH SCENE STAR	2
TOOL SCENE LIGHT EXTENDA-POD MOUNTING BRACKET	2
TOOL EMS GLOVE DISPENSER, STEEL WHITE ITEM #34GE49	8
TOOL JUNKIN PLASTIC LITTER STRETCHER	1
TOOL LITTER HARNESS	1
TOOL LITTER HARNESS PACK	1
TOOL PISTON INTAKE VALVE 6-INCH STAINLESS STEEL	1
TOOL IN-LINE PRESSURE GUAGE 2.5 INCH	1
Scott X3 5.5 w/ SNAP CHG, QUIC DISCONNECT, DUAL EBSS,PASS	6
CYL & VALV, QD, CARB, 45/5500 ASSY	12
EPIC 3 VOICE AMPLIFIER	6
MOUNTING BRACKET FOR VOICE AMPLIFIER	6
TOOL TNT EXTENSION HOSE, RED	1

SOFT SUCTION HOSE

There will be a 15' length of 6.00" soft suction hose provided with a 6.00" long handle swivel coupling on one (1) end and a 4.50" long handle swivel coupling on the other.

DRY CHEMICAL EXTINGUISHER PROVIDED BY DEALER

NFPA 1901, 2016 edition, section 8.9.3 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 dealer will provide and mount the extinguisher.

WATER EXTINGUISHER PROVIDED BY DEALER

NFPA 1901, 2016 edition, section 8.9.3 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 dealer will provide and mount the extinguisher.

FLATHEAD AXE PROVIDED BY DEALER

NFPA 1901, 2016 edition, Section 8.9.3 requires two (2) flathead axes mounted in brackets fastened to the apparatus.

The axes are not on the apparatus as manufactured. The dealer will provide and mount the axes.

PICKHEAD AXE PROVIDED BY DEALER

NFPA 1901, 2016 edition, Section 8.9.3 requires three (3) pickhead axes mounted in brackets fastened to the apparatus.

The axes are not on the apparatus as manufactured. The dealer will provide and mount the axes.

PAINT - BODY PAINTED TO MATCH CAB

The exterior custom cab and body painting procedure will consist of a seven (7) step finishing process as follows:

7. 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.
8. 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.
9. 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.
10. 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.
11. 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.
12. 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.

13. 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 and the body will be painted #40 lime yellow.

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.

GALVANIZED CHASSIS FRAME ASSEMBLY

The chassis frame assembly will be hot dip galvanized 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 hot dip galvanized are:

- Frame rails
- Frame liners
- Cross members
- Front frame extension
- Battery boxes

All galvanized components are inspected for compliance with ASTM specifications.

All components that are not galvanized shall be painted black .

ROTATION MOTORS PAINT COLOR

The aerial rotation motors will be painted to match the aerial device.

TRANSIT COATING

All non-painted metal surfaces on the exterior of the vehicle will be sprayed with a corrosion protective coating provided by Carwell. The coating can be removed with soap and water. The coating is made of a linseed oil base and is biodegradable.

The underside non-painted metal surfaces will also be coated with a corrosion protective coating.

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 DEVICE PAINT COLOR

The aerial device paint procedure will consist of a six (6) step finishing process as follows:

1. Manual Surface Preparation - All exposed metal surfaces on the aerial device structural components above the rotation point will be thoroughly cleaned and mechanically shot-blasted to remove metal impurities and prepare the aerial for painting.

2. Primer/Surfacer Coats - A two (2) component urethane primer/surfacer will be hand applied to the chemically treated metal surfaces to provide a strong corrosion protective base coat and to smooth out the surface. All seams will be caulked before painting.

3. Hand Sanding - The primer/surfacer coat will be lightly sanded to an ultra smooth finish.

4. Sealer Primer Coat - A two (2) component sealer primer coat will be applied over the sanded primer.

5. Topcoat Paint - Urethane base coat will be applied to opacity for correct color matching.

6. Clearcoat - Two (2) coats of an automotive grade two (2) component urethane will be applied.

Surfaces that will not be painted include all chrome plated, polished stainless steel, anodized aluminum and bright aluminum treadplate.

All buy out components, such as monitor, nozzle, gauges, etc. will be supplied as received from the vendor.

Removable items such as brackets will be removed and painted separately to ensure paint coverage behind all mounted items.

The aerial device (turntable, ladder sections and platform) will be painted blue white 20 using the six (6) step finishing process. The support structure, rotation motor, components below the rotation point and the stabilizers will be cleaned, caulked, primed and painted high gloss black.

REFLECTIVE BAND

A 10.00" blue reflective band will be provided across the front of the vehicle and along the sides of the body.

The reflective band provided on the cab face will be below the headlights on the fiberglass.

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 a 4.00" wide fluorescent yellow green diamond grade reflective stripe provided on the forward and rear facing side of all aerial stabilizers.

JOG(S) IN REFLECTIVE BAND
The reflective band located on each side of the apparatus body will contain one (1) jog(s) and will be angled at approximately a 45 degrees when installed.

OUTLINE, REFLECTIVE STRIPE
A Black outline will be applied on the top and the bottom of the reflective band. There will be one (1) set of outline stripes required.

CHEVRON STRIPING ON THE FRONT BUMPER
There will be alternating chevron striping located on the front bumper.

The colors will be red and fluorescent lime green diamond grade.

The size of the striping will be 6.00".

CAB DOOR REFLECTIVE STRIPE
A 6.00" x 16.00" fluorescent yellow green diamond grade reflective stripe will be provided across the interior of each cab door. The stripe will be located approximately 1.00" up from the bottom, on the door panel.

This stripe will meet the NFPA 1901 requirement.

LETTERING
Forty-one (41) to sixty (60) reflective lettering, 3.00" high, with outline will be provided.

LETTERING
Sixty-one (61) to eighty (80) reflective lettering, 2.00" high, with no outline or shade will be provided.

LETTERING
There will be reflective lettering, 18.00" high, with no outline or shade provided. There will be four (4) letters provided.

LETTERING
There will be reflective lettering, 24.00" high, with no outline or shade provided. There will be two (2) letters provided.

LETTERING
Twenty-one (21) to forty (40) reflective lettering, 10.00" high, with outline will be provided.

EMBLEMS
There will be four (4) monogram emblem(s) installed one on each side on the cab doors and one each side on the platform basket , with "DENVER" above the monogram and "FIRE DEPT." below the monogram.

The monogram and lettering will be made of gold reflective material with black outline.

The design will be the same as on previous units.

EMBLEMS
There will be two (2) pair of American flag emblems, 8.00" high, installed rear upper corners of crew cab each side. The flag will be flat (not moving) and made out of vinyl material. The pair will be mirror images of each other.

EMBLEM
There will be three (3) reflective emblem(s), approximately 14.00" - 16.00" in size, installed D2, P2 over wheels and R1. the emblem will be modeled after the department submitted information (art, patch, etc).

RADIO/INTERCOM

The radio and intercom equipment listed below will be installed after apparatus is complete:

- One (1) Harris M7300 800 MHz Mobile Radio-Scan Type
- One (1) Harris M7300 800 MHz Mobile Radios-System
- Two (2) MA-Com MAH2-VC3P7 Vehicular Charger
- SetCom System 1300 6 Position HeadsetlIntercom
- System, Driver & Officer will have Radio TXIRX & Intercom. 4 Jumpseats will have Radio RX & Intercom System will also have Radio Select Switch for MAlCom Radios
- One (1) lcom lC-A210M, Aviation Transceiver with External Speaker & Antenna
- Five (5) Console Brackets

OVAL STRAPPING HERON RIB

two (2) roll (s) shall be provided and shipped loose with the truck for the department to install.

Service on the chassis will include engine oil and filter change and chassis lubrication.

(one (1)) Cummins ISX engine service and parts manuals will be provided.

(one (1)) Allison Transmission service and parts manuals will be provided.

MANUAL, FIRE APPARATUS PARTS

Two (2) custom parts manuals for the complete fire apparatus will be provided in hard copy with the completed unit.

The manual 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 a part

The manual 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 this manual is also available on the Pierce 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.

MANUALS, CHASSIS SERVICE

Two (2) chassis service manuals containing parts and service information on major components will be provided with the completed unit.

The manuals 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.

MANUALS, CHASSIS OPERATION
Two (2) chassis operation manuals will be provided.

ONE (1) YEAR MATERIAL AND WORKMANSHIP
A Pierce basic apparatus limited warranty certificate, WA0008, is included with this document.

THREE (3) YEAR MATERIAL AND WORKMANSHIP
The Pierce custom chassis limited warranty certificate, WA0284, is included with this document.

ENGINE WARRANTY
A Detroit Diesel **five (5) year** limited engine warranty will be provided. A limited warranty certificate, WA0180, is included with this document.

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 document.

FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY
The Pierce TAK-4 suspension limited warranty certificate, WA0050, is included with this document.

REAR AXLE TWO (2) YEAR MATERIAL AND WORKMANSHIP WARRANTY
A Meritor axle limited warranty certificate, WA0046, is included with this document.

ABS BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY
A Meritor Wabco™ABS brake system limited warranty certificate, WA0232, is included with this document.

TEN (10) YEAR STRUCTURAL INTEGRITY
The Pierce custom cab limited warranty certificate, WA0012, is included with this document.

TEN (10) YEAR PRO-RATED PAINT AND CORROSION
A Pierce cab limited pro-rated paint warranty certificate, WA0055, is included with this document.

FIVE (5) YEAR MATERIAL AND WORKMANSHIP
The Pierce Command Zone electronics limited warranty certificate, WA0014, is included with this document.

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 Champ® transmission cooler will carry a five (5) year parts and labor warranty (WA0279).

The Modine® transmission cooler will carry a five (5) year parts and labor warranty and 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 (WA0216).

A copy of the warranty certificates will be submitted with the bid package.

WATER TANK WARRANTY
A UPF poly water tank limited warranty certificate, WA0195, is included with this document.

TEN (10) YEAR STRUCTURAL INTEGRITY
The Pierce apparatus body limited warranty certificate, WA0009, is included with this document.

ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY
A R-O-M Corporation roll-up door limited warranty shall be provided. The mechanical components of the roll-up door will be warranted against defects in material and workmanship for a period of seven (7) years. The door ajar switch will be warranted for a period of three (3) years and all other electrical components will be warranted for a period of one (1) year. A seven (7) year limited warranty will be provided on painted roll up doors.

The limited warranty certificate, WA0206, is included with this document.

PUMP WARRANTY
A Waterous pump limited warranty certificate, WA0225, is included with this document.

TEN (10) YEAR PUMP PLUMBING WARRANTY
The Pierce apparatus plumbing limited warranty certificate, WA0035, is included with this document.

FOAM SYSTEM WARRANTY
The Husky 12 foam system limited warranty certificate, WA0231, is included with this document.

TWENTY (20) YEAR AERIAL DEVICE STRUCTURAL INTEGRITY WARRANTY
The Pierce device limited warranty certificate, WA0052, is included with this document.

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.

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 document.

FIVE (5) YEAR MATERIAL AND WORKMANSHIP

The Pierce Command Zone electronics limited warranty certificate, WA0014, is included with this document.

SIX (6) YEAR GENERATOR MATERIAL AND WORKMANSHIP WARRANTY

A Harrison Hydra-Gen limited warranty certificate, WA0285, is included with this document.

TEN (10) YEAR PRO-RATED PAINT AND CORROSION

A Pierce body limited pro-rated paint warranty certificate, WA0057, is included with this document.

ONE (1) YEAR MATERIAL AND WORKMANSHIP

The Pierce graphics fading and deterioration limited warranty limited warranty certificate, WA0168, is included with this document.

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 provided at 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 document. 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 fire apparatus manufacturer will provide a state-licensed professional engineer to witness and certify all testing events. Testing will 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 100,000 lbs. This value exceeds the ECE 29 criteria by nearly 4.5 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.

- Additional Frontal Impact

The same cab will withstand a frontal impact of 65,200 ft-lbs of force using a moving barrier, (twice the force required by 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 bidder will certify 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 cab 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 cab has been tested and has met these criteria.

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).