	Sutphen Component Report	Customer Info	
		Work Phone Number: Home Phone Number: Fax Number:	Order#: SQB001816_1 Customer#: CTB000731

Bill To
Customer: Florida Sheriffs Association Address: ,

Ship To
Customer: Florida Sheriffs Association Address:

Spec 11 SPH 100

Line	Item #	Qty	Item Description/Comments
1		1	MODEL, SPH100
2	USA	1	USA
3	10000210	1	APPROVAL DRAWINGS
4	10000215	1	STD WIRING SCHEMATIC
5	10010001	1	CHASSIS, CUSTOM
6	236	1	Wheelbase = 236
7	25020100	1	FRAME, DOUBLE RAILS (AERIALS)
8	45010001	1	FRONT TOW EYES, BELOW BUMPER
9	45010015	1	FRONT TOW EYES, PAINTED
10	46010000	1	REAR TOW EYES
11	40010250	1	STEERING - ROSS TAS-85
12	22010100	1	DRIVE LINE, SPICER, 1810 SERIES (Tandem)
13	23013410	1	CUMMINS ISX 12 450HP DOC-DPF-DEF-SCR OBD
14	23030006	1	AIR INTAKE/EMBER SEPARATOR

Line	Item #	Qty	Item Description/Comments
15	**47012440**	1	**TRANSMISSION, ALLISON GEN 5, EVS4000**
16	**23110000**	1	**JACOBS ENGINE BRAKE**
17	**47024050**	1	**TRANSMISSION COOLER**
18	**47025000**	1	**TRANSMISSION FLUID, CASTROL TRANSYND**
19	**47030000**	1	**ALLISON TOUCH PAD SHIFTER**
20	**21021200**	1	**COOLING SYSTEM**
21	**21030000**	1	**FAN CLUTCH**
22	**21030200**	1	**RADIATOR COOLANT RECOVERY, PRESSURIZED SYST**
23	**26020100**	1	**FUEL BEAM, 65 GALLON (AERIALS)**
24	**26030000**	1	**FUEL FILL**
25	**26030100**	1	**FUEL COOLER**
26	**24040000**	1	**DIESEL EXHAUST FLUID TANK**
27	**13010050**	1	**ALTERNATOR, LEECE NEVILLE 270 AMP 4949PA**
28	**15010500**	1	**BATTERIES, INTERSTATE TYPE 31 MHD (4)**
29	**15031700**	1	**BATTERY JUMPER TERMINALS**
30	**15031575**	1	**IOTA DLS-45 45AMP 12VDC CONVERTER, MANUAL SHORELINE**
31	**14010527**	1	**FRONT AXLE, MERITOR MFS-20-133A 23,000 LB.**
32	**41010217**	1	**SUSPENSION FRONT 23,000# 54" LEAF**
33	**41030100**	1	**SUSPENSION, ENHANCED SYSTEM**
34	**43010320**	1	**FRONT TIRES GOODYEAR 425/65R22.5 LRL G296 HGW 22.5 X 12.25 WHEELS**
35	**14520310**	1	**REAR AXLE, MERITOR RT-50-180 52,000 LB TANDEM**
36	**14530150**	1	**TOP SPEED, 60 MPH**
37	**42020025**	1	**SUSPENSION REAR RAYDAN 52,000# AIR RIDE**
38	**44020280**	1	**TIRES, REAR, GOODYEAR 12R22.5 LRH G661 HIGHWAY 52,000 - 58,000 GVWR**

Line	Item #	Qty	Item Description/Comments
39	**42920200**	1	**TIRE PRESSURE MONITOR, REAL WHEELS, LED**
40	**44220100**	1	**WHEELS, ALUM, ACCURIDE (max 58K rear)**
41	**44270105**	1	**HUB COVERS, FRONT & REAR, POLISHED STS (Tandem Axle)**
42	**44270305**	1	**CHROME LUG NUT CAPS, FRONT & REAR (Tandem Axle)**
43	**44271100**	1	**MUD FLAPS, FRONT (PAIR)**
44	**44271200**	1	**MUD FLAPS, REAR (PAIR)**
45	**16010009**	1	**BRAKES MERITOR SCAM 6" FRT 7" REAR**
46	**18010046**	1	**AIR BRAKE SYST 6 TANKS WABCO 1200 DRYER (TANDEM)**
47	**18220500**	1	**NO ELEC STABILITY CONTROL SYS**
48	**18110100**	1	**WABCO 6 CHANNEL ANTI-LOCK BRAKES TANDEM**
49	**54010200**	1	**AERIAL CHASSIS PREP**
50	**54010000**	1	**MISCELLANEOUS ITEMS ON CHASSIS**
51	**54088888**	1	**SPECIAL ITEM, upgrade to 110,000 psi frame rails**
52	**11024291**	1	**CAB TSAL4SJ 62" FLAT**
53	**11030025**	1	**CAB CERTIFICATION - STRUCTURAL INTEGRITY**
54	**11031025**	1	**CAB TILT SYSTEM W/AIR TURN VALVE**
55	**11031100**	1	**MANUAL BACK-UP TILT SYSTEM**
56	**11031350**	1	**CAB DOORS, FULL LENGTH**
57	**11031419**	1	**CAB DOOR WINDOWS, MANUAL**
58	**11031401**	1	**CAB SIDE WINDOWS, FIXED**
59	**11031440**	1	**TWO SLIDING WINDOWS IN BACK WALL OF CAB APPROX 16.25" X 14.25"**
60	**52010010**	1	**SYNCHRONIZED ELECTRIC INTERMITTENT WIPERS**
61	**27022000**	1	**HANDRAILS, CAB, KNURLED STAINLESS STEEL**
62	**38010015**	1	**MIRRORS LANG MEKRA 300 SERIES REMOTE**

Line	Item #	Qty	Item Description/Comments
63	**11024405**	1	**RAISED GRILLE, LEVEL STYLE FACADE (ISX)**
64	**20010080**	1	**BUMPER, 18" EXTENSION**
65	**12010500**	1	**AIR HORNS, DUAL, GROVER #2040 RECTANGULAR**
66	**12030350**	1	**LANYARD CONTROL FOR AIR HORNS**
67	**12510110**	1	**SIREN, WHELEN 295HFS2, REMOTE FLUSH MOUNT**
68	**12610100**	1	**SIREN SPEAKER, CAST PROD SA4201-5-A (1) IN BUMPER**
69	**32520510**	1	**HEADLIGHTS, LED, DUAL STS HOUSINGS**
70	**48010300**	1	**WHELEN 400 SERIES LED FRONT TURN SIGNALS (4)**
71	**11035405**	1	**DIAMONDPLATE REAR EXTERIOR WALL OF CAB**
72	**11035430**	1	**DIAMONDPLATE CAB ROOF 36" x 59"**
73	**31010287**	1	**INTERIOR, MULTISPEC GRAY SPECKLE PAINT W/GRAY-BLACK DURAWEAR**
74	**11032929**	1	**DOOR PANEL, FULL STS**
75	**11032950**	1	**REFLECTIVE MATERIAL, NFPA MIN, WHITE**
76	**31010290**	1	**CAB INTERIOR FLOOR COVERING, GRAY RUBBERIZED**
77	**22510100**	1	**ENGINE ENCLOSURE, FULL SIZE**
78	**22510530**	1	**ENGINE ENCLOSURE COVERING, SCORPION BLACK URETHANE BLEND**
79	**11031670**	1	**NO STORAGE ON ENGINE ENCLOSURE**
80	**22610050**	1	**ENGINE HOOD LIGHT, LED (1)**
81	**11031508**	1	**GLOVE BOX**
82	**30010125**	1	**INSTRUMENTATION, BEEDE GAUGES W/ CENTER & OVERHEAD CONSOLES**
83	**30010700**	1	**CAB PUMP SHIFT**
84	**29910000**	1	**LOAD MANAGER, CLASS-1**
85	**30031100**	1	**HIGH IDLE SWITCH**
86	**11040000**	1	**CAB ACCESSORY FUSE PANEL**

Line	Item #	Qty	Item Description/Comments
87	**30110000**	1	**VEHICLE DATA RECORDER, AKRON/WELDON**
88	**33510030**	1	**INTERIOR CAB LIGHTS, RED/CLEAR LED (2)**
89	**34010030**	1	**INTERIOR CREW LIGHTS, RED/CLEAR LED (2)**
90	**28010740**	1	**DEFROSTER, HEATER & A/C (COMPACT)**
91	**28030500**	1	**DEFROSTER DUCTWORK, ENTIRE WINDSHIELD**
92	**11031687**	1	**TOOL MOUNTING PLATE, 25” x 19.5”, TOP OF HEAT/AC UNIT**
93	**38510107**	1	**DRIVER'S SEAT, BOSTROM TANKER 450 AIR RIDE W/SCBA (DURAWEAR)**
94	**38320000**	1	**HELMET STORED IN COMPARTMENT**
95	**39090000**	1	**OFFICER'S SEAT, BOSTROM TANKER 350 ABTS SCBA (DURAWEAR)**
96	**39030010**	1	**OFFICER’S SEAT COMPT, OPEN FRONT**
97	**38320000**	1	**HELMET STORED IN COMPARTMENT**
98	**39521105**	1	**CREW SEAT1, BOSTROM TANKER 350 ABTS SCBA (DURAWEAR)**
99	**38320000**	1	**HELMET STORED IN COMPARTMENT**
100	**39521106**	1	**CREW SEAT2, BOSTROM TANKER 350 ABTS SCBA (DURAWEAR)**
101	**38320000**	1	**HELMET STORED IN COMPARTMENT**
102	**39550100**	1	**SEAT COLOR, GRAY**
103	**39610105**	4	**SCBA BRACKETS, ZIAMATIC, LOAD & LOCK(4)**
104	**38410000**	1	**SEAT BELT WARNING SYSTEM, AKRON / WELDON**
105	**39710005**	1	**CREW SEAT COMPT, OPEN SIDES**
106	**60012305**	1	**QMAX-1500 GPM 6" SUCTION SINGLE STAGE PUMP**
107	**60025010**	1	**GEARBOX, HALE, G-SERIES, FRONT MOUNTED**
108	**60026000**	1	**PUMP PACKING, HALE**
109	**60035121**	1	**PUMP TEST, MISTRAS GROUP, INC**
110	**61510000**	1	**AUXILIARY COOLER (HEAT EXCHANGER)**

Line	Item #	Qty	Item Description/Comments
111	**62010002**	1	**STAINLESS STEEL PIPING**
112	**66020100**	1	**3" TANK TO PUMP W/CHECK VALVE**
113	**61720100**	1	**VALVE, AKRON HEAVY DUTY**
114	**61770120**	1	**ACTUATOR, VALVE, PUSH/PULL HANDLE, INNOVATIVE CONTROLS**
115	**73010100**	1	**TANK FILL 1.5"**
116	**61720100**	1	**VALVE, AKRON HEAVY DUTY**
117	**61770120**	1	**ACTUATOR, VALVE, PUSH/PULL HANDLE, INNOVATIVE CONTROLS**
118	**61010405**	1	**ENGINE PRESSURE GOVERNOR, CLASS1 TPGJ1939**
119	**61210050**	1	**INTAKE PRESSURE CONTROL, HALE, STS**
120	**63021100**	1	**6" MAIN SUCTION, LEFT SIDE**
121	**65030000**	1	**2.5" LEFT SIDE INLET**
122	**61720100**	1	**VALVE, AKRON HEAVY DUTY**
123	**61770100**	1	**ACTUATOR, VALVE, SWING HANDLE**
124	**60036010**	1	**THREADS, NST**
125	**63025100**	1	**6" MAIN SUCTION, RIGHT SIDE**
126	**70525125**	1	**2.5" DISCHARGE, LEFT - Position 1**
127	**61720100**	1	**VALVE, AKRON HEAVY DUTY**
128	**61770100**	1	**ACTUATOR, VALVE, SWING HANDLE**
129	**77021000**	1	**GAUGE, DISCH, NOSHOK 2.5"**
130	**60036010**	1	**THREADS, NST**
131	**70525125**	1	**2.5" DISCHARGE, LEFT - Position 2**
132	**61720100**	1	**VALVE, AKRON HEAVY DUTY**
133	**61770100**	1	**ACTUATOR, VALVE, SWING HANDLE**
134	**77021000**	1	**GAUGE, DISCH, NOSHOK 2.5"**

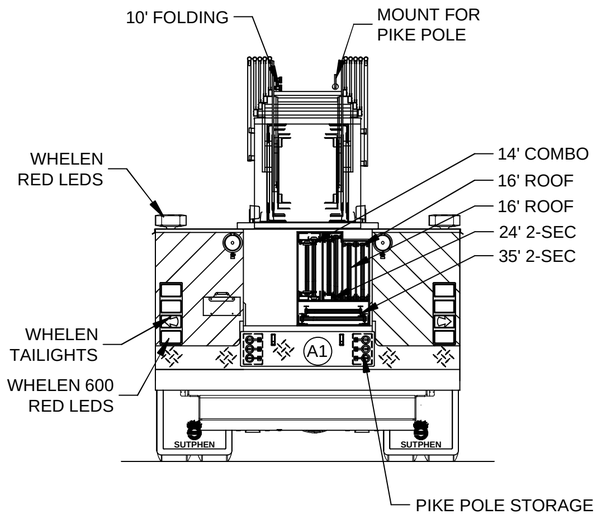
Line	Item #	Qty	Item Description/Comments
135	**60036010**	1	**THREADS, NST**
136	**71025125**	1	**2.5" DISCHARGE, RIGHT - Position 3**
137	**61720100**	1	**VALVE, AKRON HEAVY DUTY**
138	**61770100**	1	**ACTUATOR, VALVE, SWING HANDLE**
139	**77021000**	1	**GAUGE, DISCH, NOSHOK 2.5"**
140	**60036010**	1	**THREADS, NST**
141	**71025125**	1	**2.5" DISCHARGE, RIGHT - Position 4**
142	**61720100**	1	**VALVE, AKRON HEAVY DUTY**
143	**61770100**	1	**ACTUATOR, VALVE, SWING HANDLE**
144	**77021000**	1	**GAUGE, DISCH, NOSHOK 2.5"**
145	**60036010**	1	**THREADS, NST**
146	**72810000**	1	**TWO CROSSLAYS 2" VALVE-PIPING 1.5" SWIVEL**
147	**61720100**	2	**VALVE, AKRON HEAVY DUTY (2)**
148	**61770120**	2	**ACTUATOR, VALVE, PUSH/PULL HANDLE, INNOVATIVE CONTROLS (2)**
149	**77021000**	2	**GAUGE, DISCH, NOSHOK 2.5" (2)**
150	**60036010**	2	**THREADS, NST (2)**
151	**72910520**	1	**COVER, VINYL FOR CROSSLAYS (SPH)**
152	**61742000**	1	**MASTER PUMP DRAIN, MULTIPORT**
153	**61730005**	7	**DRAIN VALVES, INNOVATIVE CONTROLS, LIFT-UP(7)**
154	**78521440**	1	**WATERWAY, 4" VALVE, AKRON 9325 ELECTRIC ACTUATOR**
155	**74920210**	1	**SPH1 - SIDE MOUNT PUMP PANEL**
156	**74930500**	1	**PANEL FINISH, BLACK VINYL**
157	**74931000**	1	**ESCUTCHEON PLATES**
158	**74931050**	1	**COLOR CODING**

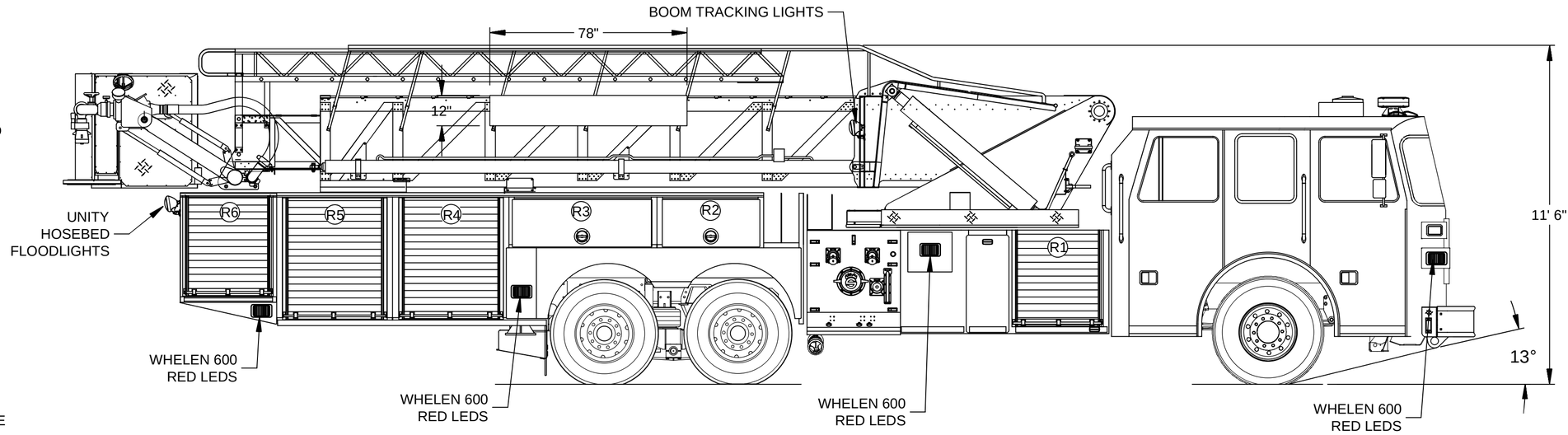
Line	Item #	Qty	Item Description/Comments
159	**74931110**	1	**PUMP FINISH, PAINTED FRAME COLOR**
160	**75510210**	1	**PUMP PANEL LIGHTS, LED STRIPS**
161	**75530100**	1	**LIGHT ON OPPOSITE SIDE PUMP PANEL, LED**
162	**76010105**	1	**PUMP PANEL GAUGES & CONTROLS**
163	**60028050**	1	**PUMP PRIMER, TRIDENT, AIR**
164	**60028310**	1	**(1) PRIMER BUTTON - MAIN SUCTION**
165	**76510050**	1	**GAUGES, MASTER, NOSHOK, 4" LIQUID FILLED**
166	**77510050**	1	**GAUGE, WATER LEVEL, INNOVATIVE CONTROLS**
167	**83525200**	1	**WATER TANK BRAND, UPF**
168	**83520205**	1	**WATER TANK, 300 GAL, POLY (AERIALS)**
169	**80117010**	1	**BODY SPH-1, LEFT 48"H / RIGHT 48"H**
170	**80029910**	1	**BODY SUBFRAME, SPH PLATFORM**
171	**81165705**	1	**UNISTRUT TRACK IN COMPTS**
172	**80220200**	1	**ROM ROLL-UP DOORS, PAINTED**
173	**84530910**	1	**COMPT LIGHTING, LED LIGHT STRIPS, 2 PER COMPT**
174		1	**CLAR NOTES, 268 total cubic feet of compartment space**
175	**81320205**	1	**SPH 100 HOSEBED, ALUM FLOORING**
176	**81410000**	1	**COVER, VINYL, MAIN HOSE BED**
177	**81330300**	1	**HOSE BED DIVIDER, ADJ (1)**
178	**81910500**	1	**HANDRAILS, KNURLED STS, SPH100**
179	**82013500**	1	**STEPS, SPH100**
180	**82510000**	1	**RUB RAILS, ANODIZED ALUM**
181	**83010100**	1	**ALUMINUM TREADPLATE (AERIALS)**
182	**80290101**	1	**FIBERGLASS WHEEL WELL LINERS**

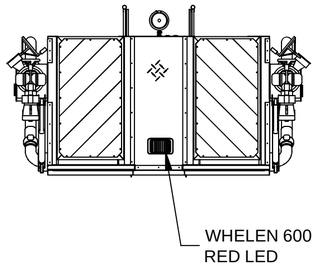
Line	Item #	Qty	Item Description/Comments
183	**89020230**	1	**LADDERS, ALCO-LITE (SPH) 115' 14', 16', 16', 24'-2sec, 35'-2sec & 10'F**
184	**89512200**	1	**LADDERS ENCLOSED IN HOSEBED ON BEAM (SPH)**
185	**84550110**	1	**LICENSE PLATE BRACKET W/ LIGHT, LED**
186	**84510100**	1	**ELECTRICAL DESCRIPTION**
187	**84520000**	1	**BACK UP ALARM, ECCO SA917**
188	**85010020**	1	**TAIL/TURN/BACKUP, WELDON 3884, LED**
189	**85110100**	1	**ICC LIGHTS, LED**
190	**85510105**	1	**STEP LIGHTS, LED - WHELEN 2G**
191	**85710020**	1	**UNDERCARRIAGE GROUND LIGHTS, LED**
192	**86510000**	1	**WORK LIGHTS, UNITY AG SPOT**
193	**87020320**	1	**WARNING LIGHTS, UPPER, WHELEN, LED FREEDOM 8**
194	**87520371**	1	**WARNING LIGHTS, LOWER, WHELEN 600 SUPER LED**
195	**94020236**	1	**AERIAL TOWER ASSEMBLY, SPH100**
196	**94020247**	1	**TURNTABLE ACCESS LADDERS, UPPER & LOWER, LEFT**
197	**94020250**	1	**INTERLOCK SYSTEM**
198	**94020260**	1	**ROTATION & SMART BOOM WARNING SYSTEM**
199	**94020272**	1	**HYDRAULIC SYSTEM - SPH100**
200	**94020900**	1	**12 VOLT AUXILIARY HYDRAULIC POWER**
201	**94020283**	1	**PEDESTAL CONTROLS - SPH 100**
202	**94021212**	1	**BOOM ASSEMBLY - SPH100**
203	**94020400**	1	**BOOM TRACKING LIGHTS - 6" UNITY SPOT LIGHT**
204	**94021326**	1	**LADDER SPH 100 HIGH RAIL CABLE TRACK**
205	**94021337**	1	**HYDRAULIC CYLINDERS - SPH 100**
206	**94021344**	1	**AERIAL TOWER WATERWAY - 110 & SPH 100**

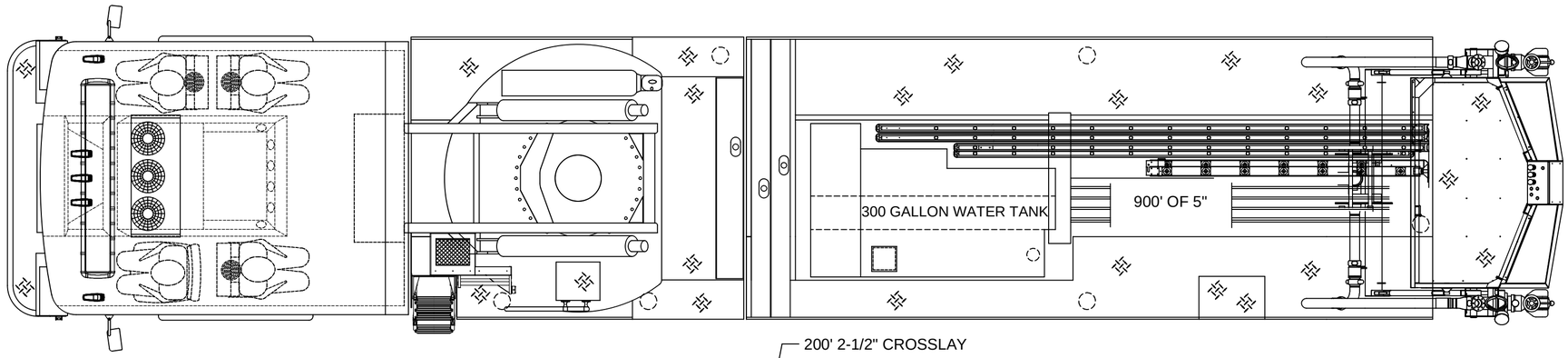
Line	Item #	Qty	Item Description/Comments
207	**94021025**	1	**OUTRIGGER GROUND JACKS W/FRONT JACKS SPH100**
208	**93910012**	1	**JACK PADS, BLACK - SPH100**
209	**94021340**	1	**OPERATIONAL TEST - AERIAL PLATFORMS**
210	**94040051**	1	**LADDER TEST, MISTRAS GROUP, INC**
211	**94210016**	1	**4-DOOR PLATFORM, SPH**
212	**94210014**	1	**PLATFORM ACCESS LADDER**
213	**94210315**	1	**PLATFORM BOOM CONTROLS W/STATUS DISPLAY SPH**
214	**94210200**	1	**UNITY 6" SPOT LIGHT, TOP RAIL OF PLATFORM**
215	**94210350**	1	**120 VOLT OUTLET IN PLATFORM**
216	**94210802**	1	**75 GPM WATER CURTAIN FOR SPH 100 or SPI112**
217	**94210705**	1	**YOKE OUTLETS FOR SPH100**
218	**94210515**	1	**MONITOR, DS, AKRON 3473, MANUAL 1000 GPM**
219	**94210668**	1	**NOZZLE, DS, AKRON 5160 AUTO**
220	**94210516**	1	**MONITOR, OS, AKRON 3473, MANUAL 1000 GPM**
221	**94210669**	1	**NOZZLE, OS, AKRON 5160 AUTO**
222	**94210990**	1	**INTERCOM SYSTEM, FRC IC201 2-STATION**
223	**94211100**	1	**PLATFORM AIR SYSTEM W/ 4500 PSI DOT AIR TANK ON TURNTABLE**
224	**94295001**	1	**SINGLE LIFTING EYE, 800 LB.**
225	**89910000**	1	**CORROSION REDUCTION PROGRAM (SPECS)**
226	**90010030**	1	**STAINLESS PAINT SCHEME - CORP AERIALS**
227	**90030159**	1	**PAINT FRAME RAILS, FUEL BEAM, BODY SUBFRAME & LOWER AERIAL COMPONENTS - BLACK**
228	**90030031**	1	**PAINT, TURNTABLE, SIDE PLATES & LIFT CYLINDER SILVER**
229	**90030033**	1	**PAINT, LADDER SHEAVES, EXT CYLINDER & YOKE SILVER**
230	**90088888**	1	**SPECIAL ITEM, Upgrade to ten year paint warranty**

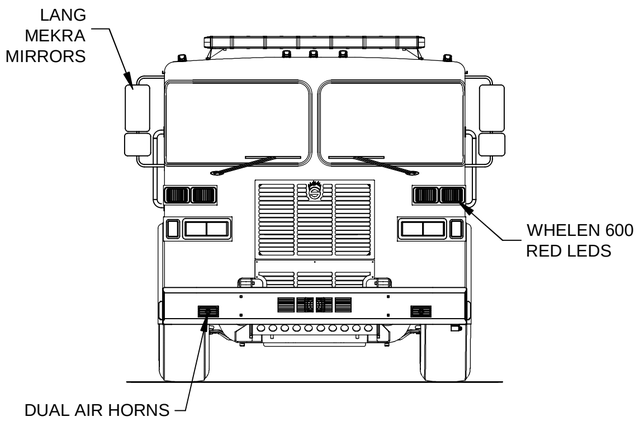
Line	Item #	Qty	Item Description/Comments
231	**90510100**	1	**LETTERING, NOT PROVIDED**
232	**90610010**	1	**4" SCOTCHLITE STRIPE**
233	**90630405**	1	**MITER EDGED "Z" STRIPE**
234	**90660200**	1	**CHEVRON STRIPING, REAR BODY & REAR PLATFORM DOOR(S)**
235	**90710000**	1	**BOOM SIGN, APPROX 78" X 12"**
236	**90720110**	1	**8" LETTERING FOR BOOM SIGN**
237	**91010000**	1	**MISC EQUIP - (1) PINT TOUCH-UP PAINT, STAINLESS STEEL NUTS & BOLTS**
238	**91030700**	1	**ZIAMATIC SAC-44 FOLDING WHEEL CHOCKS MTD W/ SQCH-44H HOLDERS (PAIR)**
239	**89050100**	1	**PIKE POLE STORAGE TUBES, (3) EA SIDE**
240	**99010000**	1	**MANUALS (1-PRINTED & 1-CD) WITH DVD**
241	**99030100**	1	**ADDITIONAL MANUFACTURER'S MANUAL (1)**
242	**1**	1	**ADDITIONAL MANUALS FROM MAJOR VENDORS (1)**
243	**99031110**	1	**DELIVERY, AERIAL APPARATUS**
244	**99510005**	1	**ONE YEAR WARRANTY**
245	**10000400**	1	**PROPOSAL GUARANTEE - BID BOND**
246	**10000410**	1	**PERFORMANCE BOND**

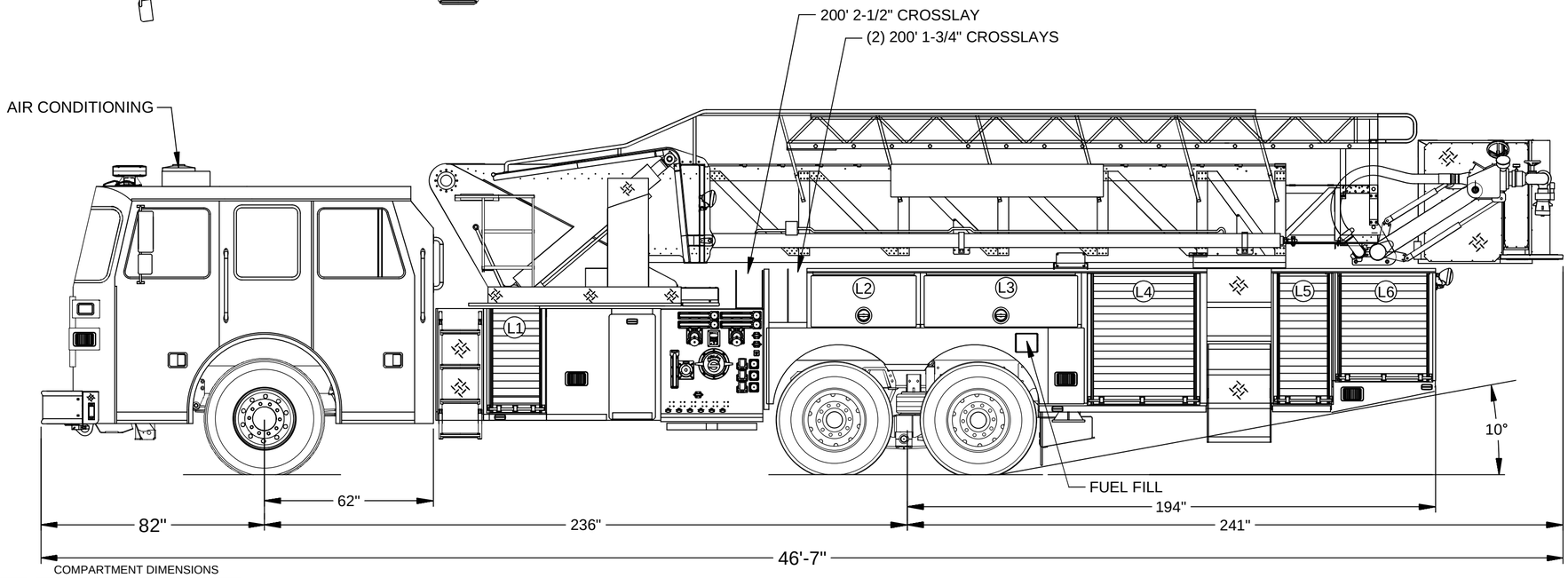












DOOR OPENINGS

COMP'T.	HEIGHT	WIDTH
L1	31 1/2	13 1/2
L2	15	33 1/4
L3	15	50 1/4
L4	40 1/2	38 3/4
L5	40 1/2	15 1/8
L6	32 1/8	30 7/8

COMPARTMENT DIMENSIONS

HEIGHT	WIDTH	DEPTH
38 1/2	20 1/4	20 1/4
19 1/2	41 1/2	12 1/8
19 1/2	58	12 1/8
48 1/2	45 3/4	26 1/2
48 1/2	22	26 1/2
40 1/8	34 3/4	26 1/2

DOOR OPENINGS

COMP'T.	HEIGHT	WIDTH
R1	31 1/2	33 1/2
R2	15	33 1/4
R3	15	50 1/4
R4	40 1/2	38 3/4
R5	40 1/2	38 3/4
R6	32 1/8	30 7/8

COMPARTMENT DIMENSIONS

HEIGHT	WIDTH	DEPTH
38 1/2	40	27 1/2
19 1/2	41 1/2	26 1/2
19 1/2	58	26 1/2
48 1/2	45 3/4	26 1/2
48 1/2	45 3/4	26 1/2
40 1/8	34 3/4	26 1/2

TOTAL COMPARTMENT VOLUME- 265 CU FT.

DOOR OPENINGS

COMP'T.	HEIGHT	WIDTH
A1	9 1/8	24 1/2

COMPARTMENT DIMENSIONS

HEIGHT	WIDTH	DEPTH
9 7/8	26	88

DIMENSIONS SHOWN ON THIS DRAWING ARE APPROXIMATE AND ARE SUBJECT TO MINOR DEVIATIONS DURING CONSTRUCTION.

IN THE EVENT OF A DISCREPANCY BETWEEN THE SUTPHEN SPECIFICATIONS AND DRAWING, THE SUTPHEN SPECIFICATIONS SHALL PREVAIL.

DRAWING IS FOR REFERENCE ONLY. SOME ITEMS PROPOSED MAY NOT BE SHOWN OR NOTED.

CUSTOMER APPROVAL

NAME: _____

TITLE: _____

DATE: _____

REV.	DESCRIPTION	BY	DATE
-	-	-	-

THIS PRINT IS PROVIDED ON A RESTRICTED BASIS AND IS NOT TO BE USED IN ANY WAY DETRIMENTAL TO THE INTEREST OF SUTPHEN CORPORATION.

DRAWN BY: C. GREEN

DATE: 1/10/2015

MFG. FACILITY: DUBLIN

SUTPHEN

FLORIDA SHERIFF'S ASSOCIATION

SPH100 AERIAL PLATFORM

DWG. NO.: SPH100 FSA11

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APPROVAL DRAWING

After the award of bid and pre-construction conference, a detailed layout drawing depicting the apparatus layout and appearance including any changes agreed upon shall be provided for customer review and signature. The drawing will become part of the contract documents. The drawing shall consist of left side, right side, frontal and rear elevation views. Apparatus equipped with a fire pump, shall have a general layout view of the pump operators panel scaled the same as the elevation views.

WIRING SCHEMATIC

A CD containing wiring diagrams of the apparatus shall be provided at the time of delivery.

PROPOSAL GUARANTEE

A certified check or bid bond in the sum of ten percent (10%) of the total bid price shall be submitted with the "Bid Proposal" at the time of the bid. The full amount of the bid surety shall be returned to the unsuccessful bidders following the award of the contract to the successful bidder.

PERFORMANCE BOND

Within twenty (20) days of notification to the successful bidder by the purchaser, prior to any work commencing on the proposed apparatus, the successful bidder shall, at their own expense, obtain and submit to the purchasing entity a performance bond in the amount of 100% equal to the total contract price.

Additionally, each bidder must disclose the price/amount it pays for bonding, per $1,000. This is to demonstrate the economic stability and credit worthiness of the bidder. NO EXCEPTIONS.

SUTPHEN MONARCH CUSTOM CHASSIS

A Sutphen Monarch Severe Duty Cab and Chassis system shall be provided. The chassis shall be manufactured in the factory of the bidder. The chassis shall be designed and manufactured for heavy duty service with adequate strength and capacity of all components for the intended load to be sustained and the type of service required. The cab and chassis system, shall be considered the bidders “Top of the Line”.

There shall be no divided responsibility in the production of the apparatus.

FRAME

The chassis frame shall be of a ladder type design utilizing industry accepted engineering best practices. The frame shall be specifically designed for fire apparatus use. Each frame rail shall be constructed of two 3/8" thick-formed channels. The outer channel shall be 10.06" x 3.50” x .375” and the inner channel (liner) shall be 9.31” x 3.13” x .375”. The section modulus shall be 31.28 $in.^3$. The resistance to bending moment (RBM) shall be 1,569,160 in./lbs. The cross-members shall be constructed of minimum 3/8" formed channels and have formed gusseted ends at the frame rail attachment.

.625 inch, grade 8 flange, Huck bolt fasteners shall be used on all permanently attached brackets to the frame to eliminate the need for bolt re-tightening.

A lifetime warranty shall be provided, per manufacturer's written statement.

FRONT TOW EYES, BELOW BUMPER

There shall be two front tow eyes with 3” diameter holes attached directly to the chassis frame, accessible below the front bumper.

TOW EYES, PAINTED FINISH

The front tow eyes shall be painted to match the color of the chassis frame.

REAR TOW EYES

There shall be two tow eyes attached directly to the chassis frame rail and shall be chromate acid etched for superior corrosion resistance and painted to match the chassis.

STEERING

The steering system shall be a TRW wheel to wheel steering system that is tested and certified by TRW, consisting of a heavy duty TRW/Ross Model TAS-85 power steering gear, TRW PS36 steering pump, miter box, drag links, and a thermostatic controlled fan cooled system (set point 185 deg. F to 170 deg. F). The steering gear shall be bolted to the frame at the cross-member for steering linkage rigidity. Four (4) turns from lock to lock with an 18" diameter slip resistant rubber covered steering wheel. Steering column shall have six-position tilt and 2" telescopic adjustment. The cramp angle shall be 45 degrees with 315mm tires or 43 degrees with 425mm tires providing very tight turning ability.

DRIVE LINE

The driveline shall consist of Spicer 1810 series dual grease fitting universal joints with "half-round" end yokes. The drive shaft shall be built with a heavy-duty steel tube 4.095" outside diameter x .180 wall thickness. The shafts shall be dynamically balanced prior to installation into the chassis. A splined slip joint shall be provided in each shaft assembly. Universal joints shall be extended life. There shall be two (2) Zerk fittings in each universal joint assembly so the joint can be greased without turning the shaft.

ENGINE

The apparatus shall be powered by a Cummins Diesel ISX 12 450 HP @ 1800 R.P.M., 1550 ft. lb. torque @ 1100 R.P.M.

ENGINE WARRANTY

The engine shall have a five year or 100,000 mile warranty and approval by Cummins for installation in the chassis. There shall be no deductible for the first two years. A one hundred dollar deductible shall apply for service during the next three years.

AIR COMPRESSOR

The air compressor shall be an 18.7 CFM engine driven Wabco.

STARTER

A 12-volt starter shall be provided, controlled by a switch on the left lower cab dash.

FUEL FILTERS

The engine fuel filters shall be mounted in a manner that is easily accessible for service or replacement. A Cummins approved primary FleetGuard Fuel Pro filter will be remote mounted to the Chassis frame rail. A secondary FleetGuard FF2200 spin on filter will be mounted on the engine.

EXHAUST SYSTEM

The engine exhaust system shall include the following components:

Diesel Particulate Filter (DPF)

Diesel Oxidation Catalyst (DOC)

Diesel Exhaust Fluid (DEF)

Selective Catalytic Reduction Filter (SCR)

The SCR catalyst utilizes the DEF fluid, which consists of urea and purified water, to convert NOx into nitrogen and water. This shall meet or exceed 2013 EPA emissions requirements.

The engine exhaust system shall be horizontal design constructed from heavy-duty truck components. The exhaust tubing shall be stainless steel to the DPF through to the SCR, aluminized steel from the SCR to the exhaust tip. A heavy duty stainless steel bellows tube shall be used to isolate the exhaust system from the engine. The system shall be equipped with single canister consisting of a Diesel Oxidation Catalyst (DOC) and a Diesel Particulate Filter (DPF), and shall be mounted under the right side frame rail, meeting the specific engine manufacturer's specifications and current emission level requirements. The outlet shall be directed to the forward side of the rear wheels, exiting the right side with a heavy duty heat diffuser. The heat diffuser shall prevent the exhaust temperature from exceeding 851 deg. F during a regeneration cycle. A heat-absorbing sleeve shall be provided on the exhaust pipe in the engine compartment area to reduce the heat, protect the alternator, and also to protect personnel while servicing the engine compartment.

AFTER TREATMENT SYSTEM

To meet EPA requirements of Particulate output, a DPF (Diesel Particulate Filter) is used. To meet EPA requirements of Nitrous Oxide output an SCR (Selective Catalytic Reduction) system utilizing DEF (Diesel Exhaust Fluid) is used.

ON-BOARD DIAGNOSTIC (OBD) SYSTEM

The engine shall be equipped with an on-board diagnostic (OBD) system which shall monitor emissions-related engine systems and components and alert the operator of any malfunctions. The OBD system is designed to further enhance the engine and operating system by providing early detection of emission-related faults. The engine control unit (ECU) will manage smart sensors located throughout the engine and after-treatment system. The system shall monitor component verification and sensor operation. There shall be warning lights located in the dash instrument panel to alert the operator of a malfunction. A data port shall be provided under the driver's side dash for the purpose of code reading and troubleshooting. All communication shall be provided through the J1939 data link.

AIR CLEANER/INTAKE

The engine air intake and filter shall be designed in accordance with the engine manufacturer's recommendations. It shall be 99.9% effective in removing airborne contaminants when tested per the industry standard SAE J726 procedure and offer a dirt holding capacity of at least 3.0 gm/cfm of fine dust (tested per SAE J726) offering superior engine protection.

The air filter shall be located at the front of the apparatus and shall be at least 66" above the ground, to allow fording deep water in an emergency situation.

An ember separator shall be provided in the engine air intake meeting, the requirements of NFPA 1901.

An Air Restriction warning light shall be provided and located on the cab dash.

TRANSMISSION

The chassis shall be equipped with a Generation 5 Allison EVS4000 six (6) speed automatic transmission. It shall be programmed five (5) speed, sixth gear locked out, for fire apparatus vocation, in concert with the specified engine.

The transmission is communicated on the J-1939 through the communication port. The fifth gear shall be an overdrive ratio, permitting the vehicle to reach its top speed at the engine's governed speed. The dipstick is dipped in a rubber coating for ease in checking oil level when hot.

The chassis to transmission wiring harness shall utilize Metri-Pack 280 connectors with triple lip silicone seals and clip-type positive seal connections to protect electrical connections from contamination without the use of coatings.

Ratings: Max Input (HP) 600

Max Input (Torque) 1850 (lb ft)

Max Turbine (Torque) 2600 (lb ft)

Mechanical Ratios: 1st - 3.51:1

2nd - 1.91:1

3rd - 1.43:1

4th - 1.00:1

5th - 0.74:1

Reverse - -5.00:1

ENGINE BRAKE

The engine shall be equipped with a Jacobs compression engine brake. An “On/Off” switch and a control for “Low/High” shall be provided on the instrument panel within easy reach of the driver.

The engine brake shall interface with the Wabco ABS brake controller to prevent engine brake operations during adverse braking conditions.

A pump shift interlock circuit shall be provided to prevent the engine brake from activating during pumping operations.

The brake light shall activate when the engine brake is engaged.

TRANSMISSION COOLER

The apparatus transmission shall be equipped with a Liquid-To-Liquid remote mounted cooler with aluminum internal components. The cooler shall be encased in an aluminum housing and mounted to the outside of the officer's side frame rail for accessibility and ease of service.

TRANSMISSION FLUID

The transmission shall come filled with Castrol TranSynd™ Synthetic Transmission Fluid or approved equal meeting the Allison TES-295 specification. **NO EXCEPTION.**

TRANSMISSION SHIFTER

An Allison "Touch Pad" shift selector shall be mounted to the right of the driver on the engine cover accessible to the driver. The shift position indicator shall be indirectly lit for nighttime operation.

COOLING SYSTEM

The cooling system shall be designed to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the engine and transmission manufacturer's requirements, and EPA regulations.

The complete cooling system shall be mounted in a manner to isolate the system from vibration and stress. The individual cores shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress to the adjoining core(s).

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

RADIATOR

The radiator shall be a cross-flow design constructed completely of aluminum with welded side tanks. The radiator shall be bolted to the bottom of the charge air cooler to allow a single depth core, thus allowing a more efficient and serviceable cooling system.

The radiator shall be equipped with a drain cock to drain the coolant for serviceability. The drain cock shall be located at the lowest point of the aluminum cooling system to maximize draining of the system.

CHARGE AIR COOLER

The charge air cooler shall be of a cross-flow design and constructed completely of aluminum with extruded tanks. The charge air cooler shall be bolted to the top of the radiator to allow a single depth core.

COOLANT

The cooling system shall be filled with a 50/50 mix. The coolant makeup shall contain ethylene glycol and de-ionized water to prevent the coolant from freezing to a temperature of –34 degrees F.

HOSES & CLAMPS

Silicone hoses shall be provided for all engine coolant lines.

All radiator hose clamps shall be spring loaded stainless steel constant torque hose clamps for all main hose connections to prevent leaks. Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting performance.

FAN

The engine cooling system shall incorporate a heavy-duty composite 11- blade Z-series fan. It shall provide the highest cooling efficiently while producing the lowest amount of noise. This robust yet light-weight fan results in less wear and stress on motors and bearings.

A shroud and recirculation shield system shall be used to ensure air that has passed through the radiator is not drawn through again.

The fan tip to radiator core clearance shall be kept at a minimal distance to increase the efficiency of the fan and reduce fan blast noise.

FAN CLUTCH

A fan clutch shall be provided that shall allow the cooling fan to operate only when needed. The fan shall remain continuously activated when the truck is placed in pump gear.

SURGE TANK

The cooling system shall be equipped with an aluminum surge tank mounted to the officer's side of the cooling system core. The surge tank shall house a low coolant probe and sight glass to monitor the coolant level. Low coolant shall be alarmed with the check engine light. The surge tank shall be equipped with a dual seal cap that meets the engine manufacturer's pressure requirements, and system design requirements.

The tank shall allow for expansion and to remove entrained air from the system. There shall also be an extended fill neck to prevent system overfill and encroachment of expansion air space. Baffling shall be installed in the tank to prevent agitated coolant from being drawn into the engine cooling system.

FUEL TANK

The chassis shall be equipped with a 65-gallon rear mounted, behind the rear axle, rectangular fuel tank that shall be constructed of steel. The fuel tank shall be certified to meet FMVSS 393.67 tests. It shall also maintain engine manufacturer's recommended expansion room of 5%.

There shall be two (2) tank baffles.

Dual pick-up and return ports shall be provided for diesel generators if required.

The fuel lines shall be nylon braid reinforced fuel hose with brass fittings. The lines shall be carefully routed along the inside of the frame rails. All fuel lines are covered in high temperature rated split plastic loom. Single suction and return fuel lines shall be provided.

The bottom of the fuel tank shall contain a 1/2" drain plug.

FUEL FILL

The fuel tank shall be equipped with a 2-1/4" filler neck assembly with a 3/4" vent located on the driver's side of the truck. A fuel fill cap attached with a lanyard shall be provided.

FUEL COOLER

Installed on the apparatus fuel system shall be an Air-To-Liquid aluminum fuel cooler. The fuel cooler shall be located in the lowest module of the cooling system.

DIESEL EXHAUST FLUID TANK

The exhaust system shall include a molded cross linked polyethylene tank. The tank shall have a capacity of 5 usable gallons and shall be mounted on the left side of the chassis frame.

The DEF tank fill neck shall accept only a 19mm dispensing nozzle versus the standard 22mm diesel fuel dispensing nozzle to prevent cross contamination. The DEF tank cap shall be blue in color to further prevent cross contamination.

A placard shall accompany fill location noting DEF specifications.

ALTERNATOR

A 270 ampere Prestolite/Leece Neville shall be provided with serpentine belt. The alternator shall generate 210 amperes at idle.

A low voltage alarm, audible and visual, shall be provided.

BATTERIES

The battery system shall be a single system consisting of four negative ground, 12 volt Interstate Group 31 MHD batteries, cranking performance of 950 CCA each with total of 3800 amps, 185 minute reserve capacity with 25 ampere draw at 80 degrees Fahrenheit. Each battery shall have 114 plates. Warranty shall be accepted nationwide.

The batteries shall be installed in a vented 304 stainless steel battery box with a removable aluminum cover to protect the batteries from road dirt and moisture. The battery cover shall be secured with four "T" handle rubber hold downs to provide easy access for maintenance and inspection. Stainless steel hardware will be used for installation. The batteries are to be placed on dri-deck and secured with a fiberglass hold down. The batteries shall be wired directly to starter motor and alternator.

The battery cables shall be 3/0 gauge. Battery cable terminals shall be soldering dipped, color-coded and labeled on heat shrink tubing with a color-coded rubber boot protecting the terminals from corrosion.

There shall be a 350-ampere fuse protecting the pump primer and a 250-ampere fuse protecting the electric cab tilt pump and other options as required.

BATTERY JUMPER TERMINAL

There shall be one set (two studs) of battery jumper terminals located by the battery box under the cab. The terminals shall have plastic color-coded covers. Each terminal shall be tagged to indicate positive/negative.

BATTERY CHARGER

An IOTA model DLS-45 45-ampere 12-volt DC battery charger with automatic overcharge protection shall be provided.

SHORELINE

A shoreline connection shall be provided and located on the driver's side of the cab between the front and rear doors.

FRONT AXLE

The front axle shall be a Meritor™ MFS-20-133A 3.74" drop beam with a capacity of 23,000 pounds. The axle shall be hub piloted, 10 stud, furnished with oil seals and come complete with assist cylinder, hoses, and mounting brackets.

SUSPENSION (FRONT)

The front suspension shall be a variable rate taper-leaf design, 54" long and 4" wide. Long life, maintenance free, urethane bushed spring shackles shall be utilized. All spring and suspension mounting shall be attached directly to frame with high strength Huck bolts and self-locking round collars. Spring shackles and pins that require grease shall not be acceptable. **NO EXCEPTIONS**.

ENHANCED FRONT SUSPENSION SYSTEM

The front suspension shall have the handling, stability, and ride quality enhanced by the use of a Ride Tech auxiliary spring system and Koni high performance shock absorbers.

This system shall utilize three stage, urethane auxiliary springs, and high performance gas filled shock absorbers to control the deflection of the leaf springs, and dampen vibration normally transmitted to the chassis. This maintenance free system will be custom tuned to the apparatus gross weight rating for maximum performance, while maintaining a soft compliant ride. **NO EXCEPTIONS.**

A (3) three year 36,0000 mile warranty will be provided by the manufacturer.

FRONT TIRES

Front tires shall be Goodyear 425/65R22.5, load range L, G296 highway tread, single tubeless type with a GAWR of 22,000 pounds. Wheels shall be disc type, hub piloted, 22.5 x 12.25 10 stud 11.25 bolt circle.

REAR AXLE

The rear axle shall be a Meritor™ RT-50-180 Tandem drive axle with a capacity of 52,000 lbs. The axles shall be hub piloted, 10 studs, furnished with oil seals.

INTER-AXLE DIFFERENTIAL LOCK

A locking inter-axle differential shall be provided between the two rear axles. An activation switch shall be provided on the driver's dash.

TOP SPEED

The top speed shall be approximately 60 MPH.

SUSPENSION (REAR)

52,000 TANDEM AIR RIDE

The rear suspension shall be a Raydan Manufacturing, Air Link™ model 952-52-199 air ride suspension. This suspension shall incorporate a quad air spring system. The air suspension bags shall have internal rubber stops giving the ability to operate without air if the need arises. Heavy-duty shock absorbers shall be provided, inboard mounted, to dampen load forces, reduce tire hops, and improve stopping. Torque rods shall be incorporated to restrict lateral movement of the differentials and to reduce bushing and tire wear. Dual height control valves shall be provided to maintain even, balanced loads. Suspension shall have a ground rating of 52,000 pounds.

REAR TIRES

Rear tires shall be Goodyear 12R22.5, load range H, G661 highway tread, dual tubeless type with a GAWR up to 52,000 pounds. Wheels shall be disc type, hub piloted, 22.5 x 8.25 10 stud with 11.25" bolt circle.

TIRE PRESSURE MONITOR

A Real Wheels LED tire pressure sensor shall be provided for each wheel. The pressure sensor shall indicate if a particular tire is not properly inflated. A total of ten (10) indicators shall be provided.

WHEELS

The front and rear wheels shall be ACCURIDE® brand aluminum.

HUB COVERS

Polished stainless steel hub covers shall be provided for the front and rear axle.

LUG NUT CAPS

Chrome plated lug nut caps shall be provided for the front and rear wheels.

FRONT MUD FLAPS

Hard rubber mud flaps shall be provided for front tires.

REAR MUD FLAPS

Hard rubber mud flaps shall be provided for rear tires.

BRAKES, Front

The front brakes shall be Meritor S-cam style. They shall be 16.5" x 6" with heavy-duty return springs, and a double anchor pin design. They shall also have quick-change shoes for fast easy brake relining.

BRAKES, Rear

The rear brakes shall be Meritor S-cam style. They shall be 16.5" x 7" with heavy-duty return springs, and a double anchor pin design. They shall also have quick-change shoes for fast easy brake relining.

AIR BRAKE SYSTEM

The vehicle shall be equipped with air-operated brakes. The system shall meet or exceed the design and performance requirements of current FMVSS-121 and test requirements of current NFPA 1901 standards.

Each wheel shall have a separate brake chamber. A dual treadle valve shall split the braking power between the front and rear systems.

All main brake lines shall be color-coded nylon type protected in high temperature rated split plastic loom. The brake hoses from frame to axle shall have spring guards on both ends to prevent wear and crimping as they move with the suspension. All fittings for brake system plumbing shall be brass.

A Meritor Wabco System Saver 1200 air dryer shall be provided.

The air system shall be provided with a rapid build-up feature, designed to meet current NFPA 1901 requirements. The system shall be designed so the vehicle can be moved within 60 seconds of startup. The quick build up system shall provide sufficient air pressure so that the apparatus has no brake drag and is able to stop under the intended operating conditions following the 60-second buildup time. The vehicle shall not be required to have a separate on-board electrical air compressor or shoreline hookup to meet this requirement.

Six (6) supply tanks shall be provided. (exceeds 5000 cubic inch capacity) One air reservoir shall serve as a wet tank and a minimum of one tank shall be supplied for each the front and rear axles. A Schrader fill valve shall be mounted in the front of the driver's step well.

A spring actuated air release emergency/parking brake shall be provided on the rear axle. One (1) parking brake control shall be provided and located on the engine hood next to the transmission shifter within easy reach of the driver. The parking brake shall automatically apply at 35 ±10 PSI reservoir pressure. A Meritor WABCO IR-2 Inversion Relay Valve, supplied by both the Primary and Secondary air systems, shall be used to activate the parking brake and to provide parking brake modulation in the event of a primary air system failure.

Accessories plumbed from the air system shall go through a pressure protection valve and to a manifold so that if accessories fail they shall not interfere with the air brake system.

AIR BRAKING ABS SYSTEM

A Wabco ABS system shall be provided to improve vehicle stability and control by reducing wheel lock-up during braking. This braking system shall be fitted to axles and all electrical connections shall be environmentally sealed from water and weather and be vibration resistant.

The system shall constantly monitor wheel behavior during braking. Sensors on each wheel transmit wheel speed data to an electronic processor, which shall sense approaching wheel lock

and instantly modulate brake pressure up to 5 times per second to prevent wheel lock-up. Each wheel shall be individually controlled. To improve field performance, the system shall be equipped with a dual circuit design. The system circuits shall be configured in a diagonal pattern. Should a malfunction occur, that circuit shall revert to normal braking action. A warning light at the driver's instrument panel shall indicate malfunction to the operator.

The system shall consist of a sensor clip, sensor, electronic control unit and solenoid control valve. The sensor clip shall hold the sensor in close proximity to the tooth wheel. An inductive sensor consisting of a permanent magnet with a round pole pin and coil shall produce an alternating current with a frequency proportional to wheel speed. The unit shall be sealed, corrosion-resistant and protected from electro-magnetic interference. The electronic control unit shall monitor the speed of each wheel sensor and a microcomputer shall evaluate wheel slip in milliseconds.

MISCELLANEOUS CHASSIS EQUIPMENT

Fluid capacity plate affixed below driver's seat.

Chassis filter part number plate affixed below driver's seat.

Maximum rated tire speed plaque near driver.

Tire pressure label near each wheel location.

Cab occupancy capacity label affixed next to transmission shifter.

Do not wear helmet while riding plaque for each seating position.

NFPA compliant seat belt and standing warning plates provided.

ALUMINUM CAB

The cab shall be a full tilt 6-person cab designed specifically for the fire service and manufactured by the chassis builder. Rear of the cab shall be slanted forward at the top rear for mid-ship aerial use. The outside of the rear cab wall shall be aluminum diamond plate.

Apparatus cabs that are not manufactured by the apparatus manufacturer shall not be acceptable.

CAB DESIGN

The apparatus chassis shall be of an engine forward, fully enclosed tilt cab design. There shall be four (4) side entry doors.

The cab shall be of a fully open design with no divider wall or window separating the front and rear cab sections. The cab shall be designed in a manner that allows for the optimum forward facing vision for crew. Cab designs that utilize roof mounted air conditioning units, are not desired.

The cab shall be constructed of high strength 5052H32 aluminum plate welded to 6061-T6 extruded aluminum framing.

The cab roof shall utilize 5” x 5” honeycomb re-enforced 6061 T6 aluminum extrusion, with fully radiused outer corner rails with integral drip channel and 6061 T6 ¾” x 2” x 3/16” aluminum box tubing type cross brace supports. Structures that do not include an integral drip channel will not be accepted. The box tubing type cross brace supports shall be installed in a curved fashion beginning from the midline of the apparatus cab and curving toward the exterior corner rails. This curvature will allow for increased strength in the event of a roll over while not allowing for rainwater buildup on the apparatus cab roof.

The cab sides shall be constructed from 1 ½” x 3” x 3/16” 6061 T6 extruded door pillars and posts that provide a finished door opening, extruded and formed wheel well openings supports, formed aluminum wheel well liners and box tubing type support braces.

The cab floor and rear cab wall shall utilize 1 ¾” x 4” x 3/16” 6061 T6 extruded box tubing type framing and support bracing.

The framework shall be of a welded construction that fully unitizes the structural frame of the cab.

The structural extrusion framework shall be overlaid with interlocked aluminum alloy sheet metal panels to form the exterior skin of the cab. The cab sides shall be constructed of 3/16” thick 5052H32 aluminum plate that slides into an integral channel of the extrusion framework. The plate is then skip welded into that channel to allow for tolerable flex while the apparatus travels down the roadway. Cab designs that utilize 1/8” thick aluminum for the cab sides shall not be acceptable.

The structural extrusion framework shall support and distribute the forces and stresses imposed by the chassis and cab loads and shall not rely on the sheet metal skin for any structural integrity.

The cab face extrusion framework shall be overlaid with 1/8” thick 5052H32 aluminum plate to allow for an aesthetically pleasing radiused cab face.

CAB SUB-FRAME

The cab shall be mounted to a 4” x 4” x 3/8” steel box tube sub-frame, and shall be isolated from the chassis, through the use of no less than six (6) elastomeric bushings. This substructure shall be completely independent of the apparatus cab. The sub frame shall be painted to match the primary chassis color.

The sub-frame shall be mounted to the chassis through the use of lubricated Kaiser Bushings for the front pivot point, and two (2) hydraulically activated cab latches, to secure the rear.

Cab mounting that does not include a sub-frame shall not be considered. **NO EXCEPTIONS.**

CAB DIMENSIONS

The cab shall be designed to satisfy the following minimum width and length dimensions:

Cab Width (excluding mirrors) 98"

Cab Length (from C/L of front axle)

To front of cab (excluding bumper) 68"

To rear of cab 62"

Total Cab Length (excluding bumper) 130"

ROOF DESIGN

The cab shall be of a flat roof design with side drip rails and shall satisfy the following **minimum** height dimensions:

Cab Dimensions Interior

Front 59"

Rear 55"

Cab Dimensions Exterior

Front 65"

Rear 65"

FENDER CROWNS

Polished stainless steel front axle fenderettes with full depth radiused wheel well liners shall be provided.

CAB INSULATION

The exterior walls, doors, and ceiling of the cab shall be insulated from the heat and cold, and to further reduce noise levels inside the cab. The cab interior sound levels shall not exceed 90 decibels at 45 mph in all cab seat positions. **NO EXCEPTIONS**

EXTERIOR GLASS

The cab windshield shall be of a two piece curved design utilizing tinted, laminated, automotive approved safety glass and shall have a minimum area of 2,700 square inches. The window shall be held in place by an extruded rubber molding. The cab shall be finished painted prior to the window installation.

SUN VISORS

The sun visors shall be made of dark smoke colored transparent polycarbonate. There shall be a visor located at both the driver and officer positions, recessed in a molded form for a flush finish.

CAB STEPS

The lower cab steps shall be no more than 22" from the ground. An intermediate step shall be provided, mid way between the lower cab step, and the cab floor.

The intermediate step shall be slightly inset to provide for safer ingress and egress. All steps shall be covered with material that meets or exceeds the NFPA requirements for stepping surfaces.

STEP LIGHTS

A white LED strip light shall illuminate each interior cab step. These lights shall illuminate whenever the battery switch is on and the cab door is opened.

CAB STRUCTURAL INTEGRITY

The cab of the apparatus shall be designed and so attached to the vehicle as to eliminate, to the greatest possible extent, the risk of injury to the occupants in the event of an accident.

The apparatus cab shall be tested to specific load and impact tests with regard to the protection of occupants of a commercial vehicle.

A test shall be conducted to evaluate the frontal impact strength of the apparatus cab to conform to the test J2420 and the "United Nations Regulation 29, Annex 3, paragraph 4, (Test A). A second test shall be conducted to evaluate the roof strength of the apparatus cab to conform to the Society Of Automotive Engineers (SAE) SAE J2422/SAE J2420 and "United Nations Regulation 29, Annex 3, paragraph 5, (Test B) and SAE J2420. The evaluation shall consist of the requirements imposed by ECE Regulation 29, Paragraph 5.

The test shall be conducted by a certified independent third party testing institution.

A letter stating successful completion of the above test on the brand of cab being supplied shall be included in the bid. There shall be **"no exception"** to this requirement.

SEAT BELT TESTING

The seat belt anchorage system shall be tested to meet FMVSS 207 Section 4.2a and FMVSS 210 section 4.2. Testing shall be conducted by an independent third party product evaluation company.

A copy of the certification letter shall be supplied with the bid documents.

CAB TILT SYSTEM

An electrically powered hydraulic cab tilt system shall be provided, and shall lift the cab to an angle of 45 degrees, exposing the engine and accessories for fluid checks and service work. The system shall be interlocked to only operate when the parking brake is set.

The lift system shall be comprised of two (2) hydraulic lift cylinders, an electrically driven hydraulic pump, and a control switch. The hydraulic pump shall be located on the exterior of the frame rail on the driver's side of the chassis that can be easily accessible when the cab is tilted. A mechanical locking system consisting of an air operated actuator and a heavy radiused wall 3" x 3" aluminum extrusion will be provided to ensure the cab remains in the raised position in the event of a hydraulic failure. Additionally, each of the hydraulic lift cylinders shall incorporate a check valve, and velocity fuses that will activate should a sudden drop in pressure by detected. The cab tilt controls shall be interlocked to the parking brake to ensure the cab will not move, unless the parking brake is set. The cab tilt controls will consist of a momentary raise/lower switch and a two position cab safety lock switch.

The hydraulic lift cylinders will be connected to a steel cab sub-frame, and not directly to the cab. NO EXCEPTIONS

MANUAL CAB LIFT

There shall be a manually operated hydraulic pump for tilting the cab in case the main pump should fail. Access to the pump shall be located under the left corner of the front bumper.

CAB DOORS

The cab doorframes shall be constructed from 6061 T6 aluminum extrusions fitted with a 5052 H32 aluminum sheet metal skin and shall be equipped with dual weather seals. The outside cab door window opening shall be framed by a black anodized aluminum trim, to provide a clean appearance. The cab doors shall be equipped with heavy-duty door latching hardware, which complies with FMVSS 206. The door latch mechanism shall utilize control cable linkage for positive operation. A rubber coated nylon web doorstop shall be provided.

The doors shall be lap type with a 10 gauge full-length stainless steel flange and 3/8" diameter hinge pin and shall be fully adjustable.

All openings in the cab shall be grommeted or equipped with rubber boots to seal the cab from extraneous noise and moisture.

The cab doors shall be designed to satisfy the following minimum opening and step area dimensions:

Door Opening:

Front	36.5" x 73"
Rear	36.5" x 73"

WINDOWS

All four cab entry doors shall have manual roll-down windows, which shall all roll down completely.

SIDE WINDOWS

Fixed position side window shall be provided on each side of the cab between the forward cab area and the crew cab area. The widows shall be approximately 20.5" high x 16.50" wide to provide maximum visibility. The side windows shall be held in place by an extruded rubber molding with a chrome plated decorative locking bead.

REAR CAB WINDOWS

Two sliding windows approximately 16.25" wide x 14.25" high shall be provided in the back wall of the cab.

WINDSHIELD WIPERS

Two (2) black anodized finish two speed synchronized electric windshield wiper system. Dual motors with positive parking. System includes large dual arm wipers with built in washer system. One (1) master control works the wiper, washer and intermittent wipe features. Washer bottle is a remote fill with a 4 quart capacity. Washer fill is located just inside of officer cab door.

CAB HANDRAILS

There shall be a 24" long, handrail provided and installed, at each cab entrance. The handrails shall be constructed of type 304 stainless steel 1.25 inch diameter tubing with bright finish and knurled gripping surface. Mounting flanges shall be constructed from 7 gauge, .180 thick, stainless sheet. Each grab rail shall have 90 degree returns to flanges. The ends of grab rail shall pass through the flanges and be welded to form one structural unit. The handrails shall be mounted using 1.25" SS Hex bolts, with a barrier rubber gasket at each flange.

Sufficient space shall allow for a gloved hand to firmly grip the rail.

There shall be two (2) rubber coated grab handles provided and mounted on the interior of the cab, one each side, on the windshield post for ingress assistance. The handrail on the driver's side shall be approximately 11" long and the handrail on the officer's side shall be approximately 18" long.

MIRRORS

Two (2) Lang Mekra 300 Series smooth chrome plated Aero style main and convex mirrors shall be installed on each side of the vehicle. The main mirror shall be 4-way remote adjustable 7" x 16" 2nd surface chromed flat glass. The convex shall be 6" x 8" 2nd surface chromed 400 mm radius glass. Each mirror housing assembly shall be constructed of lightweight textured chrome ABS with on truck glass and housing back cover replacement. In the event the mirror breaks the glass shall be replaceable in (3) minutes or less. The glass shall include a safety adhesive backing to keep broken glass in place. The mirror assembly shall be supported by a "C" loop bracket constructed of polished stainless steel tube utilizing two point mounting reducing vibration of mirror glass during normal vehicle operation. The lower section of the holder shall include a spring loaded single detent position 20 degrees forward with easy return to operating position without refocusing.

GRILLE

The front of the cab shall be equipped with a polished stainless steel grille with sufficient area to allow proper airflow into the cooling system and engine compartment. Plastic chrome plated grilles shall not be acceptable.

BUMPER

There shall be a 12" high double rib polished stainless steel wrap-around bumper provided at the front of the apparatus. Laser cut perforated grilles shall be incorporated into the bumper and located at the outboard section of the bumper for the air horns and at the center for the siren speaker. The bumper shall be mounted to a reinforcement plate constructed of 1/4" x 10" x 70" carbon steel. A gravel shield shall be provided, constructed of .188” aluminum diamond plate. The bumper extension shall be approximately 18".

AIR HORNS

Two (2) Grover 2040 Stuttertone rectangular, chrome plated, air horns shall be recess mounted, one each side behind the perforated grille of the bumper.

LANYARD CONTROL FOR AIR HORNS

The air horns shall be activated by a split "Y" lanyard in cab ceiling.

ELECTRONIC SIREN

One (1) Whelen 295HFS2 electronic siren shall be installed at the cab instrument panel complete with noise canceling microphone. The remote control head shall be flush mounted in a location specified by the fire department.

SIREN SPEAKER

A Cast Products SA4201-5-A weatherproof siren speaker shall be provided and mounted behind the perforated front bumper.

LIGHTING CAB EXTERIOR

Exterior lighting and reflectors shall meet or exceed Federal Motor Vehicle Safety Standards and National Fire Protection Association requirements in effect at this time.

LED HEADLIGHTS

There shall be dual, sealed-beam LED, rectangular headlights in custom housings on each side of the front of the cab. The lenses shall be hardened glass. The LEDs shall be long-lasting and able to withstand shock and vibration.

These headlights shall provide 850 effective lumens in high beam and 750 effective lumens in low beam.

This installation shall be a 12V DC configuration and draw 3.6 Amps.

Headlight alignment shall conform to SAE J599 AUG. 1997

- DOT Approved FMVSS 108
- SAE J96 ECE Reg. 112
- Sealed to IP67

Manufacturer's warranty: 4-year limited warranty.

FRONT TURN SIGNALS

There shall be two Whelen 400 Series LED rectangular amber turn signal lights mounted one each side in the front of the headlight housing and one mounted on each side of the warning light housing.

CAB REAR WALL COVERING

The rear outside wall of the cab shall be covered with 1/8" aluminum diamond plate.

DIAMOND PLATE, CAB ROOF

The roof of the cab shall have a diamond plate overlay. The overlay shall be constructed of .125" aluminum serrated diamond plate and measure 36" x 59".

CAB INTERIOR

The metal surfaces of the cab interior shall be coated and sealed with MultiSpec gray speckle, urethane modified, mar resistant paint. The textured coating shall provide paramount durability and wear resistance against foreign objects and normal wear and tear.

The front and rear headliners, as well as the rear cab wall, shall be finished in Gray-Black Durawear covered padded panels.

INTERIOR DOOR PANELS

The interior of the cab entry doors shall have a 304 brushed stainless steel scuff plate, contoured to the door, from the door window sill down.

REFLECTIVE MATERIAL

The lower portion of the doors shall include the NFPA requirement of 96 square inches of white reflective material on the lower portion of the interior cab doors. The striping shall be laid over 3M reflective materials. The reflective decal shall be plainly visible to oncoming traffic when the doors are in the open position.

CAB FLOOR COVERING

The cab interior floor shall be covered with a 5/16” thick, gray rubberized material to provide a rugged but cosmetically pleasing stepping surface throughout the cab. The floor covering shall provide superior durability and resistance against foreign objects as well as normal wear and tear.

ENGINE ENCLOSURE

An integral, formed aluminum and composite engine enclosure shall be provided. The engine enclosure shall be contoured and blended in an aesthetically pleasing manner with the interior dash and flooring of the cab. The enclosure shall be kept as low as possible, to maximize space and increase crew comfort.

The enclosure shall be constructed from 5052 H2 aluminum plate and GRP composite materials, providing high strength, low weight, and superior heat and sound deadening qualities.

Additionally, the underside of the engine enclosure shall be coated in with a ceramic spray on insulation and sound control. This coating is an environmentally-friendly coating that is applied seamlessly and rapidly while providing superior thermal insulation and protection against vibration and noise, and will prevent future corrosion from forming by sealing the substrate.
NO EXCEPTIONS

ENGINE ENCLOSURE COVERING

The top of the engine enclosure shall be covered with Scorpion heavy duty, black polyurethane blended coating. The textured coating shall provide paramount durability and wear resistance against foreign objects and normal wear and tear as well as sound deadening and insulation. The rubberized cab floor covering shall extend up the lower exterior sides of the engine enclosure to aid in sound deadening and heat resistance.

ENGINE HOOD LIGHTS

An LED work light shall be installed in the engine enclosure with an individual switch located on the base of the light.

GLOVE BOX

A glove box shall be provided and located directly in front of the officer position.

INSTRUMENT PANEL

The main dash shroud, which covers the area directly in front of the driver from the doorpost to the engine hood, shall be custom molded and covered with a non-glare black vinyl. The dash shall be a one-piece hinged panel that tilts outward for easy access to service the internal components. The gauge panel shall be constructed of durable aesthetically pleasing light gray polymer material, placed over a heavy duty steel backing plate, for added strength and durability.

The gauges shall be Beede Instruments, NexSys Link gauges with built-in self-diagnostics and red warning lights to alert the driver of any problems. All gauges and controls shall be backlit for night vision and identified for function. All main gauges and warning lights shall be visible to the driver through the steering wheel.

MASTER BATTERY & IGNITION SWITCH

The vehicle shall be equipped with a keyless ignition, with a three (3)-position Master Battery rocker switch, "Off/ACC/On" and a two (2)-position Engine Start rocker switch, "Off/Start".

DIESEL PARTICULATE FILTER CONTROLS

There shall be two (2) controls for the diesel particulate filter. One control shall be for regeneration and one control shall be to inhibit engine regeneration. These shall be located below the steering wheel in the kick panel.

INSTRUMENTATION & CONTROLS

Instrumentation on dash panel:

1. Tachometer/hourmeter with built in high exhaust system regeneration temperature, and instrument malfunction indicators
2. Speedometer/odometer with built in turn signal, high beam and re-settable trip odometer
3. Voltmeter
4. Diesel fuel gauge
5. DEF (Diesel Exhaust Fluid) gauge
6. Engine oil pressure
7. Transmission temperature
8. Engine temperature
9. Primary air pressure
10. Secondary air pressure

Indicators and warning lights in front of the driver:

1. Parking brake engaged

2. Low air with buzzer
3. Antilock brake warning
4. Check transmission
5. Transmission temperature
6. Upper power indicator
7. Seat belt
8. Engine temperature
9. Low oil indicator
10. Low voltage indicator
11. Air filter restriction light
12. Low coolant indicator
13. High idle indicator
14. Power on indicator
15. Check engine
16. Stop engine
17. Check engine MIL lamp
18. DPF indicator
19. High exhaust temperature
20. Wait to start

Other indicator and warning lights (if applicable):

1. Differential locked
2. PTO (s) engaged
3. Auto-slip response
4. Retarder engaged
5. Retarder temperature
6. ESC indicator
7. Jacks out
8. Jacks down

Controls located on main dash panel:

1. Master power disconnect with ignition switch
2. Engine start switch
3. Headlight switch
4. Windshield wiper/washer switch
5. Differential lock switch (if applicable)
6. Dimmer switch for backlighting

Controls included in steering column:

1. Horn button
2. Turn signal switch

3. Hi-beam low-beam switch
4. 4-way flasher switch
5. Tilt-telescopic steering wheel controls

CENTER CONTROL CONSOLE

There shall be an ergonomically designed center control console. The console shall be constructed of 1/8" smooth aluminum and shall be mounted on the engine hood between the driver and officer. The console shall have a durable coating to match the color of the engine hood covering and shall feature surfaces on each side that are contoured to face the driver and the officer for easy viewing and accessibility. The switches and other customer specified electrical items shall be mounted in removable 1/8" smooth aluminum panels with a black wrinkle finish. The console shall have an aluminum lift-up lid with quick release latch. The lid shall be held in the open position with a gas strut to allow for easy access and serviceability.

Controls located in the console conveniently accessible to the driver:

1. Transmission shifter
2. Pump shift control with OK TO PUMP and PUMP ENGAGED lights
3. Remote mirror control
4. Illuminated rocker switches to control high idle, Jacob's brake, siren/horn, siren brake, master emergency, and other customer specified components
5. 12V power point (if applicable)

Controls located in the console conveniently accessible to the driver and the officer (center):

1. Parking brake control with a guard to prevent accidental engagement

Controls located in the console conveniently accessible to the officer:

1. Illuminated rocker switches to control customer specified components that are easily reachable to the officer and do not allow for compromise of the driver's view, and eliminate the need for foot switches
2. Surface to recess siren head, radio head, or other desired items as space permits
3. 12V power point (if applicable)

Driving compartment warning labels shall include:

1. HEIGHT OF VEHICLE
2. OCCUPANTS MUST BE SEATED AND BELTED WHEN APPARATUS IS IN MOTION
3. DO NOT USE AUXILIARY BRAKING SYSTEMS ON WET OR SLIPPERY ROADS
4. EXIT WARNINGS

Additional labels included:

1. COMPUTER CODE SWITCH
2. ABS CODE SWITCH
3. FLUID DATA TAG
4. CHASSIS DATA TAG

OVERHEAD CONTROL CONSOLE

An ergonomically designed overhead console shall be provided above the driver and officer, running the full width of the cab. The overhead console shall be constructed from 1/8" aluminum plate and shall be painted with a durable finish to match the inside of the cab. There shall be seven (7) removable 1/8" smooth aluminum plates with a black wrinkle finish to house switches and other electrical items.

Directly above the driver there shall be two (2) panels with no cutouts, unless otherwise specified by the customer.

There shall be a panel located to the right of the driver that shall be designated for defroster, heat, and air conditioning controls (if specified).

The center overhead panel shall be designated for up to seven (7) door ajar indicators. Upon releasing the apparatus parking brake, one or more of these lights shall automatically illuminate (flash) when any of the following conditions occur that may cause damage if the apparatus is moved: cab or compartment door is open; ladder or equipment rack is not stowed; stabilizer system deployed; any other device has not been properly stowed.

There shall be a panel to the left of the officer as well as two (2) directly above the officer. These panels shall have no cutouts, unless otherwise specified by the customer.

ENGINE WARNING SYSTEM

An engine warning system shall be provided to monitor engine conditions such as low oil pressure, high engine temperature and low coolant level. Warning indication shall include a STOP ENGINE (red) light with audible buzzer activation and a CHECK ENGINE (amber) light

Note: (Some engine configurations may also include a fluid warning light.)

There shall be a master information light bar with 24 lights located across the center of the dash panel that covers up to 24 functions. These are defined under Indicators and Warning Lights above.

CHASSIS WIRING

All chassis wiring shall have XL high temperature crosslink insulation. All wiring shall be color-coded, and the function and number stamped at 3" intervals on each wire. All wiring shall be covered with high temperature rated split loom for easy access to wires when trouble shooting. All electrical connectors and main connectors throughout the chassis shall be treated to prevent corrosion.

MASTER ELECTRICAL PANEL

The main chassis breaker panel shall be wired through the master disconnect solenoid and controlled by the three-position ignition rocker switch. The breaker panel shall be located in front of the officer on the interior firewall and shall be protected by a removable aluminum cover. The cover shall have an aluminum notebook holder on the exterior face accessible to the officer. The cover shall be painted with a durable finish to match the interior of the cab and shall be secured with two (2) thumb screws.

The breaker panel shall include up to 22 ground switched relays with circuit breaker protection. An integrated electrical sub-panel shall be provided and interfaced to the body and chassis through an engineered wire harness system.

Twelve (12) 20-ampere relays and one (1) 70-ampere relay shall be provided for cab light bar and other electrical items. If the option for a mechanical siren has been selected two (2) additional relays shall be provided.

Up to two (2) additional relay boards with circuit breaker protection shall be provided for additional loads as required. Each board shall contain four (4) relays. The relay boards shall be configured to trip with input from switch of positive-negative or load manager by moving the connector on the board (no tools required).

All relay boards shall be equipped with a power-on indicator light (red), input indicator light (green) and power output indicator light (red).

Up to twenty-three (23) additional automatic reset circuit breakers for non-switched loads that are remotely switched (ie: heater fans, hood lights, etc.) shall be provided.

All relays and circuit breakers on the relay boards shall be pull-out/push-in replaceable.

All circuit breakers on the relay boards shall be 20 ampere automatic reset which can be doubled or tripled for 40 or 60-ampere capacity.

The system shall utilize Deutch DRC weather resistant connectors at the breaker panel, toe board and main dash connections.

All internal wire end terminals, including locking connectors, shall be mechanically affixed to the wire ends by matching terminal crimping presses to assure the highest quality terminations.

All internal splices shall be ultrasonically welded connections and all internal wiring shall be high temperature GXL type wire that is protected by wiring duct wherever possible.

All switches shall be ground controlled; no power going through any rocker switch.

Any switch controlling a relay in the breaker panel shall be capable of being set to function only when the parking brake is set. All relays shall be tagged with the function that the relay is controlling.

PUMP SHIFT MODULE

A pump shift module with indicating lights shall be located within easy reach of the driver. A gear lockup shall be provided to hold the transmission in direct drive for pump operation.

LOAD MANAGER

Load manager shall have the ability to sequence loads on and off. It shall also be able to shed 8 loads when the vehicle is stationary, starting at 12.7 volts lowest priority load to be shed, then respectively at 12.6, 12.4, 12.2, 12.0, 11.8, 11.4 and 11.0 volts DC. Any load that has been shed shall be off for a minimum of five minutes, and then if voltage has rebounded above shed voltage, the shed load shall automatically come on. There shall also be an indicator panel along side the rocker switches, which indicate power is on, battery warning and fast idle. Battery warning indicator shall flash at a rate proportional to the voltage discharge rate.

AUTOMATIC HIGH IDLE ACTIVATION

The load management system shall be capable of activating the apparatus high idle system when the system voltage drops below 12.3 volts DC. The system shall raise engine speed for a minimum of five minutes until voltage exceeds 13.0 volt DC. The load management system shall activate the high idle feature before any devices are automatically shed OFF. The high idle function request from the load management device shall function only if the appropriate interlocks are present; that is, control of the high idle system is monitored and shall be superseded by the state of the interlock control module. The automatic high idle system shall be deactivated whenever the brake pedal is pressed, and shall remain inactive for two minutes thereafter to allow an operator to override the high idle function and return the engine to idle before PTO engagement.

HIGH IDLE

The engine shall have a "high idle" switch on the dash that shall maintain an engine RPM of 1,000. The switch shall be installed at the cab instrument panel for activation/deactivation. The "high idle" mode shall become operational only when the parking brake is on and the truck transmission is in neutral.

CAB ACCESSORY FUSE PANEL

A fuse panel shall be located underneath the rear facing seat on the officer's side. The fuse panel shall consist of six (6) battery hot and six (6) ignition switch circuits. Each circuit shall be capable of 10-ampere 12-volt power and total output of 50-amps. The fuse panel shall be capable of powering accessories such as hand held spotlights, radio chargers, hand lantern chargers and other miscellaneous 12-volt electrical components.

VEHICLE DATA RECORDER

An Akron / Weldon vehicle data recorder as required by the 2009 edition of NFPA 1901 shall be installed. Vehicle data shall be sampled at the rate of 1 second per 48 hours, and 1 minute per 100 engine hours.

Free software is available to allow the fire department to collect the data as needed.

LIGHTING CAB INTERIOR

Interior lighting shall be provided inside the front of the cab for passenger safety. Two (2) ceiling mounted combination red/clear LED dome lights with a push button on/off switch in the light lens. One light shall be located over each the officer and driver's position. The lights shall also activate from the open door switch located in each cab doorjamb.

LIGHTING CREW CAB INTERIOR

Interior lighting shall be provided inside the crew cab for passenger safety. Two (2) ceiling mounted combination red/clear LED dome lights with a push button on/off switch in the light lens shall be provided. The lights shall also activate from the open door switch located in each cab doorjamb.

HEATER/DEFROSTER/AIR CONDITIONER

There shall be a minimum 65,000 cool BTU and 65,000 heat BTU single unit, heater/air conditioner mounted over the engine cover. The unit shall be mounted in center of the cab on the engine hood/enclosure. Unit shall have a shutoff valve at the right side of the frame, next to the engine. Airflow of the heater/air conditioner shall be a minimum 1200 CFM. To achieve maximum cooling, a TM-21 Compressor (10 cu. in.) will be used.

The defroster/heater shall be a minimum of 35,000 BTU and shall be a separate unit mounted over the windshield. There shall be eight (8) louvers/diffusers to direct to windshield and door glass. Airflow of the defroster/heater shall be a minimum 350 CFM. The unit shall be painted Zolatone greystone to match the cab ceiling.

The condenser shall be roof mounted and have 65,000 BTU rating. The unit shall include three fan motors. Airflow of the condenser shall be a minimum 2250 CFM. (This roof-mounted condenser shall work at full rated capacity at an idle with no engine heat problems.)

HEATER/DEFROSTER/AIR CONDITIONING CONTROLS

The heater/defroster/air conditioning shall be located in the overhead console in the center of the apparatus cab within reach of the driver and officer. The controls shall be illuminated for easy locating in dark conditions. The controls shall be located in such a way that the driver will

not be forced to turn away from the road to make climate control adjustments. Control of all heater/defroster/air conditioning functions for the entire apparatus cab shall be achieved through these controls.

DEFROSTER DIFFUSER

A molded diffuser made of durable ABS plastic ductwork system shall be provided. It shall be form fitted and shall attach to the cab's overhead defroster unit to provide temperature controlled air to the windshields. Air flow of up to 280 cfm is balanced and directed across the entire windshield for optimum defrosting capability in all types of weather.

TOOL MOUNTING PLATE

There shall be a 3/16" smooth aluminum plate installed on top of the heat/ air conditioning unit for use in mounting of equipment. The plate shall measure approximately 25" wide x 19.5" long and shall be spaced up 1". The mounting plate shall feature beveled edges on the front and rear for a finished appearance. The plate shall be coated with the same finish as the heat/air conditioning unit and shall be secured with screws for easy replacement.

DRIVER'S SEAT

An H.O. Bostrom Tanker 450 SCBA seat with air suspension shall be provided for the driver. The seat back shall have a SCBA cavity and auto-pivot-and-return padded headrest. The seat shall be equipped with a red 3-point shoulder harness with lap belt. The seat shall have fore/aft adjustment and shall be upholstered with heavy duty Durawear material.

HELMET STORAGE

The helmet for the above seat shall be stored in a compartment. A placard shall be provided visible to the riding position warning that injury may occur if helmets are worn while seated.

OFFICER'S SEAT

An H.O. Bostrom Tanker 350 ABTS SCBA seat shall be provided for the officer. The seat back shall have a SCBA cavity and auto-pivot-and-return padded headrest. The seat shall be equipped with a red 3-point shoulder harness with lap belt and an automatic retractor built into

the seat assembly. The seat shall be upholstered with heavy duty Durawear material on the main contact surfaces. The sides shall be upholstered with heavy duty vinyl.

UNDER SEAT STORAGE COMPARTMENT

There shall be an open storage area under the officer's seat, accessible from the front. The storage area shall be approximately 19.5" wide x 14.375" high x 21.75" deep. The lower rear portion of the compartment shall be tapered to accommodate the wheel well and wiring chase. The opening shall be approximately 15.5" wide x 10.5" high.

HELMET STORAGE

The helmet for the above seat shall be stored in a compartment. A placard shall be provided visible to the riding position warning that injury may occur if helmets are worn while seated.

CREW SEAT – DRIVER'S SIDE, REAR FACING

One (1) H.O. Bostrom Tanker 350 ABTS SCBA fixed base seat shall be installed behind the driver. The seat back shall have a SCBA cavity and auto-pivot-and-return padded headrest. The seat shall be equipped with a red 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The seat shall be upholstered with heavy duty Durawear material on the main contact surfaces. The sides shall be upholstered with heavy duty vinyl.

HELMET STORAGE

The helmet for the above seat shall be stored in a compartment. A placard shall be provided visible to the riding position warning that injury may occur if helmets are worn while seated.

CREW SEAT – OFFICER'S SIDE, REAR FACING

One (1) H.O. Bostrom Tanker 350 ABTS SCBA fixed base seat shall be installed behind the officer. The seat back shall have a SCBA cavity and auto-pivot-and-return padded headrest. The seat shall be equipped with a red 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The seat shall be upholstered with heavy duty Durawear material on the main contact surfaces. The sides shall be upholstered with heavy duty vinyl.

HELMET STORAGE

The helmet for the above seat shall be stored in a compartment. A placard shall be provided visible to the riding position warning that injury may occur if helmets are worn while seated.

SEAT UPHOLSTERY COLOR

The cab seat upholstery shall be gray in color.

SCBA BRACKETS

Each SCBA seat in the cab shall feature a Ziamatic ULLH self contained breathing apparatus (SCBA) storage bracket within the seat back. The bracket shall be capable of storing all U.S. 30-60 minute SCBA bottles.

The bracket shall consist of a back plate, short foot plate, two non-mar double-coated seats, and a "Load & Lock" adjustable strap assembly. The back plate and foot plate shall be black thermoplastic coated. The bottle shall be released by pulling the release strap.

SEAT BELT WARNING SYSTEM

An Akron / Weldon seat belt warning system shall be provided, and shall monitor each seating position. Each seat shall be supplied with a sensor that, in conjunction with the display module located on the dash, shall determine when the seat belt was fastened and if the seat is occupied. An icon shall represent that the seat is properly occupied. An audible and visual alarm shall be activated if the seat is occupied and/or the belt is not fastened in the proper sequence.

CREW SEAT COMPARTMENT

A compartment shall be provided under the forward facing crew seats on the back wall of the cab. The compartment shall be full through, with open access on each side of the crew cab doors.

Fire pump shall be midship mounted. The fire pump shall be of the double suction single stage centrifugal type, carefully designed in accordance with good modern practice.

The pump shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI.

The pump body shall be horizontally split, on a single plane, casing type with removable lower casing for easy removal of the entire impeller assembly including wear rings and bearings from beneath the pump without disturbing piping or the mounting of the pump in the chassis.

All moving parts in contact with water shall be of high quality bronze or stainless steel. Easily replaceable bronze labyrinth wear rings shall be provided. Discharge passage shall be designed to accomplish uniform pressure readings as the actual pump pressure. The rated capacity of the fire pump shall be 1500 gallons per minute in accordance with NFPA# 1901.

The pump shaft shall be rigidly supported by three bearings for a minimum deflection. One high lead bronze sleeve bearing to be located immediately adjacent to the impeller (on side opposite the drive unit). The sleeve bearing shall be lubricated by a force fed, automatic lubrication system, pressure balanced to exclude foreign material. The remaining bearings shall be heavy duty type, deep groove ball bearings and shall be splash lubricated.

PUMP TRANSFER CASE – G SERIES

The drive unit shall be designed of ample capacity for lubricating reserve and to maintain the proper operating temperature. Pump drive unit shall be of sufficient size to withstand up to 16,000 lbs. ft. torque of the engine in both road and pump operating conditions.

The gearbox drive shafts shall be heat treated chrome nickel steel input and output shafts shall be at least 2-3/4" in diameter, on both the input and output shafts. They shall withstand the full torque of the engine in both road and pump operating conditions.

The engagement of the pump transmission shall be of such design so as to permit transfer of power from road to pump operation only after vehicle is completely stopped. The pump shift shall be air actuated from the cab and have both a green "Pump Engaged" light, and a green "O.K.-To-Pump" light. A third green light shall be provided on the pump operator's panel for "Throttle Ready".

The pump drive unit shall be cast and completely manufactured and tested at the pump manufacturer's factory.

PUMP SEAL

The pump shaft shall have only one packing gland located on the inlet side of the pump. It shall be of split design for ease of repacking. The packing gland must be a full circle threaded design to exert uniform pressure on the packing to prevent "cocking" and uneven packing load when it is tightened. It shall be easily adjustable by hand with a rod or screwdriver and requiring no special tools or wrenches. The packing rings shall be of a unique combination of braided graphite filament and braided synthetic packing and have sacrificial zinc foil separators to protect the pump shaft from galvanic corrosion.

PUMP TEST & CERTIFICATION

The pump shall be tested and certified by Mistras Group, Inc., a third party independent testing agency, in accordance with NFPA 1901. A 3 hour pumping test from draft shall be conducted consisting of 2 hours of continuous pumping at 100% of rated capacity at 150PSI net pump pressure, followed by ½ hour of continuous pumping at 70% of rated capacity at 200PSI net pump pressure, and ½ hour of continuous pumping at 50% of rated capacity at 250PSI net pump pressure). The testing shall also include a pressure control system test, priming system test, vacuum test, a gauge/flowmeter test, and a pumping engine overload test. If the apparatus is equipped with a water tank, the water tank-to-pump test shall also be included.

AUXILIARY COOLER

An auxiliary cooler shall be furnished to provide additional cooling to the engine under extreme pumping conditions. Water from the pump is to be piped to the coils of the heat exchanger allowing the engine fluid to be cooled as required.

PUMP CONNECTIONS

All suction and discharge lines (except pump manifolds) 1" and larger shall be heavy-duty stainless steel pipe. Where vibration or chassis flexing may damage or loosen piping or where a coupling is necessary for servicing, a flexible connection shall be furnished. All lines shall be drained by a master drain valve or a separate drain provided at the connection. All individual drain lines for discharges shall be extended with a 90 degree fitting in order to drain below the chassis frame. All water carrying gauge lines shall utilize nylon tubing.

TANK TO PUMP

The booster tank shall be connected to the intake side of the pump with a check valve. The 3" tank to pump line shall run from a bottom sump into the 3" valve. To prevent damage due to chassis flexing or vibration, a short 3" flexible rubber hose coupling shall be used to connect the tank to the intake valve.

VALVE

The valve shall be an Akron Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by an Innovative Controls push/pull handle located at the operator’s panel.

TANK FILL

A 1.5" tank fill shall be provided, using a quarter turn full flow ball valve controlled from the pump operator's panel.

VALVE

The valve shall be an Akron Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by an Innovative Controls push/pull handle located at the operator's panel.

PRESSURE GOVERNOR

Apparatus shall be equipped with a Class1 Pressure Governor that is connected to the Electronic Control Module (ECM) mounted on the engine. The Governor will operate as a pressure sensor (regulating) governor (PSG) utilizing the engine's data for optimal resolution and response.

Programmable presets for RPM and Pressure settings shall be easily configurable using the menu structure.

Engine RPM, system voltage, engine oil pressure and engine temperature with audible alarm output for all shall be provided.

INTAKE RELIEF

There shall be a Hale stainless steel intake relief valve installed on the intake side of the pump. The surplus water shall be discharged away from the pump operator and terminate with Male NST hose thread. System is field adjustable.

6" PUMP INLET

A 6" diameter suction port with 6" NST male threads shall be provided, on the left side of vehicle. The inlet shall extend through the side pump panels and come complete with removable strainer and long handle chrome-plated cap.

2.5" LEFT SIDE INLET

A 2.5" gated inlet valve shall be provided on the left side pump panel. The valve shall be supplied with chrome plate female swivel, plug, chain, and removable strainer. The valve shall attach directly to the suction side of the pump with the valve body behind the pump panel.

VALVE

The valve shall be an Akron Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by a swing type handle located at the operator's panel. The handle shall have a full 90 degree movement.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

6" PUMP INLET

A 6" diameter suction port with 6" NST male threads shall be provided, on the right side of vehicle. The inlet shall extend through the side pump panels and come complete with removable strainer and long handle chrome-plated cap.

DISCHARGE #1 - LEFT

The discharge in position #1 on the left side of the apparatus shall include the following features.

A 2.5" discharge shall be provided on the left side of the apparatus.

VALVE

The valve shall be an Akron Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by a swing type handle located at the operator's panel. The handle shall have a full 90 degree movement.

2.5" PRESSURE GAUGE

A NoShok liquid filled individual line pressure gauge shall be provided. The gauge shall be 2.5" in diameter with white faces and black lettering. The gauge shall have a pressure range of 0-400 psi.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

DISCHARGE #2 - LEFT

The discharge in position #2 on the left side of the apparatus shall include the following features.

A 2.5" discharge shall be provided on the left side of the apparatus.

VALVE

The valve shall be an Akron Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by a swing type handle located at the operator's panel. The handle shall have a full 90 degree movement.

2.5" PRESSURE GAUGE

A NoShok liquid filled individual line pressure gauge shall be provided. The gauge shall be 2.5" in diameter with white faces and black lettering. The gauge shall have a pressure range of 0-400 psi.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

DISCHARGE #3 - RIGHT

The discharge in position #3 on the right side of the apparatus shall include the following features.

A 2.5" discharge shall be provided on the right side of the apparatus.

VALVE

The valve shall be an Akron Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by a swing type handle located at the operator's panel. The handle shall have a full 90 degree movement.

2.5" PRESSURE GAUGE

A NoShok liquid filled individual line pressure gauge shall be provided. The gauge shall be 2.5" in diameter with white faces and black lettering. The gauge shall have a pressure range of 0-400 psi.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

DISCHARGE #4 - RIGHT

The discharge in position #4 on the right side of the apparatus shall include the following features.

A 2.5" discharge shall be provided on the right side of the apparatus.

VALVE

The valve shall be an Akron Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by a swing type handle located at the operator's panel. The handle shall have a full 90 degree movement.

2.5" PRESSURE GAUGE

A NoShok liquid filled individual line pressure gauge shall be provided. The gauge shall be 2.5" in diameter with white faces and black lettering. The gauge shall have a pressure range of 0-400 psi.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

CROSSLAYS

Two (2) crosslay hose beds shall be supplied. The piping and valves shall be 2", the swivel shall be 1.5". The valves shall be the "drop-out" style, push/pull controlled from the pump panel.

Each compartment shall hold 200 ft. of 1.75" double jacket hose. Both beds shall be of the same dimension.

VALVE

The valve shall be an Akron Heavy-Duty swing out 8000 series brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall a 10-year warranty covered by Akron Brass.

VALVE ACTUATOR

The valve shall be controlled by an Innovative Controls push/pull handle located at the operator’s panel.

2.5" PRESSURE GAUGE

A NoShok liquid filled individual line pressure gauge shall be provided. The gauge shall be 2.5" in diameter with white faces and black lettering. The gauge shall have a pressure range of 0-400 psi.

THREAD TERMINATION

The above discharge shall terminate with National Standard Threads.

CROSSLAY COVER

A vinyl crosslay cover shall be provided to enclose the top and sides of the crosslays, capable of being secured at the top and sides.

MASTER PUMP DRAIN

A multiport master drain valve shall be provided and plumbed to multiple locations on the main pump body. The valve assembly shall be clearly marked as the Master Drain.

DRAIN VALVES LIFT UP STYLE

Vertical lift up style, quarter turn style drain valves shall be provided for each suction inlet, or discharge outlet as specified. Each drain shall be clearly marked and color coded to match the corresponding suction of discharge.

WATERWAY VALVE AND ACTUATOR

The waterway valve shall be an Akron 4" electric valve. The valve shall be controlled by an Akron Navigator 9325 electric actuator located at the operator's panel. The actuator shall be connected to both a flow sensor and a pressure sensor. The actuator shall display pressure, flow, and valve position on a full color LDC display.

PUMP AND GAUGE PANELS

Pump panels on both sides shall be easily removable. The gauge and control panels shall be two separate panels for ease of maintenance. There shall be one (1) removable access door as large as possible on the right side pump panel. This door shall have 1/4 turn latching mechanisms for easy removal.

The pump controls and gauges shall be located at the left side of the apparatus and properly marked. The control panel shall be laid out in a user-friendly manner.

All valve controls shall have the corresponding discharge gauge located immediately adjacent to control handle to allow operator to view the discharge pressure without searching the panel.

PANEL FINISH

The panels shall be constructed of black vinyl covered aluminum for maximum protection against abrasion caused during normal use.

ESCUTCHEON PLATES

The pump panel shall be equipped with color-coded removable escutcheon plates around the suction and discharge valves.

COLOR CODING

Each discharge valve control, outlet, and corresponding line gauge shall be color-coded. The color-coding shall be (as applicable):

#1 Discharge - Yellow

#2 Discharge – White

#3 Discharge – Navy Blue

#4 Discharge - Black

#5 Discharge - Green

#1 Pre-Connect - Orange

#2 Pre-Connect - Red

#3 Pre-Connect - Brown

#4 Pre-Connect - Magenta

Front Bumper Line - Turquoise

Large Diameter Discharge – Yellow with White Border

Left Hose Bed Pre-Connect - Tan

Right Hose Bed Pre-Connect - Lavender

Left Rear Discharge - Olive

Right Rear Discharge – Light Blue

Deck Gun – Silver

Inlets – Burgundy

Tank Fill - Lime Green

Tank to Pump – Burgundy

PUMP FINISH

The fire pump and attached valves shall be painted to match the primary chassis frame color. The paint finish shall be applied before the installation of any wiring, gauge lines, valve linkages, or operators.

PUMP PANEL LIGHTING, LED

The driver's side pump panel controls and gauges shall be illuminated by a full width LED light strip.

PUMP PANEL LIGHT

A light shall be provided for the opposite side pump panel.

PUMP PANEL GAUGES AND CONTROLS

The following gauges and controls shall be provided at the pump panel:

Two (2) certified laboratory test gauge outlets.

Pump primer control.

Master drain control and additional drains as needed.

Tank-fill and pump cooler valve controls.

Tank to pump valve control.

Pump capacity rating plate.

All discharge controls.

Two (2) master pump gauges.

Gauges on all 1-1/2" and larger discharge lines.

PRIMING SYSTEM

The priming pump shall be a Trident Emergency Products compressed air powered, high efficiency, multi-stage, venturi based AirPrime System. All wetted metallic parts of the priming system are to be of brass and stainless steel construction. A single panel mounted control will activate the priming pump and open the priming valve to the pump. The priming system shall have a five year warranty.

(1) PRIMER BUTTON - MAIN SUCTION

A single panel mounted control will activate the priming pump and open the priming valve to the pump.

4” MASTER GAUGES

NoShok liquid filled pump pressure and vacuum gauges shall be provided. The gauges shall be 4" in diameter with white faces and black lettering. The gauges shall have a pressure range of 30"-0-400 psi.

WATER TANK GAUGE

An Innovative Controls weather proof encapsulated (14) super bright LED light indicator shall monitor the water tank level and shall be mounted on the pump operator's panel. The fourteen LED lights are arranged in a "V" pattern for easy identification of liquid level. When the liquid level reaches less than a 1/4 full the refill level begins to flash. The tank-sensing probe shall be chemical resistant PVC with stainless steel sensing wires. The cover plate shall be aluminum

sub-plate, black background and blue graphics, with an outdoor exposure rated composite overlay.

WATER TANK

The tank shall be constructed of PT3™ polypropylene material by United Plastic Fabricating (UPF). This material shall be a non-corrosive stress relieved thermoplastic and UV stabilized for maximum protection. Tank shell thickness may vary depending on the application and may range from ½ to 1" as required. Internal baffles are generally 3/8" in thickness.

The tank shall be of a specific configuration and shall be designed to be completely independent of the body and compartments. Joints and seams shall be fused using nitrogen gas as required and tested for maximum strength and integrity. The tank construction shall include PolyProSeal™ technology wherein a sealant shall be installed between the plastic components prior to being fusion welded. This sealing method will provide a liquid barrier offering leak protection in the event of a weld compromise. The top of the booster tank shall be fitted with removable lifting assembly designed to facilitate tank removal. The transverse and longitudinal swash partitions shall be manufactured of a minimum of 3/8" PT3™ polypropylene. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions shall interlock with one another and completely fused to each other as well as to the walls of the tank. All partitions and spacing shall comply with NFPA 1901. The walls shall be welded to the floor of the tank providing maximum strength as part of the tank's unique Full Floor Design™.

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" PT3™ polypropylene and shall be a minimum dimension of 8" x 8" outer perimeter. The fill tower shall be blue in color indicating that it is a water-only fill tower. The tower shall have a 1/4" thick removable polypropylene screen and a PT3™ polypropylene hinged cover. The capacity of the tank shall be engraved on the top of the fill tower lid. Inside the fill tower there shall be a combination vent/overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I.D. of 4" that is designed to run through the tank, and shall be piped to discharge water behind the rear wheels as required in NFPA 1901 so as to not interfere with rear tire traction.

The tank cover shall be constructed of 1/2" thick PT3™ polypropylene and UV stabilized, to incorporate a multi-piece locking design, which allows for individual removal and inspection if necessary. The tank cover(s) shall be flush or recessed 3/8" from the top of the tank and shall be fused to the tank walls and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2" minimum polypropylene dowels spaced a

maximum of 40” apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall accommodate the necessary lifting hardware.

There shall be one (1) sump constructed of a minimum of 1/2" PT3™ polypropylene and be located in the left front quarter of the tank, unless specified otherwise. On all tanks that require a front suction, a 3" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3" N.P.T. threaded outlet on the bottom for a drain plug per NFPA. This shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 3” above the inside floor.

There shall be two (2) standard tank outlets: one for the tank-to-pump suction line, which shall be sized to provide adequate water flow to the pump; and, one for tank fill line, which shall be sized according to the NFPA minimum size chart for booster tanks. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and be capable of withstanding sustained fill rates of up to 1000 G.P.M. All auxiliary outlets and inlets must meet all NFPA guidelines in effect at the time of manufacture.

The UPF Poly-Tank® III shall rest on the body cross members in conjunction with such additional cross members, spaced at a distance that would not allow for more than 530 square inches of unsupported area under the tank floor. In cases where overall height of the tank exceeds 40 inches, cross member spacing must be decreased to allow for not more than 400 square inches of unsupported area.

The tank shall be isolated from the cross members through the use of hard rubber strips with a minimum thickness and width dimension of 1/4” x 1”. The rubber must be installed so it will not become dislodged during normal operation of the vehicle. Additionally, the tank must be supported around the entire bottom outside perimeter and captured both in the front and rear as well as side to side to prevent tank from shifting during vehicle operation.

The tank shall be completely removable without disturbing or dismantling the apparatus structure.

The tank shall be tested and certified as to capacity on a calibrated and certified tilting scale. Each tank shall be weighed empty and full to provide precise fluid capacity. The tank shall be delivered with a Certificate of Capacity delineating the weight empty and full and the resultant capacity based on weight. Engineering estimates for capacity calculations shall not be permitted for capacity certification. A center of gravity and weight calculation for both empty and full conditions shall be required with each tank.

The tank shall have a limited Lifetime warranty that provides warranty service for the life of the fire apparatus in which the tank is installed. Warranties are transferable if the apparatus ownership changes by requesting the transfer from UPF. In applications where the tank will be subject to severe conditions, the tank may have a warranty unique to the application that is clearly defined for each such application.

WATER TANK

The water tank shall have a capacity of 300 U.S. gallons.

APPARATUS BODY

All side metal, compartments and compartment floors shall be of bolted stainless steel. The body shall be assembled with heavy-duty stainless steel channel sills with bracing for extreme rigidity and mounted on a steel subframe.

The compartment body, pump housing and the engine compartment shall be separate modules (segmented body design) that are not to be fastened together in any manner in order to provide "flex joints" to alleviate stress and cracking of body compartments and running boards.

Compartments shall extend from the front jacks to the tailgate of the apparatus and shall be recessed to the frame of the apparatus where possible.

Compartments shall have sweep-out flooring (no obstruction at the floor bottom).

Each compartment shall be properly vented with louvers.

268 cubic feet of compartment space

REAR COMPARTMENT BELOW HOSE BED

There shall be a compartment below the hose, between the frame rails, approximately 26" wide x 9-7/8" high x 88" deep.

COMPARTMENTATION LEFT SIDE

There shall be a compartment below the turntable as follows:

L1- Approximately 20-1/4" wide x 38-5/8" high x 20-1/4" deep.

There shall be two compartments above the rear wheels:

L2- Approximately 41-3/4" wide x 19-1/2" high x 12-1/8" deep. This compartment shall have a pan type lift up door equipped with “D” ring latch and gas door stay.

L3- Approximately 58" wide x 19-1/2" high x 12-1/8" deep. This compartment shall have a pan type lift up door equipped with “D” ring latch and gas door stay.

There shall be three compartments behind the rear wheels:

L4- Approximately 45-3/4" wide x 48-1/2" high x 26-1/2" deep.

L5- Approximately 22" wide x 48-1/2" high x 26-1/2" deep.

L6- Approximately 34-3/4" wide x 40-1/8" high x 26-1/2" deep.

COMPARTMENTATION RIGHT SIDE

There shall be a compartment below the turntable as follows:

R1- Approximately 40-1/4" wide x 38-5/8" high x 27-1/2". The lower portion shall be 10" deep. There shall be a 14" high x 17-1/2" deep x 40-1/4" wide notch in the lower rear portion of the compartment to accommodate the apparatus exhaust system.

There shall be two compartments above the rear wheels:

R2- Approximately 41-3/4" wide x 19-1/2" high x 26-1/2" deep. This compartment shall have a pan type lift up door equipped with “D” ring latch and gas door stay.

R3- Approximately 58" wide x 19-1/2" high x 26-1/2" deep. This compartment shall have a pan type lift up door equipped with “D” ring latch and gas door stay.

There shall be three compartments behind the rear wheels:

R4- Approximately 45-3/4" wide x 48-1/2" high x 26-1/2" deep.

R5- Approximately 45-3/4" wide x 48-1/2" high x 26-1/2" deep.

R6- Approximately 34-3/4" wide x 40-1/8" high x 26-1/2" deep.

AERIAL BODY SUB-FRAME

The chassis shall be fitted with a sub-frame system consisting of a series of stainless steel plate gusseted legs, extending down and out from the chassis frame rails on each side. This system will provide additional structural support to the running boards and side compartments. A heavy-duty rear platform shall be constructed of mild steel to support the rear compartments. The entire assembly will be attached to the chassis frame by a series of heavy-duty U-bolts. Self-supporting bodies will not be acceptable. **NO EXCEPTIONS.**

COMPARTMENT INTERIOR - L1

The L1 compartment on the left side of the apparatus shall include the following features:

No compartment options were selected for L1

COMPARTMENT INTERIOR - L2

The L2 compartment on the left side of the apparatus shall include the following features:

No compartment options were selected for L2

COMPARTMENT INTERIOR - L3

The L3 compartment on the left side of the apparatus shall include the following features:

No compartment options were selected for L3

COMPARTMENT INTERIOR - L4

The L4 compartment on the left side of the apparatus shall include the following features:

No compartment options were selected for L4

COMPARTMENT INTERIOR - L5

The L5 compartment on the left side of the apparatus shall include the following features:

No compartment options were selected for L5

COMPARTMENT INTERIOR - L6

The L6 compartment on the left side of the apparatus shall include the following features:

No compartment options were selected for L6

COMPARTMENT INTERIOR - R1

The R1 compartment on the right side of the apparatus shall include the following features:

No compartment options were selected for R1

COMPARTMENT INTERIOR - R2

The R2 compartment on the right side of the apparatus shall include the following features:

No compartment options were selected for R2

COMPARTMENT INTERIOR - R3

The R3 compartment on the right side of the apparatus shall include the following features:

No compartment options were selected for R3

COMPARTMENT INTERIOR - R4

The R4 compartment on the right side of the apparatus shall include the following features:

No compartment options were selected for R4

COMPARTMENT INTERIOR - R5

The R5 compartment on the right side of the apparatus shall include the following features:

No compartment options were selected for R5

COMPARTMENT INTERIOR - R6

The R6 compartment on the right side of the apparatus shall include the following features:

No compartment options were selected for R6

COMPARTMENT INTERIOR - A1

The A1 compartment on the rear of the apparatus shall include the following features:

No compartment options were selected for A1

UNISTRUT

Each compartment shall come equipped with 1.625" x .875" x .125" aluminum Unistrut channel. The Unistrut shall be securely fastened to the interior walls of the compartment.

ROLL-UP COMPARTMENT DOORS

The apparatus body shall be equipped with R.O.M Robinson Shutter doors where not stated otherwise. The door slats shall be double wall box frame, manufactured from anodized aluminum. The doors shall have the following features:

Manufactured wholly in the United States.

Concave individual slat design to prevent loose equipment from hindering door operation.

Co-Extruded stretch resistant inner seal between slats to prevent metal-to-metal contact and inhibit moisture and dust penetration.

Interlocking swaged/dimpled end shoes shall be utilized to provide a tight fitting assembly and allow for easy removal in the event of damage.

Effective counter balancing for ease of lifting and lowering the doors.

One-piece side rail and track to provide and unobstructed slide area and reduce the risk of binding.

Non-abrasive replaceable water and dust barrier to keep compartment equipment clean and dry.

A magnetic type switch integral to the door shall be supplied for door ajar indication and compartment light activation.

A full width positive latch bar shall be operable with one hand, even with heavy gloves.

A door open indicator light shall be provided in the cab.

PAINTED ROLL-UP DOORS

The doors shall be wet painted before assembly by the door manufacturer. The paint shall be the same as the apparatus to achieve an exact match of paint color and have the look and durability same as on the rest of the truck.

COMPARTMENT LIGHTING

Each compartment shall be equipped with two (2) LED light strips which shall provide a consistent pattern to illuminate to entire compartment.

HOSE BED

The rear hose bed shall be completely wide open to allow for quick and easy loading and unloading of hose thus preventing hose and hose couplings from being caught or tangled.

Rear opening of the rear hose bed shall be a minimum of 42" wide x 28" high. Any rear hose bed opening(s) requiring hose chutes shall not be acceptable.

Hose bed flooring shall be removable slatted aluminum.

HOSE BED COVER

There shall be a red nylon/vinyl hose bed cover for the main hose bed. The cover shall be capable of being securely fastened at the front, sides and rear.

HOSE BED DIVIDER

The hose bed shall be divided by a 3/16" aluminum partition that is fully adjustable by sliding in tracks located at the front and rear of the hose bed. The divider shall be located as needed.

BODY HANDRAILS

Handrails shall be constructed of type 304 stainless steel 1.25 inch diameter tubing with bright finish and knurled gripping surface. Mounting flanges shall be constructed from 7 gauge, .180 thick, stainless sheet. Each grab rail shall have 90 degree returns to flanges. The ends of grab rail shall pass through the flanges and be welded to form one structural unit. The handrails, shall be mounted using 1.25" SS Hex bolts, with a barrier rubber gasket at each flange. Sufficient space shall allow for a gloved hand to firmly grip the rail.

The rails shall be located in the following areas:

(Note: These are in addition to those previously mentioned in the cab section):

There shall be one (1) handrail on each side of the access steps to the ladder. These handrails are covered with ribbed rubber to prevent hand slipping when climbing the steps.

STEPS

There shall be one (1) fold-down step on each side of the front face of side compartments as required by N.F.P.A.

There shall be one (1) fold-down step at each side of the rear area.

There shall be two (2) pull-out steps, approximately 25-3/4" wide x 11-3/4" deep, provided on the right side of the apparatus for ease of accessing side stacked ground ladders. These steps shall be located one ahead of the rear axle and one behind the rear axle.

RUB RAILS

The body shall be equipped with anodized aluminum channel style rub rails at the sides. Rub rails shall be spaced away from the body by 1/2" polymer spacers. The rub rails shall be polished to a bright finish.

ALUMINUM TREADPLATE

All load bearing aluminum treadplate running boards shall be .155 thick bright annealed with a serrated embossed finish. Running boards and rear step edges shall be flanged down for added strength. Running boards shall also be flanged up to form kick plates. All non-load bearing aluminum shall be .125" thick bright annealed finish. In areas where aluminum treadplate shall function as a load-bearing surface, there shall be a heavy steel sub-structure. This structure shall consist of 3" channel and 1-1/2" angle welded support. This shall assure that there shall be no flexing or cracking of running boards. The aluminum shall be insulated from the steel by closed cell foam body barrier material.

Treadplate locations:

1. Skirting around front bumper.
2. The step at the cab entrance.
3. The jump seat steps.
4. The running boards.
5. The rear step.
6. The top of the compartments.

WHEEL LINERS

Fiberglass fully radiused wheel well liners with adequate support to maintain their rigidity through adverse weather conditions shall be provided.

GROUND LADDERS

The apparatus shall be equipped with 115’ of heavy duty, box type "I" beam rail, ground ladders. The ladders shall meet the requirements of NFPA 1931 to ensure proper design and that sufficient strength is available for the service intended. The ground ladders shall be constructed of aluminum with non-welded, field replaceable rung to rail connections to simplify field repairs. Removable plated steel butt spurs shall be utilized for added strength. A full 1/2", non-rotting, poly rope shall be provided for easy ladder operation.

ALCO-LITE LADDERS

One (1) 10 ft. folding ladder, (mounted in fly section)

One (1) 14 ft. combination ladder

Two (2) 16 ft. roof ladders

One (1) 24 ft. 2-section extension ladder

One (1) 35 ft. 2-section extension ladder

The ladders shall have lifetime Warranty against manufacturing defects.

LADDER MOUNTING

The ladders shall be mounted on brackets on the side of the body and held in place by polished aluminum quick-release spring locks. Loading and unloading of ground ladders from rear of apparatus shall not be acceptable.

LICENSE PLATE BRACKET

A Cast Products LP0013 cast aluminum license plate bracket with LED light shall be provided at the rear of the apparatus.

MASTER ELECTRICAL PANEL

The main breaker panel shall be wired through the master disconnect solenoid and controlled with a three-position ignition rocker switch. Circuit breakers and flashers shall be located at officer's right side lower interior firewall with removable cover and schematic provided with notebook holder on outside cover.

A deluxe breaker panel with up to 22 ground switched relays with circuit breaker protection shall be provided.

An integrated electrical sub-panel shall be provided and interfaced to the body and chassis through an engineered wire harness system.

Twelve (12) 20-ampere and one (1) 70-ampere relay for cab lightbar and assemblies shall be provided. If the option for a mechanical siren has been selected two (2) additional relays shall be provided.

Additional four relay boards with circuit breaker protection for additional loads. Maximum two boards (8 relays) per breaker panel. All relay boards set up to trip with input from switch of positive-negative or load manager by moving connector on board (no tools needed to do this).

All relay boards shall be equipped with a power-on indicator light (red), input indicator light (green) and power output indicator light (red).

Up to 23 additional automatic reset circuit breakers for non-switched loads that are remotely switched (ie: heater fans, hood lights, etc.).

All relays and circuit breakers on the relay boards shall be pull-out/push-in replaceable.

All circuit breakers on the relay boards shall be 20 ampere automatic reset which can be doubled or tripled for 40 or 60-ampere capacity.

The system shall utilize Deutch DRC weather resistant connectors at the breaker panel, toe board and main dash connections.

All internal wire end terminals, including locking connectors, shall be mechanically affixed to the wire ends by matching terminal crimping presses to assure the highest quality terminations.

All internal splices shall be ultrasonically welded connections and all internal wiring shall be high temperature GXL type wire that is protected by wiring duct wherever possible.

All switches shall be ground controlled; no power going through any rocker switch.

Any switch controlling a relay in the breaker panel shall be capable of being set to function only when the parking brake is set. All relays shall be tagged with the function that the relay is controlling.

BODY ELECTRIC SYSTEM

All body electrical wiring in the chassis will be XLP cross link-insulated type. Wiring is to be color-coded and include function codes every three (3) inches. Wiring harnesses will be routed in protective, heat resistant loom, securely and neatly installed. Two power distribution centers will be provided in central locations for greater accessibility. The power distribution centers contain automatic thermal self-resetting breakers, power control relays, flashers, diode modules, daytime driving light module, and engine and transmission data links. All breakers and relays are utilized in circuits which amp loads are substantially lower than the respective component rating thus ensuring long component life. Power distribution centers will be composed of a system of interlocking plastic modules for ease in custom construction. The power distribution centers are function oriented. The first is to control major truck function and the second controls overhead switching and interior operations. Each module is single function coded and labeled to aid in troubleshooting. The centers also have accessory breakers and relays for future installations. All harnesses and power distribution centers will be electrically tested prior to installation to ensure the highest system reliability.

All external harness interfaces will be of a triple seal type connection to ensure a proper connection. The cab/chassis and the chassis/body connection points will be mounted in accessible locations. Complete chassis wiring schematics will be supplied with the apparatus.

The wiring harness contained on the chassis shall be designed to utilize wires of stranded copper or copper alloy of a gauge rated to carry 125% of maximum current for which the circuit is protected without exceeding 10% voltage drop across the circuit. The wiring shall be uniquely identified by color code or circuit function code, labeled at a minimum of every three (3) inches. The identification of the wiring shall be referenced on a wiring diagram. All wires conform to SAEJ1127 (Battery Cable), SAEJ1128 (Low Tension Primary Cable), SAEJ1560 (Low Tension Thin Wall Primary Cable).

All harnesses shall be covered with moisture resistant loom with a minimum rating of 300 Degrees Fahrenheit and a flammability rating of VW-1 as defined in UL62. The covering of jacketed cable has a minimum rating of 289 degree Fahrenheit.

All harnesses are securely installed in areas protected against heat, liquid contaminants and damage. The harness connections and terminations use a method that provides a positive mechanical and electrical connection and are in accordance to the device manufacturer's instructions. No connections within the harness utilize wire nut, insulation displacement, or insulation piercing.

All circuits conform to SAE1292. All circuits are provided with low voltage over current protective devices. These devices are readily accessible and protected against heat in excess of component rating, mechanical damage, and water spray. Star washers are not used for ground connections.

BACK-UP ALARM

An Ecco model SA917 automatic self-adjusting electronic back-up alarm producing 87-112 db shall be installed at the rear between the frame rails. It shall operate whenever the transmission's reverse gear is selected.

TAIL/STOP/TURN LIGHTS

The rear tail/stop, directional (turn amber arrow), shall be Weldon LED 3884 Series lights and the backup lights shall be halogen. The 10.5" high x 8.5" wide rectangular tri-cluster lights shall be mounted in polished housings on the rear body panels.

LED ICC/MARKER LIGHTS

LED type ICC/marker lights shall be provided to meet D.O.T. requirements.

STEP LIGHTS

Whelen 2G Series LED 4" step lights shall be provided, one each side on the front compartment face at pump panels, one at turntable step, and one each side of rear step.

GROUND LIGHTING

The apparatus shall be equipped with lighting capable of illumination to meet NFPA requirements. Lighting shall be provided at areas under the driver and crew riding area exits and shall be automatically activated when the exit doors are opened. The ground lights shall be Truck-lite® LED model #44042C. Lighting required in other areas such as work areas, steps and walkways shall be activated when the parking brake is applied, provided the ICC lights are on.

WORK LIGHTS

There shall be two (2) Unity brand AG 6" chrome plated sealed beam flood lights provided. The lights shall be securely mounted at the upper rear of the apparatus body. Each light shall be supplied with individual switches.

OPTICAL WARNING SYSTEM

The optical warning system shall be capable of two separate signaling modes during emergency operations. One mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right-of-way and the other mode shall signal that the apparatus is stopped and is blocking the right-of-way. Switching shall be provided that senses the position of the parking brake.

A master optical warning device switch shall be provided to energize all of the optical warning devices provided. All lights shall operate at not less than the minimum flash rate per minute as specified by NFPA.

UPPER LEVEL WARNING DEVICES

The upper level is divided into zones A, B, C and D and the approved lighting package to be provided shall be as follows:

Zone A (front) shall have one (1) Whelen Model FN72QLED 8 LED Freedom Series 72” Lightbar.

Zone B (right side) shall be covered by the module from the lightbar and the right rear stanchion beacon.

Zone C (rear) shall have two (2) Whelen Model RB6 rotating beacons, red, mounted on rear stanchions.

Zone D (left side) shall be covered by the module from the lightbar and the left rear stanchion beacon.

LOWER LEVEL WARNING DEVICES

The lower level is divided into zones A, B, C and D and the approved lighting package to be provided shall be as follows:

Zone A (front) shall have a stainless steel warning light housing each side with Two (2) Whelen 600 Super LED red lights mounted in the front of each housing. The inboard pair of lights is in addition to the minimum NFPA warning system and shall be wired through a load-shedding device.

Zone B (right side) shall have four (4) Whelen 600 Series Super LED red lights mounted one on the side of the headlight housing, one at the middle of the apparatus, one on the body side at rear of apparatus, and one on the side of the aerial device.

Zone C (rear) shall have two (2) Whelen 600 Series Super LED, red lights mounted one each side of the rear of the apparatus.

Zone D (left side) shall have four (4) Whelen 600 Series Super LED, red lights mounted one on the end of the headlight housing, one at the middle of the apparatus, one on the body side at rear of apparatus and one on the side of the aerial device.

AERIAL LOWER MAIN FRAME ASSEMBLY

The mainframe assembly shall be mounted mid-ship on the chassis, forward of the pump and over the transmission. This shall leave the rear hose bed open for use of large diameter and regular fire hose.

An open tube or angle substructure for the mainframe assembly shall not be acceptable.

The main frame assembly base plate, located at the top of the assembly which supports and holds the turntable rotation bearing, will be a minimum 1" steel measuring 54" x 43". There shall be a minimum of two steel tension and compression bars mounted underneath, fore and aft, of the main frame assembly which shall tie the aerial and chassis together. The bars shall function to withstand vertical torsional loads. The forward tension and compression bar shall be attached from the rear area of the front spring suspension hanger to the underside area of the mainframe assembly. The rear tension and compression bar shall be attached from the forward area of the rear spring suspension hanger to the under side area of the mainframe assembly.

TURNTABLE BEARING

The turntable bearing shall be constructed of steel. There shall be a minimum of 36 drilled and tapped holes in the turntable bearing.

The diameter of the turntable bearing shall be a minimum of 47". The turntable bearing shall be able to rotate 360 degrees in either direction on a one inch thick steel plate. The turntable bearing shall be bolted to the top of the main frame assembly using a minimum of 36 Grade 8 bolts.

UPPER TURNTABLE

The turntable shall be a minimum of one-inch thick plate and ninety-six (96) inches in diameter. The side plates to which the main base section of the aerial ladder is connected shall have a minimum height of four feet and shall include I-beam gussets of approximately fifty inches in length that tolerate the side thrust and tremendous forces to which the unit would be subjected.

The turntable shall be bolted to the turntable bearing using a minimum of 36 Grade 8 bolts.

The turntable shall be equipped with two removable aluminum sections for access into the pump.

The turntable side plates shall be positioned at a 45-degree angle (opposite the angle of the raise/lower cylinders) to act as a partial counter balance weight on the opposite side of the truck from the ladder extension.

The turntable shall be equipped with a rotating mechanism consisting of two hydraulically powered, planetary gear boxes that shall handle torque loads imposed by water hammer and hose breakage. The rotating mechanism shall give the turntable and boom built in coast as an added safety precaution to avoid lateral boom side-to-side deflection (reactionary whipping effect) caused by the boom being stopped suddenly.

A parking brake system shall be provided that is capable of holding the turntable in a stationary position regardless of the angle or extension of the aerial, while carrying the manufacturer's rated load capacity with the waterway in operation and discharging water at the tip of the aerial fly section. An override shall be provided to release the parking brake when operating with the emergency auxiliary power unit.

The power operated turntable shall provide continuous rotating of the aerial structure clockwise or counter clockwise, thus enabling the structure to be positioned in any segment through 360 degrees. The rotating mechanism shall also provide sufficient power to rotate the aerial sections in any direction at any angle, fully extended, while carrying the manufacturer's rated load capacity with the waterway in operation and discharging water at the tip of the aerial fly section.

Provisions shall be made for emergency operation of the rotation system should loss of engine power occur. This shall be done through an auxiliary power unit that is capable of providing hydraulic power to safely rotate the aerial.

There shall be one heavy-duty steel pivot shaft that shall attach the base section of the boom (at the top and very back) to the top portion of the turntable side plates. The minimum steel shaft measurement shall be 34" long, 4" diameter with 1" wall thickness. Turntables using two separate attachments to hold and position the ladder in place shall not be acceptable.

The complete rotation system shall have built in relief to prevent damage from rotating the boom into buildings or from overloaded water streams. Suitable indicators, clearly visible at all times, shall be provided to facilitate correct alignment of the turntable with the bed of the boom. An automatic light shall be used to show correct alignment for bedding of the ladder from the turntable control station and the platform station.

Wide access steps to the turntable shall be provided on the left side of the apparatus.

LOWER TURNTABLE ACCESS LADDER

There shall be a ladder located on the left side of the apparatus to access the turntable pedestal. The ladder shall be a Ziamatic model “Quick-Lift” swing out and fold down type. The ladder shall be constructed of 1.25" heavy-wall aluminum tubing and cast aluminum rungs with a non-skid footing surface. Each step shall be 3.00" deep x 15.5" wide.

UPPER TURNTABLE ACCESS LADDER

An additional ladder shall be provided on the left side turntable to allow easy access to the climbing ladder. The ladder shall be constructed from heavy wall, knurled aluminum tubing 1.25" in diameter. A large treadplate step with a Gripstrut insert shall be located at the top to act as a landing. The entire assembly shall be securely bolted to the upper turntable side plate.

INTERLOCK

An interlock shall be provided that prevents operation of the aerial device until the chassis spring brakes have been set and the transmission has been placed in neutral or the transmission is in the drive position with the driveline to the rear axle disengaged.

An interlock shall be provided that allows operation of the engine speed control only after the chassis spring brakes have been set and the transmission is in neutral.

An interlock system shall be provided to prevent the lifting of the aerial device from the travel position until all the stabilizers are in a configuration to meet the stability requirements. The interlock system shall also prevent the moving of the stabilizers unless the aerial device is in the travel position.

ROTATION LIMITING SYSTEM

An aerial rotation limiting system shall be provided to notify and prevent the operator from rotating the aerial into a restricted position due to a "short-set" outrigger configuration. The system shall enable the operator to place the aerial in a 180-degree rotation to the opposite side of the apparatus than that of the "short-set" outriggers only.

The aerial shall automatically slow down when it approaches the limit of rotation travel.

The system shall be capable of rotating the aerial two degrees past the centerline of the apparatus on the "short-set" side to enable bedding of the aerial within the travel support structure without system cutout.

Audible warning alarms and LED indicators shall be provided to warn the operator they have reached the rotation limit and can also be used to assist with set-up and troubleshooting of the system.

SMART BOOM WARNING SYSTEM

This system shall warn both audibly and visually of impending contact with either the cab or the body of the truck.

When in an area of impending contact, the system shall shift the aerial controls into a reduced speed "creep mode" but shall not limit travel of the aerial.

Both rotation interlock and the smart boom warning system shall display information on a visual LED information center mounted at the turntable control pedestal and in the platform.

HYDRAULIC SYSTEM

A flange mounted 30 GPM hydraulic pump shall be driven by a power take off unit that is connected to the chassis transmission to provide the power required for operating the aerial. The hydraulic system shall have a minimum hydraulic reservoir for 65 gallons of special hydraulic fluid. The hydraulic reservoir shall be located at the left side of the lower mainframe assembly. The hydraulic fluid must be discharged through a fine mesh stainless steel strainer. Within the system, pilot operated check valves shall be incorporated so that all valves hold in their respective function(s). A ten (10) micron return filter of 40 gpm capacity, with replaceable cartridge, shall be provided.

The hydraulic system shall also incorporate automatic by-passes to compensate in the event the boom is forced into a building or the operator accidentally moving the control valve in the opposite direction while at full speed.

The hydraulic system shall provide coast in the lift cylinders to prevent the outrigger jack system from coming off the ground. This shall be accomplished through programmable platform controls that limit the acceleration and deceleration of the boom.

Intercooling of the hydraulic oil shall be accomplished through a built in heat exchanger to cool oil at all times.

All hydraulic lines shall be of the double braided type, with synthetic cover, rated at 12,000-psi burst pressure or above. A PTO hour meter shall be provided to record the time when the aerial hydraulic system is engaged.

AUXILIARY HYDRAULIC POWER

A 12-volt auxiliary pump shall be provided to supply emergency power to the hydraulic system. This system shall be operated off the truck batteries and provide limited but adequate power to operate the boom and outrigger jacks under emergency conditions.

CONTROL PEDESTAL

There shall be an aerial control pedestal located on the left side of the turntable. The control station shall encompass three electric over hydraulic proportional lever type controllers for raising/lowering, extending/retracting, and rotating the aerial device.

The turntable pedestal controls shall have manual overrides within the console useable through an access door. The lower pedestal controls shall cancel the platform controls under all conditions.

The pedestal shall have removable panels for access to the hydraulic lines, valves and electrical wiring. There shall also be a hinged cover at the top of the control station for additional access.

The following additional items shall be mounted at the top of the turntable pedestal control station:

a] automatic panel light to illuminate controls for nighttime operation

b] on/off control switch for boom lights (one light mounted on each side of the boom)

c] on/off control switch for optional ladder lighting

d] on/off control switch for other optional lighting

e] on/off control switch for the rear bucket scene light

f] on/off control foot switch for high speed control of the hydraulic system

g] on/off control switch for “creep mode” for aerial control functions and indicator LED

h] deactivation switch of the electric platform controls with the turntable electric controls remaining operable.

i] illuminated emergency push button to deactivate the platform controls

j] a low breathing air system pressure warning alarm and LED indicator

k] a pedestal control power LED indicator

l] a platform control power Led indicator

m] intercom communication system

n] plaque displaying functions for each pedestal boom operation

o] plaque displaying rated load capacity for the platform

A safety guardrail shall be provided at the turntable pedestal control station to prevent the operator from falling.

INCLINOMETER

An illuminated inclinometer shall be provided and mounted in plain view of the pedestal operator location.

BOOM ASSEMBLY

An elevated platform of the telescopic design consisting of a minimum of five sections shall be provided.

The five sections produce a compact retracted length, allowing the platform to be positioned in tight or confined spaces at lower degrees of elevation. All sections shall be of the lightweight open lattice, non-crossing enclosed box design of truss type construction to obtain optimal stability at full horizontal reach. The telescoping sections shall be constructed from heat-treated 6061-T6 aluminum alloy material fastened by Aircraft type Huck bolts. There shall be no welding on the boom so as not to lower the yield strength of the material and cause torsional fracture, grain distortions and unequal conductivity. There shall be a minimum of 500 Aircraft type Huck bolts per section of boom. The base section of the boom shall have a section modulus of 468 $in.^3$ and a resisting bending moment of 16,000,000 in. lb. The base section shall also consist of two heavy-duty steel side plates; one mounted each side of the boom. The steel side plates shall be Huck bolted into place and shall function to tie the boom, turntable, and lift cylinders together. There shall be trailing beams attached to the side plates that shall function to position and anchor lift cylinders into place and to distribute shock loads imposed by water hammer or hose breakage.

The boom shall be left in a natural aluminum finish. Painting the boom shall not be acceptable.

The boom shall have the capability to shed ice build up during freezing conditions.

BOOM TRACKING LIGHTS

Two (2) Unity, 6" spot lights shall be provided, one on each side of the boom base section to light the aerial device for night time operation. The lights shall be activated by a switch at the pedestal.

AERIAL PLATFORM DEVICE

An aerial platform device with a minimum 100-foot vertical reach shall be provided. The height dimension shall be calculated with the boom at 80 degrees. The horizontal reach of the device shall not be less than 89 feet. The overall height of the apparatus with the aerial device in the bedded positions shall be no more than 11 feet, 6 inches and the overall length of vehicle shall be not more than 45 feet, 9-3/4 inches.

CLIMBING LADDER

A NFPA compliant climbing ladder with high handrails shall be provided for a continuous escape way and accessibility to and from the platform. Each section of the ladder shall be attached to a specific boom section allowing the ladder to extend automatically at the same rate as the boom.

The climbing area shall be free of cables, waterway and extension cylinders. The ladder climbing area shall be a continuous escape way free of all obstacles.

LOAD CAPACITIES

The following load capacities shall be established with the stabilizers at full horizontal extension and placed in the down position. Capacities shall be based upon full extension and 360 degree rotation.

50 MPH WIND CONDITION (DRY)

The aerial platform shall have a rated capacity of 1000 pounds at any elevation or extension. This condition shall be with “NO WATER” flowing or in the waterway.

50 MPH WIND CONDITION (WET)

The aerial platform shall have a rated capacity of 500 pounds at any elevation or extension. This condition shall be “WITH WATER” flowing or in the waterway.

LIFTING CYLINDERS

The raising and lowering mechanism shall consist of two hydraulic cylinders approximately 7" in diameter. The cylinders shall be attached to the boom assembly in a manner that requires only 50% of the lifting force. The cylinders shall be capable of lifting the full rated load of 1000 lb. with the boom at full horizontal extension with less than 1500 psi. hydraulic pressure.

The power operated raising and lowering cylinders shall provide movement of the ladder and platforms rapidly and smoothly without undue sway or vibration. A positive locking device shall be provided so the desired angle of elevation can be maintained indefinitely without dependence upon engine power.

As a safeguard feature, the lifting system shall be structurally and hydraulically designed and mounted to prevent rapid descent (lowering) of the aerial unit in the event of detachment, failure or hydraulic hose break. In the event of failure of any raising mechanism during operation, the gravity descent of the ladder shall be kept at a speed, which shall prevent damage to the equipment or danger to personnel. Provisions shall be made to prevent damage at full raise and lowering. There shall be a pilot controlled check valve on each cylinder.

EXTENSION AND RETRACTION

The boom and platform shall be extended by dual hydraulic rams mounted midway between the upper and lower main rails of the base section. The cylinders shall be mounted at the ends of the base section and supported through the middle to accommodate the load stress(s) of the boom.

The hydraulic cylinders shall extend the second section so that both cylinders hydraulically equalize and provide the additional safety feature of a double extension system. The extension/retraction cylinder shaft size shall be a minimum of 3" in diameter. Each cylinder rod shall have a tubular design to save weight.

The third, fourth, and fifth sections shall be connected to the second section of the boom by dual aircraft cables. This design feature shall eliminate the extra weight of hydraulic cylinders on the outer sections when extended to the side of the apparatus.

The design shall be such that the operating hydraulic pressures of the main system shall be 2,000 psi or less. Once again, as a safeguard feature, the system shall be structurally and hydraulically designed and mounted to prevent rapid descent (retraction) of the aerial unit should a detachment, failure or hydraulic hose break.

All sections of the boom shall extend and retract (slide) on special polymer slide blocks. Each slide block shall be bolted into place and shall be removable for inspection and maintenance. There shall be minimum of 44 slide blocks throughout the five sections of the boom for proper alignment and stability.

WATER SYSTEM TO THE PLATFORM

Water shall be supplied through a machine honed and fitted telescopic waterway constructed of high tensile aluminum. The waterway sections shall be provided with special pack gland type seals for minimum maintenance and the seals shall be located on the inside of the telescoping waterway. Waterway seals located on the outside of the waterway shall not be acceptable due to the decreased life expectancy caused by foreign particles and bad weather conditions damaging seals.

The waterway shall be completely enclosed by the boom sections with supports for the end of each waterway section. This shall leave the bottom side of each boom section completely free of extension/retraction cylinders, waterway supply line and waterway supports, hydraulic lines and nozzle(s) from possible damage due to the boom accidentally hitting against roof cornice or other types of constructions. The water supply line shall come directly off the main pump discharge manifold and shall be piped through smooth high pressure piping without the use of 90 degree chicksan joints, to reduce friction loss. A full flow ball valve to eliminate any possibility of water hammer on the waterway shall control the water flow. The water shall be passed through a special 4" passage-rotating swivel designed to also provide hydraulic passages and electrical circuits to the turntable. A 1.5” waterway drain valve shall be provided, and controlled from the pump operator’s panel.

Waterway piping immediately above the hydraulic swivel shall have one 90 degree elbow connected to a straight pipe attached to a reinforced smooth bore hose. There shall be no chicksan swivels or multiple bends or twists of the waterway pipe immediately above the hydraulic swivel, which would increase friction loss. The waterway diameter at the base section of the boom shall have a minimum inside diameter of 3-1/4" and shall finish in the fifth section of the boom with a minimum inside diameter of 5-1/4". This shall be done in order to decrease the friction loss as much as possible while increasing the water flow.

The waterway and platform nozzles shall have the capability of flowing a minimum of 2,000 gallons per minute.

Two (2) automatic relief valves, at the top and the bottom of the waterway, shall be provided in to eliminate any damage to the waterway by pressure shock or retracting the boom with the drain valve closed.

OUTRIGGER GROUND JACKS

The outrigger control station shall be located between the L1 compartment and the left hand outrigger. The single outrigger control station shall control all outrigger operations allowing for a one-person operation and quick set-up.

Individual control valves shall be supplied for each mode of outrigger operation. There shall be a plaque located next to each control displaying the function.

A two position hydraulic transfer valve (diverter valve) shall be installed to direct hydraulic power to either the outrigger operations or the boom operations to prevent operation of both circuits at the same time.

Fluid capacity plate for all lubricants and filter part numbers shall be provided.

There shall be three other controls located at the outrigger control station:

a] on/off switch for auxiliary hydraulic motor

b] high speed control for hydraulic system

c] on/off switch for electrical power to pedestal and platform.

The mid-ship mounted outrigger jack rams shall have a minimum bore and stroke of 5"x 23". Outriggers that employ exposed hydraulic lines shall not be acceptable.

The extendable outrigger stabilizers, when fully extended, shall have a spread of 20 feet. The stabilizer sections shall have a minimum overlap of 43" for safety and stability. The stabilizers shall be operated independently or simultaneously and may be positioned to accommodate obstructions such as curbs, pavement depressions, parked vehicles, or any other hindrance. The extendable portion of the outrigger stabilizers and the support in the mainframe shall be constructed of reinforced structural tubing, Type A500 Grade B or equivalent. Poly wear pads shall be installed between inner and outer tubes. The extendable portion of the outrigger shall ride on UHMW (ultra high molecular weight) slideblocks.

There shall be two rear jacks located directly behind the rear tandem axle area, one each side of the vehicle, designed to extend straight down to take the weight off the rear suspension system. This shall enable the vehicle to be set up in tight or confining spaces with cars, additional fire apparatus, or other obstructions nearby.

Any beam or contributing structural member, through which the jacks supports the weight of the boom (aerial sections), or any position of the apparatus plus the live loads peculiar to fire fighting operations, shall be of ample strength to carry these loads without evidence of stress, bending, twisting or other failure(s). Pilot operated check valves shall be incorporated on each jack cylinder and manual pin locks shall be provided for each main outrigger jack, for additional safety.

There shall be an audible alarm and warning light that are automatically activated when the outriggers are being deployed.

FRONT SUSPENSION LOCKING CYLINDERS

Two (2) hydraulic suspension-locking cylinders shall be provided. The cylinders shall be mounted to the chassis frame rails directly above the front axle. The cylinders shall be activated when the main outrigger system is deployed.

OUTRIGGER PADS

Two (2) jack pads made of black high-density polyethylene material shall be provided.

OPERATIONAL TEST

After starting the engine, setting the jacks and transmitting power to the platform, a complete cycle of the platform operation shall be carried out as follows: With one person operating the machine from the platform control station, raise the platform from horizontal, rotate through a 90 degree turn and extend to full specified height. This shall be completed in less than 150 seconds, smoothly and without vibration. The platform shall then be retracted and lowered to its starting position after which a thorough inspection shall be made of all moving parts with special attention given to the platform leveling system.

This test shall be repeated employing the controls at the lower pedestal control station. The effectiveness of the lower control override shall be demonstrated.

AERIAL DEVICE TEST & CERTIFICATION

The aerial device shall be tested and certified by Mistras Group, Inc., a third party independent testing agency. The aerial device shall be inspected and tested in accordance with the requirements of NFPA 1911, including all non-destructive testing (NDT) prior to being subjected to the tests defined in NFPA 1901. These tests shall include a stability test, horizontal load test, and an aerial device water system test.

PLATFORM AND EQUIPMENT

The platform shall be constructed of heat reflecting reinforced aluminum to protect occupants against flash fires and freezing weather. The platform shall have a minimum floor area of 19.5 sq. ft. and shall be provided with closed sides, 42" high all around. The platform shall be completely enclosed along the floorboard to protect occupants. There shall be four doors in the platform, two in the front and two in the rear, each of which shall be provided with a suitable safety latch. All doors shall latch and open inward to avoid accidentally falling from the platform.

A total of four (4) anchor points shall be provided within the platform for the attachment of safety harnesses.

A slip-resistant front access step shall be provided, full width of the platform, approximately 8-1/2" wide. The front corners shall be chamfered for accessibility to parapets and roofs.

Drain openings shall be provided to prevent water accumulation in the platform.

The platform-supporting member shall be a welded steel fabrication in the form of a yoke. The yoke supporting tube shall be bolted to the fly section of the boom. The platform shall be attached to the yoke supporting tube through two swivel points, one each side, above center. The position of the supporting yoke tube shall enable the platform to reach over roof cornices and other obstructions and position the platform directly on top of the roof without damaging the platform undercarriage, waterway supply line, hydraulic lines or boom sections.

A platform leveling system shall be provided and so designed that the platform together with its rated load shall be supported and maintained level in relation to the turntable regardless of the position of the boom or sections. This shall include dual hydraulic cylinders on each side of the platform (four cylinders total) and a self-contained hydraulic leveling system (fully enclosed) in the end of the boom so that no hydraulic lines, reel or base controls have to travel through the telescoping sections, helping to eliminate service problems or failure of the leveling system due to ruptured lines or leaking reels. The platform pivots shall be mounted above center (characteristic of a ferris-wheel suspension) to prevent dumping the platform should a malfunction of the leveling system occur. As a safety feature, should a malfunction occur, there shall be an emergency manual override control to level the platform.

PLATFORM BOOM OR SECTION BED LOCK

An interlock system shall be provided which shall prevent action and movement of the retracted elevating platform boom or sections in their bed until the ground jacks are placed in position to stabilize the vehicle.

LOAD LIMITATIONS

Load instruction plates shall be located at the turntable pedestal control station and the platform control station indicating the safe load of the platform. The platform shall carry the rated load capacity indicated in the following manner: raise, extend, rotate, retract and lower without exceeding the hydraulic pressures prescribed by the manufacturer. Extensions, retraction, and elevation functions can be operated simultaneously.

THE PLATFORM SHALL BE CAPABLE OF CARRYING ITS RATED LOAD SAFELY IN ANY POSITION OF OPERATION ACCORDING TO NFPA #1901.

PLATFORM ACCESS LADDER

There shall be an aluminum treadplate access ladder furnished near the rear of the body, on the left side, to access the platform. The ladder shall be furnished with a drop down aluminum step to allow easy access when the vehicle is set-up on the outriggers. Each step will be illuminated for night operation.

PLATFORM CONTROLS FOR BOOM OPERATION

The platform control station shall be on the forward wall of the platform, centered for ease in operator viewing while operating the platform. The three controls shall control the functions of raising and lowering, extension and retraction and rotation of the aerial. The placement of the controls shall conform to NFPA.

The controls shall be of the electronic type. This system shall provide diagnostic functions to aid in trouble shooting as well as programmable features to control speed, acceleration and deceleration.

The controls shall be lighted for nighttime operation.

All electrical connections to the control panel shall be made through waterproof connections and be easily removed or replaced for service.

The following additional items shall be located at the platform control station:

1] On/off control switch for light to illuminate controls for nighttime operation.

2] Foot operated switch for high-speed control of the hydraulic system.

3] A button to activate “creep mode” of the aerial operation

4] Slave intercom station allowing "hands free" operation of the intercom.

5] A "rungs aligned for climbing" for all high-handrail aerial ladder platforms.

6] A low breathing air pressure warning alarm.

A red vinyl cover shall be provided to cover the control panel in the aerial platform. The cover shall be secured at the top and snaps shall be used at the bottom.

INCLINOMETER

An illuminated inclinometer shall be provided and mounted in plain view of the aerial platform operator.

PLATFORM SPOT LIGHT

A Unity 6" spotlight shall be provided on the top rail of the platform for the use of the operator.

120 VOLT CIRCUIT TO PLATFORM

One (1) 15 amp electrical circuit utilizing 12 gauge 3 conductor electric cable shall be provided to the tip of the ladder. The circuit shall be wired from an enclosed terminal strip below the turntable through the collector ring assembly.

One (1) (NEMA-L5-20) female, three-prong, twist lock receptacle, with environmental cover, shall be located below the aerial platform controls.

WATER CURTAIN

A water spray system shall be provided beneath the platform and controlled by a hand operated valve inside the platform. The spray system shall provide 75 GPM of water in a 25 ft. diameter water curtain below the platform. As a safety factor, one or both turret nozzles may be directed straight down for large volumes of water directly below.

AUXILIARY YOKE OUTLETS

Directly behind each turret a 2-1/2" NST outlet, reduced to an 1-1/2" with cap and chain, shall be provided as auxiliary outlets with gate valves near the platform. A hose carrier for 50 ft. 1-1/2" hose shall be provided in the platform.

LEFT SIDE PLATFORM MONITOR

The left side platform monitor shall be an Akron Gemini™ style 3473 manual hand wheel controlled. The monitor shall be constructed of lightweight Pyrolite® and have a flow capacity of 1000 GPM. The monitor shall be attached directly to the platform supporting yoke with a valve to control the flow of water.

LEFT SIDE MONITOR NOZZLE

The left side monitor shall be equipped with an Akron 5160 80 psi automatic nozzle with a flow range of 250-1250 gpm.

RIGHT SIDE PLATFORM MONITOR

The right side platform monitor shall be an Akron Gemini™ style 3473 manual hand wheel controlled. The monitor shall be constructed of lightweight Pyrolite® and have a flow capacity of 1000 GPM. The monitor shall be attached directly to the platform supporting yoke with a valve to control the flow of water.

RIGHT SIDE MONITOR NOZZLE

The right side monitor shall be equipped with an Akron 5160 80 psi automatic nozzle with a flow range of 250-1250 gpm.

INTERCOM

A Fire Research Model IC201 intercom system shall be provided between the platform and the lower control station. The platform station shall be a "hands free" model while the lower "master" station shall utilize a noise canceling handheld microphone. The finish shall be black chrome powder coat.

BREATHING AIR SYSTEM

A breathing air system to the platform shall be provided.

One 4500-psi DOT cylinder, with pressure regulator, relief valve, and low air warning alarm, shall be mounted on the aerial turntable. The system shall terminate in the platform with a three place manifold, ready to accept the customer supplied air fittings.

All valves, pressure regulators and gauges shall be protected from accidental damage.

BREATHING MASK STORAGE

Storage shall be provided for breathing masks in the platform.

AIR BOTTLE REFILL

There shall be a screw-type shutoff valve and a CGA air fitting supplied on the air system plumbing to which a refill hose can be connected. The fitting shall be installed with a stainless steel tee. There shall be a protective dust cap installed on the air line fittings. The air storage bottle shall be refillable without disconnecting the air line plumbing.

LIFTING EYE

A single lifting eye shall be attached to the fly section of the boom for the purpose of hoisting a stokes basket. When a stokes basket is suspended from the eye, the basket shall be able to be reached by an attendant in the platform. Capacity of the eye shall be 800 lb. and any weight suspended from it shall be subtracted from the rated capacity of the platform.

CORROSION REDUCTION POLICY

The manufacturer shall have in place a formal corrosion reduction program and assembly procedures designed for reducing and eliminating the possibility of corrosion. It is understood that fire apparatus will operate in harsh environments. At the time of the bid the apparatus manufacturer shall show proof of a corrosion policy. Failure to submit this information could be grounds for rejection. If a formal policy is not in place explain in your bid how your firm will take the necessary steps for corrosion reduction. There will be no exception to this requirement.

In addition to a formal program the manufacture shall show proof of testing corrosion reduction processes to ASTMB117. A copy of recent test shall be included in the bid.

Frame Rails

The chassis frame rails shall be coated with a high performance, two component, reinforced inorganic zinc rich primer with a proven cathodic protection makeup preferably Cathacoat 302HB. The surface shall be clean and free of all salts, chalk and oils prior to application. Were the primer has been broken during the frame assembly process the area shall be touch up to reestablish the seal. Prior to finish paint a second primer Devran 201 shall be applied. Once the assembly of the frame is complete and the second primer is applied the entire assembly shall be covered with high quality top coat paint preferably Imron 5000 or equal. The manufacturer shall submit with the bid a copy of the product brochure and or description of the primer to be used.

Electro Plating

Steel and Iron brackets such as the pump module bracket shall be Zinc plated to protect against corrosion. Plating shall be in accordance with ASTM B663. The apparatus manufacturer shall list all components with plating.

Fasteners

In any area that a stainless steel screw or bolt head is to come in contact with aluminum or steel, painted or non-painted, the fastener shall have the underside if the head pre-coated with nylon. The nylon coating shall act as a barrier between the fastener head and the metal or painted surface.

Screw or bolt taped into the metal shall be pre-coated with a Threadlocker type material pre-applied on the threads.

When bolting together stainless steel the manufacturer shall use a pan-head bolt with nylon coating under the head, a stainless washer with a rubber backing, and a Stover flange nut to secure the bolt.

When mounting aluminum components such as a step to the apparatus body. The manufacturer shall use stainless washers with rubber backing. All mounted components shall a barrier material between the two surfaces.

All rivet type fasteners shall be of the same material being secured.

Whenever possible, pre-drill and tap all holes for mounting components such as lights, steps and hand rails prior to the paint process to reduce the corrosion opportunity. If a hole must be drilled into a previously painted surface, re-establish the paint barrier around the hole and use a flange-type nutsert with a gasket under the flange.

Where possible, minimize the number of stainless trim screws in aluminum. Structural tape and or adhesive shall be used were possible for mounting trim to the body or cab.

If a pre-treated screw or bolt is not available, hand apply Dynatex Boltlocker or Theadlocker on the threads of the screw, bolt or nutsert. This will help seal threads from moisture and help prevent the fasteners from loosening.

If lubricant is used when tapping the hole, clean out the lubricant and the shavings before applying blue Threadlocker into the hole.

Barrier Tape

Barrier tape shall be used on the backsides of all lights, trim pieces, or other components when bolting them to the apparatus; also when attaching stainless steel over an aluminum surface or when attaching aluminum treadplate to the stainless steel. All instances of dis-similar metals contacting each other require the addition of barrier tape between the metals where contact is made.

Before applying the tape, be sure the metal surface is clean from oil or dirt by cleaning the surface with a 50/50 mix of alcohol and water pr similar solvent.

Gaskets

Gaskets shall be used under all snaps, loops and fasteners for such items as for hose bed covers. Reestablish paint seal around the mounting hole edges after drilling.

Mounting with Threadlocker coating shall be used.

Flat washers with rubber backing shall be used behind all lights that have stainless screws.

Rollup Doors

1 3/4" X 1/16” barrier tape shall be used on the frame opening to act as barrier between the aluminum door rail and the painted door opening surface.

Use a paint stick around the holes after drilling and tapping. In mounting the rails, use screws with the nylon under the head and Threadlocker on the threads for mounting the doorframes.

Install barrier tape to the painted surface where the trim is located on top of the door opening.

Hinged Doors

Barrier tape shall be applied to the painted surface of the body and on the painted hinge side of the door.

On the hinge side, mount tape out toward the edge to space over the barrel of the hinge, being sure to not touch the door.

Make sure the hinge fits into the extrusion frame with no corner weld beads interfering with the door fit. Do not put the hinge in a bind or cause the stainless steel hinge to touch the aluminum. Install the doors using a truss head bolt with the nylon coating under the head and Threadlocker on the threads.

Painting Steel

The manufacturer shall wipe any oil residue dry, remove any rust and remove weld slag or smoke. Clean the surface with solvent before painting. Prime with one even coat of black Color primer, and then spray a topcoat over the primer for the finish coat. After bolts are tightened to the proper torque, touch up the bolt area and ends of the bolts with primer or cold galvanizing coating.

Mounting Emergency Lights and Options

All emergency lights, accessory mountings, Kussmaul covers, and 110 outlet boxes mounted to the body should be mounted with pre-coated Threadlocker and nylon under the head screws or bolts to minimize corrosion between dissimilar metals.

Electrical Grounding

Grounding straps shall be installed consisting of a minimum 2-gauge strap bolted to the chassis frame.

A ground cable from the cab to the right side frame rail

From the alternator to the right side frame rail

From the pump module frame to the right side truck frame.

Aerials: from the hydraulic and pump module framework.

From the pump mount to the truck frame rail.

From the body module to the right side truck frame.

Proper grounding will help eliminate ground loop problems throughout the truck, reducing the possibility for electrolysis and corrosion to occur. Provide clean connection points on all ground connections, (remove paint where applicable), and spray or brush on electrical sealer as necessary.

When installing foam system pump wiring the power must come from a dedicated breaker to a power solenoid, and then to the power terminal provided by FoamLogix or FoamPro. Pay particular attention to the grounding detail for wire size and good grounding practice, including removing the paint at the point of ground attachment to the chassis. Keep the length of ground wire as short as practically possible.

SALT SPRAY TESTING

Salt spray test shall be used to confirm the relative resistance to corrosion of coated and uncoated metallic specimens, when exposed to a salt spray climate at an elevated temperature. Test specimens shall be placed in an enclosed chamber and exposed to a continuous indirect spray of neutral (pH 6.5 to 7.2) salt water solution, which falls-out on to the specimens at a rate of 1.0 to 2.0 ml/80cm²/hour, in a chamber temperature of +35C. This climate shall be maintained under constant steady state conditions.

Method

Salt fog testing shall be performed by placing samples in a test cabinet that has been designed in accordance with Paragraph 4 (Apparatus) of ASTM B117 and operated in accordance with Paragraph 10 (Conditions) of ASTM B117.

A 5% salt solution, prepared by dissolving sodium chloride into water that meets the requirements of ASTM D1193 Specification for Reagent Water, Type IV is supplied to the chamber. At the time the samples are placed into test, the cabinet should be pre-conditioned to the operating temperature of 35ºC and fogging a 5% salt solution at the specified rate. The fog collection rate is determined by placing a minimum of two 80 sq. cm. funnels inserted into measuring cylinders graduated in ml. inside the chamber. One collection device shall be located nearest the nozzle and one in the farthest corner.

Orientation

Unless otherwise agreed upon, the samples are placed at a 15-30 degree angle from vertical or tested in the “installed” position. This orientation allows the condensation to run down the specimens and minimizes condensation pooling. Overcrowding of samples within the cabinet should be avoided. An important aspect of the test is the utilization of a free-falling mist, which uniformly settles on the test samples. Samples should be placed in the chamber so that condensation does not drip from one to another.

Test durations

Test durations shall be 500 hours except for sample rotation and daily monitoring of collection rates, the cabinet should remain closed for the duration of the test.

PAINTING

The apparatus shall undergo extensive pre-paint preparation. All cab and body trim parts are to be removed prior to painting. All appliance-mounting holes are to be drilled and de-burred prior to painting. This allows mounting holes to be primed and painted. Before prime and finish coats are applied, the complete apparatus shall be properly prepared and treated to permit the best possible adhesion of the primer and finish coats.

All materials used in the paint process shall be of the of the highest quality available. Modern methods shall be employed to assure the finest finish surface possible. All priming, surfacing and painting shall be done in a modern down draft or cross flow paint facility. Experienced personnel trained by the paint manufacturer shall perform all paint application in order to provide the highest quality and most enduring paint finish available. Both aluminum and steel surfaces to be painted shall be primed with a two (2)-component primer which is compatible with the finish coat. The apparatus shall be finish painted with a polyurethane base/clear system. "No Exception"

Utilizing the stainless steel body fabrication, the interior of all compartments, inside hose bed and surrounding areas adjacent to compartments doors shall remain a #4 brushed stainless steel finish. This practice shall eliminate the possibility of paint chipping, and electrolysis of aluminum, which can cause corrosive action between dissimilar metals. The chassis, compartment doors, front and rear jack doors, and rear fender panels shall be painted the color indicated.

A barrier gasket/washer of "High Density Closed Cell Urethane Foam" shall be used behind all lights, handrails, door hardware and any miscellaneous items such as stainless steel snaps, hooks, washers and acorn nuts. The gaskets/washers shall be coated with pressure sensitive acrylic adhesive. All screws used to penetrate painted surfaces shall be pre-treated/coated under the head with nylon and the threads shall have pre-coat #80. This procedure shall be strictly adhered to for corrosion prevention and damage to the finish painted surfaces.

The following paint process shall be utilized:

Surface Preparation:

1. Wash surface thoroughly with mild detergent.
2. Clean and de-grease with Prep-Sol 3812S.
3. Sand and feather edge using 400 grit or finer on a dual action sander.
4. Remove sanding dust with a cleaner compatible with polyurethane base coat/clear coat final finish.

Substrate treatment:

1. Use a Metal Conditioner followed with a Conversion Coating product.

Priming:

1. Use a priming 615S pretreatment.
2. Use a self etching primer applied to achieve a 1.5 mil dft minimum.

3. Use Prime N Seal sealer compatible with polyurethane base coat.

Color Coat:

1. Apply polyurethane base coat 1-2 mil dft minimum.

Clear coat:

1. Apply polyurethane clear coat 2 mil dft minimum.

PAINTED FRAME

The frame rails, fuel beam, and body subframe shall be painted glossy black.

TURNTABLE PAINT

The turntable, side plates and lift cylinders shall be painted silver.

PAINT PACKAGE

The ladder sheaves, extension cylinder and yoke shall be painted silver.

STRIPING

A 4" Scotchlite stripe shall be provided across the front of the cab and along each side of the apparatus.

“Z” STRIPE

The Scotchlite stripe shall be a mitered "Z" type on the cab sides and continuing straight along each side of the apparatus.

STRIPING, CHEVRON STYLE, REAR BODY, OUTBOARD

The apparatus shall have 6” red and yellow reflective Chevron style striping affixed to the outboard right and left portion of the rear body and the aerial platform rear door(s). The striping will be set in a manner to have the effect of an inverted “V” shape. The stripe will travel low to high from the outside to the inside.

BOOM SIGN

A boom sign, approximately 78" x 12", shall be provided on each side of the boom. The background of the boom sign shall be painted primary truck color.

BOOM SIGN LETTERING

Up to twenty (20) 8" 22KT Gold laminated goldleaf letters, with left hand shading and right hand outline to equal 8-5/8" letter, shall be provided on each boom sign.

MISCELLANEOUS EQUIPMENT FURNISHED

1 pt. touch-up paint

A bag of stainless steel nuts and bolts, as used in the construction of the apparatus.

WHEEL CHOCKS

Two (2) Ziamatic #SAC-44 folding wheel chocks with SQCH-44H holders shall be provided. The wheel chocks shall be located in a area close to the rear axles easily accessible from the side of the apparatus.

PIKE POLE STORAGE

Three (3) storage tubes shall be recessed each side of the rear compartment for pike pole storage. A spring-loaded clip shall be installed near each tube to secure the head of a standard pike pole.

OPERATION AND SERVICE MANUALS

Complete "Operation and Service" manuals shall be supplied with the completed apparatus, one (1) printed copy and one (1) CD. Service manual instructions shall include service,

maintenance and troubleshooting for major and minor components of the truck. The apparatus manufacturer shall supply part numbers for major components (i.e. Engine, Axles, Transmission, Pump, etc.). A table of contents, hydraulic, air brake and overall apparatus wiring schematics shall be included.

A video demonstration DVD on the operation of the truck shall be supplied with the manuals.

Additional operator and maintenance manual(s) shall be provided.

DELIVERY

The custom built fire apparatus shall be driven from the manufacturing facility to the community by a factory trained delivery engineer who shall thoroughly demonstrate the complete apparatus operation and maintenance to the fire department designated personnel.

WARRANTIES

The following warranties shall be supplied:

1. The apparatus shall be warranted to be free from mechanical defects in workmanship for a period of one (1) year. The apparatus shall be covered for parts and labor costs associated with repairs for a period one (1) year.
2. Life-time warranty on the frame.
3. Ten (10) year warranty on paint.
4. Ten (10) body structural warranty
5. Ten (10) year cab structural warranty
6. Two (2) year aerial mechanical warranty
7. Twenty (20) year aerial structural warranty

8. Manufacturers Warranties for all major components.
9. Lifetime Booster tank warranty
10. Five (5) year pump warranty
11. Five (5) year Engine warranty
12. Five (5) year Transmission warranty
13. Two (2) year Axle warranty
14. Ten (10) year corrosion perforation on cab and body

Detailed warranty documents shall be included for complete coverage on each of these warranties.

MANUFACTURING & LOCATIONS

The apparatus will be manufactured in facilities wholly owned and operated by the company. A complete stock of service parts, and service shall be provided on a 24 hours around the clock basis. The company shall maintain parts and service for a minimum period of twenty (20) years on each apparatus model manufactured.