

CITY OF GOODYEAR, AZ
2017 ENGINE SPECIFICATIONS
TECHNICAL COMMENTS AND CLARIFICATIONS
November 17, 2016

CAB AND CHASSIS

25. We can comply with the 300-day delivery lead-time with the following stipulations: (1) The 300-day period starts after Goodyear approves drawings and any revisions made at the prebuild meeting(s). (2) The 'as proposed design' remains relatively intact at the end of the prebuild meeting(s). (3) The 300-day lead-time would apply to the first or lead unit. It is Smeal's policy that in dealing with multiple unit orders from first time customers that a lead unit is built with the additional units being scheduled to trail the lead unit in the production schedule by 30-45 days. This is done as a means of mitigating risk to all parties by limiting the risk that any errors or misinterpretations are built on all three (3) trucks as a 'lead + trail' method provides an opportunity to identify such errors on the first unit, allowing for correction and adjustment before the same takes place on the additional units.

34. The cab/chassis will be a 2018 model year.

54. We have proposed a Black Onyx Zolatone, which is Zolatone 20-71. Zolatone 20-06 is Black/Black. We have several colors available and we can further discuss alternatives at or prior to the prebuild meeting. There is no cost impact associated with any of the colors that are available. This comment is applicable for all the sections of the cab specifications that refer to interior paint colors. Refer to this: <http://www.autobodysupply.net/ZOL20-06-QT-p/zol20-06-fslash-qt.htm>

72. The engine we are proposing is the Cummins L-9 engine, which is the EPA 2017 compliant version of the Cummins ISL-9.

98. We have included an additional DEF gauge in our proposal. It is currently indicated as a 'ship loose' item until we can pin down an exact location to mount same at the prebuild meeting.

112. We have proposed a Telma driveline retarder in a frame mounted configuration rather than the specified **focal mount**. The reason for this is that Meritor (the axle manufacturer) has discontinued offering the Telma with the RS24-160 model rear axle as called for in the Goodyear specification. A focal mount can be supplied with a Meritor RS23-186 rear axle, which would also allow a 24,000 lb. RAWR. The additional cost for the RS23-186 with focal mount retarder would be \$2,262.

114. Since the pump is to be rear mounted, Smeal will modify the chassis driveline. As such no temporary 121. jackshaft is required from the chassis manufacturer.

118. The exact dimension from the center line of the rear axle to the center line of the suction on the pump will be subject to detailed engineering review by Smeal and may not be exactly 95

121. We have proposed the Fleetguard FS1098 fuel filter/fuel-water separator with light and alarm as it is the only supplemental fuel filter currently approved for use with the EPA 2017 L9 engine.

171. We have proposed a wheelbase of 194". This is in-line with Smeal's policy of dealing with 1" chassis/frame length increments wherever possible.

176. Spartan chassis standard is to offer a frame that is powder coated black. We have proposed the powder coated black frame with the addition of job color paint on the frame and all axles and other chassis frame mounted items. We are unable to offer a powder coat in job color yellow, but believe our approach meets or exceeds the intent of the Goodyear spec.

204. The climate control system we have proposed was introduced as a replacement for the system that is generally described in the Goodyear specification. It is a next generation system with capacity and performance characteristics that exceed those in the Goodyear specification and is fully described in in our proposal text.

205. The climate control drain with the new system is gravity based. Spartan moved away from the venturi based system to improve system reliability.

265. The spacing between the forward-facing seats as proposed is 4". This exceeds the 2.5" dimension called for in the Goodyear specifications, but is the minimum allowable under current NFPA 1901.

310. The Goodyear specified Whelen 500 series "do not move" interior light has been discontinued and has been replaced by Whelen's Ion series light.

327-330. As regards switching/activation of air horns, electronic siren and electromechanical siren, our proposal text may not exactly match the Goodyear specification, however, we will supply as per spec. To insure we have 'got it right' this topic will be thoroughly reviewed at the prebuild meeting.

342. We have proposed a Panasonic brand radio.

BODY and RELATED

394/395. We have proposed a formed aluminum body fabricated from 3/16" 5052H-32 aluminum sheet. 5052H-32 is generally regarded as a superior material for a formed body because of a higher yield strength and tensile strength.

398. Our body sub frame is fabricated from hot dipped galvanized steel and is supplied, as standard, with a 20-year structural and corrosion warranty. It is fully described in our proposal text.

405. Our body wheelwell liners are fabricated from 5052H-32 aluminum.

415. We are unable to provide a 10-year warranty on the body undercoating.

416. We are proposing a 10-year body paint warranty. This warranty has some prorated provisions. A copy of our warranty certificate is included in our proposal package.

417. We are proposing a Line-X compartment interior finish.

429. Please refer to the drawings we have submitted with our proposal. We have shown the forward compartments on the body to be of identical height/width and depth. (The widths of these compartments can be adjusted in 1" (+/-) increments if desired.) The forward compartment can be transverse to the compartment on the Captain's side, however, the length of the water tank and, more importantly, the length of the ground ladders will preclude this area from being fully transverse. (The ladders extend into the body 171" from the rear.) We suggest that this item be discussed in more detail prior to or at the prebuild meeting.

429-445. We have made a good faith effort to meet the compartment equipment layout requirements by providing an array of compartment accessories including shelves, trays, etc. throughout the body and we are happy to further discuss equipment layout with Goodyear. As currently configured we have included nearly \$7,000 of shelves, trays, tool boards, etc. which should give us a good basis for fine tuning equipment placement mounting in concert with Goodyear.

448. Our rubrail uses an extrusion design similar to the specified On Scene Solutions, however it is not sourced from this firm.

504. With the specified rear mount pump configuration, there is no independent pump module as described in the Goodyear spec. The pump itself is frame mounted, aft of the rear wheels. The pump control panel is located in the driver's side rear compartment area of the body and the main intake and discharges are located at the rear of the apparatus.

505. In a Smeal apparatus the primary 12VDC distribution panel is located recessed in the front wall of the body in an enclosed compartment.

520. We have proposed pump mechanical seals rather than traditional packing as the seals are STD with the specified CX pump.

522. Our proposal text incorrectly states that the cooler line to be supplied is 3/8". A 1/2" cooler line will be supplied as specified.

PUMP and PLUMBING, HOSEBED, MISC.

12. Pending a detailed engineering review and plumbing layout, we have proposed an Akron electric valve in lieu of the specified handwheel control. This was done to insure a safe and reliable means of opening/closing this valve. The valve itself is a 4" Akron valve with a 5" NST connection.

16. Due to the size and location of the valve for the deck gun, we have proposed an Akron electric valve in lieu of the specified push-pull handle. This was done to insure a safe and reliable means of opening/closing this large diameter valve.

49. We have proposed the specified aluminum hosebed cover, however, in order to provide a safe and reliable mechanism to open the cover, we have included an electric over hydraulic mechanism that allows the covers to be opened/closed from the ground.



November 17, 2016

Ms. Dora Chavez
City of Goodyear, AZ
City Hall
1900 N. Litchfield Rd.
Goodyear, AZ 85338

Re: 17-3793 – Fire Department Pumper Trucks

Dear Ms. Chavez:

Please find enclosed our proposal, offered on behalf of Smeal Fire Apparatus, made in response to the above solicitation. Smeal is top-tier fire apparatus manufacturer based in Snyder, NE and has been in continuous operation for nearly 55 years. Smeal's products are well known for their top tier quality and durability. Smeal offers a complete line of pumpers, pumper tankers and aerial products. Our pumper line includes rear mount pumpers like those requested in Goodyear's specifications. The Smeal fire apparatus will be built on a Spartan Metro Star chassis. Smeal is Spartan's largest customer and has utilized Spartan as their chassis of choice for 25+ years.

RedSky Fire Apparatus is Smeal's Phoenix based Arizona representative and has been in business for 6-1/2 years, making us the most tenured business of our type in Arizona. Our primary service partner since the inception of our business is Inland Kenworth, now located only about 10-15 minutes from Goodyear.

In reviewing our proposal, please note that we have gone to great lengths to achieve an exceptionally high level of technical compliance with the specifications, not cutting corners and, wherever possible, using the brand name components specified by the City. In doing so, we have incurred the **cost of compliance** in our proposal – giving you what you asked for and not making any assumptions as to what alternate components might (or might not) be acceptable to Goodyear.



Smeal and RedSky understand rear mount pumpers. In fact, the undersigned was part of the team that developed a rear mount pumper product while working for a competing manufacturer. This experience gives us an appreciation for the nuances of the rear mount product, putting us in an excellent position to work collaboratively with Goodyear on this project. In this case, we did our best to understand and interpret Goodyear's 150+ page specification package. If there are areas where we misunderstood a requirement, we are more than happy to address/adjust as needed. We are always at Goodyear's disposal.

Thank you for allowing us to offer this proposal and for your consideration moving forward.

Very truly yours,

A handwritten signature in blue ink, appearing to read "James Featherstone". The signature is fluid and stylized, with a long horizontal stroke extending to the right.

James Featherstone
President
Encl.

Smeal Fire Apparatus

Bid Weight Report

Fire Department		Dealership	
City of Goodyear		RedStorm Fire and Rescue Apparatus	
City, State		Apparatus Type	
Goodyear	Arizona	Rear Mount Pumper	
Bid Number		Chassis	
0017447-01		Metro Star	

Weight Distribution			
Gross Vehicle Weight	41600 lbs.	Water Tank	500 US Gallons Water
Rear Axle Weight	23700 lbs.	Foam	40 US Gallons Foam
Front Axle Weight	17900 lbs.	Foam	0 US Gallons Foam
Load Percent Rear	56.97 %	Number of Seats	6
Load Percent Front	43.03 %	Loose Equipment	
Left Rear Weight	11674 lbs.	Allowance	2500 lbs.
Right Rear Weight	11577 lbs.		
Rear Left / Right Differential	0.42 % This Value Must Be 7% or Less		
Left Front Weight	8849 lbs.		
Right Front Weight	8668 lbs.		
Front Left / Right Differential	1.03 % This Value Must Be 7% or Less		
ESC Required	NO	Brake System ABS/ATC/ESC Single Axle	

The weight estimates on this sheet are based on bid information or sales information available at the date shown on this form. Changes in the content of this information will affect the overall weight of the finished apparatus.

20000	FRONT	OK	TOO SMALL	INCREASE TO	
			TOO LARGE	DECREASE TO	
24000	REAR	OK	TOO SMALL	INCREASE TO	
			TOO LARGE	DECREASE TO	

DATE: 11/7/2016

APPROVED

Robert Litz Digitally signed by Robert Litz
Date: 2016.11.07 08:30:18 -0600

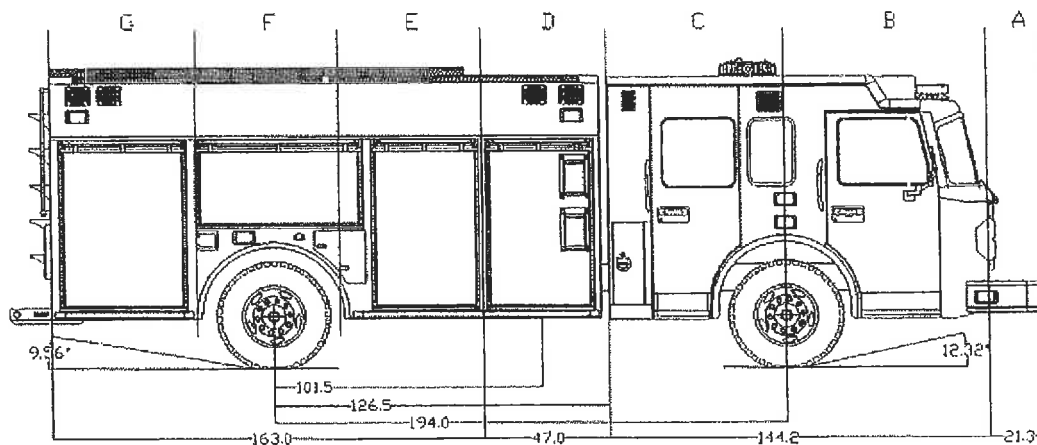
Department	City	State	Dealership
City of Goodyear	Goodyear	Arizona	RedStorm Fire and Rescue Apparatus
Bid Number	0017447-01		
Author	Bob L		
Date	11/7/2016		
File	E:\Bids\WeightFile\BidWeight1740017447\0017447-01\Item\BIG ITEM		
Rear Mount Pumper	Metro Star		

Results	GVW	Rear GAW	Front GAW	LEFT REAR	RIGHT REAR	LEFT FRONT	RIGHT FRONT	Apparatus CG
Total Options (pg. 2)	5736	3253	2483	1702.9	1550.5	1257	1225	From Ground
Totals Big Items	35032	19998	15034	9971	10026	7592	7442	51.76
Totals	40768	23251	17517	11674	11577	8849	8668	From Frame
	ADJ. CHASSIS WT.			0	0	0	0	11.01
Approximate Weight Distribution	41600	23700	17900	Total Left Rear= 11674		DIFF.		Max CG 80 % of Rear Track Width From Ground
Recommended Minimum GVWR	42000	24000	18000	Total Right Rear= 11577		97		
Bid Axle Size	44000	24000	20000	PERCENT DIFF. REAR=		0.42		57.60
Engineering Approval		OK	OK	Total Left Front= 8849		DIFF.		Estimated Frame Height
		REAR WIDTH	FRONT WIDTH	Total Right Front= 8668		181		
		72	85	PERCENT DIFF. FRONT=		1.03		40.76

				Data			72	85	PERCENT DIFF. FRONT=				1.03	40.75
Option #	Size	Qty			CG Left/Right (Inches)	L _c (Inches)	Rear _A	Front _A		LEFT REAR	RIGHT REAR	LEFT FRONT	RIGHT FRONT	VERTICAL CG (Inches) From Ground
1			Metro Star	18220	-0.4	147.2	4394.0	13826.0	2223.6	2170.4	6984.0	6842.0		40.4
2			Rear Mount Pumper											
3	500		US Gals Water + 40 Foam	5194	0.0	33.0	4310.2	883.4	2155.1	2155.1	441.7	441.7		61.6
4			Pump	2400	0.0	-13.6	2568.1	-168.1	1284.4	1283.7	-84.1	-84.0		49.6
5			3/16" Aluminum Body & Sub	5773	0.8	-2.0	5832.9	-59.5	2852.9	2980.0	-29.2	-30.3		57.3
6	5	850 ft	Supply Hose	978	0.0	-9.0	1023.4	-45.4	511.7	511.7	-22.7	-22.7		89.3
7			3/16" Aluminum Pump Module	1158	0.2	101.5	552.0	605.7	274.8	277.2	301.7	303.9		60.7
8	68	51	Fuel Filled	408	0.0	-36.3	484.3	-76.3	242.2	242.2	-38.2	-38.2		21.8
9			Tool Boards, Shelves, Trays	547	-3.8	30.1	462.2	85.0	255.2	207.0	46.2	38.7		39.5
10														
11	2.5	200 ft	Supply Hose	152	-17.9	-9.0	159.1	-7.1	119.1	40.0	-5.0	-2.0		84.8
12	2.5	200 ft	Supply Hose	152	17.9	-9.0	159.1	-7.1	40.0	119.1	-2.0	-5.0		84.8
13	1.75	100 ft	Supply Hose	60	19.2	-9.0	52.3	-2.3	12.2	40.1	-0.6	-1.7		90.4

NOTE: Metro Star LFD 10" Raised Roof 450HP Cummins L9 - EPA 2017 Allison 3000 EVS

							Drawing Data						
			CG	Center of Gravity			C _L	144.2					
Data Collection Form			R _A	Rear Axle			W _B	194.0					
Smeal Fire Apparatus			F _A	Front Axle			S _L	163.0					
Bid Weight Estimator Data			LC	Load Center			D _L	47.0					
Smeal Fire Apparatus			WB	Wheel Base			CA	126.5					
							B _E	21.3					
Option #	Size	Qty	ITEM DESCRIPTION	WEIGHT (lbs.)	CG Left/Right (inches)	ZONE	R _A	F _A	LEFT REAR	RIGHT REAR	LEFT FRONT	RIGHT FRONT	Vertical CG (inches) From Ground
Personnel													
	300	2	Front Firefighters	600		B	-119.6	716.6	-59.3	-59.3	359.3	359.3	51.3
	300	4	Rear Firefighters	1200		C	208.8	891.2	104.4	104.4	495.6	495.6	51.3
Hose													
	1.75	200	Preconnect	100		D	46.9	53.1	23.5	23.5	26.5	26.5	74.4
	1.75	200	Preconnect	100		D	46.9	53.1	23.5	23.5	26.5	26.5	53.4
	1.75	110	Bumper / Trash	55		A	-24.6	79.8	-12.4	-12.4	39.9	39.9	27.3
Ladder													
	10'	1	585-A	16	30.1	F	16.2	-0.2	1.3	14.8	0.0	-0.1	79.6
	14'	1	775-A	28	25.6	F	28.3	-0.3	4.1	24.2	-0.1	-0.2	64.7
	24'	1	900-A	72	30.1	F	72.7	-0.7	6.0	66.8	-0.1	-0.6	66.0
	6'	1	Pike Pole	6	24.8	F	5.1	-0.1	0.8	4.3	0.0	0.0	80.4
	8'	1	Pike Pole	6	25.6	F	8.1	-0.1	0.9	5.2	0.0	0.0	78.6
	10'	1	Pike Pole	7	26.4	F	7.1	-0.1	0.9	6.1	0.0	-0.1	76.8
Mounted Equipment													
			Light Tower	175		C	30.4	144.6	15.2	15.2	72.3	72.3	116.9
			Light Tower Shield	126		C	21.7	103.3	10.8	10.9	51.6	51.6	118.8
			Speedlay	65		D	30.5	34.5	15.2	15.2	17.3	17.3	67.3
			Speedlay	65		D	30.5	34.5	15.2	15.2	17.3	17.3	46.3
			Deluge (3 inch)	90	-24.7	G	116.1	-29.1	97.9	18.3	-20.7	-5.5	86.4
			Speedlay Plumbing	100		F	101.0	-1.0	50.5	50.5	-0.5	-0.5	43.0
			Speedlay Plumbing	100		F	101.0	-1.0	50.5	50.5	-0.5	-0.5	43.0
			FoamPro System 2001	100		G	129.0	-29.0	64.5	64.5	-14.5	-14.5	64.8
			Front Discharge (1.5 inch)	100		D	46.9	53.1	23.5	23.5	26.5	26.5	43.0
			Rear Preconnect (1.5 inch)	20		F	20.2	-0.2	10.1	10.1	-0.1	-0.1	76.6
			Rear Preconnect (2.5 inch)	20		F	20.2	-0.2	10.1	10.1	-0.1	-0.1	68.8
			Rear Preconnect (2.5 inch)	20		F	20.2	-0.2	10.1	10.1	-0.1	-0.1	68.8
			Wheel Well Compartment	38		E	27.7	10.3	13.9	13.9	5.1	5.1	43.8
			Wheel Well Compartment	38		F	38.4	-0.4	19.2	19.2	-0.2	-0.2	43.8
			T-Brute Hose Bed Cover	241		F	243.5	-2.5	121.7	121.7	-1.2	-1.2	115.8
			Wheel Chocks	60	-44.0	E	36.5	13.5	40.6	-4.1	13.7	-0.2	15.8
Equipment Allowances													
			NFPA Equipment allowance	502	-3.5	D	235.7	266.7	129.2	106.5	144.3	122.5	62.7
			NFPA Equipment allowance	646	-3.2	E	473.0	174.7	257.4	215.6	93.8	80.8	85.6
			NFPA Equipment allowance	424	-5.0	F	427.9	-4.4	243.6	184.3	-2.4	-1.9	81.7
			NFPA Equipment allowance	626	-0.5	G	608.3	-181.9	410.1	398.2	-92.1	-89.8	59.6
Misc.													
				5736.0			3253.5	2482.5					



City of Goodyear

BID 0017447-01

Date 11/7/2016

Weights

Left Front	9026 lbs.	Right Front	8941 lbs.	Total Weight Front	17867 lbs.	L / R Weight Difference	1.03 %
Left Rear	11907 lbs.	Right Rear	11809 lbs.	Total Weight Rear	23716 lbs.	L / R Weight Difference	0.42 %
Left Side Weight	20933 lbs.	Right Side Weight	20650 lbs.	Total Apparatus Weight	41583 lbs.	Total L / R Weight Difference	0.68 %
				Apparatus CG	-0.27 inches		
				CG Left Side / Right Side	-0.27 inches		
				CG From Rear Axle	83.36 inches		
				CG Vertical From Ground	51.76 inches		

CG Left Side / Right Side

CG Vertical From Ground

CG From Rear Axle

-0.27 inches

Apparatus CG

51.76 inches

CG From Rear Axle

83.36 inches

-0.27 inches

Apparatus CG

51.76 inches

CG Left Side / Right Side

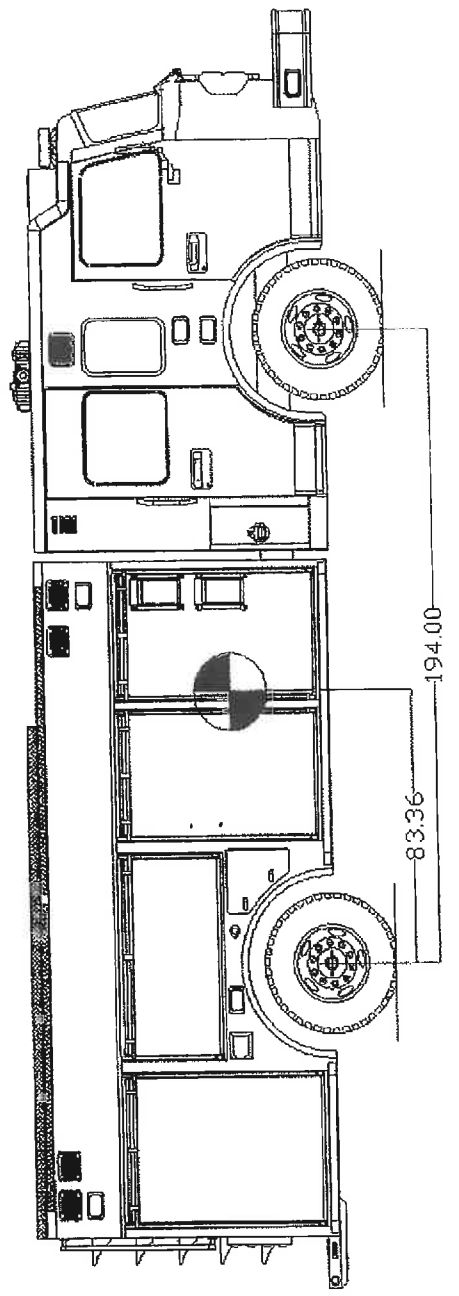
CG Vertical From Ground

CG From Rear Axle

-0.27 inches

Apparatus CG

51.76 inches



Freedom® IV Series Light Bar Order Form/Worksheet

Configuration

<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">R LED</div> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">B LED</div> <div style="border: 1px solid black; padding: 2px;">R LED</div> <div style="border: 1px solid black; padding: 2px;">B LED</div> <div style="border: 1px solid black; padding: 2px;">R LED</div> </div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">Cable Exit</div>		<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Strb</div>	<div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">B LED</div> <div style="border: 1px solid black; padding: 2px;">R LED</div> <div style="border: 1px solid black; padding: 2px;">B LED</div> <div style="border: 1px solid black; padding: 2px;">R LED</div> </div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">B LED</div>

Lenses

	Clear	Clear	Clear
Clear			
Clear			
	Clear	Clear	Clear

Control Cable Wiring

<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Grn</div> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">Grn/Whl</div> <div style="border: 1px solid black; padding: 2px;">Grn/Blk</div> <div style="border: 1px solid black; padding: 2px;">Red/Whl</div> <div style="border: 1px solid black; padding: 2px;">Whl/Brn</div> </div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">Whl</div>			<div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">Whl/Red</div> <div style="border: 1px solid black; padding: 2px;">Red/Whl</div> <div style="border: 1px solid black; padding: 2px;">Grn/Blk</div> <div style="border: 1px solid black; padding: 2px;">Grn/Whl</div> </div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">Grn</div>

Internal Harness Connectors and Colors

<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Blu, E</div> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">Gry, D, Front</div> <div style="border: 1px solid black; padding: 2px;">Vio, D, Front</div> <div style="border: 1px solid black; padding: 2px;">Blu, D, Front</div> <div style="border: 1px solid black; padding: 2px;">Yel, C, Rear</div> </div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">Grn, E</div>		<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Ext</div>	<div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">Yel, C, Front</div> <div style="border: 1px solid black; padding: 2px;">Org, B, Front</div> <div style="border: 1px solid black; padding: 2px;">Red, B, Front</div> <div style="border: 1px solid black; padding: 2px;">Brn, B, Front</div> </div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">Org, A</div>

Freedom® IV Series Light Bar Order Form/Worksheet

Control Cable Color	Function	I/O Ports	Cable
Violet	Low Power		20Conductor
GreenBlack	Front Inboard		20Conductor
GreenWhite	Front Outboard		20Conductor
BlueBlack	Rear Inboard		20Conductor
WhiteBlue	Flashing Alley-TD Or Alley Warning		20Conductor
WhiteOrange	Aux		20Conductor
WhiteViolet	Scanlock		20Conductor
WhiteRed	Front Center		20Conductor
Green	Front Corner		20Conductor
WhiteBrown	Rear Center		20Conductor
BlueWhite	Rear Outboard		20Conductor
Yellow	Passenger Alley		20Conductor
Blue	Rear Corner		20Conductor
White	Driver Alley		20Conductor
WhiteBlack	Takedown		20Conductor
WhiteYellow	Traffic Advisor Left		20Conductor
WhiteGreen	Traffic Advisor Right		20Conductor
RedWhite	Front Middle		20Conductor
RedBlack	Rear Middle		20Conductor

Line Items

QTY	Model #	Description	List Price
1	F4X7R0B0	72" Freedom IV LC Series	Call Factory
1	F4WAR	Add One Super-LED® Warning/Alley Lights	\$167.00
4	F4DLB	Add Super-LED® Lighthouse, 1 Long Blue/Blue	\$948.00
4	F4DLR	Add Super-LED® Lighthouse, 1 Long Red/Red	\$948.00
1	F4500S	Add center mount strobe option	\$185.00
1	F4WAB	Add One Super-LED® Warning/Alley Lights	\$167.00
1	02-0487987-05	Add Option, sub spacer brackets 60" & 72" center option	\$0.00
1	F4DSCBL	Cable Exit on the Alternate Side of the LightBar	\$65.00
Total:			Call Factory

The above costs (in US Dollars) is an estimate only. Refer to the current Whelen Automotive Price List for accurate pricing!

Order Information

Order Date 11/2/2016
 Account Number
 Project Name
 Vehicle Type
 Voltage 12
 Bar Length 72
 WECAD Version WeCad 5.11.0.7

Bill To:

PO Number
 Name
 Address1
 Address2
 City
 State
 Zip Code
 Telephone
 Contact 1
 Contact 2

Ship To:

PO Number
 Name
 Address1
 Address2
 City
 State
 Zip Code
 Telephone
 Contact 1
 Contact 2

Special Instructions



V-MUX® Training Certification V-MUX Certified Supplier Level 1 & 2

Original Equipment Manufacturer (OEM):

Smeal Fire Apparatus Company

Dates and location:

2003-2016 ongoing
Snyder, Nebraska

lead OEM personnel certified:

Gary Reppert *et al*
Electrical Engineering Manager

Instructors:

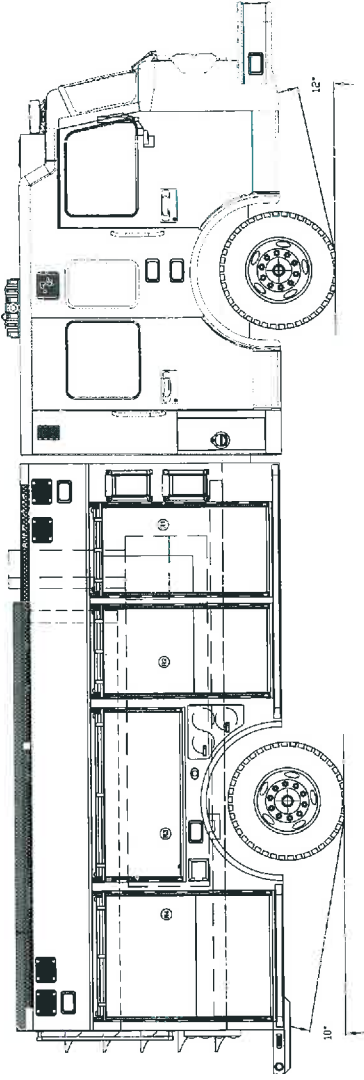
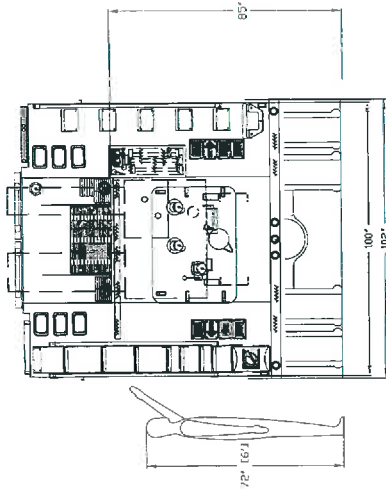
Dennis Wilcox, Jeff Dilgren
V-MUX® Applications Engineers

Curriculum:

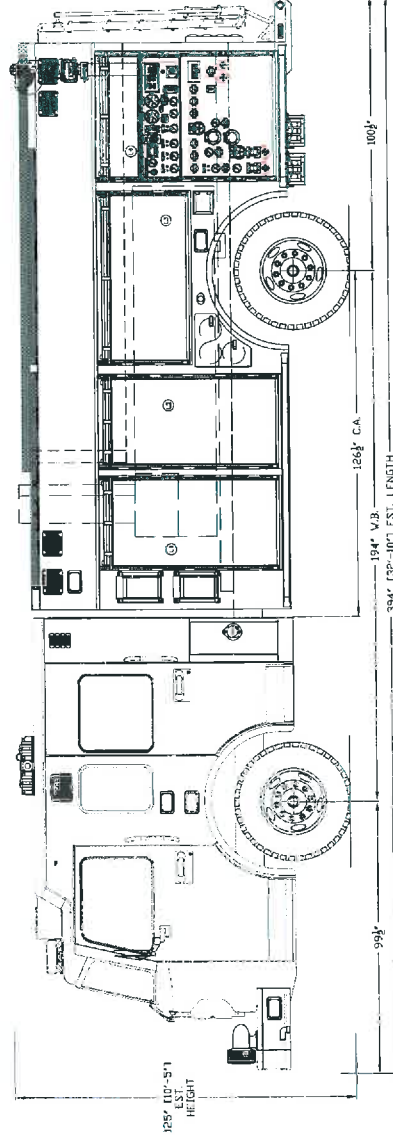
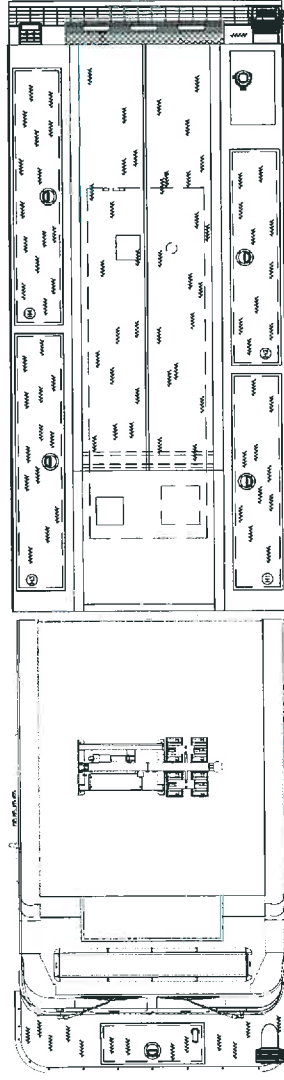
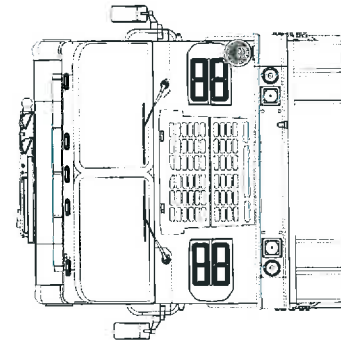
- V-MUX® Component hardware
- V-MUX® System Designer™ software
- V-MUX® Diagnostics software
- V-MUX® Downloader software

The OEM has satisfied the training requirements for Level 1 and Level 2 of the V-MUX certified supplier program and is hereby authorized to design, build, and service Weldon V-MUX electrical systems.

Jeffrey A Dilgren
Supervisor of V-MUX training
Authorized 14 November, 2016



COMP.	OPENING	UPPER	DEPTH	LOWER
L1/L2	31W X 63H	26		26
L3	60W X 30SH	26	N/A	
L4	44W X 63H	26		26
R1/R2	31W X 63H	15		26
R3	60W X 30SH	15	N/A	
R4	44W X 63H	15		26
H1/H2	18W X 77L	18		18
H3/H4	18W X 92L	18		18
INTERMEDIATE DIVIDE HEIGHT				
GROUND LADDERS & PIKE POLES				
ITEM/LADDER LENGTH MODEL QTY				
A	24' P-SEC	900A		1
B	14' ROD	775A		1
C	10' ATTIC	585A		1
D	PIKE POLES	-		3
E				
F				
G				
H				
I				



FOR REFERENCE PURPOSES ONLY

PUMP: VATERIUS CXVK 1500 GPM
TANK: POLY 500 LBS
FOAM: 40 USG
BODY: 3/16 ALUMINUM
HOUSE BLD: 128 CUBIC FEET
CHASSIS: SPARTAN PATENT STAR LTD

PROPOSAL



Approval	Signatures	Date
DISPATCH		
TOWLER		
SIGNAL SALES		
PRODUCTION		
TRAINING		

Revisions	
1	
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SMEAL FIRE APPARATUS
SNYDER, NE 68664
CITY OF GOODYEAR
GOODYEAR, AZ
Desain: J. Brodd
Scale: 3/8"=1'
Drawing No: 17447
11 x 17 BID

**SPECIFICATIONS:
Smeal Pumper Trucks with Spartan Metrostar Chassis**



**City of Goodyear
IFB 17-3793**

REARMOUNT PUMPER BODY SPECIFICATIONS

QUALITY AND WORKMANSHIP

The design of the apparatus shall embody the latest approved automotive engineering practices. Experimental designs and methods shall not be acceptable.

The workmanship shall be of the highest quality in its respective field. Special consideration shall be given to the following points: accessibility of the various units that require periodic maintenance, ease of operation (including both pumping and driving), and symmetrical proportions.

GENERAL CONSTRUCTION

The complete apparatus, assemblies, subassemblies, component parts, and so on, shall be designed and constructed with due consideration to the nature and distribution of the load to be sustained and to the general character of the service to which the apparatus is to be subjected when placed in service.

All parts of the apparatus shall be strong enough to withstand the general service under full load. The apparatus shall be so designed that the various parts are readily accessible for lubrication, inspection, adjustment and repair.

The apparatus shall be designed and constructed, and the equipment so mounted, with due consideration to distribution of the load between the front and rear axles, and side to side loading that all specified equipment, including a full complement of specified ground ladders, full water tank, loose equipment, and firefighters; shall be carried without overloading or damaging the apparatus as per requirements defined in NFPA 1901.

The main apparatus body structure shall have an approximate width of 100" in order to maximize the enclosed compartment space of the apparatus. The 100" wide measurement represents the main body structure measured from the bottom, outermost rear corners of the apparatus body structure. Components affixed or fastened to the apparatus will increase the body width proportionately.

LIABILITY

The bidder, if their bid is accepted, shall defend any and all suits and assume all liability for the use of any patented process, device or article forming a part of the apparatus or any appliance furnished under the contract.

WARRANTY

A copy of the warranties for the chassis, pump, body, paint, and water tank shall be furnished with each bidder's proposal.

ROADABILITY

The apparatus, when fully equipped and loaded, shall be capable of the following performance while on dry paved roads that are in good condition:

Accelerating from 0 to 35 mph (55km/hr) within 25 seconds on a 0 percent grade. Attaining a

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speed of 50 mph (80 km/hr) on 0 percent grade.

Maintaining a speed of at least 20 mph (32 km/hr) on any grade up to and including 6 percent. The maximum top speed of the apparatus shall not exceed the tire manufacturer's maximum speed rating for the tires installed on the apparatus.

FAILURE TO MEET TESTS

In the event the apparatus fails to meet the test requirements of these specifications on the first trials, second trials may be made at the option of the bidder within 30 days of the date of the first trials.

Such trials shall be final and conclusive and failure to comply with these requirements shall be cause for rejection. Failure to comply with changes as required to conform to any clause of the specifications within 30 days after notice is given to the bidder of such changes, shall be cause for rejection of the apparatus.

Permission to keep or store the apparatus in any building owned or occupied by the Department during the specified period, with the permission of the bidder, shall not constitute acceptance. No Exceptions

NFPA 1901-2016

The National Fire Protection Association "Standard for Automotive Fire Apparatus", 2016 edition, is hereby adopted and made a part of these specifications, the same as if it were written out in full detail, with the exception of the section dealing with "Equipment Recommended for Various Types of Apparatus". Bidders shall provide the equipment requested herein and the buyer shall supply the rest before the apparatus is put into service. It is the intent of the purchaser to purchase an apparatus that meets 100% of the minimum standards defined and outlined in NFPA 1901-2016 edition. There are to be no exceptions to this requirement.

PERFORMANCE BOND AND PAYMENT BOND– 100%

Smeal Fire Apparatus will provide, within thirty (30) days after award of contract, and along with a signed copy of the contract, a performance bond, which guarantees performance of all terms and conditions of the contract and of the Basic One (1) Year Limited Warranty agreement, and a payment bond, which will guarantee payment for labor, materials, and equipment furnished for use in the performance of the contract. The performance bond will specifically cover the performance of the contract according to its terms and conditions. The payment bond will cover payment of labor, materials, and equipment furnished for use in the performance of the contract. This performance bond and payment bond will be issued by a surety company who is listed by the U.S. Treasury Department's list of approved sureties, as published in Circular 570, as of the bid date. The performance bond and payment bond will be issued in an amount equal to 100% of the contract amount and will be dated concurrent to, or subsequent to, the date of the contract.

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

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BID BOND – 10%

A bid bond as security for the bid in the form of a 10% bid bond will be provided with the proposal. This bid bond will be issued by a Surety Company who is listed on the U.S. Treasury Departments list of acceptable sureties as published in Department Circular 570. The bid bond will be issued by an authorized representative of the Surety Company and will be accompanied by a certified power of attorney dated on or before the date of bid.

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

INSPECTION CERTIFICATE - NFPA 1901 COMPLIANCE

An OEM inspection certificate for the apparatus shall be furnished upon delivery. The purpose of this NFPA 1901 compliance inspection shall be to serve as proof to the customer that all applicable standards have been met or exceeded by the responsible manufacturer.

The following objectives shall be achieved as a result (this listing shall not be construed as being all inclusive):

- Ensure that understanding of all parties respective responsibilities have been addressed by the actual referencing of NFPA 1901 and the amendments in these specifications and the purchase contract and documentation.
- Ensure that only structural materials complying with appropriate standards and codes are used for construction.
- Ensure that applicable standards of design and manufacturing have been met or exceeded.
- Ensure that safety factors have been met or exceeded where required.
- Ensure that applicable standards for testing and inspection have been met or exceeded by personnel with the appropriate qualifications, experience, and certifications.
- Ensure that where applicable components, equipment, and loose equipment carry the appropriate characteristics, classifications, and/or certifications.
- Ensure that in general and as a whole, all applicable requirements set forth in NFPA 1901, and those codes, standards, and specifications referenced by said parties are met, exceeded, and/or addressed.

CONSTRUCTION DOCUMENTATION

The contractor shall supply, at the time of delivery, at least one (1) copy of the following documents:

1. The manufacturers record of apparatus construction details, including the following information:

Owners name and address
Apparatus manufacturer, model, and serial number
Chassis make, model, and serial number
GAWR of front and rear axles

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Front tire size and total rated capacity in pounds or kilograms
Rear tire size and total rated capacity in pounds or kilograms
Chassis weight distribution in pounds with water and manufacturer mounted equipment (front and rear)
Engine make, model, serial number, rated horsepower and related speed, and governed speed
Type of fuel and fuel tank capacity
Electrical system voltage and alternator output in amps
Battery make, model, and capacity in cold cranking amps (CCA)
Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio
If applicable, the pump make, model, rated capacity in gallons or liters per minute, and serial number
Pump transmission make, model, serial number, and gear ratio, if unit is equipped with a pump
If applicable, the auxiliary pump make, model, rated capacity in gallons or liters per minute, and serial number
Water tank certified capacity in gallons or liters
On aerial apparatus, the device type, rated vertical height in feet or meters, rated horizontal reach in feet or meters, and rated capacity in pounds or kilograms
Paint manufacturer and paint number(s)
Company name and signature of responsible company representative
2. Certification of slip resistance of all stepping, standing, and walking surfaces

3. If the apparatus has a fire pump, a copy of the following shall be provided: pump manufacturers certification of suction capability, apparatus manufacturers approval for stationary pumping applications, engine manufacturers certified brake horsepower curve showing the maximum governed speed, pump manufacturers certification of the hydrostatic test, and the certification of inspection and test for the fire pump

4. If the apparatus has an aerial device, the certification of inspection and test for the aerial device, and all the technical information required for inspections to comply with NFPA 1914, Standard for Testing Fire Department Aerial Devices

5. If the apparatus has a fixed line voltage power source, the certification of the test for the fixed power source

6. If the apparatus is equipped with an air system, test results of the air quality, the SCBA fill station, and the air system installation

7. Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall fire apparatus (with the water tank full but without personnel, equipment, and hose)

8. Written load analysis and results of the electrical system performance tests

9. When the apparatus is equipped with a water tank, the certification of water tank capacity

OPERATION AND SERVICE DOCUMENTATION

The contractor shall supply, at time of delivery, at least two (2) sets of complete operation and service documentation covering the completed apparatus as delivered and accepted. The documentation shall address at least the inspection, service, and operations of the fire apparatus and all major components thereof. The contractor shall also provide documentation of the following items for the entire apparatus and each major operating system or major component of the apparatus:

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Manufacturers name and address
Country of manufacturer
Source of service and technical information
Parts and replacement information
Descriptions, specifications, and ratings of the chassis, pump, and aerial device

Wiring diagrams for low voltage and line voltage systems to include the following information: representations of circuit logic for all electrical components and wiring, circuit identification, connector pin identification, zone location of electrical components, safety interlocks, alternator-battery power distribution circuits, and input/ output assignment sheets or equivalent circuit logic implemented in multiplexing systems

Lubrication charts

Operating instructions for the chassis, any major components such as a pump or aerial device, and any auxiliary systems

Precautions related to multiple configurations of aerial devices, if applicable Instructions regarding the frequency and procedure for recommended maintenance Overall apparatus operating instructions

Safety considerations Limitations of use Inspection procedures

Recommended service procedures

Troubleshooting guide

Apparatus body, chassis, and other component manufacturers warranties

Special data required by this standard

Copies of required manufacturer test data or reports, manufacturer certifications, and independent third-party certifications of test results

A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus

One (1) copy of the FAMA Safety Guide

The contractor shall deliver with the apparatus all manufacturers operations and service documents supplied with components and equipment that are installed or supplied by the contractor.

OWNER'S MANUAL

There shall be an owner's manual containing the construction, operation, and service documentation provided on a USB Drive. There shall be one (1) copy of the USB provided with the apparatus.

ELECTRICAL MANUAL

A complete electrical manual for the apparatus shall also be provided on the USB Drive. This manual shall be specifically prepared for this individual unit rather than a generic schematic manual designed to accommodate all apparatus. The electrical manual shall also include

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electrical schematics, harness layouts, V-Mux specifications (including Node Input/output Spreadsheet and Node Relationship Spreadsheet), and Master Wire Listing. A contact letter shall also be provided by the electrical engineer, who built the manual, with instructions on using the manual and contact information for assistance with electrical manual questions.

ELECTRICAL SCHEMATICS

There shall be a section of the electrical manual that shall include schematics of the electrical system and components on the apparatus. These schematics shall be specifically prepared for this individual unit rather than a generic schematic designed to accommodate all apparatus.

PUMP PLUMBING SCHEMATICS (if applicable)

There shall be a section of the electrical manual that shall include a schematic of the pump plumbing. This schematic shall be specifically prepared for this individual unit rather than a generic schematic designed to accommodate all apparatus.

HYDRAULIC SCHEMATICS (if applicable)

There shall be a section of the electrical manual that shall include schematics of the hydraulic components on the apparatus including but not limited to:
Ladder Rack(s) and Hose Bed Door(s) (if applicable)

FIRE APPARATUS SAFETY GUIDE

There shall be one (1) printed copy of the FAMA Fire Apparatus Safety Guide provided with the apparatus. This guide provides safety instructions for operations of the fire apparatus.

MISCELLANEOUS EQUIPMENT ALLOWANCE

The Gross Axle Weight Rating (GAWR) and the Gross Combined Weight Rating (GCWR) or Gross Vehicle Weight Rating (GVWR) of the chassis shall be adequate to carry the weight of the unequipped apparatus with the water tank and other tanks full, specified hose load, unequipped personnel weight, ground ladders, and miscellaneous equipment allowance of 2,500 pounds.

TILT TABLE TESTING

The apparatus shall be tested to verify the stability to 26.5 degrees in both directions. The apparatus shall be tested while loaded with fuel, fire fighting agents, hose, ladders, a weight of 250 lbs. per seat, and also weight that is equivalent to the miscellaneous equipment that shall be carried. The weight added to the apparatus for testing purposes shall be distributed approximately to the in-service use, yet not to exceed the manufacturer's compartment ratings.

VEHICLE STABILITY

The apparatus shall comply with the requirements of NFPA 1901 as it applies to vehicle stability. The particular apparatus as described in the specification provided within the bid package shall be classified into one of the following categories:

The apparatus shall go through actual tilt table testing. This shall be determined by the apparatus manufacturer.

The apparatus shall be equipped with a rollover stability control system as defined in section

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4.13.1.2 of NFPA 1901.

The apparatus shall be deemed a similar apparatus and meeting the intent of section 4.13.1.1.2 of NFPA 1901.

INDEPENDENT THIRD PARTY PUMP CERTIFICATION

The fire pump shall be tested and certified by Underwriter's Laboratories, a nationally recognized independent third party testing company. Tests shall be conducted so that the pump performs as listed below:

- 100% of rated capacity at 150 pounds net pressure
- 70% of rated capacity at 200 pounds net pressure
- 50% of rated capacity at 250 pounds net pressure
- 100% of rated capacity at 165 pounds net pressure

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance spots as outlined by NFPA 1901. The pump shall be free from objectionable pulsation and vibration.

PUMP CERTIFICATION

The pump shall be certified in U.S. gallons per minute (GPM).

APPARATUS PRODUCTION PHOTOS

Photos of the apparatus shall be provided to the customer at regular intervals as it progresses through production. There shall be a minimum of eight (8) photos provided at each of the following intervals:

- Chassis arrival to the OEM
- Each week of production at the OEM Upon completion of production
- The photos shall be uploaded to a secure website, only accessible to the customer and representatives of the OEM.

PRE-CONSTRUCTION MEETING

There shall be a pre-construction meeting held at the apparatus manufacturer's factory. Fire department personnel, dealer representative(s) and factory representative(s) shall be present during the pre-construction meeting process. The purpose of conducting this meeting at the factory is to allow the fire department personnel to see various features of or similar components on other apparatus that may be found on the production floor. The pre-construction meeting is the most important meeting during the after-sale production process. The purpose of this meeting is to finalize all aspects of the specifications, discuss and clarify all design details of the apparatus, and to share or provide all information so all parties are in agreement on the apparatus being constructed. The ultimate goal of the pre-construction meeting is for the fire department officials, dealer representative(s), and factory representative(s) to discuss and clarify all aspects of the proposed apparatus and to provide all necessary information to the apparatus manufacturer that will ensure the apparatus is built to the satisfaction of all parties involved.

The apparatus manufacturer shall create and forward to the dealer a "Pre-construction" document containing the following items:

- Complete specifications of the apparatus including the chassis
- Detailed amp draw report

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- Listing of clarifications or questions from the manufacturer that require attention (shelf locations, lettering details, etc.)
- A total of six (6) packets of 11" x 17" drawings, each packet complete with a single view drawing for each side of the apparatus shall be supplied
- All drawings shall be drawn and printed to an appropriate scale to maximize the size of the apparatus on each 11" x 17" sheet of paper.
- During this pre-construction meeting, any changes or clarifications must be documented on a manufacturer issued change order. The change order shall be signed by the customer and dealership and ultimately by the apparatus manufacturer. The change order becomes an extension of the contract with the official signatures of all three parties. All change order items resulting from the pre-construction meeting shall be implemented into the official shop order document.

PRE-PAINT INSPECTION

There shall be an inspection of the apparatus at the pre-paint stage of production by the customer at the apparatus manufacturer's showroom. The customer shall be given the opportunity to visually inspect the chassis, pump panel, plumbing, and all other body options so that any discrepancies may be addressed prior to the painting process. A company representative shall be present at the inspection to answer all questions. Adequate notice shall be given to the dealer as to when the apparatus will be available for inspection.

FINAL INSPECTION

The customer and/or dealer representative will inspect the final apparatus prior to it leaving the apparatus body manufacturer's facility. This will allow any changes that may be required, to be done so in a timely and inexpensive manner. After leaving the facility, all repairs or alterations will be performed by either the Dealer or an OEM approved service center.

There shall be five (5) customer representatives present for the preconstruction conference and final inspection and four (4) representatives at the prepaint/midpoint inspection. All travel expenses are the responsibility of RedSky/Smeal.

OVERALL HEIGHT

The actual overall height of the vehicle shall be approximately 125" (10'-5") from the ground. This measurement shall be taken with the tires properly inflated with the apparatus in the unloaded condition. The actual measurement shall be taken at the highest point of the apparatus.

OVERALL LENGTH

The actual overall length of the vehicle shall be approximately 394" (32'-10").

WHEELBASE

The actual wheelbase of the vehicle shall be approximately 194" (16'-2").

ANGLE OF APPROACH

The actual angle of approach of the vehicle shall be a minimum of 12 degrees.

ANGLE OF A DEPARTURE

The actual angle of departure of the vehicle shall be a minimum of 10 degrees.

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SPARTAN METRO STAR CHASSIS

The chassis shall be a Spartan Metro Star.

MUD FLAPS

In addition to the chassis supplied front mud flaps, there shall be two (2) mud flaps provided rearward of the rear axles on the apparatus. The mud flaps shall be a minimum of 3/8" thick to prevent "sailing."

AIR OUTLET ON PUMP PANEL

There shall be a 1/4" quick connect female air outlet on the driver's side pump panel. This outlet shall be used for filling tires or fire extinguishers.

The chassis supplied and installed heat exchanger shall be attached to the pump by the OEM manufacturer.

CHASSIS SUPPLIED FRONT BUMPER

The front bumper shall be chassis supplied and installed.

CENTER FRONT BUMPER STORAGE WELL

There shall be a storage well in the center of the extended front bumper. There shall be an aluminum tread plate cover installed on the storage well. *Shop Note: Shall hold 110' of 1.75" double jacketed hose.*

MAP CONSOLE

There shall be a map console installed in the chassis cab. The console shall be 9-1/8" wide x 13" long and 10" deep. The console shall hold three (3) binders up to 2-1/2" thick. The map console shall be constructed of aluminum and shall have an interior abraded finish and an exterior MultiSpec MS90 finish that matches the other interior cab color. There shall be one (1) On Scene Solutions cargo strap provided to secure the stored equipment.

There shall be two (2) cup holders, one each side and a small storage bin located between the cup holders.

The map console shall be mounted on the engine tunnel. The map console shall be mounted upright, utilizing a "drop-in" style so the maps are accessible from the top.

HAZARD AND DOOR OPEN WARNING CIRCUIT

There shall be a hazard and "open door" warning circuits tied to the Vista Display in the chassis to alert the driver of an unsafe condition for moving the apparatus. The Vista Display shall have a specific screen to show the displayed alert. The screen shall show the apparatus in full driver's side, officer's side and rear views. The door, component or device that is not properly closed or stowed will be shown on the screen in the appropriate view. The displayed alerts shall be shown automatically when the parking brake is not fully engaged and any of the following conditions exist:

Any equipment compartment door that is not closed (excluding compartments with 4 ft³ (0.1 m³) or less of volume; or have an opening of 144 in² (92,000 mm²) or less; or doors that do extend

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sideways beyond the mirrors or up above the top of the fire apparatus).

Any ladder or equipment rack that is not in the stowed position.

Any device or component that is permanently attached to the apparatus that is open, extended, or deployed in a manner that is likely to cause damage to the apparatus that has been specified as being tied to the hazard warning circuit.

REAR CUP HOLDERS

There shall be two cup holders located on the interior rear wall of the cab. One cup holder shall be located each side for use with the forward facing crew positions.

STREAMLIGHT RECHARGEABLE SURVIVOR® LED FLASHLIGHTS

There shall be four (4) Streamlight, model 90503, Survivor® LED rechargeable flashlights supplied and installed on the apparatus. Each flashlight shall be orange in color, include one (1) Steady Charger and shall be wired direct to the chassis batteries.

EMS COMPARTMENT - DRIVER'S SIDE

There shall be a forward-facing EMS compartment installed along the rear interior cab wall on the driver's side of the chassis. The compartment shall be 32" tall, 20" wide, and 20" deep. The compartment shall be constructed of aluminum. There shall be two (2) adjustable aluminum shelves provided in the compartment.

The compartment shall have a ROM roll-up door provided on the front for easy access to equipment stored inside. The roll-up door shall be supplied with a full-width handle for ease of opening with only one hand, allowing quick access to equipment and Nylon end shoes on every slat to assure operation without constant lubrication. There shall be a door lock with key provided with the roll-up door.

The EMS compartment shall be furnished with a "ROM" LED compartment light mounted on the front corner of the compartment. An automatic door switch shall activate the compartment light.

CREW STORAGE BINS

There shall be two (2) storage bins located on the back wall of the cab, one each side of the forward facing seats. The bottom of each bin shall be even with the bottom of the rear wall vinyl cover. Each bin shall be approximately 4" x 8" x 4" and divided into two equal sized sections. The bins shall be fabricated from aluminum and be finished to match the interior of the cab.

Each EMS compartment exterior, interior, and shelves shall have an abraded finish.

EMS MASK HOLDER

There shall be an EMS mask (N95 Style) holder provided and located between the forward facing crew seats. The holder shall be fabricated from smooth aluminum and will be finished to match the cab interior.

DOCKING STATIONS

Docking stations for two (2) iPads and a slide-out tray for a MCT docking station shall be supplied

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and installed in locations as directed by Goodyear. This installation shall include power supplies and antennas as required.

12 VDC FUSE BLOCK

There shall be one (1) 100 amp Blue Sea Systems ST Series blade type fuse block with screw type terminals for both positive and negative buss with cover provided for distribution of up to six (6) 30 amp, 12 VDC circuits. Fuse block shall be located per required circuits and be protected from damage.

The outlet shall be located on top of the engine tunnel, below the rear edge of the engine tunnel mounting plate.

ANTENNA RAIL

A five (5) position antenna rail shall be furnished and installed as per Goodyear requirements. The specifics of this item shall be further reviewed and confirmed at or prior to the prebuild meeting.

12 VDC FUSE BLOCK

There shall be one (1) 100 amp Blue Sea Systems ST Series blade type fuse block with screw type terminals for both positive and negative buss with cover provided for distribution of up to six (6) 30 amp, 12 VDC circuits. Fuse block shall be located per required circuits and be protected from damage.

The outlet shall be located inside a seat box, inside the chassis cab.

Shop Note: Under forward facing seat box.

TRASH CAN HOLDER

A trash can holder meeting Goodyear requirements shall be furnished and installed in the cab, located behind the driver's seat.

TOE KICK TRIM PROTECTION

Toe kick trim protection meeting Goodyear requirements shall be furnished and installed in the cab with specifics of same to be reviewed and agreed upon at our prior to the prebuild meeting.

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WATER TANK

The apparatus shall be equipped with a United Plastic Fabricating 500 U.S. gallon water tank. Certification of the tank capacity shall be recorded on the manufacturer's record of construction and shall be provided to the purchaser upon delivery of the apparatus. The UPF® water tank shall be constructed of 1/2" thick PT2E™ polypropylene sheet stock. This material shall be a non-corrosive stress relieved thermoplastic, black in color, and U.V. stabilized for maximum protection.

BOOSTER TANK

The booster tank shall be of a specific configuration and shall be so designed to be completely independent of the body and compartments. All joints and seams shall be nitrogen welded and tested for maximum strength and integrity. The top of the booster tank shall be fitted with removable lifting eyes designed with a 3 to 1 safety factor to facilitate easy removal.

TANK BAFFLES

The transverse swash partitions shall be manufactured of 3/8" PT2E™ polypropylene (natural in color) and extend from approximately 4" off the floor to just under the cover. The longitudinal swash partitions shall be constructed of 3/8" PT2E polypropylene (natural in color) and extend to the floor of the tank through the cover to allow for positive welding and maximum integrity. 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 be welded to each other as well as to the walls of the tank.

TANK SUMP

There shall be one (1) sump in the bottom of the water tank. The sump shall be constructed of 1/2" polypropylene and shall be located in the left front quarter of the tank. On all tanks that require a front suction, a 4" 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 be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 2" above the sump to pre-vent air from being entrained in the water while pumping.

TANK FILL CONNECTION

All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and shall be capable of withstanding sustained fill rates of up to 1,000 GPM.

TANK LID

The tank lid shall be constructed of 1/2" thick PT2E™ polypropylene to incorporate a multi three-piece locking design that allows for individual removal and inspection if necessary. The tank lid shall be recessed 3/8" from the top of the tank and shall be welded to both sides and longitudinal

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partitions for maximum integrity. Each one of the lids shall have hold downs consisting of 2" polypropylene dowels spaced a maximum of 30" apart. These dowels shall extend through the covers and shall assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall be drilled and tapped 1/2" x 13" to accommodate the lifting eyes.

WATER TANK MOUNTING

The water tank cradle shall be an integral part of the body sub-frame. Please reference the sub-frame section for complete water tank mounting information.

WATER TANK DRAIN

There shall be a 1-1/2" drain valve provided under the sump of the water tank. The valve shall include a locking lever to prevent accidental draining of the water tank.

WATER TANK FILL TOWER

The tank shall have a combination vent and manual fill tower marked "Water Fill." The fill tower shall be constructed of 1/2" PT2E™ polypropylene and shall be a minimum dimension of 8" x 8" at the outer perimeter. The tower shall be located in the left front corner of the tank. The tower shall have a 1/4" thick removable polypropylene screen and a PT2E™ polypropylene hinged-type cover. The fill tower shall be blue in color.

WATER TANK LEVEL GAUGE

There shall be one (1) Class1 "ITL-40" Tank Level Gauge for indicating water level provided on the pump operator's control panel. The Tank Level Gauge shall indicate the liquid level or volume on an easy to read LED display and show increments of 1/8 of a tank.

Each tank level gauge system shall include:

A pressure transducer that is mounted on the outside of the tank in an easily accessible area. Sealed foam tanks will require zero pressure vacuum vents.

A super bright multi-color LED display viewable from 180 degrees with a visual indication at nine accurate levels.

A set of weather resistant connectors to connect to the digital display, to the pressure transducer and to the apparatus power.

The system shall include the ability to display "text messages" The system shall include built-in diagnostic capabilities.

WATER TANK LEVEL DISPLAY

There shall be two (2) Innovative Controls SL Plus Monster Light slave displays provided. There shall be one (1) display mounted on the driver's side of the chassis cab and one (1) mounted on the officer's side of the chassis cab. Each monster light shall have 64 super-bright LEDs in 4 discrete groupings of 16 LEDs per color. These colored LED groupings shall mimic the functionality of the master display.

4" WATER TANK OVERFLOW

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The tank shall be equipped with a minimum of a 4" schedule 40 polypropylene overflow/ air vent pipe. The pipe shall be installed in the fill tower and extend through the tank and dump to the rear of the rear axle.

FOAM CELL

There shall be one (1) United Plastic Fabricating 40 U.S. gallon foam cell incorporated into the water tank. There shall be one (1) pressure/vacuum vent installed on the foam tank. There shall be one (1) drain hose connected to the foam cell. The drain shall have a quarter-turn valve installed inside the pump compartment and it shall drain below the frame rail of the chassis.

Class "A" foam shall be utilized.

The foam tank shall have a 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. Each foam fill tower shall be constructed of a green colored material indicating which tower is to receive each type of foam utilized. The capacity of the tank shall be engraved on the top of the fill tower lid. The tower shall be located in the right front corner of the tank unless otherwise specified. The tower shall have a 1/4" thick removable polypropylene screen and a stainless steel hinged-type cover. Inside the fill tower, approximately 1.5" down from the top, there shall be an anti-foam fill tube that extends down to the bottom of the tank. A pressure vacuum vent shall be provided in the lid of the fill tower.

FOAM TANK LEVEL GAUGE

There shall be one (1) Class1 "ITL-40M" Tank Level Gauge for indicating Class A foam level provided on the pump operator's control panel. The Tank Level Gauge shall indicate the liquid level or volume on an easy to read LED display and show increments of 1/8 of a tank.

Each tank level gauge system shall include:

- A pressure transducer that is mounted on the outside of the tank in an easily accessible area. Sealed foam tanks will require zero pressure vacuum vents.
- A super bright multi-color LED display viewable from 180 degrees with a visual indication at nine accurate levels.
- A set of weather resistant connectors to connect to the digital display, to the pressure transducer and to the apparatus power.
- The system shall include the ability to display "text messages" The system shall include built-in diagnostic capabilities.

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HOSE BED

The hose bed shall be located above the water tank and have a minimum capacity of 30 cubic feet in accordance with the latest NFPA regulations. The inside of the hose bed shall be smooth aluminum. The hose bed shall exit at the rear of the apparatus through a single access opening. The opening shall be free of obstructions that might interfere with the deployment and loading of hose. There shall be a 1" stainless steel trim piece on the body, at the rear-bottom of the hose bed, to protect the chevron when deploying hose and shall be attached using fasteners.

The interior of the hose bed shall have an abraded aluminum finish.

The floor of the hose bed compartment shall be constructed of Dura-Dek fiber reinforced plastic material. The flooring shall be fabricated of "T" beam pultrusions in parallel connected with cross slats that are first mechanically bonded and then epoxied, forming a large sheet. The top portion of each "T" cross section shall measure 1-1/4" wide and 3/16" thick with beaded ends. The vertical portion shall be 3/8" thick, beading out at the bottom to a thickness of 1/2" and tall enough to result in an overall height of 1". The "T" sections shall be spaced 3/4" apart to allow for drainage and ventilation.

Each "T" beam shall be constructed utilizing a core of 250,000 continuous glass fiber strands that are high in resistance to tension, compression and bending. An outer sheath consisting of a continuous strand mat to prevent lineal splitting and slipping shall surround the core. The sheath shall also serve to draw the protective resin to the bar surface. Both reinforcements shall be pulled through an isophthalic polyester resin, treated with antimony trioxide for fire resistance, to form a solid length.

The flooring shall then be protected with a polyurethane coating to screen out ultraviolet rays. This bright white coating shall be baked on and shall provide a pleasing contrast when installed in the apparatus.

The hose bed shall contain the following hose load:

Shop Note: The hose bed height shall be approximately 85" from the ground.

200' of 2-1/2" double jacket hose

800' of 5" rubber hose

200' of 2-1/2" double jacket hose with gated wye, 100' of 1-3/4" double jacket hose pre-connected.

POWER OPERATED HOSE BED DOORS

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The hose bed storage area shall be covered with two (2) hinged aluminum doors. The doors shall be hinged on the outside edges, utilizing full length stainless steel piano hinges. The doors shall lift up and out towards the outside of the body. The doors shall be fabricated with 14 gauge aluminum inner panel for superior strength. The outside sheet shall be constructed of anti-slip tread plate.

The hose bed doors shall be power operated utilizing a self-contained hydraulic system. The pressure of the hydraulic system shall be factory set to a pressure that will smoothly power the cover doors upward and downward. The system is designed to keep the doors firmly open when reloading hose as well as to hold the cover doors firmly down in the travel position. Mechanical locks are not required in order to avoid possible injury from accidental closing of cover doors.

Hydraulic cylinders, located in front of the hose bed storage area shall be utilized to open and close the cover doors. The system shall only allow one door at a time to move. The cylinders, when the doors are in the closed position, shall lower into a secluded compartment that is separate from the stored hose to ensure unobstructed hose deployment operations. The cylinder pins attached to the doors shall be designed to be removable with the doors in the closed position without having to climb inside the hose storage area.

Self-contained switches shall be utilized to raise and lower the cover doors independently. The switches shall be located at the rear of the apparatus in a convenient location allowing the operator to view the hose bed cover doors while operating the mechanism from ground level. The switches shall be the momentary type of switch that requires the operator to hold the switch until the desired movement of the cover doors is achieved.

The power unit shall be interlocked with the parking brake and shall be operable only when the park-brake is applied. The doors shall be connected to the open door warning system. An audible alarm shall be located towards the front of the hose bed area designed to warn occupants of the hose bed area that door movement is occurring.

HOSE BED COVER LIGHTING

Hose bed lighting shall be provided by two (2) 36 inch On Scene Night Axe LED lights recessed in the inside of the hose bed cover doors, one (1) in each door. The lights shall be enclosed within a tough waterproof Lexan tube enclosure. Night Axe shall offer 200 lumens per 18 inches of light and an adjustable beam angle. The lights shall be activated when the doors is opened.

There shall be a black webbing restraints located on the end of the hose bed. The webbing shall be a two-piece design and one (1) side of each piece shall be connected using footman loop. Each piece shall be attached to each other in the center of the hose bed using Velcro.

HOSE BED DIVIDERS

There shall be two (2) hose bed dividers installed in the hose bed. The dividers shall be fabricated from 1/4" smooth aluminum plate and an aluminum extrusion. Each divider shall have an abraded finish and mounted on hot-dipped galvanized slide rails at the front and rear of the hose bed. Where no obstruction such as a fill tower is present, the slide rails shall allow full movement of the dividers along the width of the hose bed. Each hose bed divider shall have an oval shaped hand hold slot to assist in moving the divider. This shall provide the capability for variable hose load configurations and capacities.

HOSE BED LOADING LIGHTS

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There shall be four (4) On-Scene Night Axe 9" LED hose bed loading lights provided. Two (2) lights shall be located on each side of the hose bed. The lights shall provide illumination of the hose bed area. The hose bed loading lights shall be controlled by a switch located above the tail light bezel on the left side. The hose bed lighting circuit shall be deactivated when the park brake is disengaged.

ALUMINUM BODY CONSTRUCTION

The apparatus body shall be fabricated from 3/16", smooth aluminum sheet. The total outside width of the apparatus body shall not exceed 100 inches (2.54 meters). The width measurement of the sidewalls shall be made from the outside wall of the two opposite sides of the body. The body shall be designed for a single axle chassis.

The complete apparatus body shall be fabricated utilizing the break and bend techniques in order to form a strong, yet flexible, uni-body structure. The body shall be constructed with holding fixtures to ensure proper dimensioning. Each apparatus body is specific in design in order to meet the unique requirements of the purchasing fire department.

The main body compartments on each side, as well as the rear center compartment if applicable, shall contain a sweep out floor design. Each compartment shall be made to the most practical dimensions in order to provide maximum storage capacity for the fire department's equipment. The door opening threshold shall be positioned lower than the compartment floor permitting easy cleaning of the compartments.

Continuous, solid welded seams shall be located at the upper front and upper rear corners of the apparatus body. The flooring of all lower, main body compartmentation shall also have solid weld seams. All door jams, on both the top and the bottom, shall be solid welded as well. Each main door jam shall consist of a double jam design, this is comparable to a double struck frame design, which provides superior strength and durability. All double door jams are to be welded together utilizing the plug weld technique. All remaining compartment walls shall be stitch welded.

The compartment floors, specifically L1 and R1, shall have a minimum of two (2) 1" x 2" rectangular tubes welded to the entire width of the compartment floor. The two (2) rear side compartments as well as the rear center compartment, if applicable, shall be welded to the rear deck support structure. This rear deck support structure is specially designed for the galvanized apparatus body substructure. A minimum of two (2) squares tubes,

which are 1/4" x 3" x 3", shall run the entire width of the body from sidewall to sidewall. Each lower, rear compartment shall be adequately stitch welded to the cross tubes providing strength and durability to the entire apparatus body.

The body design shall include a "false wall" design in the lower portion of each lower, rear compartment. This "false wall" is required in order to allow for easy accessibility to the rear electrical components found in the rear taillight cluster area.

On the upper area of the apparatus body, directly above the side compartment door openings, a

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header is to be fabricated from smooth, aluminum sheet. This area shall be free from any body seams and shall be painted the same color as the apparatus body. The height of the header may vary depending on the following factors: apparatus design, lettering requirements, scene lights and warning light requirements as well as various other options. A "J" channel shall be incorporated into the body design in order to provide a rain gutter to further assist in preventing excessive moisture from getting into the compartments.

There shall be eight (8) Amdor rollup door installed, one (1) on each side body compartment face. Each door shall have a double wall slat with continuous ball and socket type hinge joints for superior strength and durability. The back surface of each door shall be smooth and flat to eliminate hang-up on compartment contents. The narrow slat design shall allow for a compact balancer and minimum coil size. The slats of the door shall be painted job color by the door manufacturer. The sills and tracks shall be a satin anodized finish.

Each Amdor rollup door shall have a full width stainless steel lift bar latching system. The stiffer mechanism shall allow for one handed release.

There shall be eight (8) door handles with power locks and keys provided, one (1) on each side compartment roll-up door. The doors shall be unlocked by a single switch located in the chassis cab.

There shall be drip pans with drains provided in the upper section of all body compartments with roll-up doors. Each drip pan shall prevent moisture from the roll-up door spool from entering the compartment interior.

BODY COMPARTMENT LIGHTING

There shall be a total of eight (8) On-Scene Access Series LED compartment lights installed in the body compartments. Each light shall be enclosed within a tough waterproof Lexan tube enclosure and offer 400 lumens per 18" of light and an adjustable beam angle.

COMPARTMENT COATING

The interior of the body compartments shall be coated with gray Line-X® thermoplastic polyurethane coating, unless otherwise specified. The coating shall be durable enough to withstand the everyday abuse of equipment removal and shifting.

TURTLE TILES

There shall be Turtle Tile Plastics interlocking squares in all of the body compartments. The Turtle Tiles shall be applied in all body compartment shelves, adjustable-height trays, floor-mounted trays, and on compartment floors that do not contain floor-mounted trays. No Turtle Tiles shall be applied on compartment floors underneath floor-mounted trays. Each square shall be made from polyvinyl chloride that is flame and chemical resistant. For maximum slip resistance and drainage, each square shall have a grid surface design.

COMPARTMENT AIR RELEASE

Each compartment shall be vented to help remove trapped air when closing a compartment door. The vent shall be a rubber gasket in the area of the outboard corners of the compartment. Wiring may also be run through these areas.

COMPARTMENT DRAIN HOLES

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Each body compartment shall be equipped with drain holes to allow standing water to exit to underneath the apparatus.

FUEL FILLS

There shall be two (2) fuel fill pockets located in the rear wheel well area on both the driver and officer's sides. Each fuel fill shall utilize a stainless steel OEM door with a polished finish. The hinge and frame shall all be constructed out of stainless steel material.

DRIVER'S (LEFT) SIDE BODY COMPARTMENTS

COMPARTMENT L1

There shall be a full height compartment located ahead of the rear wheels on the driver's side of the apparatus body. This compartment shall be designated as L1 within these specifications and any ensuing paperwork or drawings after contract execution.

The dimensions of the compartment shall be:

Height: 63"

Width: 31"

Depth: 26" Upper and 26" Lower

Intermediate Divide Height: "

COMPARTMENT L2

There shall be a full height compartment located ahead of the rear wheels on the driver's side of the apparatus body. This compartment shall be designated as L2 within these specifications and any ensuing paperwork or drawings after contract execution.

The dimensions of the compartment shall be:

Height: 63"

Width: 31"

Depth: 26" Upper and 26" Lower

Intermediate Divide Height: "

COMPARTMENT L3

There shall be a standard height compartment located above the rear wheels on the driver's side of the apparatus body. This compartment shall be designated as L3 within these specifications and any ensuing paperwork or drawings after contract execution.

The dimensions of the compartment shall be:

Height: 30.5"

Width: 60"

Depth: 26" Upper and 26" Lower

Intermediate Divide Height: "

COMPARTMENT L4

There shall be a full height compartment located behind the rear wheels on the driver's side of the apparatus body. This compartment shall be designated as L4 within these specifications and any ensuing paperwork or drawings after contract execution.

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The dimensions of the compartment shall be:

Height: 63"

Width: 44"

Depth: 26" Upper and 26" Lower

Intermediate Divide Height: "

L1 Components

There shall be one (1) roll out equipment tray installed on the floor of the compartment. The tray shall be equipped with an Austin Hardware drawer slide. The roller assembly shall have a rated capacity of 300 lbs. distributed load and shall have 100% extension capability. The tray shall be constructed of 3/16" aluminum sheet with 3" lips to prevent items from being shifted during transportation. The tray shall have an abraded finish and be equipped with a gas spring in order to hold the tray in either a fully extended or closed position.

STREAMLIGHT RECHARGEABLE LED FIREBOX

There shall be one (1) Streamlight, model 45865, rechargeable LED E-Spot FireBox® flashlight supplied and installed on the apparatus. The LiteBox® shall be orange in color, include one (1) Vehicle Mount System, and be wired direct to the chassis batteries.

Shop Note: The light shall be installed on the front wall of the compartment.

There shall be aluminum vertical strut channels welded in the compartment. There shall be two (2) struts for any full depth portion and one (1) strut for any shallow depth portion, on each side of the compartment.

The compartment layout shall be detailed at the pre-construction meeting.

L2 Components

There shall be two (2) aluminum adjustable full-depth shelves installed on the apparatus in the compartment. Each shelf shall be constructed of 3/16" aluminum sheet with 2" lips. The shelves shall be coated with abraded finish and shall be designed in such a manner as to allow liquids to readily drain when spilled.

There shall be one (1) roll out equipment tray installed in the compartment. The tray shall be equipped with an Austin Hardware drawer slide. The roller assembly shall have a rated capacity of 300 lbs. distributed load and have 100% extension capability. The roller assembly shall be bolted to vertical struts to allow for height adjustment. The tray shall be constructed of 3/16" aluminum sheet with 3" lips to prevent items from being shifted during transportation. The tray shall have an abraded finish and shall be equipped with a gas spring in order to hold the tray in either a fully extended or closed position.

There shall be one (1) roll out equipment tray installed on the floor of the compartment. The tray shall be equipped with an Austin Hardware drawer slide. The roller assembly shall have a rated capacity of 300 lbs. distributed load and shall have 100% extension capability. The tray shall be constructed of 3/16" aluminum sheet with 3" lips to prevent items from being shifted during transportation. The tray shall have an abraded finish and be equipped with a gas spring in order to hold the tray in either a fully extended or closed position.

There shall be aluminum vertical strut channels welded in the compartment. There shall be two (2) struts for any full depth portion and one (1) strut for any shallow depth portion, on each side of the compartment.

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The compartment layout shall be detailed at the pre-construction meeting.

L3 Components

There shall be one (1) swing out aluminum tool board located in the standard height compartment. The tool board shall be constructed of 3/16" aluminum. The tool board shall be mounted to adjustable unistruts to allow the board to be relocated for depth in the compartment. There shall be a positive latching mechanism that shall secure the board in the compartment. The tool board shall utilize a friction washers to hold the it in both the opened and closed position.

The tool board shall have a maintenance-free abraded finish.

There shall be aluminum vertical strut channels welded in the compartment. There shall be two (2) struts for any full depth portion and one (1) strut for any shallow depth portion, on each side of the compartment.

The compartment layout shall be detailed at the pre-construction meeting.

L4 Components

There shall be one (1) roll out equipment tray installed on the floor of the compartment. The tray shall be equipped with an Austin Hardware drawer slide. The roller assembly shall have a rated capacity of 300 lbs. distributed load and shall have 100% extension capability. The tray shall be constructed of 3/16" aluminum sheet with 3" lips to prevent items from being shifted during transportation. The tray shall have an abraded finish and be equipped with a gas spring in order to hold the tray in either a fully extended or closed position.

There shall be aluminum vertical strut channels welded in the compartment. There shall be two (2) struts for any full depth portion and one (1) strut for any shallow depth portion, on each side of the compartment.

The compartment layout shall be detailed at the pre-construction meeting.

DRIVER'S SIDE REAR WHEEL WELL POSITION - WL1

There shall be a three (3) air bottle compartment installed in the forward portion of the rear wheel well area, on the driver's side. The compartment shall be a triangle design. The compartment door and hinges shall be constructed out of stainless steel material, and the frame shall be constructed out of aluminum. The door shall have a rubber gasket in order to create a 100% seal to protect the interior of the compartment. The storage compartment shall be a rotational, molded component that is assembled to the door and frame. This assembly process shall prevent the air bottle from making contact with the stainless steel frame while loading and unloading the air bottle. The door shall be painted primary body color.

OFFICER'S (RIGHT) SIDE BODY COMPARTMENTS COMPARTMENT R1

There shall be a full height compartment located ahead of the rear wheels on the officer's side of the apparatus body. This compartment shall be designated as R1 within these specifications and any ensuing paperwork or drawings after contract execution.

The dimensions of the compartment shall be:

Height: 63"

Width: 31"

Depth: 15" Upper and 26" Lower

Intermediate Divide Height: 27"

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COMPARTMENT R2

There shall be a full height compartment located ahead of the rear wheels on the officer's side of the apparatus body. This compartment shall be designated as R2 within these specifications and any ensuing paperwork or drawings after contract execution.

The dimensions of the compartment shall be:

Height: 63"

Width: 31"

Depth: 15" Upper and 26" Lower

Intermediate Divide Height: 27"

COMPARTMENT R3

There shall be a standard height compartment located above the rear wheels on the officer's side of the apparatus body. This compartment shall be designated as R3 within these specifications and any ensuing paperwork or drawings after contract execution.

The dimensions of the compartment shall be:

Height: 30.5"

Width: 60"

Depth: 15" Upper and 15" Lower

Intermediate Divide Height: "

COMPARTMENT R4

There shall be a full height compartment located behind the rear wheels on the officer's side of the apparatus body. This compartment shall be designated as R4 within these specifications and any ensuing paperwork or drawings after contract execution.

The dimensions of the compartment shall be:

Height: 63"

Width: 44"

Depth: 15" Upper and 26" Lower

Intermediate Divide Height: 27"

R1 Components

There shall be one (1) roll out equipment tray installed on the floor of the compartment. The tray shall be equipped with an Austin Hardware drawer slide. The roller assembly shall have a rated capacity of 300 lbs. distributed load and shall have 100% extension capability. The tray shall be constructed of 3/16" aluminum sheet with 3" lips to prevent items from being shifted during transportation. The tray shall have an abraded finish and be equipped with a gas spring in order to hold the tray in either a fully extended or closed position.

There shall be aluminum vertical strut channels welded in the compartment. There shall be two (2) struts for any full depth portion and one (1) strut for any shallow depth portion, on each side of the compartment.

The compartment layout shall be detailed at the pre-construction meeting.

R2 Components

There shall be one (1) aluminum adjustable shallow-depth shelf installed on the apparatus in the compartment. The shelf shall be constructed of 3/16" aluminum sheet with 2" lips. The shelf shall have a abraded finish and shall be designed in such a manner as to allow liquids to readily drain when spilled.

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There shall be one (1) aluminum adjustable full-depth shelf installed on the apparatus in the compartment. The shelf shall be constructed of 3/16" aluminum sheet with 2" lips. The shelf shall be coated with abraded finish and shall be designed in such a manner as to allow liquids to readily drain when spilled.

There shall be one (1) roll out equipment tray installed in the compartment. The tray shall be equipped with an Austin Hardware drawer slide. The roller assembly shall have a rated capacity of 300 lbs. distributed load and have 100% extension capability. The roller assembly shall be bolted to vertical struts to allow for height adjustment. The tray shall be constructed of 3/16" aluminum sheet with 3" lips to prevent items from being shifted during transportation. The tray shall have an abraded finish and shall be equipped with a gas spring in order to hold the tray in either a fully extended or closed position.

There shall be one (1) roll out equipment tray installed on the floor of the compartment. The tray shall be equipped with an Austin Hardware drawer slide. The roller assembly shall have a rated capacity of 300 lbs. distributed load and shall have 100% extension capability. The tray shall be constructed of 3/16" aluminum sheet with 3" lips to prevent items from being shifted during transportation. The tray shall have an abraded finish and be equipped with a gas spring in order to hold the tray in either a fully extended or closed position.

STREAMLIGHT RECHARGEABLE LED FIREBOX

There shall be one (1) Streamlight, model 45865, rechargeable LED E-Spot FireBox® flashlight supplied and installed on the apparatus. The LiteBox® shall be orange in color, include one (1) Vehicle Mount System, and be wired direct to the chassis batteries.

Shop Note: The light shall be mounted on the upper front wall of the compartment.

There shall be aluminum vertical strut channels welded in the compartment. There shall be two (2) struts for any full depth portion and one (1) strut for any shallow depth portion, on each side of the compartment.

The compartment layout shall be detailed at the pre-construction meeting.

R3 Components

There shall be one (1) aluminum adjustable shallow-depth shelf installed on the apparatus in the compartment. The shelf shall be constructed of 3/16" aluminum sheet with 2" lips. The shelf shall have a abraded finish and shall be designed in such a manner as to allow liquids to readily drain when spilled.

There shall be aluminum vertical strut channels welded in the compartment. There shall be two (2) struts for any full depth portion and one (1) strut for any shallow depth portion, on each side of the compartment.

The compartment layout shall be detailed at the pre-construction meeting.

R4 Components

There shall be two (2) aluminum adjustable shallow-depth shelves installed on the apparatus in the compartment. Each shelf shall be constructed of 3/16" aluminum sheet with 2" lips. The shelves shall be coated with abraded finish and shall be designed in such a manner as to allow liquids to readily drain when spilled.

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There shall be two (2) aluminum adjustable full-depth shelves installed on the apparatus in the compartment. Each shelf shall be constructed of 3/16" aluminum sheet with 2" lips. The shelves shall be coated with abraded finish and shall be designed in such a manner as to allow liquids to readily drain when spilled.

There shall be aluminum vertical strut channels welded in the compartment. There shall be two (2) struts for any full depth portion and one (1) strut for any shallow depth portion, on each side of the compartment.

The compartment layout shall be detailed at the pre-construction meeting.

OFFICER'S SIDE REAR WHEEL WELL POSITION - WR1

There shall be a three (3) air bottle compartment installed in the forward portion of the rear wheel well area, on the officer's side. The compartment shall be a triangle design. The compartment door and hinges shall be constructed out of stainless steel material, and the frame shall be constructed out of aluminum. The door shall have a rubber gasket in order to create a 100% seal to protect the interior of the compartment. The storage compartment shall be a rotational, molded component that is assembled to the door and frame. This assembly process shall prevent the air bottle from making contact with the stainless steel frame while loading and unloading the air bottle. The door shall be painted primary body color.

REAR SIDE BODY

GS-36 BODY SUB FRAME

To assure proper body alignment and clearance, the body sub frame shall be constructed in a jig and fitted directly on the chassis. The sub frame shall be constructed of 36,000 PSI galvanized steel.

The chassis frame rails shall be fitted with fiber reinforced rubber to isolate the body frame members from direct contact with chassis frame rails.

The main body sub frame shall be constructed from steel tubing. The sub frame shall run the full length of the body and shall be spaced the same width as the chassis frame rails. The main sub frame shall also be the integral support for the water tank. Vertical drop tubes shall be welded to the sub frame. From these vertical drop tubes shall extend cross members constructed of steel angle. These cross members shall extend out to support the compartments. Cross members shall be located at the front and rear of the body and in front and rear of the wheel well opening.

A drop frame, fabricated of steel tube and steel angles, shall support the compartment area behind the rear. The rear drop frame shall be constructed using vertical drop tubes, welded to the main sub frame. All drop frame structures shall be welded directly to the body sub frame to allow the body to be a completely separate structure from the chassis.

After fabrication the sub frame shall be hot dip galvanized for maximum protection against corrosion.

BODY MOUNTING

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The body sub frame shall be fastened to the chassis frame with a minimum of six (6) spring loaded body mounts. Each mount shall be configured using a two-piece bracket. The two (2) brackets shall be fabricated of steel plates. The plates shall be galvanized to prevent any corrosion. Each mounting assembly shall utilize two (2) plated bolts and two (2) heavy duty springs. The assembly design shall allow the body and sub frame to act as one (1) component, separate from the chassis. As the chassis frame twists under driving conditions, the spring mounting system shall limit any stress from being transferred into the body. The spring loaded body mounts shall also prevent frame side rail or body damage caused by unevenly distributed stress and strains due to load and chassis movement.

Body mountings that do not allow relief from chassis movement shall not be acceptable.

TANK MOUNTING

The water tank shall rest on the sub frame cross members which are spaced as required by the tank manufacturer.

The tank shall be isolated from the cross members through the use of hard rubber strips with a minimum Rockwell hardness of 60 durometer. Additionally, the tank shall be supported around the entire perimeter and captured front and rear as well as side to side to prevent the tank from shifting during vehicle operations.

Although the tank shall be designed on a free floating suspension principle, it shall be required that the tank have adequate hold down restrains to minimize movement during vehicle operations.

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

DRIVER'S SIDE HATCH COMPARTMENTS

There shall be a hatch compartment located on top of the driver's side compartments. The compartment shall be constructed as an integral part of the apparatus body. The compartment shall open from end-to-end, creating one large compartment, free of any dividing bulkheads.

There shall be two (2) independent tread plate doors covering the compartment. Each compartment door handle shall be locking stainless steel recessed "D" ring type handle.

There shall be a safety latch with striker plate included with each door handle assembly.

Lighting shall be provided by two (2) 36" LED On Scene Night Axe lights installed on the upper inside portion of the compartments, one (1) per door. The lighting shall be enclosed within a tough waterproof Lexan tube enclosure. Night Axe lights shall offer 200 lumens per 18 inches of light and an adjustable beam angle. The lights shall activate when the door is opened.

There shall be a drain located in the floor of the hatch compartment with a 1" tube terminating below the body.

Located behind the left side hatch compartments shall be an open recessed area to be used for the deluge gun.

Shop Note: Each left side hatch compartment shall have an opening of 77" long x 18" wide and have a useable depth of 18".

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The entire driver's side hatch compartment shall utilize Turtle Tile Plastics interlocking squares. Each square shall be made from polyvinyl chloride that is flame and chemical resistant. For maximum slip resistance and drainage, each square shall have a grid surface design.

OFFICER'S SIDE HATCH COMPARTMENTS

There shall be a hatch compartment located on top of the officer's side compartments. The compartment shall be constructed as an integral part of the apparatus body. The compartment shall open from end-to-end, creating one large compartment, free of any dividing bulkheads.

There shall be two (2) independent tread plate doors covering the compartment. Each compartment door handle shall be locking stainless steel recessed "D" ring type handle. There shall be a safety latch with striker plate included with each door handle assembly.

Lighting shall be provided by two (2) 36" LED On Scene Night Axe lights installed on the upper inside portion of the compartments, one (1) per door. The lighting shall be enclosed within a tough waterproof Lexan tube enclosure. Night Axe lights shall offer 200 lumens per 18 inches of light and an adjustable beam angle. The lights shall activate when the door is opened.

There shall be a drain located in the floor of the hatch compartment with a 1" tube terminating below the body.

Shop Note: Each left side hatch compartment shall have an opening of 92" long x 18" wide and have a useable depth of 18".

The entire officer's side hatch compartment shall utilize Turtle Tile Plastics interlocking squares. Each square shall be made from polyvinyl chloride that is flame and chemical resistant. For maximum slip resistance and drainage, each square shall have a grid surface design.

WALKWAYS AND OVERLAYS

All exterior surfaces designated by the manufacturer as stepping, standing, or walking areas shall be overlaid with 3003 H22 Bright Tread Plate to provide a slip resistant surface, even when the surface is wet. All interior surfaces designated by the manufacturer as stepping, standing, or walking areas shall be slip resistant when the surface is dry. The degree of slip resistance shall be in compliance with the intent of NFPA 1901.

Horizontal walkways shall have .080" aluminum tread plate overlays installed and vertical surfaces shall have .125" aluminum overlays. Overlays shall be installed that are totally insulated from the apparatus with nylon shoulder washers that extend into holes in the body. Stainless steel cap nuts shall be employed where bolt ends may damage equipment or cause injury. After the apparatus is painted and the overlays are reinstalled, they shall be additionally sealed at the edges with a caulking compound. The exterior top tread plate overlay shall be mounted flush with the outer edges of the apparatus body.

Any designated horizontal standing or walking surface higher than 48" from the ground and not guarded by a railing, or structure at least 12" high shall have a "safety yellow line" marking the outside perimeter of the designated standing or walking surface area. Yellow reflective SCENEdots shall be used to create the line along the outside edges of standing and walking surfaces. Steps and ladders shall not be required to have the yellow line.

STEPPING SURFACES

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All steps shall have a surface area of at least 35 square inches and shall be able to withstand a load of at least 500 pounds. Steps shall be provided at any area that personnel may need to climb and shall be adequately lighted.

REAR DECK WITH GRIP STRUT INSERT

A modular bolt-on deck shall be installed on the rear of the apparatus to form a full width step area. The rear deck shall be constructed of anti-slip bright tread plate. There shall be a Grip Strut insert fabricated into the step area of the rear deck that shall be open below. The outside edge of the rear deck shall be flush with the rub rail that is installed on the body to maintain a uniform appearance. The depth of the rear deck will be 16". The rear deck shall be installed with sufficient support to form a sturdy, non-deflecting step area for personnel.

BODY RUB RAILS

Rub rails shall be installed beneath the compartment doors to protect them from damage should the body be brushed or rubbed against another object. The rub rails shall be 3/16" aluminum channel, 2-1/2" x 1". The rub rails shall be highly polished and then bright dip anodized.

The rub rails shall be installed on the body utilizing non-corrosive nylon spacers and secured with stainless steel bolts. The outside edge of the rub rails shall be even with the fenderettes and bolt-on steps to prevent snagging.

REAR UNDERBODY TOW EYES

Two (2) rear tow eyes shall be installed directly below the rear of the chassis frame rails, mounted to the subframe. The tow eyes shall be capable of a combined 15,000 lb. straight pull rating.

REAR WHEEL WELLS

The fenders shall be integral with the body sides and compartments with a seamless appearance. The fenders shall be fitted with bolt-in removable full circular inner liners in the wheel well area for ease of cleaning and maintenance. There shall be sufficient clearance provided in the wheel well to allow the use of tire chains when the apparatus fully loaded.

STAINLESS STEEL REAR FENDERETTES

Two (2) stainless steel fenderettes shall be installed at the outboard edge of the rear wheel well area, one (1) on each side. The fenderettes shall be bolted to the apparatus body using nylon washers to space them slightly away from the body to reduce build-up of road grime. The fenderettes shall be constructed of stainless steel that has been polished to a high quality finish.

EXHAUST HEAT DEFLECTOR SHIELD

There shall be a 4" heat deflector shield installed over the exhaust to aid in dissipating the heat to prevent exhaust heat from adversely affecting anything stored in the body.

FUEL TANK GAUGE ACCESS PANEL

There shall be a removable panel provided in the rear compartment to allow for access to the fuel tank gauge without removing the fuel tank.

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LICENSE PLATE BRACKET

There shall be a license plate bracket mounted on the rear of the apparatus. A clear LED light shall be incorporated into the bracket.

TRIMRITE® STAINLESS STEEL FASTENERS

TrimRite® stainless steel fasteners shall be provided for all exposed and unpainted fasteners throughout the body in locations such as overlays, pump panels, and other numerous hardware mounting locations. TrimRite® stainless is a hardenable martensitic stainless steel that provides a high level of corrosion resistance, hardness up to Rockwell C 51, good cold formability and ease of heat treatment, all of which combine to provide an alloy which has been used for many applications such as fasteners, especially self-drilling types. TrimRite® stainless are tested to salt spray standard ASTM B117, which is a 200-hour salt spray test. The OEM shall use TrimRite® stainless with an added blue patch which provides improved vibration resistance for the fastener.

ADDITIONAL HARDWARE

There shall be a bag of stainless steel nuts, bolts, and washers supplied with the apparatus for mounting of equipment.

REAR ACCESS LADDER AND STEPS

There shall be one (1) aluminum access ladder located on the driver-side rear face of the apparatus in order to provide access to the top of the apparatus

The ladder shall have straight steps with two (2) fold-down steps. The number of straight steps and the width of the ladder shall be determined by engineering to be as large as possible based on the rear body style/components. The stepping height between steps and from the ground shall be in compliance with NFPA. The ladder steps will be fabricated with bar grating and minimum depth of 4-1/4". The ladder shall have railing fabricated out of non-skid aluminum to assist in climbing. There shall be railing on each side of the ladder.

There shall be five (5) Cast Products bolt-on steps installed on the officer's side-rear of the apparatus. The steps shall have large open slots to prevent buildup of ice or mud and to provide a handhold when necessary.

The access ladder and steps shall be adequately lit with LED lighting. There shall be one (1) light located above each the access ladder and the set of steps on the rear face of the body. The light shall be located in a manner that shall light all of the steps

FULL WIDTH HOSE BED STEP

There shall be a full width tread plate step located above the rear compartment door. The step shall be used to assist in reloading the hose bed. The step shall also include hand-holds in the rear of the step to be used when climbing the rear of the truck.

HANDRAILS

All handrails shall be constructed of knurled stainless steel of not less than 1-1/4" in diameter. All railing shields and brackets shall be chrome plated, and shall be bolted to the body with stainless steel bolts. The lower bracket on all vertical handrails shall have a drain hole drilled in it at the lowest point.

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The following handrails shall be provided on the apparatus:

There shall be a handrail installed forward of the stacked speedlays, on the driver's side. There shall be a handrail installed forward of the stacked speedlays, on the officer's side. There shall be a vertical handrail installed on the officer's side rear of the apparatus. There shall be a horizontal handrail installed below the hose bed. There shall be two (2) handrails installed on top of the rear hose bed risers, one (1) on the driver's side and one (1) on the officer's side.

There shall be a handrail installed on the rear of each hose bed cover door.

GROUND LADDER STORAGE

The ground ladders shall be stored beneath the hose bed, on the officer's side of the water tank. The ladders shall be stored vertically on their beam in an aluminum rack with poly scuff strips. The ladders shall be accessible through a hinged painted aluminum door on the rear of the body with a locking D-ring handle. The following ground ladders shall be supplied with the apparatus:

One (1) Duo Safety, model 900-A, 24' two section aluminum extension ladder shall be provided. The ladder shall be constructed with 6061-T6 aluminum alloy and shall have a 750 pound duty rating. The ladder shall have a closed length of 14' 2.75".

One (1) Duo Safety, model 775-A, 14' aluminum roof ladder shall be provided. The ladder shall have a 750 pound duty rating and aluminum roof hooks that fold for storage.

One (1) Duo Safety, model 585-A, 10' folding ladder shall be provided. The ladder shall have a 300 pound duty rating and Duo Safety ladder shoes for slip resistance.

PIKE POLE STORAGE

There shall be three (3) aluminum tubes for the storage of pike poles installed in the ground ladder storage compartment.

The following pike poles shall be supplied with this location on the apparatus:

One (1) Nupla, model YPD-8, 8' fiberglass pike pole shall be provided. The pike pole shall be constructed of tubular fiberglass with reinforcement at critical stress points and a butt style handle.

Three (3) Nupla, model YPD-10, 10' fiberglass pike poles shall be provided. Each pike pole shall be constructed of tubular fiberglass with reinforcement at critical stress points and a butt style handle.

One (1) Nupla, model RH-8DA, 8' fiberglass pike pole shall be provided. The pike pole shall be constructed of tubular fiberglass with reinforcement at critical stress points and an aluminum "D" style handle.

The wheel chocks shall be stored in locations that are easily accessible under the rear of the body on the driver's side of the apparatus.

WHEEL CHOCKS

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There shall be one (1) pair of Zico model SAC-44 wheel chocks provided with the apparatus. The wheel chocks shall be mounted in Zico model SQCH-44-H mounting brackets.

PUMP COMPARTMENT IN BODY

The pump compartment shall be a rear mount design and shall be integral to the body. The pump compartment shall be located at the rear of the body.

PUMP COMPARTMENT LIGHTS

The pump compartment shall be equipped with two (2), 9" On-Scene Night Axe LED compartment lights. The lights shall be rated at 100,000 hours of service. The light shall be waterproof and magnesium chloride resistant. The light shall be enclosed in tough 5/8" Lexan tube. Multi-clip attachments shall allow for easy installation.

PUMP ACCESS PANEL

There shall be a pump access door located on the back wall of the officer's side rear compartment to allow access to the pump compartment. The panel shall be of the single pan design and shall be positively latched in the closed position utilizing compression latches. The panel finish shall match that of the compartment.

CONTROL PANEL

The operator's panel in the driver-side rear compartment shall be divided into two sections. The lower section shall be where all valve controls, the primer control, the discharge relief valve controls (pilot valve), and other mechanical controls are located. This surface shall be referred to as the "control panel".

All valve controls shall be the self-locking type, activated by either direct control or with a direct linkage utilizing friction locking bell cranks and universal ball swivels. The primary valve handles shall have color coded tags installed in a recessed area to clearly denote the purpose of each control.

INSTRUMENT PANEL

The surface above the control panel shall contain all instruments, gauges, test fittings, and optional controls. This surface shall be referred to as the "instrument panel". The instrument panel shall be independent and hinged and latched so that it may be opened. All instruments, gauges, and other equipment shall be installed with sufficient slack in any cabling, tubing, or plumbing to allow the panel to swivel to the fully open position.

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The instrument and gauge panel shall be vertically hinged "swing out" to provide access for service.

REAR PUMP PANEL

A single panel shall be installed on the rear of the body. This shall be the area where any discharges, inlets, steamers, and other pump associated equipment are located. This panel shall be easily removable and held in place with quick release push latches. It shall be fully removable for pump and plumbing access without the need to use hand tools. Any electrical equipment that may be installed shall be equipped with connectors so they may be easily separated from the opening created when the below described front access panel is removed.

PANEL SURFACES

The control panel, instrument panel, and rear panel shall be coated with black Line-X® for maximum resistance to abrasion and to minimize glare. The material shall be capable of withstanding the effects of extreme temperatures and weather.

GARNISH RING BEZEL ASSEMBLIES

Innovative Controls intake and/or discharge garnish rings shall be installed to the apparatus with mounting bolts. These bezel assemblies shall be used to identify intake and/or discharge ports with color and verbiage. The garnish rings shall be designed and manufactured to withstand the specified apparatus service environment and shall be backed by a warranty equal to that of the exterior paint and finish. The specified assemblies shall feature a chrome-plated panel-mount bezel with durable UV resistant polycarbonate inserts. These UV resistant polycarbonate graphic inserts shall be sub-surface screen printed to eliminate the possibility of wear and protect the inks from fading. All insert labels shall be backed with 3M permanent adhesive (200MP), which meets UL969 and NFPA standards.

VERBIAGE TAG BEZEL ASSEMBLIES

Innovative Controls verbiage tag bezels shall be installed. The bezel assemblies will be used to identify apparatus components. These tags shall be designed and manufactured to withstand the specified apparatus service environment and shall be backed by a warranty equal to that of the exterior paint and finish. The verbiage tag bezel assemblies shall include a chrome-plated panel-mount bezel with durable easy-to-read UV resistant polycarbonate inserts featuring the specified verbiage and color coding. These UV resistant polycarbonate verbiage and color inserts shall be sub-surface screen printed to eliminate the possibility of wear and protect the inks from fading. Both the insert labels and bezel shall be backed with 3M permanent adhesive (200MP), which meets UL969 and NFPA standards.

SAFETY MESSAGE BEZEL ASSEMBLIES

Innovative Controls safety message bezels shall be installed. The bezel assemblies will be used to identify, instruct, or warn the operators. These tags shall be designed and manufactured to withstand the specified apparatus service environment and shall be backed by a warranty equal to that of the exterior paint and finish. The safety message bezel assemblies shall include a chrome-plated panel-mount bezel with durable easy-to-read UV resistant polycarbonate inserts featuring ANSI safety standard graphics or custom graphics. These UV resistant polycarbonate graphic inserts shall be sub-surface screen printed to eliminate the possibility of wear and protect

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the inks from fading. Both the graphic insert labels and bezel shall be backed with 3M permanent adhesive (200MP), which meets UL969 and NFPA standards.

PUMP PANEL LIGHTING

The operator's panel shall be illuminated by the rollup door lighting.

The rear panel shall be illuminated by one (1) 36" On-scene Night Axe LED light. The rear panel lights shall become energized upon setting the parking brake so the gauge information provided may be consulted at any time the apparatus is parked.

The pump panel lighting shall become energized automatically upon setting the park brake and opening the pump module roll-up door so the gauge information may be consulted at any time the apparatus is parked with the pump module door open.

PUMP PANEL VISTA DISPLAY

There shall be a Weldon V-Mux Vista display provided by the chassis manufacturer and shipped loose. The display be installed on the enclosed pump panel located inside the left rear compartment.

FUEL TANK GAUGE ON PUMP PANEL

There shall be a 2" fuel tank gauge provided on the pump panel. The gauge shall provide fuel tank readout for the pump operator during fire ground operations.

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FIRE PUMP

The pump shall be a Waterous CXVK 1250 U.S. GPM (5000 LPM) fire pump. The pump shall be a single stage centrifugal class "A" rated fire pump, designed specifically for the fire service.

The pump body shall be cast as two (2) vertically split pieces. The body shall be made of high tensile, close-grained gray iron with a minimum tensile strength of 40,000 PSI.

FLAME PLATED IMPELLER HUBS

The pump impellers shall be bronze, specifically designed for the fire service and accurately balanced for vibration free running. The stripping edges shall be located on opposite sides of the impellers to reduce shaft deflection.

The impeller shaft shall be stainless steel, accurately ground to size and supported at each end by oil or grease lubricated anti-friction ball bearings for rigid, precise support. The bearings used on the impeller shaft shall be automotive type bearings, easily cross- referenced and readily available at normal parts or bearing stores.

The impeller hubs shall be flame plated with tungsten carbide to hardness approximately twice that of tool steel to assure maximum pump life and efficiency. During the flame plating process the base metal shall not be allowed to exceed a temperature of 300 degrees Fahrenheit to prevent altering the metallurgical properties of the impeller material.

IMPELLER WEAR RINGS

The pump shall be equipped with replaceable bronze wear rings for increased pump life and minimum maintenance cost. The wear rings shall be designed to fit into a groove in the face of the impeller hubs forming a labyrinth that, as the clearance increases with age, directs water from the discharge side in several directions eventually exiting outward, away from the eye of the impeller hub.

LUBRICATION SYSTEM

An internal lubrication system shall deliver lubricant directly to the drive chain. This unique design shall eliminate the need for an external lubrication pump and auxiliary cooling. Oil shall be

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supplied with the lubrication system.

REMOTE PUMP TRANSMISSION

The pump shall have a Waterous TC20 series transmission. The TC20 pump transmission shall be of the latest design, incorporating a high strength Morse Hy-Vo® chain capable of operating at high speeds while providing smooth and quiet transmission of power. Drive and driven sprockets shall be made of hardened steel and have ground bores. Drive line shafts shall be made from alloy steel forgings, hardened and ground to size. Deep groove, anti-friction ball bearings shall be used throughout the pump transmission. The pump shift shall be a constant mesh, two (2) position sliding collar that engages all teeth simultaneously and shall be self locking. Air power allows the operator to shift to ROAD or PUMP position by actuating a simple valve. LED signals shall show the completion of shift from ROAD to PUMP. An internal lubrication system delivers lubricant directly to the drive chain. This unique design eliminates the need for an external lubrication pump and auxiliary cooling. All driveline components shall have a torque rating equal to or greater than the final net engine torque. A pan on the bottom of the case shall be removable to allow for inspection of internal driveline components.

MECHANICAL SEALS

The pump shall be equipped with self-adjusting, maintenance free mechanical shaft seals that shall not require manual adjustment. These seals shall be designed in a manner such that they shall remain functional enough to permit continued use of the pump in the unlikely event of a seal failure.

ALLOY ANODES

There shall be three (3) OEM supplied alloy anodes provided with the fire pump. The anodes shall aid in preventing galvanic corrosion within the water pump and be easily replaceable. The anodes shall be installed as follows:

Two (2) in the suction manifold of the fire pump. One (1) in the discharge manifold of the fire pump.

The pump shall be rated at 1250 gallons per minute.

FIRE PUMP MOUNTING

The fire pump shall be mounted within the rear of the apparatus body.

The pump shall be frame mounted; therefore minimizing the likelihood of the pump casing cracking should the apparatus be involved in a collision.

PUMP SHIFT

The pump shift actuating mechanism shall be air operated from a valve in the cab identified as "PUMP SHIFT". Full instructions for shifting the pump shall be inscribed on the valve plate.

There shall be two (2) green pump system shift indicator lights in the chassis cab. The first light shall become energized when the pump has completed its shift into pump gear and shall be labeled "Pump Engaged". The second light shall become energized when the chassis parking brake has been set and when the pump and the chassis transmissions have been shifted completely into the correct gears for pumping, this light shall be labeled "OK to Pump".

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There shall be one (1) green pump system shift indicator light located on the operator's panel. This light shall only become engaged when the chassis parking brake has been set and when the pump and the chassis transmissions have been completely shifted into the correct gears. The light shall be located adjacent to the throttle control and shall be labeled "Warning: Do Not Open Throttle Unless Light Is On".

MANUAL OVERRIDE

A manual override system shall be supplied for the pump shift should a problem develop in the chassis air brake system. Controls for the override shall be located near the front of the body on the driver's side. Instructions shall be inscribed on a plate near the pump shift controls.

PRESSURE GOVERNOR

The apparatus shall be equipped with a Class 1, model 117690 Total Pressure Governor (TPG) that is connected to the engine Electronic Control Module. The TPG shall operate as a pressure sensor (regulating) governor (PSG) utilizing the engines J1939 data for optimal resolution and response. Programmable presets for RPM and pressure settings shall be easily configurable using the TPG's straightforward menu structure. The TPG shall also include indication of engine RPM, system voltage, engine oil pressure and engine temperature with audible alarm output for all. The TPG uses the J1939 data bus for engine information requiring no additional sensors to be installed.

An interlock system shall be provided to prevent advancement of the engine speed at the pump operator's panel unless the apparatus has "Throttle Ready" indication.

The TPG shall also include a pump hour meter to track total hours of pump operation.

INTAKE RELIEF VALVE

There shall be an Akron Brass, model #59, intake relief valve installed on the suction side of the pump. The valve shall be the preset type, adjustable from 75 to 250 PSI, and shall be designed to prevent vibration from altering the setting. The relief outlet shall be directed below the pump with the discharge terminating in a 2-1/2" male NST connection. The discharge shall be away from the pump operator and labeled "Do Not Cap".

PUMP PRIMING SYSTEM

There shall be a Waterous, model VPO/VPOS priming pump included with the pump. The priming pump shall be an electrically driven rotary vane pump mounted firmly within the pump area. The pump shall be controlled from the pump operator's panel. An indicator light on the pump panel shall show when the primer motor is engaged. The pump shall be capable of creating suction and discharging water from a lift of 10 feet through 20 feet of suction hose of the appropriate size, in not more than 30 seconds starting with the pump dry. It shall be capable of developing a vacuum of 22 inches at an altitude of up to 1000 feet.

There shall be a Waterous model VAP vacuum activated priming valve supplied with the pump. The valve shall open automatically when the priming system is activated. The valve shall be installed on the pump or mounted remotely.

MASTER DRAIN VALVE

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A Trident manifold drain valve assembly shall be supplied. This drain shall provide the capability to drain the entire pump by turning a single control. The valve assembly shall consist of a stainless steel plate and shaft in a bronze body with multiple ports. The drain valve control shall be mounted on the driver's side pump panel and labeled "Master Drain".

WATEROUS OVERHEAT PROTECTION MANAGER WITH INDICATOR LIGHTS AND BUZZER

There shall be a Watrous Overheat Protection Manager (OPM), installed on the pump. The relief valve shall automatically relieve water from the pump when the temperature of the pump water exceeds 140°F. In addition, a warning light on the pump panel shall be triggered by a thermal switch when the water in the pump reaches 180°F. The warning light and a buzzer act as additional protection devices if the temperature inside the pump keeps rising although the valve is open. The valve shall automatically reset after activation.

PAINT PUMP PRIMARY BODY COLOR

The pump, pump enclosure, main intake(s), and auxiliary intake valve(s) shall be painted with PPG polyurethane enamel paint. The paint shall be the primary body color.

PUMP AND ENGINE COOLING SYSTEM

There shall be a pump and engine cooling system provided on the apparatus. The cooling system shall keep the engine cool when running for long periods of time and the pump cool during long periods of pumping when water is not being discharged. The cooling system shall also be setup in a way that the cooling system lines can be easily drained through the master pump drain.

The cooling system lines shall consist of high-pressure, high-temperature 3/8" (inside diameter) abraded rubber hose. The engine cooling lines shall be installed with one (1) line going from the discharge side of the water pump through an Innovative Controls, model 3004204-2-2, 3/8" in-line quarter turn ball valve assembly and continuing on to the chassis heat exchanger. The return line from the heat exchanger shall then run into the suction side of the pump. The pump cooling lines shall be installed with one (1) line going from the discharge side of the water pump through an Innovative Controls, model 3004204-2-2, 3/8" in-line quarter-turn ball valve assembly up to the water tank. At the water tank, the pump cooling line shall be plumbed into a 3/8" check valve on the "Tank Fill" valve. The check valve shall prevent tank water from back flowing into the pump when the cooling system is not in use. A return line from the water tank shall be plumbed into the water pump.

The engine cooling system valve shall be controlled on the operator's panel, and shall be clearly labeled, "Engine Cooler".

The pump cooling system valve shall be controlled on operators panel, and shall be clearly labeled, "Pump Cooler".

FOAM SYSTEM

There shall be a FoamPro 2001 single foam system installed on the apparatus. The system shall be an electronic, fully automatic, variable speed, direct injection, and discharge side foam proportioning system. The system shall be capable of handling Class A foam concentrates and most Class B foam concentrates. The foam proportioning operation shall be based on direct measurement of water flows, and remain consistent within the specified flows and pressures. The system shall be capable of delivering accuracy to within 3% of calibrated settings over the advertised operation range when installed according to factory standards. The system shall be

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equipped with a digital electronic control display, suitable for installation on the pump panel.

Incorporated within the control display shall be a microprocessor that receives input from the system flow meter, while also monitoring foam concentrate pump output, comparing values to ensure that the operator preset proportional amount of foam concentrate is injected into the discharge side of the fire pump.

Paddlewheel type flow meter shall be installed in the discharges specified to be foam capable.

The digital computer control display shall enable the pump operator to perform the following control and operation functions for the foam proportioning system:

- Provide push-button control of foam proportioning rates from 0.1% to 9.9% in 0.1% increments.
- Show current flow-per-minute of water.
- Show total volume of water discharged during and after foam operations are completed.
- Show total amount of foam concentrate consumed. Simulate flow rates for manual operation.
- Perform setup and diagnostic functions for the computer control microprocessor. Flash a "low concentrate" warning when the foam concentrate tank(s) run(s) low.
- Flash a "no concentrate" warning and shut the foam concentrate pump off, preventing damage to the pump, should the foam tank(s) empty.
- A 12 volt electric motor driven positive displacement foam concentrate pump, rated up to 2.6 GPM (9.84 L/min), with operating pressures up to 400 PSI (27.6 BAR), shall be installed in a suitable compartment near the apparatus pump house. A pump motor electronic driver (mounted to the base of the pump) shall receive signals from the computer control display, and power the 1/2 horsepower electric motor. The electric motor is directly coupled to the concentrate pump in a variable speed duty cycle to ensure that the correct proportion of concentrate preset by the pump operator is injected into the water stream.

System capacity shall be as follows:

Foam Concentrate Maximum / Water Flow GPM (L/Min)

0.2% / 1300 (4921)

0.5% / 520 (1968)

1.0% / 260 (984)

3.0% / 85 (322)

A full flow check valve shall be provided to prevent foam contamination of fire pump and water tank or water contamination of foam tank.

Components of the complete proportioning system as described above shall include: Operator control and display

Paddlewheel flow meter

Pump and electric motor/motor driven

Wiring harnesses

Low-level tank switch

Foam injection check valve

An installation and operation manual shall be provided for the unit, along with a one (1) year limited warranty. A system-schematic placard and a system-rating placard shall be supplied and installed in accordance with NFPA standards.

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FOAM PROPORTIONING SYSTEM TESTING

The foam proportioning system shall be tested and certified after final installation as per NFPA 1901.

PLUMBING MANIFOLD

The plumbing manifold shall consist of the inlet side manifold and the discharge side manifold. Galvanized Victaulic couplings shall be used wherever possible for ease of maintenance and superior corrosion protection.

The inlet side of the plumbing manifold shall utilize schedule 10, 304 grade stainless steel tubing and preformed elbows for inlets that are larger than 3". Side auxiliary inlets that are 3" or smaller shall utilize schedule 40, 304 grade stainless steel threaded tubing and preformed elbows. The inlet manifold shall thread into the pump auxiliary inlet ports and each inlet valve shall thread onto the inlet manifold.

The discharge side of the plumbing manifold shall utilize schedule 40, 304 grade stainless steel tubing and preformed elbows to ensure the quality of the manifold where welds are required. The discharge manifold shall connect to the pump discharge ports using 1/2" stainless steel flanges that shall be machined to seat an O-ring to ensure a leak proof seal. Each discharge shall derive from a port on the manifold assembly connected to a discharge valve with 1/2" 304 grade stainless steel flanges. Discharges that terminate in a location other than the pump module (i.e. rear discharges) that do not require welding shall utilize a combination of high pressure flex hose and schedule 10, 304 grade stainless steel tubing to allow flexibility between the body and the pump module.

There shall be a Trident Emergency Products 3/4" quarter turn drain valve included. There shall be a chrome plated rectangular handle provided on the drain valve to facilitate use with a gloved hand. The drain valve shall be located just above the running board and below the pump panel to reduce clutter in the pump panel area. The drain valve shall be connected to the valve with flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color coded bezel shall be included.

INNOVATIVE CONTROLS DISCHARGE GAUGES - 2-1/2" - 0-400PSI

The discharge gauges on the apparatus shall be 2 1/2" (63mm) diameter Innovative Controls pressure gauges. The gauges shall have a one-piece die-cast brass case that integrates the valve stem connection, movement support, and bourdon tube support into a single unit that eliminates distortion and leakage. Clear scratch resistant molded lenses shall be used to ensure distortion-free viewing and they shall be sealed to the gauge by being trapped together with a profile gasket by a crimped stainless steel bezel. The gauges shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from -40°F to +160°F.

The gauges shall exceed ASME B40.100 Grade B requirements with an accuracy of +/-1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

Highly-polished stainless steel bezels shall be provided to prevent corrosion and protect lenses and gauge cases. The gauges shall be installed into decorative chrome-plated mounting bezels that incorporate valve identifying verbiage and/or color labels.

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The gauges shall display a range from 0 to 400 psi and shall have an orange tip on the pointer.

MASTER PRESSURE CENTER ASSEMBLY

The master gauges shall be installed on the pump panel no more than 6 inches apart in an integrated master pressure assembly that includes the two (2) master gauges and the test port manifold.

The master intake and master discharge gauges shall be 4" (101mm) diameter Innovative Controls pressure gauges. Each gauge shall have a one-piece die-cast brass case that integrates the valve stem connection, movement support, and bourdon tube support into a single unit that eliminates distortion and leakage. A clear scratch resistant molded lens shall be used to ensure distortion-free viewing and it shall be sealed to the gauge by being trapped together with a profile gasket by a crimped stainless steel bezel. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from -40°F to +160°F.

Each gauge shall exceed ASME B40.100 Grade B requirements with an accuracy of +/-1% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy. A highly-polished stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case.

The two (2) master gauges shall be installed into a decorative chrome-plated zinc mounting bezel that also incorporates a test port manifold and a graphic overlay that identifies the master intake and discharge gauges, the vacuum test port, and the pressure test port. The test port manifold is solid cast brass with chrome-plated plugs.

The gauge on the left shall be the master pump intake gauge and display a range from -30 to 600 psi with black graphics on a white background. The gauge on the right shall be the master pump discharge gauge and display a range from 0 to 600 psi with burgundy graphics on a white background.

The non-Storz discharge and intake fittings provided on this apparatus shall be South Park Corp. Brand. The adapter/cap/plug fittings shall be manufactured from high-quality brass that shall be polished to remove manufacturing irregularities with a chrome finish applied to the polished surface.

The Storz discharge and intake fittings provided on this apparatus shall be Task Force Tips Brand. For corrosion resistance, the adapter shall be constructed of hard coat anodized aluminum alloy and include a polymer bearing ring for prevention of galvanic corrosion.

The auxiliary intake(s) shall terminate with NST swivels, and the discharges shall terminate with NST male threads.

DISCHARGE, PRE-CONNECT, AND INTAKE DRAINS

There shall be an Innovative Controls 3/4" quarter turn drain valve included on each discharge, gated intake, and steamer valve (if applicable). There shall be a side stem, long stroke chrome plated lift handle provided on the drain valve to facilitate use with a gloved hand. The drain valve shall have a verbiage tag that angles upward so that it can easily be seen and read by the operator before opening. The drain valve shall be located below the pump panel and discharge/intake panel to reduce clutter in the pump panel area. The drain valve shall be

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connected to the valve with a flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color coded bezel shall be included.

2" TANK FILL

There shall be a 2" tank fill plumbed from the pump to the tank. Installation shall be completed with 2" Class 1 rubber hose and stainless steel hose couplings. An Akron Brass, model 8620, 2" Swing-Out™ valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass manual gear actuator installed on the valve. The gear actuator shall operate at a 50:1 gear ratio, which operates from fully open to fully closed in twelve (12) rotations.

The gear actuator shall be controlled by an Akron Brass 4" handwheel valve controller. The handwheel worm gear shall be connected to the remote mounted valve via a rod assembly. The handwheel shall turn a gear sector mounted on the valve for smoother and easier operations under pressure. A position indicator shall show the position of the ball valve as per NFPA 1901. Opening and closing speed shall comply with the current NFPA standard to minimize effects of water hammer.

4" TANK-TO-PUMP

There shall be a 4" tank-to-pump plumbed with a Class 1 flexible hose from the tank to the suction side of the pump. There shall be an Akron Brass, model 8940, 4" Swing- Out™ valve shall be provided. The valve shall have an all cast brass valve body with a 4" full flow waterway ideal for flows up to 2000 gpm and a maximum body length of 4". The valve shall utilize a Fusion CF™ composite ball design with a single urethane seat and be structurally rated to 500psi with a 250psi operating pressure. The valve shall not require the lubrication of seats or any other internal waterway parts, and shall be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass air actuator installed on the valve. A Class 1 air cylinder shall be connected to the R1 actuator to allow the valve to be actuated via an air source.

There shall be a check valve between the pump suction and the booster tank valve. The check valve shall eliminate back flow into the water tank when the pump is connected to a pressurized source.

6" REAR CENTER MAIN INTAKE

There shall be a 6" main intake, with 6" plumbing, located on the center-rear of the apparatus. The suction fittings shall include a removable die-cast screen to provide cathodic protection for the pump thus reducing corrosion. The intake shall terminate MNST thread.

There shall be a Neles Jamesbury, model 815W, butterfly valve provided. The valve shall be a 6" full flow valve with a 6" NST nipple. The valve shall be controlled by a hand wheel located on the pump panel, on the same side as the valve. The valve shall meet current NFPA standards for

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opening and closing speed.

There shall be an Innovative Controls, model 3004204-2-2, 3/8" in-line bleeder valve provided on the steamer inlet. The valve shall be used to bleed off air or water as per NFPA requirements.

There shall be an Akron Brass, model #59, intake relief valve installed on the steamer valve. The valve shall be the preset type, adjustable from 75 to 250 PSI, and shall be designed to prevent vibration from altering the setting. The relief outlet shall be directed below the pump with the discharge terminating in a 2-1/2" male NST connection. The discharge shall be away from the pump operator and labeled "Do Not Cap".

2-1/2" REAR DRIVER-SIDE AUXILIARY INTAKE

There shall be a 2-1/2" gated auxiliary intake, with 2-1/2" plumbing, provided on the driver-side rear of the apparatus. The auxiliary intake shall be fully recessed behind the panel in order to keep the valve protected from the elements.

An Akron Brass, model 8825, 2-1/2" Swing-Out™ valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass, model TSC manual actuator installed directly on the valve. The handle shall allow the valve to be controlled directly at the valve.

There shall be one (1) South Park, model HPC3008AC, 2 1/2" NST plug with chain provided.

All intakes shall have the OEM Standard label package unless stated otherwise. All intake labels shall be burgundy in color. Specific verbiage on each intake label tag shall be determined at the pre-construction meeting.

1-1/2" FRONT BUMPER DISCHARGE

There shall be a 1-1/2" discharge located inside the center hosewell of the front bumper. The discharge shall be plumbed with 2" plumbing and high pressure flex hose with stainless steel couplings. The discharge shall terminate MNST.

The discharge shall have Class1 model 34AD automatic drains installed in the low routed areas below the 1/4 turn manual drain. The automatic drains shall open whenever pressure in the line drops below 6 psi.

The discharge shall be foam capable.

An Akron Brass, model 8620, 2" Swing-Out™ valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The

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valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass manual gear actuator installed on the valve. The gear actuator shall operate at a 50:1 gear ratio, which operates from fully open to fully closed in twelve (12) rotations.

The gear actuator shall be controlled by an Akron Brass 4" handwheel valve controller. The handwheel worm gear shall be connected to the remote mounted valve via a rod assembly. The handwheel shall turn a gear sector mounted on the valve for smoother and easier operations under pressure. A position indicator shall show the position of the ball valve as per NFPA 1901. Opening and closing speed shall comply with the current NFPA standard to minimize effects of water hammer.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 psi. The gauge shall have a black dial graphic and an orange tip on the pointer.

The discharge shall be designated as a pre-connect and no cap and chain shall be supplied.

2-1/2" DRIVER'S SIDE HOSE BED PRE-CONNECT

There shall be a 2-1/2" pre-connect, with 2-1/2" plumbing, located at the front of the hose bed on the driver's side. The discharge shall terminate MNST.

The discharge shall be foam capable.

An Akron Brass, model 8625, 2-1/2" Swing-Out™ valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass manual gear actuator installed on the valve. The gear actuator shall operate at a 50:1 gear ratio, which operates from fully open to fully closed in twelve (12) rotations.

The gear actuator shall be controlled by an Akron Brass 4" handwheel valve controller. The handwheel worm gear shall be connected to the remote mounted valve via a rod assembly. The handwheel shall turn a gear sector mounted on the valve for smoother and easier operations under pressure. A position indicator shall show the position of the ball valve as per NFPA 1901. Opening and closing speed shall comply with the current NFPA standard to minimize effects of water hammer.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 psi. The gauge shall have a black dial graphic and an orange tip on the pointer.

The discharge shall be designated as a pre-connect and no cap and chain shall be supplied.

2-1/2" PRE-CONNECT AT FRONT OF HOSE BED

There shall be a 2-1/2" pre-connect, with 2-1/2" plumbing, located on the officer's side of the front of the hose bed. The discharge shall terminate MNST.

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The discharge shall be foam capable.

An Akron Brass, model 8625, 2-1/2" Swing-Out™ valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass manual gear actuator installed on the valve. The gear actuator shall operate at a 50:1 gear ratio, which operates from fully open to fully closed in twelve (12) rotations.

The gear actuator shall be controlled by an Akron Brass 4" handwheel valve controller. The handwheel worm gear shall be connected to the remote mounted valve via a rod assembly. The handwheel shall turn a gear sector mounted on the valve for smoother and easier operations under pressure. A position indicator shall show the position of the ball valve as per NFPA 1901. Opening and closing speed shall comply with the current NFPA standard to minimize effects of water hammer.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 psi. The gauge shall have a black dial graphic and an orange tip on the pointer.

The discharge shall be designated as a pre-connect and no cap and chain shall be supplied.

1-1/2" HOSE BED PRECONNECT (DRIVER SIDE)

There shall be a 1-1/2" preconnect, with 2" plumbing, located at the front of the hose bed on the driver's side. The preconnect shall terminate MNST.

The discharge shall be foam capable.

An Akron Brass, model 8620, 2" Swing-Out™ valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass manual gear actuator installed on the valve. The gear actuator shall operate at a 50:1 gear ratio, which operates from fully open to fully closed in twelve (12) rotations.

The gear actuator shall be controlled by an Akron Brass 4" handwheel valve controller. The handwheel worm gear shall be connected to the remote mounted valve via a rod assembly. The handwheel shall turn a gear sector mounted on the valve for smoother and easier operations under pressure. A position indicator shall show the position of the ball valve as per NFPA 1901. Opening and closing speed shall comply with the current NFPA standard to minimize effects of water hammer.

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The valve shall be actuated by an Akron Brass electric actuator installed on the valve. The electric actuator shall have a 25:1 gear ratio, which actuates from fully open to fully close in eight (8) seconds, a clutchless motor, and utilize an electric controller with current limiting design.

The electric actuator shall be controlled by an Akron Brass model 9323 Navigator™ Pro electric valve controller. The electric controls shall be of true position feedback design, requiring no clutches in the motor or current limiting. The unit shall be completely sealed with momentary open, close as well as an optional one (1) touch full open feature to operate the actuator. Two (2) additional buttons shall be available to be used for preset selection, preset activation and menu navigation. The controller shall have up to three (3) preset locations that can be user set and easily recalled upon each use. The unit shall be capable of being used in conjunction with at least two (2) additional displays to control one (1) valve. The unit shall provide position indication through a full color backlit LCD display. The display shall be a full color LCD display with a backlight. It shall have manual adjustment of the brightness as well as an auto-dimming option. The unit shall carry a five (5) year warranty.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 psi. The gauge shall have a black dial graphic and an orange tip on the pointer.

There shall be one (1) Task Force Tips model #AH3ST-NT 5" female NST x 5" Storz 30 degree elbow provided. The elbow shall be configured with a 5" swivel Storz coupling and a 5" female NH swivel rocker lug coupling.

There shall also be one (1) Task Force Tips model A01ST 5" Storz blind cap with lanyard provided.

GARDEN HOSE DISCHARGE

There shall be a 3/4" discharge with gardenhose fitting located on the left side pump compartment. The discharge shall come equipped with a pressure regulator, Trident 1/4" turn manual drain, Trident 3/4" valve, and a Trident T-Handle.

There shall be a female cap and chain provided.

There is no gauge required for the garden hose discharge. Cap and chain included.

SPEEDLAY CONFIGURATION

There shall be two (2) 1-1/2" stacked speedlay pre-connects located ahead of the forward body compartments (L1/R1). Class1 high-pressure flex hose with stainless steel couplings shall be used in the plumbing.

A Trident 90° swivel elbow shall be utilized to keep the hose from kinking when pulled from either side of the apparatus. The swivel for each speedlay shall be located outboard for ease of making connections while changing hose.

Each pre-connected speedlay shall be equipped with one (1) removable aluminum tray to aid in loading the hose. The trays shall have an abraded finish.

The pre-connect hose beds shall be sized to accommodate the following hose load: The interior of the pre-connect hose bed shall have a maintenance free abraded finish. The floor of the speedlay shall be slotted sufficiently for drainage.

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The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 psi. The gauge shall have a black dial graphic and an orange tip on the pointer.

The discharge shall be designated as a pre-connect and no cap and chain shall be supplied.

2-1/2" REAR CENTER DISCHARGE

There shall be two (2) 2-1/2" discharge, with 2-1/2" plumbing, located on the center rear of the apparatus. Each discharge shall terminate MNST.

The discharge shall be foam capable.

An Akron Brass, model 8625, 2-1/2" Swing-Out™ valve shall be provided on each rear center discharge. Each valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. Each valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. Each valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

Each valve shall be actuated by an Akron Brass manual gear actuator installed on the valve. The gear actuator shall operate at a 50:1 gear ratio, which operates from fully open to fully closed in twelve (12) rotations.

Each gear actuator shall be controlled by an Akron Brass 4" handwheel valve controller. Each handwheel worm gear shall be connected to the remote mounted valve via a rod assembly. The handwheel shall turn a gear sector mounted on the valve for smoother and easier operations under pressure. A position indicator shall show the position of the ball valve as per NFPA 1901. Opening and closing speed shall comply with the current NFPA standard to minimize effects of water hammer.

Each rear center discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 psi. The gauge shall have a black dial graphic and an orange tip on the pointer.

There shall be one (1) South Park, model SE393010AC, 2-1/2" Female NST swivel rocker lug x 2-1/2" Male NST 30° elbow adapter provided on each rear center discharge.

There shall be one (1) South Park, model HCC2808AC, 2-1/2" NST vented rocker lug cap with chain provided on each rear center discharge.

5" REAR OFFICER-SIDE DISCHARGE

There shall be a 5" large diameter discharge, with 4" plumbing, located on the officer- side rear of the apparatus. The discharge shall terminate MNST.

There shall be one (1) Akron Brass, model 8840, 4" Swing-Out™ valve provided. The valve shall have an all cast brass valve body with a 4" full flow waterway ideal for flows up to 2000gpm and a maximum body length of 4". The valve shall utilize a bronze flat ball design with a single urethane seat and be structurally rated to 500psi with a 250psi operating pressure. The valve shall not require the lubrication of seats or any other internal waterway parts, and shall be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall carry a ten (10) year warranty by the valve manufacturer.

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There shall be two (2) heavy-duty 22 oz. hypalon vinyl coated nylon end flaps/covers located on each end of the pre-connected speedlays. The top and bottom of the end covers shall be connected using footman loop and J-Hooks with an adjustable buckle. The cover color shall be black.

1-1/2" PRECONNECT

There shall be a 1-1/2" preconnect with 2" plumbing. The preconnect shall terminate out a swivel MNST.

The 1-1/2" speedlay pre-connect shall have a capacity of 200' of 1-3/4" double jacket fire hose stored in a double stack.

The discharge shall be foam capable.

An Akron Brass, model 8620, 2" Swing-Out™ valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass manual gear actuator installed on the valve. The gear actuator shall operate at a 50:1 gear ratio, which operates from fully open to fully closed in twelve (12) rotations.

The gear actuator shall be controlled by an Akron Brass 4" handwheel valve controller. The handwheel worm gear shall be connected to the remote mounted valve via a rod assembly. The handwheel shall turn a gear sector mounted on the valve for smoother and easier operations under pressure. A position indicator shall show the position of the ball valve as per NFPA 1901. Opening and closing speed shall comply with the current NFPA standard to minimize effects of water hammer.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 psi. The gauge shall have a black dial graphic and an orange tip on the pointer.

The discharge shall be designated as a pre-connect and no cap and chain shall be supplied.

1-1/2" PRECONNECT

There shall be a 1-1/2" preconnect with 2" plumbing. The preconnect shall terminate out a swivel MNST.

The 1-1/2" speedlay pre-connect shall have a capacity of 200' of 1-3/4" double jacket fire hose stored in a double stack.

An Akron Brass, model 8620, 2" Swing-Out™ valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten

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(10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass manual gear actuator installed on the valve. The gear actuator shall operate at a 50:1 gear ratio, which operates from fully open to fully closed in twelve (12) rotations.

The gear actuator shall be controlled by an Akron Brass 4" handwheel valve controller. The handwheel worm gear shall be connected to the remote mounted valve via a rod assembly. The handwheel shall turn a gear sector mounted on the valve for smoother and easier operations under pressure. A position indicator shall show the position of the ball valve as per NFPA 1901. Opening and closing speed shall comply with the current NFPA standard to minimize effects of water hammer.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 psi. The gauge shall have a black dial graphic and an orange tip on the pointer.

The discharge shall be designated as a pre-connect and no cap and chain shall be supplied.

3" DELUGE RISER DISCHARGE

There shall be a 3" discharge for the deluge located above the rear driver's side of apparatus. The discharge riser shall terminate 3" Victaulic coupling.

Shop Note: The riser shall be located in a recessed section behind the left side hatch compartments.

An Akron Brass, model 8630, 3" Swing-Out™ valve shall be provided. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a specially designed flow optimizing stainless steel ball. The valve shall not require lubrication of seats or any other internal waterway parts, and must be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valve shall be manufactured and assembled in the United States. The valve shall carry a ten (10) year warranty by the valve manufacturer.

The valve shall be actuated by an Akron Brass electric actuator installed on the valve. The electric actuator shall have a 16:1 gear ratio, which actuates from fully open to fully closed in five (5) seconds, a clutchless motor, and utilize an electric controller with current limiting design.

The electric actuator shall be controlled by an Akron Brass, model 9323, Navigator™ Pro electric valve controller. The electric controls shall be of true position feedback design, requiring no clutches in the motor or current limiting. The unit shall be completely sealed with momentary open, close as well as an optional one (1) touch full open feature to operate the actuator. Two (2) additional buttons shall be available to be used for preset selection, preset activation and menu navigation. The controller shall have up to three (3) preset locations that can be user set and easily recalled upon each use. The unit shall be capable of being used in conjunction with at least two (2) additional displays to control one (1) valve. The unit shall provide position indication through a full color backlit LCD display. The display shall be a full color LCD display with a backlight. It shall have manual adjustment of the brightness as well as an auto-dimming option. The unit shall carry a five (5) year warranty.

The discharge shall have a 2-1/2" brass case gauge with bezel and a display range from 0 to 400 psi. The gauge shall have a black dial graphic and an orange tip on the pointer.

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TFT RC3 ELECTRIC EXTEND-A-GUN

A Task Force Tips electric Extend-A-Gun model XGA38VL-RL shall be supplied. The Extend-A-Gun shall allow for a 18" extension of the waterway for the monitor by the push of a button to raise or lower the non-rotating pipe into a locked position. The extension shall have a 3" waterway, a hard coat anodized finish, and built in sensors for connection to the open door alarm.

TFT TYPHOON MONITOR

There shall be one (1) Task Force Tips Typhoon, model Y5-E61A, remote controlled electrically operated monitor with 3" NPT inlet provided on the apparatus. The riser for the deck gun shall terminate 3" NPT. The monitor shall be capable of flows up to 1500 gpm with a maximum operating pressure of 200 psi. The monitor shall include a factory installed control panel mounted to the monitor for controlling horizontal rotation, elevation, nozzle pattern, and programmable park and oscillate. Knobs shall be installed so the monitor may be manually operated in the event of power failure. The monitor shall include field changeable stops for horizontal travel at 45, 90 and 135 degrees either side of a center position. Horizontal travel without stops shall be 225 degrees left and right. The main waterway shall be constructed of hard coat anodized aluminum. The deck gun shall be remain the same painted color that it was when it left the manufacturer.

A Task Force Tips monitor control, model Y4E-CT-30, shall be supplied on the apparatus. The controller shall allow the electric monitor to be controlled from a handheld pendant. The control shall be supplied with a stainless steel mounting bracket to securely store the unit in the L1 compartment.

A Task Force Tips, model YE-RF-900, wireless remote controller shall be provided. The controller shall allow the electric monitor to be controlled using a wireless handheld transmitter. The transmitter will operate up to 500 feet away from the truck. The transmitter shall be supplied with a stainless steel mounting bracket.

The monitor shall be powder-coated Silver by the monitor manufacturer and shall not be repainted by the OEM.

There shall be one (1) Task Force Tips, model M-ERP1250-NN, automatic master stream electric nozzle 3-1/2" NH thread swivel base provided. The nozzle shall be equipped with an electric pattern control. The nozzle shall maintain a constant nozzle pressure regulated to 100 PSI, while being continuously variable from straight stream to wide fog. The nozzle shall include rubber bumper incorporate TFT "power fog" teeth for fully-filled, finger-free fog pattern. The nozzle shall be lightweight hard coat anodized aluminum for maximum resistance to corrosion and wear.

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ELECTRICAL SYSTEM

Wiring harnesses shall be the automotive type, engineered specifically for the builder's apparatus, and shall meet the following criteria. Under no circumstances shall diodes, resistors, or fusible links be located within the wiring harness. All such components shall be located in an easy to access wiring junction box or the main circuit breaker area. All wiring shall meet white book, baseline advanced design transit coach specification and Society of Automotive Engineers recommended practices. It shall be stranded copper wire core with cross linked polyethylene insulation complying with SAE specification J1128. Each wire shall be hot stamp function coded every three inches starting one inch from the end and continuing throughout the entire harness. In addition to function coding, each wire shall be number, color, and gauge coded.

Wire harnesses shall be wrapped with a high abrasion and chemical resistant thermoplastic polyester elastomer coated polyester yarn for braiding constructions of electrical wiring systems. The braid yarn shall have a minimum tensile strength of 15 lbs. before breaking and have a maximum of 20% elongation before breaking. Temperature properties for the yarn shall range from a minimum 280°F (138°C) service temperature to a maximum -112°F (-80°C) brittleness temperature with a cold flex tolerance of at least -49°F (-45°C).

Harnesses shall be modular in design; a main harness system subdivided into several smaller sub-harnesses. The harness subsections shall be connected using Deutsch branded, heavy duty, environmentally sealed, connectors with silicone seals and a rear insertion/removal contact system. For isolation of electrical "zones" the harness subsections shall consist of a main harness, a pump harness with a separate pump gauge panel harness, a driver's side body harness with a separate driver's side compartment harness, a officer's side body harness with a separate officer's side compartment harness, and a rear body harness with two separate rear compartment harnesses.

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The main harness and three body harnesses shall interconnect at a central, easy to reach location and their connectors shall not be obstructed by other harnesses or fuel/air lines. In addition, the main and body harness connectors shall be color coded for ease of identification with their respective colors noted on the accompanying electrical diagrams.

Where connectors are not provided by the electrical component manufacturer, all 12 volt lights and other electrical components (excluding rocker and toggle switches) shall connect to the harnesses using Deutsch brand connectors; butt connectors are considered unacceptable.

All Deutsch connectors shall meet the following criteria:

All connectors shall have a minimum IP67 rating.

Temperature range from -67°F (-55°C) to 257°F (125°C) continuous at rated current. Only solid contacts will be used. Stamped and formed contacts are unacceptable.

All contacts shall be soldered unless a crimping tool or machine is used that gives an even and precise pressure for the terminal being used.

All contacts shall be pull-tested to insure their integrity.

WEATHERPROOF DOOR SWITCHES

Due the harsh environment and susceptibility to moisture on the fire ground, the fire apparatus compartment doors shall utilize weatherproof switches. Two different types of switches shall be used. Weatherproof proximity switches shall be utilized. No Exceptions.

The switches shall be used for activation of the compartment lights and to provide a signal to the door open circuit in the cab.

V-MUX ELECTRICAL MANAGEMENT SYSTEM

The apparatus shall be equipped with a V-MUX Multiplex System. There are several key benefits to multiplexing, one is to reduce the number of connections in a vehicles electrical system, because of this it is important to limit the amount of modules that control certain functions of the vehicle.

Outputs:

The outputs shall perform all the following items without added modules to perform any of the tasks:

Load Shedding: The System shall have the capability to Load Shed with 8 levels any output. This means you can specify which outputs (barring NFPA restrictions) you would like Load Shed. Level 1 12.9v, Level 2 12.5V, Level 3 - 12.1V, Level 4 - 11.7V, Level 5 11.3V, Level 6 10.9V, Level 7 10.5, Level 8 10.1. Unlike conventional load shedding devices you can assign a level to any or all outputs. No add-on modules shall be acceptable; the module with the outputs must perform this function.

Load Sequencing: The System shall be able to sequence from 0 8 levels any output. With 0 being no delay and 1 being a 1 second delay, 2 being a 2 second delay and so on. Sequencing reduces the amount of voltage spikes and drops on your vehicle, and can help limit damage to your charging system. No add-on modules shall be acceptable; the module with the outputs must

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perform this function.

Output Device: The System shall have solid-state output devices. Each solid-state output shall be a MOS-FET (Metal Oxide Semiconductor - Field Effect Transistors); MOS-FETs are solid-state devices with no moving parts to wear out. A typical relay when loaded to spec has a life of 100,000 cycles. The life of a FET is more than 100 times that of a relay. No add-on modules shall be acceptable; the module with the outputs must perform this function.

Flashing Outputs: The System shall be able to flash any output in either A or B phase, and logic is used to shut down needed outputs in park, or any one of several combined interlocks. The flash rate can be selected at either 80, or 160 FPM. This means any light can be specified with a multiplex truck with no need to add flashers. Flashing outputs can also be used to warn of problems. No add-on modules shall be acceptable; the module with the outputs must perform this function.

PWM: The modules shall have the ability to PWM at some outputs so that a Headlight PWM module is not needed. No add-on modules shall be acceptable; the module with the outputs must perform this function.

Diagnostics: An output shall be able to detect either a short or open circuit. Inputs:

The inputs shall have the ability to switch by a ground or battery signal.

The inputs shall be filtered for noise suppression via hardware and software so that RF or dirty power will not trick an input into changing its status.

System Network:

The Multiplex system shall contain a Peer-to-Peer network. A Master Slave Type network is not suitable for the Fire/Rescue industry. A Peer-to-Peer network means that all the modules are equal on the network; a Master is not needed to tell other nodes when to talk.

System Reliability:

The Multiplex system shall be able to perform in extreme temperature conditions, from -40° to +85° C (-40° to +185° F.) The system shall be sealed against the environment, moisture, humidity, salt or fluids such as diesel fuel, motor oil or brake fluid. The enclosures shall be rugged to withstand being mounted in various locations or compartments around the vehicle. The modules shall be protected from over voltage and reverse polarity.

12 VOLT SYSTEMS TEST

After completion of the unit, the 12 volt electrical system shall undergo a battery of tests

as listed in NFPA 1901. These tests shall include, but not be limited to: Reserve capacity test

Alternator performance test at idle

Alternator performance test at full load

Low voltage alarm test

Certification of the results shall be supplied with the apparatus at the time of delivery.

TAIL LIGHTS

There shall be a Whelen 600 series LED tail light assembly installed on each side on the rear of the apparatus. Each assembly shall include one (1) red LED stop/tail light, one (1) amber LED turn light, and one (1) clear backup light. Each light shall be mounted in a separate chrome flange.

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REAR WORK LIGHT SWITCH

A switch shall be installed above the tail light bezel on the left side of the rear of the apparatus. The switch shall be wired to the backup lights to provide additional work lighting. The rear work light circuit shall be deactivated when the park brake is disengaged. In addition to the lights being activated by the above switch, the lights shall also come on when the transmission is placed in reverse.

MIDSHIP TURN SIGNALS

There shall be two (2) Whelen model T0A00MAR turn signal lights with chrome flanges installed. One (1) light shall be located in the rear wheel well area on each side of the body.

BODY GROUND LIGHTING

There shall be On-Scene Night Axe 9" LED lights installed beneath the apparatus in areas where personnel may be expected to climb on and off of the apparatus. The lights shall illuminate the ground within 30" of the apparatus to provide visibility of any obstructions or hazards. These areas shall include, but shall not be limited to, side running boards and the rear step area.

The lights shall be activated when the parking brake is engaged and by a switch located in the chassis cab Vista display.

CLEARANCE LIGHTS

Grote model 65282 red LED clearance lights shall be installed in the rear tailboard as necessary to be in full compliance with applicable ICC and DOT codes and regulations. Clearance reflectors shall be placed on the apparatus to be in full compliance with applicable ICC and DOT codes and regulations.

CHASSIS SUPPLIED BACK UP CAMERA SYSTEM

There shall be a backup camera system installed in the cab that shall be supplied with the chassis. The camera shall be installed on the rear center upper portion of the apparatus.

DAVID CLARK INTERCOM SYSTEM

There shall be a David Clark 3800 position intercom system provided on the apparatus. The system shall have the option of connecting to mobile radios, allowing all personnel to listen to the radio and selected stations to transmit over the radio. The system shall be of rugged and serviceable modular design. All system components shall be designed as weather tight. The intercom control head shall be located in the optimal position by OEM unless otherwise specified by the customer.

CAB POSITIONS

The David Clark intercom system shall accommodate one (1) wired driver position, one (1) wired officer position, and four (4) wired crew positions in the chassis cab.

There shall be six (6) David Clark headset plug-in module installed, one (1) for each wired position. Each module shall be designed for interior mounting and shall accommodate a David Clark single plug headset.

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There shall be two (2) David Clark, model H3442, under the helmet, radio-transmit headset provided, one (1) each for the driver and officer. Each headset shall have a soft head strap designed to be worn under a helmet, a flex microphone boom that rotates 200 degrees for use on either side and an earpiece-mounted microphone on/off button. The microphone shall be noise canceling with a windscreen.

There shall be four (4) David Clark, model H3442, under the helmet, intercom only headsets provided, one (1) for each of the crew positions. Each headset shall have a soft head strap designed to be worn under a helmet, a flex microphone boom that rotates 200 degrees for use on either side and an earpiece-mounted microphone on/off button. The microphone shall be noise canceling with a windscreen.

Each headset shall be complete with a hanger to hold the headset when not in use. The driver's and officer's hangers shall be mounted inboard of each position, and all hangers shall be located in the optimal position based on cab and seat configuration by OEM unless otherwise specified by the customer.

RADIO INTERFACE

There shall be two (2) David Clark, model C3821, mobile radio interface cable supplied with the intercom system. The cable shall be radio specific and shall allow the David Clark intercom system to interface with the Motorola mobile radio system. The model of headsets used shall determine which personal shall have radio transmit ability. The radio interface cable drop shall be routed to the general area of the termination of the radio antenna(s), or center dash if no antenna are required.

UPPER ZONE A

The upper zone A warning lights shall be supplied and installed by the chassis manufacturer.

UPPER ZONE C

There shall be two (2) Whelen 600 Series Super-LED® lights with chrome-plated flange installed in Upper Zone C, on the upper rear face of the apparatus. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The conformal coated PC board and sealed lens/reflector assembly shall provide additional protection against environmental elements. The solid state warning lights shall be vibration resistant.

Shop Note: Mount above the rear scene light.

The driver's and officer's side warning lights shall both have amber LED's and amber lenses.

UPPER ZONE B/D SIDE WARNING LIGHTS

There shall be four (4) Whelen 900 Series Super-LED® lights with chrome-plated flange installed, two (2) each in Upper Zone B and Upper Zone D. The warning lights shall incorporate sixteen (16) Super-LED, a optic hard coated polycarbonate lens, and utilize a metal reflector with integrated TIR hybrid optics for maximum output. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The conformal coated PC board and sealed lens/reflector assembly shall provide additional protection against environmental elements. The solid state warning lights shall be vibration resistant.

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LOWER ZONE WARNING LIGHT PACKAGE

There shall be four (4) Whelen Series TIR6 Super-LED® lights with chrome-plated flange installed in the lower zone of the apparatus to meet NFPA compliance, two (2) 50B03ZBR lights with blue LEDs and lenses located on the driver's side and tow (2) 50R03ZBR light with red LEDs and lenses on the officer's side.

There shall be two (2) Whelen 600 Series Super-LED® lights model 60R02FBR blue with blue lens on the driver's side and 60R02FRR light with red LEDs and red lens on the officer's side, each with chrome-plated flange installed in the lower zone of the apparatus to meet NFPA compliance.

The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The conformal coated PC board and sealed lens/reflector assembly shall provide additional protection against environmental elements. The solid state warning lights shall be vibration resistant.

Shop Note: The 500 Series lights shall be located over rear wheels side and on the rear side body corners each side.

UPPER ZONE C - ADDITIONAL WARNING LIGHTS

There shall be two (2) Whelen 600 Series Super-LED® lights with chrome-plated flange installed in Upper Zone C. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The conformal coated PC board and sealed lens/reflector assembly shall provide additional protection against environmental elements. The solid state warning lights shall be vibration resistant.

Shop Note: Mount below rear scene light.

Upper Zone Rear warning lights: Driver's side blue LED's with blue lens and Officer's side red LED's with red lens.

There shall be one (1) air horn button provided on the driver's side pump panel. The button shall be red in color and included a label reading "AIR HORN".

WHELEN 12V SURFACE-MOUNT SCENE LIGHTS

There shall be two (2) Whelen 900 Series Super-LED®, model 9SC0ENZR, lights installed on the apparatus. Each steady burn scene light shall incorporate twenty four clear Super-LEDs, a clear gradient optic hard coated polycarbonate lens, and utilize a metal reflector for maximum output. The hard coated lens shall provide extended life/ luster protection against UV and chemical stresses. Each light's conformal coated PC board and sealed lens/reflector assembly shall provide additional protection against environmental elements. Each solid state scene light shall be vibration resistant. Each light is certified to meet KKK 1822F requirements and AMD 024 standards. An installation kit including mounting hardware and rubber gasket shall be provided for surface mounting. The scene lights are covered by a five year factory warranty.

The two (2) lights shall be installed on the rear side face of the body, one (1) on each side.

The driver's side and officer's side scene light(s) shall be controlled by a switch located on the V-Mux display in the chassis cab. The activation for the driver's side scene lights on the V-Mux display shall be labeled "LEFT SCENE" and the officer's side shall be labeled "RIGHT SCENE."

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WHELEN 12V SURFACE-MOUNT SCENE LIGHTS

There shall be two (2) Whelen 900 Series Super-LED®, model 9SC0ENZR, lights installed on the apparatus. Each steady burn scene light shall incorporate twenty four clear Super-LEDs, a clear gradient optic hard coated polycarbonate lens, and utilize a metal reflector for maximum output. The hard coated lens shall provide extended life/ luster protection against UV and chemical stresses. Each light's conformal coated PC board and sealed lens/reflector assembly shall provide additional protection against environmental elements. Each solid state scene light shall be vibration resistant. Each light is certified to meet KKK 1822F requirements and AMD 024 standards. An installation kit including mounting hardware and rubber gasket shall be provided for surface mounting. The scene lights are covered by a five year factory warranty.

The two (2) lights shall be installed on the forward side face of the apparatus body, one (1) on the each side.

The driver's side and officer's side scene light(s) shall be controlled by a switch located on the V-Mux display in the chassis cab. The activation for the driver's side scene lights on the V-Mux display shall be labeled "LEFT SCENE" and the officer's side shall be labeled "RIGHT SCENE."

WHELEN 12V SURFACE-MOUNT SCENE LIGHTS

There shall be two (2) Whelen 600 Series Super-LED®, model 6SC0ENZR, lights installed on the apparatus. Each steady burn scene light shall incorporate 12 clear Super-LEDs, a clear gradient optic hard coated polycarbonate lens, and utilize a TIR optic reflector for maximum output. The hard coated lens shall provide extended life/ luster protection against UV and chemical stresses. Each light's conformal coated PC board and wet sealed then vacuum tested lens/reflector assembly shall provide additional protection against environmental elements. Each solid state scene light shall be vibration resistant. Each light is certified to meet KKK 1822K requirements and 024 Standards. An installation kit including mounting hardware and rubber gasket shall be provided for surface mounting. The scene lights are covered by a five year factory warranty.

The two (2) lights shall be installed on the rear face of the body, one (1) on each side.

The rear scene light(s) shall be controlled by a switch located on the V-Mux. The light(s) shall be controlled by one (1) switch. The switch shall be labeled "REAR SCENE."

In addition to the switch located on the V-Mux, the rear scene light(s) shall be activated by the rear work light switch and when the apparatus is placed in reverse.

LIGHT TOWER

One (1) Command Light Shadow, SL Series light tower(s) shall be provided and installed on the completed unit. A flashing warning light shall be provided in cab, indicating when a light tower is not in nested position as required by NFPA 1901, 2016 edition. The Command Light shall be covered by a five (5) year limited warranty from defects in materials and workmanship. An operation, maintenance, and parts manual shall be provided with the completed unit. The light tower shall extend 49 1/2" above the mounting surface and shall extend to full upright position in less than 15 seconds. The overall size of nested light tower shall be approximately 48" long x 24" wide x 9" high and weigh approximately 75 pounds.

Light Tower Construction and Design

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The Command Light assembly shall be of aluminum construction, with stainless steel shafts and bronze bushings for long life and low maintenance.

The electrically controlled unit shall not require usage of the vehicle's air supply for operation, thereby eliminating the chance for air leaks in the vehicle braking system. Hydraulic or pneumatic type floodlights are not acceptable alternatives to the specified all electric light tower.

The light tower shall be tested to in wind conditions of 90 mph (150 kph) minimum. Other type floodlights that have not been tested to these conditions are not acceptable.

The light tower shall be capable of overhanging the side or back of the vehicle to provide maximum illumination to the vicinity adjacent to the vehicle for the safety of emergency personnel in high traffic conditions. Any tower that is only capable of rotations at the top of a pole is not an acceptable alternative to the specified tower.

Light Tower Electrical System

The light tower shall be a single-stage device with a lighting capable of 355 degree rotation. The light shall be elevated by an electric linear actuators, the actuator shall adjust the light bank angle from 0 to 110 degrees.

The tower base shall have a light that illuminates the envelope of motion during any movement of the light tower mast per NFPA 1901, 2016.

Light Tower Floodlights

The Command Light model SL442D-W2-LED shall be equipped with the following bank of floodlights:

Floodlight manufacturer: Whelen Engineering

Number of lamp heads: Four (4) Pioneer Plus DC LED

Voltage: 12 volts

Watts of each lamp head: 150 watt Total watts of light tower: 600 watts Total lumens of light tower: 64,000

Configuration

The light heads shall be mounted with two (2) on each side of the light tower, giving two (2) vertical lines of two (2) when the lights are in the upright position.

Light Tower Paint

The light tower shall be electrostatically powder coated with a hammer tone gray color.

Light Tower Controls

The light tower shall be controlled with a hand held 15 umbilical line remote control and shall be equipped with a button to activate the "Auto-Park" automatic nesting feature. The controls on the remote shall be:

Two (2) switches; one (1) for each pair of lights. One (1) switch for light bank rotation.

One (1) switch for elevating lower stage. One (1) switch for elevating upper stage.

One (1) switch for optional light bank rotation.

One (1) indicator light to indicate when light bank is out of the roof nesting position. One (1)

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indicator light to indicate when light bank is rotated to proper nesting position.

Light Tower Mounting

The light tower shall be mounted to roof of the custom cab which shall be reinforced as necessary to support weight of the light tower.

The light tower shall be located on the top of the chassis cab. The controls for the light tower shall be located inside compartment L1. The chassis cab roof shall be reinforced for the mounting of a light tower on the top of the chassis cab.

LIGHT TOWER SHIELD

The light tower located on the cab roof, shall have an aluminum shield provided around the four (4) sides. The shield shall sit even with the rear of the custom cab. The front of the shield shall be sloped to match the cab. The shield shall be painted to match the top of the cab.

CHASSIS PAINT

The two-tone chassis cab shall be painted by the chassis manufacturer.

BODY PAINT PREPARATION

After the body and components have been fabricated and assembled they then shall be disassembled prior to painting so when the apparatus is completed there shall be finish paint beneath the removable components. The apparatus body and components shall be metal finished as follows to provide a superior substrate for painting.

All aluminum sections of the body shall undergo a thorough cleaning process starting

with a phosphoric acid solution to begin the etching process followed by a complete rinse. The next step shall consist of a chemical conversion coating applied to seal the metal substrate and become part of the aluminum surface for greater film adhesion.

After the cleaning process, the body and its components shall be primed with a High Solids primer and the seams be caulked.

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All bright metal fittings, if unavailable in stainless steel or polished aluminum, shall be heavily chrome plated. Iron fittings shall be copper under plated prior to chrome plating.

PAINT PROCESS

The paint process shall follow the strict standards as set forth by PPG Fleet Finish Guidelines.

The body shall go through a three-stage paint process: primer coat, base coat (color), and clear coat. In the first stage of the paint process the body shall be coated with PPG F3980 Low VOC / High Solids primer to achieve a total thickness of 2-4 mills. In the second stage of the paint process the body shall be painted with PPG FBCH Delfleet™ High Solids Polyurethane Base Coat. A minimum of two to three coats of paint shall be applied to achieve hiding. In the final stage of the paint process the body shall be painted with PPG DCU-2002 Clear Coat. A minimum of two to three coats shall be applied to achieve a total dry film thickness of 2-3 mills.

As part of the curing process the painted body shall go through a Force Dry / Bake Cycle process. The painted components shall be baked at 185 degrees for 3 hours to achieve a complete coating cure on the finished product.

HAND POLISHED

After the Force Dry / Bake Cycle and ample cool down time, the coated surface shall be sanded using 3M 1000, 1200, and or 1500 grit sandpaper to remove surface defects. In the final step, the surface shall be buffed with 3M super-duty compound to add extra shine to coated surface. No more than .5 mil of clear shall be removed in this process.

BODY COLOR

The body shall be painted with PPG High Solids Polyurethane Base Coat. The single tone body shall be painted (YELLOW) PPG# FBCH-81533.

UNDERCOATING

The apparatus shall undergo a two (2) step undercoating process. The first step shall be a rubberized polyurethane base compound that is applied after the body has been primed. The materials used incorporate unused paint products to reduce the amount of waste released into the environment. This coat shall be applied to all hidden pockets and surfaces that shall not be visible after completion.

As a final step, the entire underside of the body shall be coated with a bituminous based automotive type undercoating when the apparatus is completed. During this application, special care shall be taken to avoid spraying the product on air lines, cables, or other items that would cause normal maintenance to be hindered.

CORROSION PREVENTION

One (1) 3.75 ounce tube of Electrolysis Corrosion Control (ECK) shall be provided to use whenever additional items are mounted to the apparatus.

ECK protects aluminum and stainless steel against electrolytic reaction, isolates dissimilar metals and gives bedding protection for hardware and fasteners. ECK contains anti-seizing lubricant for threads. ECK is dielectric and perfect for use with electrical connectors.

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TOUCH UP PAINT

One (1) two ounce bottle of acrylic enamel touch-up paint or two (2) touch up paint pens, if color is available, shall be supplied.

REFLECTIVE STRIPE FRONT TERMINATION

The NFPA reflective stripe located on the side of the apparatus shall wrap around the front of the chassis cab and terminate at chassis grill.

RUB RAIL REFLECTIVE STRIPING

There shall be 2" reflective striping installed in the rub rail channel. The reflective striping shall be diamond grade quality material for increased visibility. The reflective shall be silver in color.

NFPA COMPLIANT REFLECTIVE STRIPING

Reflective striping shall be applied to the exterior of the apparatus in a manner consistent with NFPA 1901. It shall consist of a 6" wide stripe low across the front of the chassis and along the sides up to the first compartment on each side where it shall transition up and back to a point in the upper compartments where it shall then run level to the back edge of the body.

There shall be a reflective "S" located in the reflective striping on each side of the apparatus where the stripe transitions from low to high..

The color of the main reflective striping on the apparatus shall be white.

CHEVRON COLOR - RED/FLUORESCENT YELLOW-GREEN

The chevron striping shall consist of 3M part numbers 1172 EC, red and 3983, fluorescent yellow-green.

Only 3M Diamond Grade™ VIP Reflective Striping shall be used. 3M Diamond Grade™ VIP Reflective Striping is a wide angle prismatic lens reflective sheeting designed for the production of durable traffic control signs and delineators that are exposed vertically in service. This sheeting is designed to provide higher sign brightness than sheetings that use glass bead lenses. It is intended to also provide high sign brightness in the legibility distance where other sheetings do not.

CHEVRON REFLECTIVE STRIPING ON REAR

In addition to the custom striping pattern supplied on the apparatus, there shall be additional reflective striping applied to the entire rear of the unit. The reflective striping shall cover at least 50% of the rear facing vertical surface per NFPA 1901. The striping shall consist of a solid base layer of reflective material and alternate between the exposed base layer material and durable, transparent, acrylic colored film. Each stripe shall be a minimum of 6" in width and shall be applied to the apparatus at 45° angle.

The chevron pattern shall include any painted storage compartment doors.

GRAPHICS

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Graphics shall be supplied utilizing materials and a layout as per Goodyear specifications. A detailed 'proof' will be prepared and approved by Goodyear prior to any work commencing.

TWO (2) YEAR PROTECTION PLAN - MATERIAL AND WORKMANSHIP WARRANTY

OEM installed purchased parts and fabricated parts shall be free of defects in material and workmanship for a period of two (2) years starting thirty (30) days after the original invoice date. For further details, please refer to the complete warranty document.

TEN (10) YEAR WARRANTY BODY STRUCTURAL INTEGRITY

The body shall be free of structural or design failure or workmanship for a period of ten (10) years or 100,000 miles starting thirty (30) days after the original invoice date.

FIVE (5) YEAR 100% V-MUX ELECTRICAL WARRANTY

The V-mux electrical system shall be free of defects in design and workmanship for a period of five (5) years starting thirty (30) days after the original invoice date. For further details, please refer to the complete warranty document.

TEN (10) YEAR STAINLESS STEEL PLUMBING LIMITED WARRANTY

The stainless steel plumbing and piping shall be free from corrosion perforation for a period of ten

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(10) years starting thirty (30) days after the original invoice date.

WATER TANK WARRANTY

The tank shall be complete with a lifetime warranty. The tank manufacturer shall mark the tank and furnish notice that indicates proof of warranty. For further details, please refer to the complete warranty document.

TWENTY (20) YEAR GALVANIZED SUB-FRAME WARRANTY

The galvanized sub-frame shall be free of structural or design failure or workmanship for a period of twenty (20) years starting thirty (30) days after the original invoice date. For further details, please refer to the complete warranty document.

TEN (10) YEAR PAINT LIMITED WARRANTY

The apparatus body and pump house shall be free of blistering, peeling and any other adhesion defect caused by defective manufacturing methods or paint material selection for exterior surfaces for a prorated period of ten (10) years starting thirty (30) days after the original invoice date. This warranty is subject to the terms and conditions as described in the warranty certificate included in our proposal.

Paint on the undercarriage, body interior (Line-X® coating included) or aerial structure related paint, if applicable, is covered only under the Standard One (1) Year Limited Warranty.

TEN (10) YEAR CORROSION PERFORATION LIMITED WARRANTY

The body exterior paint shall be warranted against corrosion perforation for a prorated period of ten (10) years starting thirty (30) days after the original invoice date. For further details, please refer to the complete warranty document.

PUMP WARRANTY

The fire pump shall be warranted by Waterous for a period of five (5) years from the date of delivery to the fire department or five and one-half (5-1/2) years from the shipment date by Waterous, whichever period shall be first to expire. For further details, please refer to the complete warranty document.

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Smeal Pumper Trucks with Spartan Metrostar Chassis**



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CUSTOM CHASSIS SPECIFICATIONS

MODEL

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

COUNTRY OF SERVICE

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

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

CAB AND CHASSIS LABELING LANGUAGE

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

APPARATUS TYPE

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

VEHICLE TYPE

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

AXLE CONFIGURATION

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

GROSS AXLE WEIGHT RATINGS FRONT

The front gross axle weight rating (GAWR) of the chassis shall be 20,000 pounds.

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

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GROSS AXLE WEIGHT RATINGS REAR

The rear gross axle weight rating (GAWR) of the chassis shall be 24,000 pounds.

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

PUMP PROVISION

The chassis shall include provisions for mounting a drive line pump towards the rear of the apparatus.

WATER & FOAM TANK CAPACITY

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

CAB STYLE

The cab shall be a custom, fully enclosed, LFD model with a 10.00-inch raised roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to ten (10) seating positions.

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

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

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

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

The exterior width of the cab shall be 94.00 inches wide with a minimum interior width of 88.00 inches. The overall cab length shall be 144.60 inches with 67.50 inches from the centerline of the front of the axle to the back of the cab.

The cab interior shall be designed to afford the maximum usable interior space and attention to ergonomics with hip and legroom while seated which exceeds industry standards. The crew cab

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floor shall be flat across the entire walking area for ease of movement inside the cab.

The cab shall offer an interior height of 57.50 inches from the front floor to the headliner and a rear floor to headliner height of 65.00 inches in the raised roof area, at a minimum. The cab shall offer an interior measurement at the floor level from the rear of the engine tunnel to the rear wall of the cab of 65.38 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

The cab shall include a driver and officer area with two (2) cab doors large enough for personnel in full firefighting gear. The front doors shall offer a clear opening of 40.25 inches wide X 53.50 inches high, from the cab floor to the top of the door opening. The cab shall also include a crew area with up to two (2) cab doors, also large enough for personnel in full firefighting gear. The rear doors shall offer a clear opening of 32.25 inches wide X 61.00 inches high, from the cab floor to the top of the door opening.

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

The first step for the driver and officer area shall measure approximately 11.50 inches deep X 31.13 inches wide. The intermediate step shall measure approximately 8.50 inches deep X 32.50 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 11.00 inches.

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

CAB FRONT FASCIA

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

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

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

FRONT GRILLE

The front fascia shall include a box style, 304 stainless steel front grille 44.45 inches wide X 33.50 inches high X 1.50 inches deep. The grille shall include a minimum free air intake of 732.00 square inches. The upper portion of the grille shall be hinged to provide service access behind the grille.

CAB UNDERCOAT

There shall be a rubberized undercoating applied to the underside of the cab that provides

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abrasion protection, sound deadening and corrosion protection.

CAB SIDE DRIP RAIL

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

CAB PAINT EXTERIOR

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

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

The entire cab shall then be coated with an intermediate solid or epoxy surfacing agent that is designed to fill any minor surface defects, provide an adhesive bond between the primer and the paint and improve the color and gloss retention of the color. The finish to this procedure shall be a sanding of the cab with 360 grit paper followed by sealing the seams with SEM brand seam sealer.

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

CAB PAINT MANUFACTURER

The cab shall be painted with PPG Industries paint.

CAB PAINT PRIMARY/LOWER COLOR

The primary/lower paint color shall be FBCH 81739 yellow

CAB PAINT SECONDARY/UPPER COLOR

The secondary/upper paint color shall be PPG FBCH 91258 white.

CAB PAINT EXTERIOR BREAKLINE

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

CAB PAINT PINSTRIPE

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

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CAB PAINT WARRANTY

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

CAB PAINT INTERIOR

The visible interior cab structure surfaces shall be painted with a multi-tone onyx black texture finish. *(See comments and clarifications for additional info.)*

CAB ENTRY DOORS

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

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

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

CAB ENTRY DOOR TYPE

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

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

CAB INSULATION

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

LH EXTERIOR REAR COMPARTMENT

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

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LEFT HAND EXTERIOR REAR COMPARTMENT LIGHTING

There shall be one (1) Sound Off Signal brand LED strip light installed to illuminate the exterior rear compartment on the left side of the cab. The strip light shall be 10.00 inches long and shall include three (3) bright white Gen3 LEDs.

LH EXTERIOR COMPARTMENT INTERIOR FINISH

The interior of the left hand exterior compartment shall have a multi-tone onyx black texture finish.

RH EXTERIOR REAR COMPARTMENT

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

RIGHT HAND EXTERIOR REAR COMPARTMENT LIGHTING

There shall be one (1) Sound Off Signal brand LED strip light installed to illuminate the exterior rear compartment on the right side of the cab. The strip light shall be 10.00 inches long and shall include three (3) bright white Gen3 LEDs.

RH EXTERIOR COMPARTMENT INTERIOR FINISH

The interior of the right hand exterior compartment shall have a multi-tone onyx black texture finish.

CAB STRUCTURAL WARRANTY

Summary of Warranty Terms:

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

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

CAB TEST INFORMATION

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

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

ELECTRICAL SYSTEM

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

OEM WIRING

The wiring system shall include a custom J1939 interface harness drop provided by the chassis manufacturer designed to meet the requirements provided by the OEM.

The wiring system shall also include a prewire for ECM park brake input and engine ground return circuits located behind the switch panel. The circuits shall include an extra 2 feet of wire and shall be labeled "ECM Park Brake Input".

MULTIPLEX DISPLAY

The multiplex electrical system shall include (3) Weldon Vista IV displays with interactive touchscreens. The displays shall be located one (1) on the right side of the dash in the switch panel, one (1) on the left side of the dash in the switch panel and (1) shipped loose for installation by the OEM. (Smeal will install this screen on the pump panel or other location as directed by Goodyear.) The Vista IV displays shall feature full color LCD touchscreens. The display shall include a message bar displaying the time of day and important messages requiring acknowledgement by the user on the top of the screen in the order they are received. There shall be eight (8) push button virtual controls, four (4) on each side of the display in addition to the touchscreen virtual controls, for the on-board diagnostics. The display screens shall be video ready for back-up cameras, thermal cameras, and DVD.

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

CUSTOM VMUX PROGRAMMING

The light controls on both Vista screens as follows:

Position 1 - All amber lights only

Position 2 - All colored lights including position 1 lights

Position 3 - All warning lights (Unitrol 480K electronic siren, Q2B siren and clear lights wired to parking brake circuit)

LOAD MANAGEMENT SYSTEM

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

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DATA RECORDING SYSTEM

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

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

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

ACCESSORY POWER

The electrical distribution panel shall include two (2) power studs. The studs shall be size #10 and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall can carry up to a 40-amp battery direct load. One (1) power stud shall can carry up to a 15-amp ignition switched load. The two (2) power studs shall share one (1) #10 ground stud. A 225-amp battery direct power and ground stud shall be provided and installed on the chassis near the left-hand battery box for OEM body connections.

EXTERIOR ELECTRICAL TERMINAL COATING

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

ENGINE

The chassis engine shall be a Cummins L9 engine. The L9 engine shall be an in-line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 450 horse power at 2100 RPM and shall be governed at 2200 RPM. The torque rating shall feature 1250 foot pounds of torque at 1400 RPM with 543 cubic inches (8.9 liters) of displacement.

The L9 engine shall feature a VGT™ Turbocharger, a high pressure common rail fuel system, fully integrated electronic controls with an electronic governor, and shall be EPA certified to meet the 2017 emissions standards using cooled exhaust gas recirculation and selective catalytic reduction technology.

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

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for proper engine lubrication.

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

CAB ENGINE TUNNEL

The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade, 0.19 of an inch-thick aluminum. The tunnel shall be a maximum of 41.50 inches wide X 25.50 inches high.

DIESEL PARTICULATE FILTER CONTROLS

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

ENGINE PROGRAMMING HIGH IDLE SPEED

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

ENGINE HIGH IDLE CONTROL

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

ENGINE PROGRAMMING ROAD SPEED GOVERNOR

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

AUXILIARY ENGINE BRAKE

The engine shall utilize a variable geometry turbo (VGT). The VGT auxiliary engine brake shall be an integral part of the turbo and shall offer a variable rate of exhaust flow, which when activated shall slow the engine and in turn slow the vehicle.

The VGT shall actuate the vehicle's brake lights when engaged as an auxiliary brake. A cutout relay shall be installed to disable the VGT when in pump mode or when an ABS event occurs. The VGT engine brake shall activate at a 0% accelerator throttle position when in operation mode.

AUXILIARY ENGINE BRAKE CONTROL

An engine variable geometry turbo brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all of the

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following conditions are simultaneously detected:

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

The variable geometry turbo brake shall be controlled via a virtual button on the Vista display and control screen. The multiplex system shall remember and default to the last engine brake control setting when the vehicle is shut off and re-started.

ELECTRONIC ENGINE OIL LEVEL INDICATOR

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

FLUID FILLS

The front of the chassis shall accommodate fluid fill for the engine oil through the grille. This area shall also accommodate a check for the engine oil. The transmission, power steering, and coolant fluid fills and checks shall be under the cab. The windshield washer fill shall be accessible through the front left side mid step.

ENGINE DRAIN PLUG

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

ENGINE WARRANTY

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

REMOTE THROTTLE HARNESS

An apparatus interface wiring harness for the engine and transmission pump interlocks shall be supplied with the chassis. The harness shall include a connector for connection to a chassis pump panel harness supplied by the body builder and shall terminate in the left frame rail behind the cab for connection by the body builder. The harness shall include circuits deemed for a pump panel and shall contain circuits for a hand throttle, and a multiplexed gauge. Separate circuits shall also be included for a pump control switch, "Pump Engaged" and "OK to Pump" indicator lights, open compartment ground, start signal, park brake ground, ignition signal, master power, clean power, customer ignition, air horn solenoid switch, high idle switch and high idle indicator light. The harness shall contain interlocks that will prevent shifting to road or pump mode unless the transmission output speed translates to less than 1 mph and the transmission is in neutral. The shift to pump mode shall also require the park brake be set.

ENGINE PROGRAMMING REMOTE THROTTLE

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

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ENGINE PROGRAMMING IDLE SPEED

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

ENGINE FAN DRIVE

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

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

ENGINE COOLING SYSTEM

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

The cooling system shall utilize 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, an air to air charge air cooler bolted to the front of the radiator, recirculation shields, a shroud, a fan, and required tubing.

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

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

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

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

The charge air cooler shall be a cross-flow design constructed completely of aluminum with cast tanks. All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicone hump hoses and stainless steel "constant torque" style clamps meeting the engine manufacturer's requirements.

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

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ENGINE COOLING SYSTEM PROTECTION

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

ENGINE COOLANT

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

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

ENGINE COOLANT FILTER

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

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

ELECTRONIC COOLANT LEVEL INDICATOR

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

ENGINE PUMP HEAT EXCHANGER

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

COOLANT HOSES

The cooling systems coolant hoses shall be silicone heater hose and shall include silicone hoses for all radiator coolant plumbing including the surge tank hoses. The radiator coolant hoses shall be formed silicone with formed aluminized steel tubing. All radiator silicone coolant hose and tubing, heater hose, and surge tank plumbing shall be secured with stainless steel constant torque band clamps.

ENGINE COOLANT OVERFLOW BOTTLE

A remote engine coolant overflow bottle shall be provided in the case of over filling the coolant system. The overflow bottle shall capture the expansion fluid or overfill rather than allow the fluid to drain on the ground. The overflow bottle provided on the cooling system shall only be a catch bottle and shall not return excess coolant back into the surge tank.

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ENGINE AIR INTAKE

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

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

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

AIR INTAKE PROTECTION

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

ENGINE EXHAUST SYSTEM

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

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

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

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

DIESEL EXHAUST FLUID TANK

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

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

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frozen.

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

ENGINE EXHAUST ACCESSORIES

In addition to the right-hand exhaust outlet, an exhaust diverter system and left hand exhaust outlet shall be supplied. The exhaust diverter shall allow the exhaust to exit on the right hand or left hand side of the vehicle. There shall be a switch on the dash labeled LEFT, MID, and RIGHT. The switch shall include three LED lit push buttons.

Two (2) exhaust temperature mitigation devices shall be shipped loose for installation by the body manufacturer on the vehicle. The temperature mitigation devices shall lower the temperature of the exhaust by combining ambient air with the exhaust gasses at the exhaust outlet.

ENGINE EXHAUST WRAP

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

TRANSMISSION

The drive train shall include an Allison model EVS 3000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

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

The transmission gear ratios shall be:

1st	3.49:1
2nd	1.86:1
3rd	1.41:1
4th	1.00:1
5th	0.75:1
6th	0.65:1 (if applicable)
Rev	5.03:1

TRANSMISSION MODE PROGRAMMING

The transmission, upon start-up, will automatically select a four (4) speed operation. The fifth speed over drive shall be available with the activation of the mode button on the shifting pad.

TRANSMISSION FEATURE PROGRAMMING

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

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the shift selector. This requires re-selecting drive range to shift out of neutral for the override.

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

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

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

ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR

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

TRANSMISSION SHIFT SELECTOR

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

TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE

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

TRANSMISSION COOLING SYSTEM

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

TRANSMISSION DRAIN PLUG

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

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TRANSMISSION WARRANTY

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

PTO LOCATION

The transmission shall have two (2) power take off (PTO) mounting locations, one (1) in the 8:00 o'clock position and one (1) in the 4:00 o'clock position.

DRIVELINE

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

DRIVELINE RETARDER

A Telma electromagnetic driveline retarder shall be frame mounted on the chassis to act as an auxiliary braking system.

MIDSHIP RETARDER CONTROL

There shall be four (4) stages of activation for the driveline retarder. The first stage shall be 25% activation, the second stage shall be 50% activation, the third stage shall be 75% activation and the fourth stage shall be 100% activation. All four stages shall work off pressure applied to the service brake. The first stage shall activate with 3 PSI of pressure, the second stage shall activate with 5 PSI of pressure, the third stage shall activate with 7 PSI of pressure, and the fourth stage shall activate with 10 PSI of pressure. The driveline retarder shall be controlled by a virtual On/Off switch located on the Vista display. There shall be an indicator light mounted in the instrument panel. The indicator light shall indicate each of the four (4) stages of activation.

The driveline retarder shall disengage in pump mode or during an ABS event. A positive activation of the driveline retarder shall activate the brake lights.

MIDSHIP PUMP / GEARBOX

A mid-ship gearbox for a rear mount pump shall be installed by the apparatus manufacturer. The chassis manufacturer shall not provide any driveline provisions for the gearbox installation.

REAR MOUNT PUMP

The rear mount pump shall be installed by the body builder.

REAR MOUNT PUMP MODEL

The rear mount pump model shall be specified by the body builder.

FUEL LINES

The fuel system supply and return lines installed from the fuel tank to the engine shall be

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reinforced nylon tubing rated for diesel fuel. The fuel lines shall be brown in color and connected with brass fittings.

FUEL SHUTOFF VALVE

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

ELECTRIC FUEL PRIMER

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

FUEL COOLER

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

FUEL TANK

The fuel tank shall have a capacity of sixty-eight (68) gallons and shall measure 35.00 inches in width X 20.00 inches in height X 24.00 inches in length. The increased height and reduced length allows for the use of a shorter rear frame overhang on the chassis.

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

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

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

FUEL TANK MATERIAL AND FINISH

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

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

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

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FUEL TANK STRAP MATERIAL

The fuel tank straps shall be constructed of ASTM A-36 steel.

FUEL TANK FILL PORT

The fuel tank fill ports shall be offset with the left fill port located in the rearward position and the right fill port located in the middle position on the fuel tank.

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

FUEL TANK SERVICEABILITY PROVISIONS

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

FUEL TANK DRAIN PLUG

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

FRONT AXLE

The front axle shall be a Meritor Easy Steer Non-drive front axle, model number MFS-20. The axle shall include a 3.74 inch drop and a 71.00-inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle.

FRONT AXLE WARRANTY

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

FRONT WHEEL BEARING LUBRICATION

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

FRONT SHOCK ABSORBERS

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

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

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

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

FRONT SUSPENSION

The front suspension shall include a nine (9) leaf spring pack in which the longest leaf measures 54.00-inch-long and 4.00 inches wide and shall include a military double wrapped front eye. Both spring eyes shall have a case hardened threaded bushing installed with lubrication counter bore and lubrication land off cross bore with grease fitting. The spring capacity shall be rated at 21,500 pounds.

STEERING COLUMN/ WHEEL

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

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

ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR

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

POWER STEERING PUMP

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

FRONT AXLE CRAMP ANGLE

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

POWER STEERING GEAR

The power steering gear shall be a TRW model TAS 65 with an assist cylinder.

CHASSIS ALIGNMENT

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

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REAR AXLE

The rear axle shall be a Meritor model RS-24-160 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a rated capacity of 24,000 pounds.

The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.50 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance.

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

REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

REAR AXLE WARRANTY

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

REAR WHEEL BEARING LUBRICATION

The rear axle wheel bearings shall be lubricated with oil.

VEHICLE TOP SPEED

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

REAR SUSPENSION

The single rear axle suspension shall feature a Neway AD-127 air suspension. The suspension shall include optimized air springs mounted to the equalizing beams and integral transverse beam. An adjustable torque rod and adjustable track bar shall also be included.

Dual air height control valves shall be installed to ensure equal frame height on both sides of the vehicle regardless of the load. The rear suspension is run flat capable at reduced speeds.

The rear suspension capacity shall be rated at 24,000 to 27,000 pounds.

REAR SHOCK ABSORBERS

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

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FRONT TIRE

The front tires shall be Michelin 365/70R-22.5 20PR "L" tubeless radial XZA highway tread.

The front tire stamped load capacity shall be 21,000 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 125 pounds per square inch.

REAR TIRE

The rear tires shall be Michelin 11R-22.5 16PR "H" tubeless radial XDN2 all-weather tread designed for exceptional traction and mileage.

The rear tire stamped load capacity shall be 24,020 pounds per axle with a nominal speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.

The Michelin Intermittent Service Rating maximum load capacity shall be 25,700 pounds per axle with a maximum speed of 75 miles per hour when properly inflated to 120 pounds per square inch.

The Michelin Intermittent Service Rating maximum speed capacity shall match the nominal speed rating.

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

REAR AXLE RATIO

The rear axle ratio shall be 5.13:1.

TIRE PRESSURE INDICATOR

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

FRONT WHEEL

The front wheels shall be Alcoa hub piloted, 22.50 inch X 10.50-inch polished aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and shall include Alcoa's Dura-Bright® finish with XBR technology as an integral part of the wheel surface. Alcoa Dura-Bright® wheels keep their shine without polishing. Brake dust, grime and road debris are easily removed by simply cleaning the wheels with soap and water.

REAR WHEEL

The rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25-inch Level One™ aluminum wheels with a polished outer surface and Alcoa Dura-Bright® wheel treatment with XBR® technology as an integral part of the wheel. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

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BALANCE WHEELS AND TIRES

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

WHEEL TRIM

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

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

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

BRAKE SYSTEM

A rapid build-up air brake system shall be provided. The air brakes shall include a two (2) air tank, three (3) reservoir system with a total of 4152 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. An inversion valve shall be installed to provide a service brake application in the unlikely event of primary air supply loss. All air reservoirs provided on the chassis shall be labeled for identification.

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

A four (4) sensor, four (4) modulator Anti-lock Braking System (ABS) shall be installed on the front and rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. This in turn shall allow the driver to maintain steering control under heavy braking and in most instances, shorten the braking distance. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

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

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

The Electronic Stability Control (ESC) unit is a functional extension of the electronic braking system. It is able to detect any skidding of the vehicle about its vertical axis as well as any

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rollover tendency. The control unit comprises an angular-speed sensor that measures the vehicle's motion about the vertical axis, caused, for instance, by cornering or by skidding on a slippery road surface. An acceleration sensor measures the vehicle's lateral acceleration. The Controller Area Network (CAN) bus provides information on the steering angle. On the basis of lateral acceleration and steering angle, an integrated microcontroller calculates a theoretical angular speed for the stable vehicle condition.

FRONT BRAKES

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

REAR BRAKES

The rear brakes shall be Meritor 16.50 inch X 7.00-inch S-cam drum type.

PARK BRAKE

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

PARK BRAKE CONTROL

A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake system. The control shall be yellow in color.

The parking brake actuation valve shall be mounted in the center switch panel.

REAR BRAKE SLACK ADJUSTERS

The rear brakes shall include Meritor automatic slack adjusters installed on the axle which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.

AIR DRYER

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

FRONT BRAKE CHAMBERS

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

REAR BRAKE CHAMBERS

The rear axle shall include TSE 30/30 H.O.T. (High Output Technology) brake chambers shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake

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shoes against the brake drum. The TSE 30/30 H.O.T. chambers are designed to provide the same performance as 30/36 chambers in a smaller package.

AIR COMPRESSOR

The air compressor provided for the engine shall be a Wabco® SS318 single cylinder pass-through drive type compressor which shall be capable of producing 18.7 CFM at 1200 engine RPMs. The air compressor shall feature a higher delivery efficiency translating to more air delivery per horsepower absorbed. The compressor shall include an aluminum cylinder head which shall improve cooling, reduce weight and decrease carbon formation. Superior piston and bore finishing technology shall reduce oil consumption and significantly increasing the system component life.

AIR GOVERNOR

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

MOISTURE EJECTORS

Automatic moisture ejectors with a manual drain provision shall be installed on all reservoirs of the air supply system.

AIR SUPPLY LINES

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

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

AIR INLET CONNECTION

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

AIR INLET LOCATION

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

AIR INLET/ OUTLET FITTING TYPE

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

AIR TANK SPACERS

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

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REAR AIR TANK MOUNTING

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

WHEELBASE

The chassis wheelbase shall be 194.00 inches.

REAR OVERHANG

The chassis rear overhang shall be 54.00 inches.

FRAME

The frame shall consist of double rails running parallel to each other with cross members forming a ladder style frame. The frame rails shall be formed in the shape of a "C" channel, with the outer rail measuring 10.25 inches high X 3.50 inches deep upper and lower flanges X 0.38 inches thick with an inner channel of 9.44 inches high X 3.13 inches deep and 0.38 inches thick. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. Each double rail section shall be rated by a Resistance Bending Moment (RBM) minimum of 3,213,100 inch pounds and have a minimum section modulus of 29.21 cubic inches. The frame shall measure 35.00 inches in width.

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

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

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

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

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

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

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

FRAME WARRANTY

Summary of Warranty Terms:

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

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

MISCELLANEOUS FRAME OPTIONS

The cross members following the transmission, throughout the length of the frame shall be inverted where clearance allows.

FRAME CLEAR AREA

The chassis frame shall be left clear of chassis mounted components inside or outside the frame rails within the first 30.00 inches behind the cab to allow space for OEM installed components. Cross members may be installed in the clear area if required for proper frame or driveline configuration.

FRAME PAINT

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

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

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

The chassis under carriage consisting of frame, axles, driveline running gear, air tanks and other chassis mounted components shall be painted the primary/lower cab color. Paint shall be applied prior to airline and electrical wiring installation.

FRONT BUMPER

A one piece, two (2) rib wrap-around style, polished stainless steel front bumper shall be provided. The material shall be 10 gauge 304 stainless steel, 12.00 inches high and 99.00 inches wide.

FRONT BUMPER EXTENSION LENGTH

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

FRONT BUMPER APRON

The 21.00 inch extended front bumper shall include an apron constructed of 0.19-inch-thick

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embossed aluminum tread plate.

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

FRONT BUMPER DISCHARGE

The chassis shall include frame mounted 2.00-inch diameter plumbed pipe intended for use as a discharge trash line. The discharge pipe shall be routed from the left-hand front splay rail area behind the bumper to the area rear of the front axle, ahead of the battery box.

The discharge shall pipe shall be a, 2.00-inch stainless steel schedule 10 tube. The discharge shall include a Victaulic groove for connecting to the pump and discharge hose plumbing on each end of the tube.

The apparatus manufacturer shall plumb the discharge pipe to the pump and shall provide all valves as required.

FRONT BUMPER COMPARTMENT CENTER

The front bumper shall include a compartment in the bumper apron located in the center between the frame rails which may be used as a hose well. The compartment shall be constructed of 0.13 inch 5052-H32 grade aluminum and shall include drain holes in the bottom corners to allow excess moisture to escape. The compartment shall include a notched cover constructed of 0.19-inch-thick bright embossed aluminum tread plate. The notch shall be located in the left front portion of the cover and shall be 4.00 inches in length with a 2.00 inches wide radius.

MECHANICAL SIREN

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

MECHANICAL SIREN LOCATION

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

AIR HORN

The front bumper shall include two (2) Hadley brand E-Tone air horns which shall measure 21.00 inches long with a 6.00-inch round flare. The air horns shall be trumpet style with a chrome finish on the exterior and a painted finish deep inside the trumpet.

AIR HORN LOCATION

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

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AIR HORN RESERVOIR

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

ELECTRONIC SIREN SPEAKER

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

ELECTRONIC SIREN SPEAKER LOCATION

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

FRONT BUMPER TOW HOOKS

Two (2) heavy duty tow hooks, painted to match the chassis frame, shall be installed in the rearward position out of the approach angle area, bolted directly to the side of each chassis frame rail with grade 8 bolts.

CAB TILT SYSTEM

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

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

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

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

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

A steel safety channel assembly, painted safety yellow shall be installed on the right-side cab lift cylinder to prevent accidental cab lowering. The safety channel assembly shall fall over the lift cylinder when the cab is in the fully tilted position. A cable release system shall also be provided to retract the safety channel assembly from the lift cylinder to allow the lowering of the cab.

CAB TILT LIMIT SWITCH

A cab tilt limit switch shall be installed. The switch will effectively limit the travel of the cab when

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

CAB TILT CONTROL RECEPTACLE

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

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

CAB WINDSHIELD

The cab windshield shall have a surface area of 2825.00 square inches and be of a two (2) piece wraparound design for maximum visibility.

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

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

GLASS FRONT DOOR

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

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

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

GLASS TINT FRONT DOOR

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

GLASS REAR DOOR RH

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

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GLASS TINT REAR DOOR RIGHT HAND

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

GLASS REAR DOOR LH

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

GLASS TINT REAR DOOR LEFT HAND

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

GLASS SIDE MID RH

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

GLASS TINT SIDE MID RIGHT HAND

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

GLASS SIDE MID LH

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

GLASS TINT SIDE MID LEFT HAND

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

CLIMATE CONTROL

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

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

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

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

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

The air conditioning system plumbing shall be a mixture of custom bent zinc coated steel fittings and Aeroquip GH134 flexible hose with Aeroquip EZ-Clip fittings. The overhead heater/defroster plumbing shall include an electronic flow control valve that re-directs hot coolant away from the evaporator, via a bypass loop, as the temperature control is moved toward the cold position.

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

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

CLIMATE CONTROL DRAIN

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

CLIMATE CONTROL ACTIVATION

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

HVAC OVERHEAD COVER PAINT

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

A/C CONDENSER LOCATION

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

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A/C COMPRESSOR

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

UNDER CAB INSULATION

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

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

The engine tunnel insulation shall measure approximately 0.75-inch-thick including a vertically lapped polyester fiber layer, a 1.0 lb./ft² PVC barrier layer, an open cell foam layer, and a moisture and heat reflective foil facing reinforced with a woven fiberglass layer. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.

The cab floor insulation shall measure .56-inch-thick including a 1.0#/sf PVC barrier and a moisture and heat reflective foil facing, reinforced with fiberglass strands. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed MVSS 302 flammability test.

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

INTERIOR TRIM FLOOR

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

INTERIOR TRIM

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

REAR WALL INTERIOR TRIM

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

HEADER TRIM

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

TRIM CENTER DASH

The main center dash area shall be constructed of 5052-H32 Marine Grade, 0.13-inch-thick aluminum plate. There shall be four (4) holes located on the top of the dash near each outer edge of the electrical access cover for ventilation. The dash shall include cup holders and storage bins.

TRIM LH DASH

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

TRIM RH DASH

The right-hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch-thick aluminum plate and shall include a glove compartment with a hinged door and a Mobile Data Terminal (MDT) provision. The glove compartment size will measure 14.00 inches wide X 6.38 inches high X 5.88 inches deep. The MDT provision shall be provided above the glove compartment.

ENGINE TUNNEL TRIM

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

ENGINE TUNNEL ACCESSORIES

The engine tunnel shall include an aluminum plate for mounting accessories such as brackets for flashlights, etc. The plate shall be mounted above the engine tunnel with 0.75-inch-thick spacers so wires can be routed between the plate and the engine tunnel. The mounting surface shall be located as far forward on the engine cover as possible and be as large as possible between the radius edges of the tunnel. The mounting plate shall be 0.38 of an inch thick and feature a DA sanded finish.

POWER POINT DASH MOUNT

The cab shall include two (2) 12-volt cigarette lighter type receptacles in the switch panel to provide a power source for 12-volt electrical equipment. The cab shall also include one (1) Blue Sea dual universal serial bus (USB) charging receptacle in the cab dash to provide a power source for USB chargeable electrical equipment. The USB port shall be capable of a 5 Volt-2.1-amp total output. The receptacles shall be wired battery direct.

AUXILIARY POWER POINT ENGINE TUNNEL

The cab interior shall include two (2) 12-volt cigarette lighter type receptacles to provide power sources for 12-volt electrical equipment. The receptacles shall be connected directly to the

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batteries. The receptacles shall be located on the rear of the engine tunnel near the top, one (1) near the left corner and one (1) near the right corner.

The cab shall also include two (2) Dual universal serial bus (USB) charging receptacles on the rear of the engine tunnel to provide a power source for USB chargeable electrical equipment. Each USB receptacle shall include one (1) USB port capable of a 5 Volt-1-amp output and one (1) USB port capable of a 5 Volt-2.1-amp output wired battery direct and include a backlit legend. One (1) near the left corner and one (1) near the right corner wired battery direct and include a backlit legend.

STEP TRIM

Each cab entry door shall include a three-step entry. The first step closest to the ground shall be constructed of polished 5052 H32 aluminum Grip Strut® grating with angled outer corners. The grating shall allow water and other debris to flow through rather than becoming trapped within the stepping surface. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed in 0.08-inch-thick 3003-H22 embossed aluminum tread plate.

UNDER CAB ACCESS DOOR

The cab shall include an aluminum access door in the left crew step riser painted to match the cab interior paint with a push and turn latch. The under cab access door shall provide access to the diesel exhaust fluid fill.

INTERIOR DOOR TRIM

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

DOOR TRIM KICKPLATE

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

DOOR TRIM CUSTOMER NAMEPLATE

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

CAB DOOR TRIM REFLECTIVE

The interior of each door shall include high visibility reflective tape. A white reflective tape shall be provided vertically along the outer rear edge of the door. The lowest portion of each door skin shall include a reflective tape chevron with red and white stripes. The chevron tape shall measure 6.00 inches in height.

INTERIOR GRAB HANDLE "A" PILLAR

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

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above the bottom of the door window opening. The handles shall assist personnel in entering and exiting the cab.

INTERIOR GRAB HANDLE FRONT DOOR

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

INTERIOR GRAB HANDLE REAR DOOR

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

ADDITIONAL INTERIOR GRAB HANDLE REAR DOOR

Each interior rear door shall include an additional grab handle. The handle shall be an ergonomically contoured 9.00-inch-long cast aluminum grab handle. Each handle shall be mounted horizontally on the upper interior door trim panel. Each handle shall be textured and feature a black powder coat finish and shall assist personnel entering and exiting the cab.

INTERIOR SOFT TRIM COLOR

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

INTERIOR TRIM SUNVISOR

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

INTERIOR FLOOR MAT COLOR

The cab interior floor mat shall be black in color.

CAB PAINT INTERIOR DOOR TRIM

The inner door panel surfaces shall be painted with multi-tone onyx black texture finish.

HEADER TRIM INTERIOR PAINT

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

TRIM CENTER DASH INTERIOR PAINT

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

TRIM LH DASH INTERIOR PAINT

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

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TRIM RIGHT HAND DASH INTERIOR PAINT

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

ENGINE TUNNEL ACCESSORIES PAINT

The engine tunnel accessories shall be painted with multi-tone silver gray texture finish.

DASH PANEL GROUP

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

SWITCHES CENTER PANEL

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

SWITCHES LEFT PANEL

The left dash panel shall include one (1) windshield wiper/washer control switch located in the left-hand side of the panel. The switch shall have backlighting provided.

SWITCHES RIGHT PANEL

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

SEAT BELT WARNING

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall provide a visual warning indicator in the Vista display and control screen(s), an indicator light in the instrument panel, and an audible alarm.

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

SEAT MATERIAL

The seats shall be covered with a 45.00-ounce vinyl material. This material shall be semi-resistant to UV rays and from being saturated or contaminated by fluids.

SEAT COLOR

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

SEAT BACK LOGO

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The seat back shall include the "Goodyear Fire Department" logo. The logo shall be centered on the standard headrest of the seat back and on the left side of a split headrest.

SEAT DRIVER

The driver's seat shall be an H.O. Bostrom 400 Series Sierra model seat with air suspension. The four-way seat shall feature 3.00-inch vertical travel air suspension and manual fore and aft adjustment with 5.00 inches of travel. The suspension control shall be located on the seat below the left front corner of the bottom cushion. The seat shall also feature integral springs to isolate shock.

The seat position shall include a three-point shoulder harness with lap belt and an automatic retractor attached to the cab. The buckle portion of the seat belt shall be mounted on a semi-rigid stalk extending from the seat base within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 37.00 inches measured with the seat suspension height adjusted to the upper limit of its travel.

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

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

SEAT BACK DRIVER

The driver's seat shall feature a two (2) way adjustable lumbar support and offer an infinite fully reclining adjustable titling seat back. The seat back shall also feature a contoured head rest.

SEAT MOUNTING DRIVER

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

SEAT OFFICER

The officer's seat shall be an H.O. Bostrom 400 Series Sierra model seat with air suspension. The four-way seat shall feature 3.00-inch vertical travel air suspension and manual fore and aft adjustment with 5.00 inches of travel. The suspension control shall be located on the seat below the left front corner of the bottom cushion. The seat shall also feature integral springs to isolate shock.

The seat position shall include a three-point shoulder harness with lap belt and an automatic retractor attached to the cab. The buckle portion of the seat belt shall be mounted on a semi-rigid stalk extending from the seat base within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 37.00 inches measured with the seat suspension height adjusted to the upper limit of its travel.

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

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

SEAT BACK OFFICER

The officer's seat shall feature a two (2) way adjustable lumbar support and offer an infinite fully reclining adjustable tilting seat back. The seat back shall also feature a contoured head rest.

SEAT MOUNTING OFFICER

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

SEAT BELT ORIENTATION CREW

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

SEAT REAR FACING OUTER LOCATION

The crew area shall include two (2) rear facing crew seats, which include one (1) located directly behind the left side front seat and one (1) located directly behind the right side front seat.

SEAT CREW REAR FACING OUTER

The crew area shall include a seat in the rear facing outboard position which shall be a H.O. Bostrom 400 Series Firefighter model seat. The seat shall feature a tapered and padded seat, and cushion. The seat and cushion shall be spring load hinged and compact in design for additional room and shall remain in the stored position until occupied.

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

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

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

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flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

SEAT BACK REAR FACING OUTER

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

SEAT MOUNTING REAR FACING OUTER

The rear facing outer seat shall be mounted facing the rear of the cab.

SEAT FORWARD FACING CENTER LOCATION

The crew area shall include two (2) forward facing center crew seats with both located at the center of the rear wall.

SEAT CREW FORWARD FACING CENTER

The crew area shall include a seat in the forward-facing center position which shall be a H.O. Bostrom Firefighter model seat. The seat shall feature eight-way electric positioning. The eight positions shall include up and down, fore and aft, and front and rear tilt. The seat shall feature integral springs to isolate shock. The seat shall feature two (2) way adjustable lumbar support and offer an infinite fully reclining adjustable tilting seat back. The seat back shall also feature a contoured head rest.

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

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

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

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

SEAT BACK FORWARD FACING CENTER

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

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adjustable head rest.

ARMREST FOWARD FACING CENTER

All forward facing center crew seat positions shall include armrests on the inboard and outboard side of each seat. Each armrest shall be covered with black urethane material and shall be an integral part of the seat.

SEAT FRAME FORWARD FACING

The forward-facing center seating positions shall include an enclosed seat frame located and installed on the rear wall. The seat frame shall measure 48.00 inches wide X 12.38 inches high X 22.00 inches deep. The seat frame shall be constructed of Marine Grade 5052-H32 0.19-inch-thick aluminum plate. The seat box shall be painted the same color as the remaining interior.

SEAT FRAME FORWARD FACING STORAGE ACCESS

There shall be two (2) access points to the storage area one (1) each side of the seat frame. Each access point shall be covered by a hinged door which measures 18.00 inches wide X 8.63 inches high to allow access for storage in the seat box. The access door hinges shall be at the rear edge of the doors.

SEAT MOUNTING FORWARD FACING CENTER

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

CAB FRONT UNDERSEAT STORAGE ACCESS

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

SEAT COMPARTMENT DOOR FINISH

All under seat storage compartment access doors shall have a multi-tone black-black texture finish.

WINDSHIELD WIPER SYSTEM

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

ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR

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

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CAB DOOR HARDWARE

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

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

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

The exterior pull handles shall include a scuff plate behind the handle constructed of polished stainless steel to help protect the cab finish.

DOOR LOCKS

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

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

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

DOOR LOCK LH REAR CAB COMPARTMENT

The left-hand side rear compartment shall feature a power door lock actuator.

DOOR LOCK RH REAR CAB COMPARTMENT

The right-hand side rear compartment shall feature a power door lock actuator.

GRAB HANDLES

The cab shall include one (1) 24.00 inch knurled, anti-slip, one-piece exterior assist handle behind each cab door. The grab handle shall be made of 14 gauge 304- stainless steel and be 1.25-inch diameter to enable non-slip assistance with a gloved hand.

POWER DOOR LOCK COMPARTMENT ACTIVATION

The power door lock feature shall include activation for exterior compartment door locks through the key fob, keypads and through a virtual switch on the multiplex display.

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REARVIEW MIRRORS

Ramco model 6015-PCHR bus style mirrors shall be provided. The mirror heads shall be polished cast aluminum and shall measure 9.75 inches wide X 13.00 inches high. The mirrors shall be mounted one (1) on each front cab corner radius below the windshield with 15.00-inch-long polished cast aluminum arms.

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

REARVIEW MIRROR HEAT SWITCH

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

EXTERIOR TRIM REAR CORNER

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

CAB FENDER

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Each two-piece liner shall consist of an inner liner 16.00 inches wide made of vacuum formed ABS composite and an outer fenderette 3.50 inches wide made of 14 gauge 304 polished stainless steel.

MUD FLAPS FRONT

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

CAB EXTERIOR FRONT & SIDE EMBLEMS

The cab shall include three (3) Spartan emblems. There shall be one (1) installed on the front air intake grille and one (1) emblem on the exterior of the cab on the lower forward portion of the front driver and officer side doors.

IGNITION

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

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

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

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BATTERY

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

BATTERY TRAY

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

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

BATTERY BOX COVER

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

BATTERY CABLE

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

BATTERY JUMPER STUD

The starting system shall include battery jumper studs. These studs shall be located on the rear face of the left-hand battery tray. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

ALTERNATOR

The charging system shall include a 320 amp Leece-Neville 12-volt alternator. The alternator shall include a self-exciting integral regulator.

BATTERY CONDITIONER

A Kussmaul 1200 Pump Plus battery conditioner shall be supplied. The battery conditioner shall be mounted in the cab in the LH rear facing outer seating position.

BATTERY CONDITIONER DISPLAY

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted in the cab, viewable through the cab mid side window behind the left front door.

AUXILIARY AIR COMPRESSOR

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

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air pressure.

ELECTRICAL INLET

A Kussmaul 30-amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed.

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

Amp Draw Reference List:

Kussmaul 1000 Charger - 3.5 Amps
Kussmaul 1200 Charger - 10 Amps
Kussmaul 35/10 Charger - 10 Amps
1000W Engine Heater - 8.33 Amps
1500W Engine Heater - 12.5 Amps
120V Air Compressor - 4.2 Amps

ELECTRICAL INLET LOCATION

An electrical inlet shall be installed on the left-hand side of cab over the wheel well in the forward position 6.88" lower than the standard position.

ELECTRICAL INLET CONNECTION

The electrical inlet shall be connected to the battery conditioner.

ELECTRICAL INLET COLOR

The electrical inlet connection shall include a yellow cover.

HEADLIGHTS

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

FRONT TURN SIGNALS

The front fascia shall include two (2) Whelen model 600 4.00 inch X 6.00 inch programmable LED amber turn signals which shall be installed in a chrome bezel outboard of the front warning and above the headlamps.

HEADLIGHT LOCATION

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

SIDE TURN/MARKER LIGHTS

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

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MARKER AND ICC LIGHTS

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

HEADLIGHT AND MARKER LIGHT ACTIVATION

The headlights and marker lights shall be controlled via a virtual button on the Vista display. There shall be a virtual dimmer control on the Vista display to adjust the brightness of the dash lights.

GROUND LIGHTS

Each door shall include one (1) On-Scene brand Night Axe LED strip model ground light mounted to the underside of the cab step below each door. The ground light shall be mounted in a polished aluminum bezel. The ground lighting shall be activated by the opening of the respective side door, respective side turn signal, when the parking brake is set, as well as being activated through a virtual button on the Vista display and control screen.

LOWER CAB STEP LIGHTS

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

INTERMEDIATE STEP LIGHTS

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

UNDER BUMPER LIGHTS

There shall be two (2) 9-inch-long On Scene Night Axe LED NFPA compliant ground lights mounted under the bumper. The under bumper ground lighting shall be interlocked with the park brake

ENGINE COMPARTMENT LIGHT

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

LIGHTBAR PROVISION

There shall be one (1) light bar installed on the cab roof. The light bar shall be provided and installed by Spartan Chassis. The light bar installation shall include mounting and wiring to a control switch on the cab dash.

CAB FRONT LIGHTBAR

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The lightbar provisions shall be for one (1) Whelen brand Freedom IV LED lightbar mounted centered on the front of the cab roof. The lightbar shall be 72.00 inches in length. The lightbar shall feature six (6) red LED light modules and two (2) clear LED light modules. The entire lightbar shall feature a clear lens. The clear lights shall be disabled with park brake engaged. The lightbar shall include an F4500S strobe for traffic control mounted centered in the front of the light bar. The cable shall exit the lightbar on the right side of the cab.

LIGHTBAR SWITCH

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

SIDE SCENE LIGHTS

The side of the cab shall include two (2) Whelen 900 series 9SC0ENZR model scene lights, one (1) each side which shall be surface mounted with a chrome bezel. The Whelen lights shall offer LED lighting at a gradient 32-degree angle.

SIDE SCENE LIGHT LOCATION

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

SIDE SCENE ACTIVATION

The scene lights shall be activated by two (2) virtual buttons on the Vista display and control screen(s), one (1) for each light, and by opening the respective side cab doors.

INTERIOR OVERHEAD LIGHTS

The cab shall include a red/clear Whelen LED dome lamp located over each door. The dome lamps shall be rectangular in shape and shall measure approximately 7.00 inches in length X 3.00 inches in width with a black colored bezel. The clear function of each lamp shall be activated by opening the respective door. While the door is closed the individual red or clear function of each lamp can be activated dependently by switches on each lamp.

An additional separately functioning red or clear Whelen LED dome lamp shall be provided over the engine tunnel. Each individual function can be activated dependently by switches on the lamp.

MAP LIGHTS

A Sunnex swivel map light shall be provided. The light shall have a clear lens and a control switch on the base. The light shall be mounted on the overhead HVAC cover on the right-hand side.

LIGHT TOWER PROVISION

The cab roof shall include reinforcement for a light tower. The reinforcement shall consist of four (4) aluminum pads mounted to the exterior of the cab roof and additional internal cab roof structure. The entire reinforcement shall be integral with the roof for rigidity. The light tower shall be provided and installed by the body manufacturer.

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LIGHT TOWER MODEL

The light tower provisions shall be for a Command Light Shadow model SL442D-RT-: LED, a12 volt light tower. The light tower shall feature four (4) FRC Pioneer Plus LED 150-watt scene light heads.

LIGHT TOWER ORIENTATION

The roof reinforcement shall be installed parallel to the rear wall of the cab.

LIGHT TOWER HORIZONTAL JUSTIFICATION

The roof reinforcement shall be justified to the center of the cab left to right.

LIGHT TOWER LIGHT HEAD ORIENTATION

The roof reinforcement shall be oriented in order for the light head on the light tower to be to the left side while in the stored position.

LIGHT TOWER FORE/AFT ORIENTATION

The roof reinforcement shall be oriented on the roof of the cab centered from front to rear.

DO NOT MOVE APPARATUS LIGHT

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

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

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

MASTER WARNING SWITCH

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

HEADLIGHT FLASHER

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

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

HEADLIGHT FLASHER SWITCH

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

INBOARD FRONT WARNING LIGHTS

The cab front fascia shall include two (2) Whelen 600 series Super LED front warning lights in the left and right inboard positions. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the front fascia of the cab within a chrome bezel.

INBOARD FRONT WARNING LIGHTS COLOR

The warning lights mounted on the cab front fascia in the inboard positions shall be blue light on the left side and red on the right side, both with clear lenses.

FRONT WARNING SWITCH

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

INTERSECTION WARNING LIGHTS

The chassis shall include two (2) Whelen 600 series Super LED intersection warning lights, one (1) each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors.

INTERSECTION WARNING LIGHTS COLOR

The intersection lights shall be red/blue vertical split with a clear lens. The intersection lights located on the left side shall be red forward and the intersection lights on the right side shall be blue forward.

INTERSECTION WARNING LIGHTS LOCATION

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

SIDE WARNING LIGHTS

The cab sides shall include two (2) Whelen 900 series Super LED warning lights, one (1) on each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the sides of the cab within a chrome bezel.

SIDE WARNING LIGHTS COLOR

The warning lights located on the side of the cab shall be blue/blue on the left side and red/red on the right side.

SIDE WARNING LIGHTS LOCATION

The warning lights on the side of the cab shall be mounted above the "B" pillar in the highest available position.

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AUXILIARY SIDE WARNING LIGHTS

The cab side shall include an auxiliary set of Whelen 600 series 4.00-inch-tall X 6.00-inch-wide Super LED warning lights, one (1) each side, which shall feature fourteen (14) flash patterns plus a steady burn for solid colors and twenty (20) flash patterns plus a steady burn for split colors. The lights shall be surface mounted within a chrome bezel.

AUXILIARY SIDE WARNING LIGHTS COLOR

The auxiliary warning lights located on the left-hand side of the cab shall be red and the auxiliary warning lights located on the right-hand side of the cab shall be blue.

AUXILIARY SIDE WARNING LIGHTS LOCATION

The auxiliary warning lights on the side of the cab shall be mounted over the wheel well. The center line of the warning lights shall be 12.00 inches above the wheel well apex.

SIDE AND INTERSECTION WARNING SWITCH

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

TRAFFIC CONTROL

There shall be a prewire for the strobe included in the lightbar. The cable shall be routed from the lightbar to behind the center dash panel for a customer installed traffic controller.

SIREN CONTROL HEAD

One (1) Federal/Unitrol U480K-15 electronic siren with sliding light control switch (60 amps maximum) shall be provided in the cab. Power shall be provided through the VMUX system "Master" warning lights. The VMUX menu provides selection of Position 1, 2, or 3 programming. Siren shall be wired as follows:

- ☐ _Position 0 - Blocked
- ☐ _Position 1 – Rear lighting only
- ☐ _Position 2 – 360 degree lights; no pre-empt or siren
- ☐ _Position 3 - All Lights and siren.

The siren shall be wired to the radio auxiliary speaker for the outside radio speaker in the "radio" mode. A Unitrol model UMNCT-B, noise canceling type microphone shall be provided for the PA system.

HORN BUTTON SELECTOR SWITCH

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

AIR HORN ACTIVATION

The air horn activation shall be accomplished by the steering wheel horn button and a left-hand side Linemaster model SP491-S81 foot switch for the driver and a black momentary push button

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on the switch panel. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

MECHANICAL SIREN ACTIVATION

The mechanical siren shall be actuated by a black push button in the switch panel on the dash and an additional black push button accessible to the captain. A black push button siren brake control shall be provided in the switch panel on the dash.

The siren shall only be active when master warning switch is on to prevent accidental engagement.

ELECTRONIC SIREN AUXILIARY ACTIVATION

The electronic siren shall include pre-wiring for activation by a left-hand side foot switch.

BACK-UP ALARM

A Preco-Matic model 270 backup alarm shall be installed at the rear of the chassis with an output level of 107 dB. The alarm shall automatically activate when the transmission is placed in reverse.

INSTRUMENTATION

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

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

The instrument panel shall contain the following gauges:

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

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

One (1) four-movement gauge displaying engine oil pressure, coolant temperature, voltmeter, and transmission temperature shall be included. The scale on the engine oil pressure gauge shall read from 0 to 100 pounds PSI with a red line zone indicating critical levels of oil pressure. A red indicator light in the gauge and audible alarm shall indicate low engine oil pressure. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (°F) with

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a red line zone indicating critical coolant temperatures. A red indicator light in the gauge and audible alarm shall indicate high coolant temperature. The scale on the voltmeter shall read from 9 to 18 volts with a red line zone indicating critical levels of battery voltage. A red indicator light in the gauge and an audible alarm shall indicate high or low system voltage. The low voltage alarm shall indicate when the system voltage has dropped below 11.8 volts for more than 120 seconds in accordance with the requirements of NFPA 1901. The scale on the transmission temperature gauge shall read from 100 to 300 degrees °F with a red line zone indicating critical temperatures. A red indicator light in the gauge and an audible alarm shall indicate a high transmission temperature.

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

RED INDICATORS

Stop Engine - indicates critical engine fault
Air Filter Restricted - indicates excessive engine air intake restriction
Park Brake - indicates parking brake is set
Seat Belt - indicates a seat is occupied and corresponding seat belt remains unfastened
Low Coolant - indicates critically low engine coolant
Cab Tilt Lock - indicates the cab tilt system locks are not engaged.

AMBER INDICATORS

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

GREEN INDICATORS

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

BLUE INDICATORS

High Beam indicator

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AUDIBLE ALARMS

Air Filter Restriction
Cab Tilt Lock
Check Engine
Check Transmission
Open Door/Compartment
High Coolant Temperature
High or Low System Voltage
High Transmission Temperature
Low Air Pressure
Low Coolant Level
Low DEF Level
Low Engine Oil Pressure
Low Fuel
Seatbelt Indicator
Stop Engine
Water in Fuel
Extended Left/Right Turn Signal On
ABS System Fault

BACKLIGHTING COLOR

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

APPARATUS PANEL INSTRUMENTATION

A diesel exhaust fluid gauge shall be shipped loose with the cab and chassis for the body builder to install. The gauge shall display the Diesel Exhaust Fluid (DEF) level as a bar graph which shall provide a yellow warning indication once the level has dropped below 12.5 percent and a red warning indication once the level has dropped below to 5 percent.

RADIO

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

AM/FM ANTENNA

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

CAMERA

An Audiovox Voyager heavy duty rearview camera system shall be supplied. One (1) box shaped camera shall be shipped loose for OEM installation in the body to afford a clear view of the rear of the vehicle and two (2) cameras with a teardrop shaped chrome plated housings shall be mounted on the left and right side of the cab below the windshield ahead of the front door at approximately the same level as the cab door handle. The side cameras shall afford a clear view

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of the area each side of the vehicle.

The cameras shall be wired to a Weldon Vista display which shall be located on the left side of the dash. The rear camera shall activate when the transmission is placed in reverse and the side cameras shall activate with the respective side turn signal. Each camera shall also be activated by a button on the Vista display.

Note: All antenna bases (5) described below will be installed in/on an antenna rail, the specifics of which will be carefully reviewed and confirmed at the prebuild meeting.

COMMUNICATION ANTENNA

An antenna base, for use with an NMO type antenna, shall be mounted on the right-hand front corner of the cab roof so not to interfere with light bars or other roof mounted equipment installed by Spartan Chassis. The antenna base shall be an Antenex model MABVT8 made for either a 0.38 inch or 0.75 inch receiving hole in the antenna and shall include 17.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base design provides the most corrosion resistance and best power transfer available from a high temper all brass construction and gold plated contact design. The antenna base shall be provided by Spartan.

COMMUNICATION ANTENNA CABLE ROUTING

The antenna cable shall be routed from the antenna base mounted on the roof to the area behind and underneath the right-hand front seat.

AUXILIARY COMMUNICATION ANTENNA

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

AUXILIARY COMMUNICATION ANTENNA CABLE ROUTING

The auxiliary antenna cable shall be routed from the antenna base mounted on the roof to the area behind and underneath the right-hand front seat.

CAB EXTERIOR PROTECTION

The cab face shall have a removable plastic film installed over the painted surfaces to protect the paint finish during transport to the body manufacturer. The rear wall shall also include a removable plastic film installed on the exterior surface of the cab to protect the finish during transport.

FIRE EXTINGUISHER

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

ROAD SAFETY KIT

The cab and chassis shall include one (1) emergency road safety triangle kit.

SPECIFICATIONS:
Smeal Pumper Trucks with Spartan Metrostar Chassis



City of Goodyear
IFB 17-3793

DOOR KEYS

The cab and chassis shall include a total of four (4) door keys for the manual door locks.

WARRANTY

Summary of Warranty Terms:

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

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

CHASSIS OPERATION MANUAL

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

ENGINE AND TRANSMISSION OPERATION MANUALS

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

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

CAB/CHASSIS AS BUILT WIRING DIAGRAMS

The cab and chassis shall include two (2) digital copies of wiring schematics and option wiring diagrams.

PAINT CONFIRMATION

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



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SNEYDER, NEBRASKA 68664
smeal.com
402-593-7224

WE BUILD RESPECT.

2 Year Smeal Protection Plan Limited Warranty

Two (2) Years

1. Smeal Fire Apparatus Company ("Smeal") warrants to each original purchaser only that the Smeal apparatus manufactured by Smeal, shall be free of defects in material and workmanship for a period of two (2) years, beginning on the 30th day from the invoice date for the completed apparatus.

2. This warranty shall only cover Smeal manufactured apparatus and installed components supplied by Smeal.

3. Smeal reserves the right to thoroughly examine the apparatus or any parts thereof which are claimed to be defective and Smeal's obligation pursuant to this warranty shall be limited to the repair or replacement of the structural component or components which Smeal determines to have structurally failed due to defective manufacture, design, or workmanship. This repair or replacement shall be without charge to the original purchaser and Smeal shall have the sole right to elect whether the vehicle or items shall be repaired or replaced, which repairs shall be performed solely by Smeal at its principal place of business or at a repair facility selected by Smeal. This warranty covers only labor for repair or replacement which is reasonably necessary, as determined by Smeal, to make the repair or replacement deemed necessary by Smeal. Any labor, time, or amounts which are in excess of those reasonably necessary or deemed to be excessive by Smeal are not covered under this warranty. All repairs must be expressly approved in writing by Smeal's warranty department. The failure to obtain approval for repairs from Smeal or to have the apparatus or item repaired or replaced at Smeal or a place designated by Smeal shall void this warranty. Any repair or replacement performed by Smeal pursuant to this warranty shall be warranted under this warranty only for the duration of the original warranty.

4. This warranty is nontransferable and terminates upon transfer of ownership or possession of the apparatus from the original purchaser to any other third party or entity.

5. Smeal's obligation to render any performance under this warranty is subject to the following conditions:

a) The original purchaser must provide documentation to the satisfaction of Smeal. In addition, all testing results or reports must be provided to Smeal's Customer Service department within thirty (30) days of inspection or testing, otherwise this warranty shall be deemed null and void.

b) The claimed defect must manifest itself during the warranty period;

c) The original purchaser must notify Smeal in writing of the claimed defect within thirty (30) days after the claimed defect manifests itself to the original purchaser;

d) The claimed defective apparatus or item must be returned to Smeal or Smeal's designee immediately after notification of Smeal with transportation charges prepaid, unless otherwise directed by Smeal. Smeal shall have the unconditional right to thoroughly examine the claimed failures, including the apparatus and any part thereof, prior to conducting or approving any repair or replacement to determine whether the claimed failure is covered by this warranty. The failure of Smeal to conduct any such examination shall not be deemed to be a waiver of its right to deny warranty coverage.

6. This warranty is effective only under normal use and conditions.

In addition, this warranty does not cover:

a) Damage or corrosion due to improper use, improper maintenance, unauthorized alterations to the structure or repairs, chemical deterioration, accidents, acts of God, or operation beyond rated capacity; or

b) Any liability for direct or indirect damages or delays resulting from any defects, including, but not limited to, special, incidental, or consequential damages, loss of use, or loss of profits; or

c) The cost of transporting original purchaser's apparatus or item to or from any repair facility.

At the request of Smeal, any allegedly defective vehicle shall be returned to Smeal by the purchaser for examination and/or repair. The purchaser shall be responsible for the cost of transportation and for the risk of loss of or damage to the vehicle during such transportation.

d) Non-structural cracks or breakage.

e) Metal deformities, including buckling or material bending, unless the same was caused by the structural failure of a structural component.

f) Ordinary maintenance services or adjustments.

g) Replacement of any ordinary maintenance items, including but not limited to, filters, screens, lubricants and light bulbs; or

h) Any item which is manufactured by any person or entity other than Smeal that is separately warranted in any manner by said person or entity.

7. This warranty is absolutely void if Smeal determines that the apparatus or any item has been misused, neglected, altered, overloaded, loaded to a state of excessive imbalance, or damaged. In addition this warranty is void if Smeal determines that the original purchaser has misrepresented or concealed any material fact in connection with this warranty claim or that the vehicle or item has been damaged in an accident or act of God, or that the failure is attributable to any use by the original customer which is contrary to the intended use for which the product was manufactured or designed by Smeal.

8. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE FOR A PARTICULAR PURPOSE, WARRANTIES ARISING BY OPERATION OF LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE. THIS WARRANTY IS FURTHER IN LIEU OF ALL OTHER REPRESENTATIONS TO THE ORIGINAL PURCHASER AND ANY OTHER OBLIGATIONS OR LIABILITIES WHATSOEVER, INCLUDING, BUT NOT LIMITED TO, ANY OBLIGATION OR LIABILITY FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES. SMEAL NEITHER GIVES, ASSUMES, NOR AUTHORIZES ANY OTHER PERSON TO GIVE OR ASSUME ANY OTHER WARRANTY, OBLIGATION, OR LIABILITY ON SMEAL'S BEHALF, UNLESS EXPRESSLY GIVEN OR ASSUMED IN WRITING BY SMEAL.

9. PERFORMANCE OF REPAIRS OR REPLACEMENT OF PARTS UNDER THE TERMS SET FORTH HEREIN ARE THE EXCLUSIVE REMEDIES AFFORDED TO THE BUYER AND NEITHER SMEAL NOR ANY OF ITS DISTRIBUTORS OR AGENTS SHALL BE LIABLE FOR ANY BREACH OF WARRANTY IN AN AMOUNT EXCEEDING THE PURCHASE PRICE OF THE DEFECTIVE APPARATUS, EQUIPMENT OR ITEM. THIS WARRANTY SHALL NOT BE EXTENDED, ALTERED, OR VARIED EXCEPT BY WRITTEN AGREEMENT SIGNED BY SMEAL AND THE ORIGINAL PURCHASER.

10. Smeal reserves the right to make changes in the design of and/or improvements on its products or to change specifications on material as it may deem desirable at any time without imposing any obligations on itself to make corresponding changes or improvements in or on its products theretofore manufactured. Only the Smeal apparatus and its components manufactured by Smeal are bound by this warranty. Components of other manufacturers are covered only by such warranties set forth by the component manufacturer.

Option ID: W02450



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WE BUILD RESPECT.

Body/Structural Integrity (Aluminum and Galvanneal) Limited Warranty Smeal Manufactured Parts

Ten (10) Years

1. Smeal Fire Apparatus Company ("Smeal") warrants that the body of each newly constructed apparatus which is manufactured by Smeal shall be free of structural or design failure or workmanship for a period of ten (10) years or 100,000 miles, beginning on the 30th day from the invoice date for the completed apparatus.
2. This warranty shall cover the body, including tubular support, water tank cradle support, body/pump house mount structures, and other structural components as set forth in Smeal's body specifications.
3. Smeal reserves the right to thoroughly examine the apparatus or any parts thereof which are claimed to be defective and Smeal's obligation pursuant to this warranty shall be limited to the repair or replacement of the structural component or components which Smeal determines to have structurally failed due to defective manufacture, design, or workmanship. This repair or replacement shall be without charge to the original purchaser and Smeal shall have the sole right to elect whether the vehicle or items shall be repaired or replaced, which repairs shall be performed solely by Smeal at its principal place of business or at a repair facility selected by Smeal. This warranty covers only labor for repair or replacement which is reasonably necessary, as determined by Smeal, to make the repair or replacement deemed necessary by Smeal. Any labor, time, or amounts which are in excess of those reasonably necessary or deemed to be excessive by Smeal are not covered under this warranty. All repairs must be expressly approved in writing by Smeal's warranty department. The failure to obtain approval for repairs from Smeal or to have the apparatus or item repaired or replaced at Smeal or a place designated by Smeal shall void this warranty. Any repair or replacement performed by Smeal pursuant to this warranty shall be warranted under this warranty only for the duration of the original warranty.
4. This warranty is nontransferable and terminates upon transfer of ownership or possession of the apparatus from the original purchaser to any other third party or entity.
5. Smeal's obligation to render any performance under this warranty is subject to the following conditions:
 - a) The original purchaser must provide any requested documentation to the satisfaction of Smeal. In addition, all testing results or reports must be provided to Smeal's Customer Service department within thirty (30) days of inspection or testing, otherwise this warranty shall be deemed null and void.
 - b) The claimed defect must manifest itself during the warranty period;
 - c) The original purchaser must notify Smeal in writing of the claimed defect within thirty (30) days after the claimed defect manifests itself to the original purchaser;
 - d) The claimed defective apparatus or item must be returned to Smeal or Smeal's designee immediately after notification of Smeal with transportation charges prepaid, unless otherwise directed by Smeal. Smeal shall have the unconditional right to thoroughly examine the claimed failures, including the apparatus and any part thereof, prior to conducting or approving any repair or replacement to determine whether the claimed failure is covered by this warranty. The failure of Smeal to conduct any such examination shall not be deemed to be a waiver of its right to deny warranty coverage.
6. This warranty is effective only under normal use and conditions.

In addition, this warranty does not cover:

- a) Damage or corrosion due to improper use, improper maintenance, unauthorized alterations to the structure or repairs, chemical deterioration, accidents, acts of God, or operation beyond rated capacity; or
 - b) Any liability for direct or indirect damages or delays resulting from any defects, including, but not limited to, special, incidental, or consequential damages, loss of use, or loss of profits; or
 - c) The cost of transporting original purchaser's apparatus or item to or from any repair facility.
- At the request of Smeal, any allegedly defective vehicle shall be returned to Smeal by the purchaser for examination and/or repair. The purchaser shall be responsible for the cost of transportation and for the risk of loss of or damage to the vehicle during such transportation.
- d) Non-structural cracks or breakage.
 - e) Metal deformities, including buckling or material bending, unless the same was caused by the structural failure of a structural component.
 - f) Ordinary maintenance services or adjustments.
 - g) Replacement of any ordinary maintenance items, including but not limited to, filters, screens, lubricants and light bulbs; or
 - h) Any item which is manufactured by any person or entity other than Smeal that is separately warranted in any manner by said person or entity.

7. This warranty is absolutely void if Smeal determines that the apparatus or any item has been misused, neglected, altered, overloaded, loaded to a state of excessive imbalance, or damaged. In addition this warranty is void if Smeal determines that the original purchaser has misrepresented or concealed any material fact in connection with this warranty claim or that the vehicle or item has been damaged in an accident or act of God, or that the failure is attributable to any use by the original customer which is contrary to the intended use for which the product was manufactured or designed by Smeal.

8. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE FOR A PARTICULAR PURPOSE, WARRANTIES ARISING BY OPERATION OF LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE. THIS WARRANTY IS FURTHER IN LIEU OF ALL OTHER REPRESENTATIONS TO THE ORIGINAL PURCHASER AND ANY OTHER OBLIGATIONS OR LIABILITIES WHATSOEVER, INCLUDING, BUT NOT LIMITED TO, ANY OBLIGATION OR LIABILITY FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES. SMEAL NEITHER GIVES, ASSUMES, NOR AUTHORIZES ANY OTHER PERSON TO GIVE OR ASSUME ANY OTHER WARRANTY, OBLIGATION, OR LIABILITY ON SMEAL'S BEHALF, UNLESS EXPRESSLY GIVEN OR ASSUMED IN WRITING BY SMEAL.

9. PERFORMANCE OF REPAIRS OR REPLACEMENT OF PARTS UNDER THE TERMS SET FORTH HEREIN ARE THE EXCLUSIVE REMEDIES AFFORDED TO THE BUYER AND NEITHER SMEAL NOR ANY OF ITS DISTRIBUTORS OR AGENTS SHALL BE LIABLE FOR ANY BREACH OF WARRANTY IN AN AMOUNT EXCEEDING THE PURCHASE PRICE OF THE DEFECTIVE APPARATUS, EQUIPMENT OR ITEM. THIS WARRANTY SHALL NOT BE EXTENDED, ALTERED, OR VARIED EXCEPT BY WRITTEN AGREEMENT SIGNED BY SMEAL AND THE ORIGINAL PURCHASER.

10. Smeal reserves the right to make changes in the design of and/or improvements on its products or to change specifications on material as it may deem desirable at any time without imposing any obligations on itself to make corresponding changes or improvements in or on its products theretofore manufactured. Only the Smeal apparatus and its components manufactured by Smeal are bound by this warranty. Components of other manufacturers are covered only by such warranties set forth by the component manufacturer.

Option ID: W10100A



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WE BUILD RESPECT.

Plumbing and Piping Limited Warranty Smeal Manufactured Parts

Ten (10) Years

1. Smeal Fire Apparatus Company ("Smeal") warrants to each original purchaser only that the Stainless Steel plumbing piping shall be free from corrosion (perforation) is defined as an actual hole through the piping material caused by corrosion) for a period of ten (10) years, beginning on the 30th day from the invoice date for the completed apparatus.

2. This warranty shall apply only to the piping for the discharges and intakes plumbed to the truck's main water pump and shall not include the pump or any of its accessories.

3. Smeal reserves the right to thoroughly examine the apparatus or any parts thereof which are claimed to be defective and Smeal's obligation pursuant to this warranty shall be limited to the repair or replacement of the structural component or components which Smeal determines to have structurally failed due to defective manufacture, design, or workmanship. This repair or replacement shall be without charge to the original purchaser and Smeal shall have the sole right to elect whether the vehicle or items shall be repaired or replaced, which repairs shall be performed solely by Smeal at its principal place of business or at a repair facility selected by Smeal. This warranty covers only labor for repair or replacement which is reasonably necessary, as determined by Smeal, to make the repair or replacement deemed necessary by Smeal. Any labor, time, or amounts which are in excess of those reasonably necessary or deemed to be excessive by Smeal are not covered under this warranty. All repairs must be expressly approved in writing by Smeal's warranty department. The failure to obtain approval for repairs from Smeal or to have the apparatus or item repaired or replaced at Smeal or a place designated by Smeal shall void this warranty. Any repair or replacement performed by Smeal pursuant to this warranty shall be warranted under this warranty only for the duration of the original warranty.

4. This warranty is nontransferable and terminates upon transfer of ownership or possession of the apparatus from the original purchaser to any other third party or entity.

5. Smeal's obligation to render any performance under this warranty is subject to the following conditions:

a) The original purchaser must provide any requested documentation to the satisfaction of Smeal. In addition, all testing results or reports must be provided to Smeal's Customer Service department within thirty (30) days of inspection or testing, otherwise this warranty shall be deemed null and void.

b) The claimed defect must manifest itself during the warranty period;

c) The original purchaser must notify Smeal in writing of the claimed defect within thirty (30) days after the claimed defect manifests itself to the original purchaser;

d) The claimed defective apparatus or item must be returned to Smeal or Smeal's designee immediately after notification of Smeal with transportation charges prepaid, unless otherwise directed by Smeal. Smeal shall have the unconditional right to thoroughly examine the claimed failures, including the apparatus and any part thereof, prior to conducting or approving any repair or replacement to determine whether the claimed failure is covered by this warranty. The failure of Smeal to conduct any such examination shall not be deemed to be a waiver of its right to deny warranty coverage.

6. This warranty is effective only under normal use and conditions.

In addition, this warranty does not cover:

a) Damage or corrosion due to improper use, improper maintenance, unauthorized alterations to the structure or repairs, chemical deterioration, accidents, acts of God, or operation beyond rated capacity; or

b) Any liability for direct or indirect damages or delays resulting from any defects, including, but not limited to, special, incidental, or consequential damages, loss of use, or loss of profits; or

c) The cost of transporting original purchaser's apparatus or item to or from any repair facility.

At the request of Smeal, any allegedly defective vehicle shall be returned to Smeal by the purchaser for examination and/or repair. The purchaser shall be responsible for the cost of transportation and for the risk of loss of or damage to the vehicle during such transportation.

d) Non-structural cracks or breakage.

e) Metal deformities, including buckling or material bending, unless the same was caused by the structural failure of a structural component.

f) Ordinary maintenance services or adjustments.

g) Replacement of any ordinary maintenance items, including but not limited to, filters, screens, lubricants and light bulbs; or

h) Any item which is manufactured by any person or entity other than Smeal that is separately warranted in any manner by said person or entity.

7. This warranty is absolutely void if Smeal determines that the apparatus or any item has been misused, neglected, altered, overloaded, loaded to a state of excessive imbalance, or damaged. In addition this warranty is void if Smeal determines that the original purchaser has misrepresented or concealed any material fact in connection with this warranty claim or that the vehicle or item has been damaged in an accident or act of God, or that the failure is attributable to any use by the original customer which is contrary to the intended use for which the product was manufactured or designed by Smeal.

8. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE FOR A PARTICULAR PURPOSE, WARRANTIES ARISING BY OPERATION OF LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE. THIS WARRANTY IS FURTHER IN LIEU OF ALL OTHER REPRESENTATIONS TO THE ORIGINAL PURCHASER AND ANY OTHER OBLIGATIONS OR LIABILITIES WHATSOEVER, INCLUDING, BUT NOT LIMITED TO, ANY OBLIGATION OR LIABILITY FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES. SMEAL NEITHER GIVES, ASSUMES, NOR AUTHORIZES ANY OTHER PERSON TO GIVE OR ASSUME ANY OTHER WARRANTY, OBLIGATION, OR LIABILITY ON SMEAL'S BEHALF, UNLESS EXPRESSLY GIVEN OR ASSUMED IN WRITING BY SMEAL.

9. PERFORMANCE OF REPAIRS OR REPLACEMENT OF PARTS UNDER THE TERMS SET FORTH HEREIN ARE THE EXCLUSIVE REMEDIES AFFORDED TO THE BUYER AND NEITHER SMEAL NOR ANY OF ITS DISTRIBUTORS OR AGENTS SHALL BE LIABLE FOR ANY BREACH OF WARRANTY IN AN AMOUNT EXCEEDING THE PURCHASE PRICE OF THE DEFECTIVE APPARATUS, EQUIPMENT OR ITEM. THIS WARRANTY SHALL NOT BE EXTENDED, ALTERED, OR VARIED EXCEPT BY WRITTEN AGREEMENT SIGNED BY SMEAL AND THE ORIGINAL PURCHASER.

10. Smeal reserves the right to make changes in the design of and/or improvements on its products or to change specifications on material as it may deem desirable at any time without imposing any obligations on itself to make corresponding changes or improvements in or on its products theretofore manufactured. Only the Smeal apparatus and its components manufactured by Smeal are bound by this warranty. Components of other manufacturers are covered only by such warranties set forth by the component manufacturer.

Option ID: W10300A



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WE BUILD RESPECT.

Paint and Corrosion Limited Warranty Smeal Painted Parts - Pumper

Ten (10) Years Paint / Ten (10) Years Corrosion

1. The warranty period shall begin on the 30th day from the invoice date for the completed apparatus.

2. Except as provided below, for a period of ten (10) years after delivery to the original purchaser, Smeal Fire Apparatus Co. ("Smeal") warrants to the end user that its body is free of blistering, peeling, or any other adhesion defect caused by defective manufacturing methods or paint material selection for exterior surfaces of the body of this vehicle. This limited warranty shall apply only if the vehicle is properly maintained and used in service which is normal to the particular vehicle. Normal service means service which does not subject the vehicle to stresses or impacts greater than normally result from the careful use of the vehicle. If the buyer discovers a defect or nonconformity it must notify Smeal in writing within thirty (30) days after the date of the discovery. This limited warranty is not transferable by the first user, and is applicable to the vehicle in the following percentage costs of warranty repair, if any:

Topcoat Durability & Appearance: Gloss, Color Retention & Cracking	Integrity of Coating System: Adhesion, Blistering/Bubbling	Corrosion: Dissimilar Metal and Crevice
0-72 months 100%	0-36 months 100%	0-36 months 100%
73-96 months 50%	37-84 months 50%	37-48 months 50%
97-120 months 25%	85-120 months 25%	49-72 months 25%
		73-120 months 10%

3. This limited warranty applies only to the body exterior paint. Paint on the vehicle's undercarriage, and body interior (line-x coating included), or aerial structure related paint, if applicable, is warranted only under the Smeal Basic Two Year Limited Warranty.

4. In addition to the foregoing, and subject to all terms and conditions of this limited warranty, except cost allocations, Smeal warrants its body exterior paint for a period of ten (10) years against corrosion perforation.

5. Smeal makes no warranty whatsoever as to:

(a) integral parts, components, attachments or trade accessories not manufactured by Smeal, but instead, the applicable warranties, if any, of the respective manufacturers thereof shall apply;

(b) any vehicle, chassis, or component, part, attachment or accessory damaged by misuse, neglect or accident;

(c) any vehicle chassis or component, part, attachment or accessory shall have been repaired, altered or assembled in any way by others than Smeal which, in the sole judgment of Smeal, affects the performance, stability or purpose for which it was manufactured; and

(d) products or parts which are not defective but which may wear out and have to be replaced during the warranty period. Smeal assumes no responsibility for the assembly of its parts or sub-assembly into finished products unless the assembly is performed by Smeal.

Warranty Inclusions:

- Peeling or delamination of the topcoat and/or other layers of paint.
- Cracking or checking.
- Excessive loss of gloss caused by cracking, checking or hazing.

Warranty Exclusions:

- Paint deterioration caused by blisters or other film degradation due to rust or corrosion originating from the substrate
- Hazing, chalking or loss of gloss caused by improper care, abrasive polishes, cleaning agents, heavy-duty pressure washing, or aggressive mechanical wash systems.
- Paint deterioration caused by abuse, scratches, chips, gloss reduction, accidents, acid rain, chemical fallout or acts of nature.
- Claims presented without proper Warranty documentation.

In addition, this warranty does not cover:

The cost of transporting original purchaser's apparatus or item to or from any repair facility.

At the request of Smeal, any allegedly defective vehicle shall be returned to Smeal by the purchaser for examination and/or repair. The purchaser shall be responsible for the cost of transportation, and for the risk of loss of or damage to the vehicle during such transportation.

6. DISCLAIMERS OF WARRANTIES:

THE WARRANTIES SET FORTH IN PARAGRAPH 1 ARE THE EXCLUSIVE WARRANTIES GIVEN BY SMEAL. SMEAL HEREBY DISCLAIMS AND EXCLUDES ALL OTHER WARRANTIES WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING ANY WARRANTY OF MERCHANTABILITY, ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING OR USAGE OF TRADE.

7. BUYER'S REMEDIES:

If the product fails to conform to the warranties set forth in paragraph 1 and such nonconformity is not due to misuse or improper maintenance, buyer shall notify Smeal as provided in paragraph 1, and shall make the product available for inspection by Smeal or its designated agent. At the request of Smeal, any defective vehicle shall be returned to Smeal for examination and/or repair. The cost of such transportation will be the responsibility of the buyer. Within a reasonable time, Smeal shall repair or replace any nonconforming or defective paint component. THIS REMEDY SHALL BE EXCLUSIVE AND SOLE REMEDY FOR ANY BREACH OF WARRANTY.

8. EXCLUSION OF CONSEQUENTIAL AND INCIDENTAL DAMAGES:

IN NO EVENT SHALL SMEAL BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM NONDELIVERY OR FROM THE USE, MISUSE OR INABILITY TO USE THE PRODUCT OF FROM DEFECTS IN THE PRODUCT OR FROM THE NEGLIGENCE OF SMEAL OR FROM TORT.

This exclusion applies regardless of whether such damages are sought for breach of warranty, breach of contract, negligence or strict liability in tort or under any other legal theory.

Option ID: W10201



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WE BUILD RESPECT.

Galvanized Body Sub-Structure (GS-36) Integrity Limited Warranty: Pumper/Rescue Apparatus Models- Smeal Manufactured Parts

Twenty (20) Years

1. Smeal Fire Apparatus Company ("Smeal") warrants that the galvanized body sub-structure (GS-36); which is manufactured by Smeal, shall be free of structural or design failure or workmanship for a period of twenty (20) years or 100,000 miles, beginning on the 30th day from the invoice date for the completed apparatus.

2. This warranty shall only cover structural components identified in the Smeal specifications of GS-36 (body and tank sub-structure).

3. Smeal reserves the right to thoroughly examine the apparatus or any parts thereof which are claimed to be defective and Smeal's obligation pursuant to this warranty shall be limited to the repair or replacement of the structural component or components which Smeal determines to have structurally failed due to defective manufacture, design, or workmanship. This repair or replacement shall be without charge to the original purchaser and Smeal shall have the sole right to elect whether the vehicle or items shall be repaired or replaced, which repairs shall be performed solely by Smeal at its principal place of business or at a repair facility selected by Smeal. This warranty covers only labor for repair or replacement which is reasonably necessary, as determined by Smeal, to make the repair or replacement deemed necessary by Smeal. Any labor, time, or amounts which are in excess of those reasonably necessary or deemed to be excessive by Smeal are not covered under this warranty. All repairs must be expressly approved in writing by Smeal's warranty department. The failure to obtain approval for repairs from Smeal or to have the apparatus or item repaired or replaced at Smeal or a place designated by Smeal shall void this warranty. Any repair or replacement performed by Smeal pursuant to this warranty shall be warranted under this warranty only for the duration of the original warranty.

4. This warranty is nontransferable and terminates upon transfer of ownership or possession of the apparatus from the original purchaser to any other third party or entity.

5. Smeal's obligation to render any performance under this warranty is subject to the following conditions:

a) The original purchaser must provide any requested documentation to the satisfaction of Smeal. In addition, all testing results or reports must be provided to Smeal's Customer Service department within thirty (30) days of inspection or testing, otherwise this warranty shall be deemed null and void.

b) The claimed defect must manifest itself during the warranty period;

c) The original purchaser must notify Smeal in writing of the claimed defect within thirty (30) days after the claimed defect manifests itself to the original purchaser;

d) The claimed defective apparatus or item must be returned to Smeal or Smeal's designee immediately after notification of Smeal with transportation charges prepaid, unless otherwise directed by Smeal. Smeal shall have the unconditional right to thoroughly examine the claimed failures, including the apparatus and any part thereof, prior to conducting or approving any repair or replacement to determine whether the claimed failure is covered by this warranty. The failure of Smeal to conduct any such examination shall not be deemed to be a waiver of its right to deny warranty coverage.

6. This warranty is effective only under normal use and conditions.

In addition, this warranty does not cover:

a) Damage or corrosion due to improper use, improper maintenance, unauthorized alterations to the structure or repairs, chemical deterioration, accidents, acts of God, or operation beyond rated capacity; or

b) Any liability for direct or indirect damages or delays resulting from any defects, including, but not limited to, special, incidental, or consequential damages, loss of use, or loss of profits; or

c) The cost of transporting original purchaser's apparatus or item to or from any repair facility.

At the request of Smeal, any allegedly defective vehicle shall be returned to Smeal by the purchaser for examination and/or repair. The purchaser shall be responsible for the cost of transportation and for the risk of loss of or damage to the vehicle during such transportation.

d) Non-structural cracks or breakage.

e) Metal deformities, including buckling or material bending, unless the same was caused by the structural failure of a structural component.

f) Ordinary maintenance services or adjustments.

g) Replacement of any ordinary maintenance items, including but not limited to, filters, screens, lubricants and light bulbs; or

h) Any item which is manufactured by any person or entity other than Smeal that is separately warranted in any manner by said person or entity.

7. This warranty is absolutely void if Smeal determines that the apparatus or any item has been misused, neglected, altered, overloaded, loaded to a state of excessive imbalance, or damaged. In addition this warranty is void if Smeal determines that the original purchaser has misrepresented or concealed any material fact in connection with this warranty claim or that the vehicle or item has been damaged in an accident or act of God, or that the failure is attributable to any use by the original customer which is contrary to the intended use for which the product was manufactured or designed by Smeal.

8. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE FOR A PARTICULAR PURPOSE, WARRANTIES ARISING BY OPERATION OF LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE. THIS WARRANTY IS FURTHER IN LIEU OF ALL OTHER REPRESENTATIONS TO THE ORIGINAL PURCHASER AND ANY OTHER OBLIGATIONS OR LIABILITIES WHATSOEVER, INCLUDING, BUT NOT LIMITED TO, ANY OBLIGATION OR LIABILITY FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES. SMEAL NEITHER GIVES, ASSUMES, NOR AUTHORIZES ANY OTHER PERSON TO GIVE OR ASSUME ANY OTHER WARRANTY, OBLIGATION, OR LIABILITY ON SMEAL'S BEHALF, UNLESS EXPRESSLY GIVEN OR ASSUMED IN WRITING BY SMEAL.

9. PERFORMANCE OF REPAIRS OR REPLACEMENT OF PARTS UNDER THE TERMS SET FORTH HEREIN ARE THE EXCLUSIVE REMEDIES AFFORDED TO THE BUYER AND NEITHER SMEAL NOR ANY OF ITS DISTRIBUTORS OR AGENTS SHALL BE LIABLE FOR ANY BREACH OF WARRANTY IN AN AMOUNT EXCEEDING THE PURCHASE PRICE OF THE DEFECTIVE APPARATUS, EQUIPMENT OR ITEM. THIS WARRANTY SHALL NOT BE EXTENDED, ALTERED, OR VARIED EXCEPT BY WRITTEN AGREEMENT SIGNED BY SMEAL AND THE ORIGINAL PURCHASER.

10. Smeal reserves the right to make changes in the design of and/or improvements on its products or to change specifications on material as it may deem desirable at any time without imposing any obligations on itself to make corresponding changes or improvements in or on its products theretofore manufactured. Only the Smeal apparatus and its components manufactured by Smeal are bound by this warranty. Components of other manufacturers are covered only by such warranties set forth by the component manufacturer.

Option ID: W20100A



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Fire Truck Chassis & Cab 2-Yr/36,000 Mile Limited Warranty

What This Limited Warranty Covers

This limited warranty covers repair or replacement, at the sole option of Spartan Motors USA, Inc. (hereinafter Spartan), of any part of your new Spartan chassis (hereinafter Covered Parts) in which a nonconformity in materials or workmanship appears during normal use, maintenance or service within the limited warranty period, subject to the limitations and exclusions described below in "What This Limited Warranty Does Not Cover". REPAIR OR REPLACEMENT OF COVERED PARTS BY A SPARTAN AUTHORIZED SERVICE CENTER IS THE EXCLUSIVE REMEDY UNDER THIS LIMITED WARRANTY. SPARTAN WILL NOT REPLACE OR REPURCHASE THE FIRE TRUCK. The repair or replacement of a Covered Part does not extend the life of the limited warranty except where state or provincial law otherwise provides for an extension during the time that the Covered Part is being repaired or replaced under this limited warranty.

Covered Parts are limited to chassis systems and components such as the driveline, cooling system, hydraulic system, suspension, air system, and climate control system. The frame, cab structure, paint, and aerial equipment (when applicable) are each covered by specific warranty terms as defined in their individual warranties, included in this booklet. This limited warranty excludes certain components (e.g. the engine, transmission, tires, and batteries) and any parts or components added to the chassis by another party. In addition to this Spartan limited warranty, original component manufacturers may provide their own separate warranties. Purchasers should check each original component manufacturer's warranty regarding its coverage. **This limited warranty is valid only in the United States and Canada.**

Coverage under this warranty is not subject to proration or deductibles.

How Long the Limited Warranty Lasts

The original limited warranty is in effect for a period of **24 months or 36,000 miles** (or 58,065 kilometers), whichever occurs first, from the date of delivery of the completed new fire truck to the first end user. Certain engine emission components, installed by Spartan and not covered under the engine manufacturer warranty, have a warranty term of 5 years or 100,000 miles, whichever comes first. This limited warranty is not valid if the odometer is disconnected, or its reading has been altered, or actual mileage cannot be determined.

Who is Covered

This limited warranty covers the OWNER of a vehicle equipped with a **2017** model year new Spartan chassis, except for the Metro Star-RT model line which is covered by its own specific warranties. The limited warranty may be transferred to subsequent owners during the warranty period by submitting to Spartan a new Chassis Limited Warranty Registration form (see "How to Obtain the Limited Warranty" below). **THIS LIMITED WARRANTY IS NULL AND VOID IF THE VEHICLE HAS BEEN LEASED OR RENTED FOR COMPENSATION TO ANOTHER INDIVIDUAL OR ENTITY. THIS LIMITED WARRANTY DOES NOT COVER A CHASSIS THAT HAS BEEN SOLD BY AN OWNER OTHER THAN SPARTAN BEFORE IT BECOMES A COMPONENT IN A COMPLETE VEHICLE.**

What This Limited Warranty Does Not Cover

The exclusive remedy under this limited warranty or under any implied warranty that arises under state or provincial law is repair or replacement of any Covered Part in which a nonconformity in materials or workmanship appears during normal use, maintenance or service within the warranty period, subject to the following exclusions:

LIMITATION ON IMPLIED WARRANTIES: *This limited warranty is in lieu of and in exclusion of any other warranties, express or implied, including any warranty of merchantability or fitness for a particular purpose. Any implied warranties that arise under applicable state or provincial law notwithstanding the foregoing, including any implied warranty of merchantability or fitness for a particular purpose, are limited in duration to the term of this limited warranty and are limited in scope of coverage to those portions of the chassis covered by this limited warranty.*

LIMITATION ON DAMAGES: *Spartan shall not be liable for incidental, consequential, direct, indirect or other damages (such as, but not limited to, lost wages, loss of use, diminution in value, lost profits, lost opportunities, alternative transportation, inconvenience, cost of lodging, or lost vehicle rental expenses) that result from breach of the written warranty or any implied warranty.*

ITEMS NOT COVERED BY THIS LIMITED WARRANTY INCLUDE:

- The engine and transmission; however, the engine and transmission are covered by **5-year** warranties issued to you from the engine and transmission manufacturers. We will gladly help you arrange for service under those separate warranties. (See "How to Get Service".)

Spartan FT0017R25September15

Spartan Motors USA, Inc.

- Normal maintenance such as lubrication, batteries, tires, filter and oil replacement, belts and hoses, brake lining and adjustment, door check strap adjustment, and vehicle alignments; normal wear parts including, but not limited to, electrical accessories, voltage regulator, flashers, windshield wipers, etc.
- Damage caused by improper maintenance or use including, but not limited to, failure to follow the required or recommended maintenance schedule, failure to maintain operating parameters (e.g. tire pressure, fluid and lubricant levels, chassis ride height and alignment) and failure to follow operating instructions. Maintenance schedules and operating instructions are found in the Spartan Motors Operation & Maintenance Manual provided with your chassis.
- Additions or accessories not originally installed by Spartan, including ancillary equipment used in firefighting, and any problems resulting from such additions or accessories.
- Installation of any "aftermarket" devices or the modification of any existing system or component originally installed by Spartan without Spartan's prior express written approval and any problems resulting from such installation or modification.
- Damage caused by misuse, carelessness, abuse or neglect (e.g. overloading, driving over curbs).
- Damage that arises outside of normal use.
- Damage caused by collision, fire, theft, vandalism, weather, freezing, flooding, acts of God, or other casualties.
- Damage or nonconformities with respect to Covered Parts in a vehicle that is leased or rented to another party for compensation.
- Chassis cab, frame, and structure if the frame is altered by welding, cutting or splicing, or improper drilling of rail flanges without Spartan's prior written approval.
- Cab and chassis systems and components damaged as a result of corrosion, including, but not limited to, exposure to salt, acidic materials, or other damaging chemicals.
- Covered Parts that have been sold by an owner other than Spartan before the Covered Parts become a complete vehicle.
- Vehicles with 7,501 or more miles on the odometer or that are 24 months or more past the VDM on the date of delivery to the first end user are not considered "new" for purposes of this cab and chassis limited warranty, and may be covered exclusively by one of Spartan's demo/used fire truck chassis and cab limited warranty options. Check the odometer and VDM to determine whether the vehicle could be a demo/used vehicle by this definition and may be subject to a demo/used fire truck chassis and cab limited warranty instead of this Fire Truck Chassis and Cab 2-Year/36,000 Mile Limited Warranty. If you have questions or wish to inquire as to whether the vehicle is considered a demo/used model, contact Spartan at (800) 543-5008.

Third Party Representations

Spartan does not authorize any person to create for Spartan any other obligations or liability in connection with its chassis, and Spartan is not responsible for any representation, promise or warranty made by a dealer, component or vehicle manufacturer, or other person beyond what is expressly stated in this limited warranty.

How to Obtain the Limited Warranty

The original retail purchaser is responsible for submitting, or having the vehicle dealer submit, a Chassis Limited Warranty Registration form to Spartan within 30 days of the date of delivery. This form is located on the Spartan Motors CD or USB flash drive supplied with your vehicle, or may be completed on-line at www.spartanchassis.com/cps/warranty/online_registration.asp. THIS LIMITED WARRANTY IS NOT VALID IF CHASSIS LIMITED WARRANTY REGISTRATION FORM IS NOT SENT TO SPARTAN WITHIN 30 DAYS AFTER THE DATE OF DELIVERY TO THE FIRST END USER OR ANY SUBSEQUENT OWNER.

How to Get Service

To obtain warranty service for your Spartan chassis, call toll free Monday through Friday from 8:00 a.m. to 5:00 p.m. (Eastern Time) at 1-800-543-5008. Our customer service technicians can help answer questions regarding our products and services, provide information about warranty coverage and maintenance issues, help you arrange for service under other manufacturer warranties, and locate Spartan authorized service centers in your area. To find a current list of Spartan authorized service centers on-line, go to www.spartanchassis.com. ALL LIMITED WARRANTY WORK MUST BE AUTHORIZED BY SPARTAN BEFORE REPAIRS ARE MADE. When you call for service, please have the following information available so that we may expedite your service:

- Your Spartan VIN (Vehicle Identification Number)
- First end user's date of purchase
- The current actual mileage

NO WARRANTY CLAIM WILL BE PROCESSED OR PAID WITHOUT PROOF OF ACTUAL MILEAGE AND FIRST END USER'S DATE OF PURCHASE.

Arbitration Provision

Any claim or controversy arising out of or relating to this limited warranty, or breach thereof, shall be settled by arbitration administered by the American Arbitration Association in the State of Michigan in accordance with the Commercial Arbitration Rules of the American Arbitration Association. The determination of the arbitrator(s) shall be in writing and shall include an explanation of the basis for the determination. The determination of the arbitrator(s) shall be final and binding and judgment upon such determination may be entered in any court having jurisdiction.

How State or Provincial Law Applies

This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state or province to province. In addition, some states and/or provinces will not enforce one or more of the limitations in this document, so one or more of the limitations may not apply to you.



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Fire Truck Cab Structure Limited Warranty

What This Limited Warranty Covers

This warranty covers repair or replacement, at the sole option of Spartan Motors USA, Inc. (hereinafter Spartan), of any part of your Spartan cab in which a nonconformity in materials or workmanship appears under normal use, where maintenance has been performed as stated in the Emergency Response Chassis Operation & Maintenance Manual, or during servicing of the vehicle operated in the United States and/or Canada within the limited warranty period. The cab is defined as a modular structure, excluding all hardware, seats, mechanical items, electrical items, and paint finishes. REPAIR OR REPLACEMENT OF CAB COMPONENTS IS THE EXCLUSIVE REMEDY UNDER THIS LIMITED WARRANTY.

Coverage under this warranty is not subject to proration or deductibles.

How Long the Limited Warranty Lasts

The cab original limited warranty is in effect for a period of **10 years or 100,000 miles** (or 161,290 kilometers), whichever occurs first, from the date of delivery of the completed fire truck to the first end user, regardless of subsequent ownership. If the date of delivery to the end user is more than 24 months beyond the chassis VDM and/or the truck has been driven 7,501 or more miles, the cab structure warranty will be deemed to have started on the chassis VDM (Vehicle Date of Manufacture.) This limited warranty is not valid if the odometer is disconnected, or its reading has been altered, or actual mileage cannot be determined.

Who is covered

This limited warranty covers the OWNER of a vehicle equipped with a **2017** model year Spartan chassis, except for the Metro Star-RT model line which is covered by its own specific warranties. THIS LIMITED WARRANTY DOES NOT COVER A CHASSIS THAT HAS BEEN SOLD BY AN OWNER OTHER THAN SPARTAN BEFORE IT BECOMES A COMPONENT IN A COMPLETE VEHICLE.

How to Obtain the Limited Warranty

The original retail purchaser is responsible for submitting, or having the vehicle dealer submit, a Chassis Limited Warranty Registration form to Spartan within 30 days of the date of delivery. This form is located on the Spartan Motors CD or USB flash drive supplied with your vehicle, or may be completed on-line at www.spartanchassis.com/cps/warranty/online_registration.asp. THIS LIMITED WARRANTY IS NOT VALID IF CHASSIS LIMITED WARRANTY REGISTRATION FORM IS NOT SENT TO SPARTAN WITHIN 30 DAYS AFTER THE DATE OF DELIVERY TO THE FIRST END USER OR ANY SUBSEQUENT OWNER.

How to Get Service

See chassis and cab general limited warranty

What This Warranty DOES NOT Cover

This warranty covers only repair or replacement of any part of a Spartan cab structure in which a nonconformity in materials or workmanship appears. Spartan will not replace the fire truck or repurchase the fire truck from you. **Some examples of items NOT COVERED by this limited warranty include:**

- Normal maintenance.
- Damage caused by, but not limited to, failure to follow the required or recommended maintenance schedule, failure to ensure operating parameters are maintained, and failure to follow operating instructions. Maintenance schedules and operating instructions are found in the Spartan Motors Operation & Maintenance Manual provided with your chassis.
- Additions or accessories not originally installed by Spartan, including ancillary equipment used in firefighting, and any problems resulting from such additions or accessories.
- Installation of any "aftermarket" devices or modification of the cab by welding, cutting or splicing without Spartan's prior express written approval and any problems resulting from such installation or modification.
- Damage caused by, but not limited to, abuse or neglect (e.g. overloading, driving over curbs, or exposure to corrosive or flooded environments).
- Damage caused by, but not limited to, collision, fire, theft, vandalism, or acts of God.
- Incidental expenses such as, but not limited to, loss of use, inconvenience, loss of time, vehicle rental, lodging or travel costs, etc.
- Damage to a Spartan vehicle that is leased or rented to a second party.
- Cab components damaged as a result of corrosion, including, but not limited to exposure to salt, acidic material, or other damaging chemicals.

ALL LIMITED WARRANTY WORK MUST BE AUTHORIZED BY SPARTAN BEFORE REPAIRS ARE MADE.

THIS WARRANTY IS FURTHER LIMITED by the terms and conditions stated in the Fire Truck Chassis and Cab Limited Warranty in sections titled "Limitation on Damages", "Limitation on Implied Warranties", and "Arbitration Provision". Please review these provisions carefully as they will further limit warranty.

Spartan FTCab0017 R25September15



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Fire Truck Frame Limited Warranty

What This Limited Warranty Covers

This warranty covers repair or replacement, at the sole option of Spartan Motors USA, Inc. (hereinafter Spartan), of any part of your Spartan frame and frame members in which a nonconformity in materials or workmanship appears under normal use, where maintenance has been performed as stated in the Emergency Response Chassis Operation & Maintenance Manual, or during servicing of the vehicle operated in the United States and/or Canada within the limited warranty period. Required frame maintenance includes annual inspections and the proper repair of any paint damage and/or surface corrosion. The frame includes only the frame rails and cross members (ladder assembly), and does not include support brackets and hardware, such as the fuel tank mounting and cab mounting. REPAIR OR REPLACEMENT OF FRAME COMPONENTS IS THE EXCLUSIVE REMEDY UNDER THIS LIMITED WARRANTY.

Coverage under this warranty is not subject to proration or deductibles.

How Long the Limited Warranty Lasts

The frame limited warranty is in effect for the **lifetime** of the vehicle. For purposes of the lifetime frame warranty, a life time is **50 years for frame rails and 20 years for cross members** from the date of delivery of the completed fire truck to the first end user, regardless of subsequent ownership. If the date of delivery to the first end user is more than 24 months beyond the chassis VDM (Vehicle Date of Manufacture) and/or the truck has been driven 7,501 or more miles, the lifetime frame warranty will be deemed to have started on the chassis VDM. This limited warranty is not valid if the odometer is disconnected, or its reading has been altered, or actual mileage cannot be determined.

Who is covered

This limited warranty covers the OWNER of a vehicle equipped with a **2017** model year Spartan chassis, except for the Metro Star-RT model line which is covered by its own specific warranties. **THIS LIMITED WARRANTY DOES NOT COVER A CHASSIS THAT HAS BEEN SOLD BY AN OWNER OTHER THAN SPARTAN BEFORE IT BECOMES A COMPONENT IN A COMPLETE VEHICLE.**

How to Obtain the Limited Warranty

The original retail purchaser is responsible for submitting, or having the vehicle dealer submit, a Chassis Limited Warranty Registration form to Spartan within 30 days of the date of delivery. This form is located on the Spartan Motors CD or USB flash drive supplied with your vehicle, or may be completed on-line at www.spartanchassis.com/cps/warranty/online_registration.asp. **THIS LIMITED WARRANTY IS NOT VALID IF CHASSIS LIMITED WARRANTY REGISTRATION FORM IS NOT SENT TO SPARTAN WITHIN 30 DAYS AFTER THE DATE OF DELIVERY TO THE FIRST END USER OR ANY SUBSEQUENT OWNER.**

How to Get Service

See chassis and cab general limited warranty

What This Warranty DOES NOT Cover

This warranty covers only repair or replacement of any part of a Spartan frame in which a nonconformity in materials or workmanship appears. Spartan will not replace the fire truck or repurchase the fire truck from you. **Some examples of items NOT COVERED by this limited warranty include:**

- Damage caused by, but not limited to, failure to follow the required or recommended maintenance schedule, failure to ensure operating parameters are maintained, and failure to follow operating instructions. Maintenance schedules and operating instructions are found in the Spartan Motors Operation & Maintenance Manual provided with your chassis.
- Additions or accessories not originally installed by Spartan, including ancillary equipment used in firefighting, and any problems resulting from such additions or accessories.
- Installation of any "aftermarket" devices or modification of the frame by welding, cutting or splicing, or improper drilling of rail flanges without Spartan's prior express written approval and any problems resulting from such installation or modification.
- Damage caused by, but not limited to, abuse or neglect (e.g. overloading, driving over curbs, or corrosive or flooded environments).
- Damage caused by, but not limited to, collision, fire, theft, vandalism, or acts of God.
- Incidental expenses such as, but not limited to, loss of use, inconvenience, loss of time, vehicle rental, lodging or travel costs, etc.
- Damage to a Spartan vehicle that is leased or rented to a second party.
- Chassis frame components damaged as a result of corrosion, including but not limited to exposure to salt, acidic material, or other damaging chemicals.

ALL LIMITED WARRANTY WORK MUST BE AUTHORIZED BY SPARTAN BEFORE REPAIRS ARE MADE.

THIS WARRANTY IS FURTHER LIMITED by the terms and conditions stated in the Fire Truck Chassis and Cab Limited Warranty in sections titled "Limitation on Damages", "Limitation on Implied Warranties", and "Arbitration Provision". Please review these provisions carefully as they will further limit warranty.

Spartan FTFrame0017 R25September15



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Fire Truck PPG Paint Limited Warranty

What This Limited Warranty Covers

This warranty covers repair or replacement, at the sole option of Spartan Motors USA, Inc. (hereinafter Spartan), of the PPG paint on your Spartan fire truck if a nonconformity in materials or workmanship appears under normal use, where maintenance has been performed as stated in the Emergency Response Chassis Operation & Maintenance Manual, or during servicing of the vehicle operated in the United States and/or Canada within the limited warranty period. REPAIR OR REPLACEMENT OF PAINT IS THE EXCLUSIVE REMEDY UNDER THIS LIMITED WARRANTY.

Coverage under this warranty is not subject to proration or deductibles.

How Long the Limited Warranty Lasts

The paint limited warranty is in effect for a period of **10 years or 100,000 miles** (or 161,290 kilometers) from the date of delivery of the completed fire truck to the first end user, whichever occurs first, regardless of subsequent ownership. If the date of delivery to the end user is more than 24 months beyond the chassis VDM and/or the truck has been driven 7,501 or more miles, this paint warranty will be deemed to have started on the chassis VDM (Vehicle Date of Manufacture.) This limited warranty is not valid if the odometer is disconnected, or its reading has been altered, or actual mileage cannot be determined.

Who is covered

This limited warranty covers the OWNER of a vehicle equipped with a **2017** model year Spartan chassis, except for the Metro Star-RT model line which is covered by its own specific warranties. THIS LIMITED WARRANTY DOES NOT COVER A CHASSIS THAT HAS BEEN SOLD BY AN OWNER OTHER THAN SPARTAN BEFORE IT BECOMES A COMPONENT IN A COMPLETE VEHICLE.

How to Obtain the Limited Warranty

The original retail purchaser is responsible for submitting, or having the vehicle dealer submit, a Chassis Limited Warranty Registration form to Spartan within 30 days of the date of delivery. This form is located on the Spartan Motors CD or USB flash drive supplied with your vehicle, or may be completed on-line at www.spartanchassis.com/cps/warranty/online_registration.asp. THIS LIMITED WARRANTY IS NOT VALID IF CHASSIS LIMITED WARRANTY REGISTRATION FORM IS NOT SENT TO SPARTAN WITHIN 30 DAYS AFTER THE DATE OF DELIVERY TO THE FIRST END USER OR ANY SUBSEQUENT OWNER.

How to Get Service

See chassis and cab general limited warranty

What This Warranty DOES NOT Cover

This warranty covers only repair or replacement of paint in which a nonconformity in materials or workmanship appears. Spartan will not replace the fire truck or repurchase the fire truck from you. **Some examples of items NOT COVERED by this limited warranty include:**

- Any paint not applied by Spartan.
- Damage caused by fire, misuse, negligence, or accident.
- Damage from exposure to corrosive agents.
- Damage caused by theft, vandalism, riot or explosion.
- Damage caused by lightning, earthquake, windstorm, hail, flood, or use in an acidic environment.
- Any repairs, modifications, or alterations made without Spartan's authorization.
- Damage resulting from compromising the painted surface in any way, such as drilling holes.
- Damage from lack of maintenance and cleaning.
- Gold leaf, decals, or striping except that which is affected by repair.
- Loss of time, loss of use of the product, inconvenience, lodging, food or other consequential or incidental loss that may result from a failure.
- UV Paint fade.

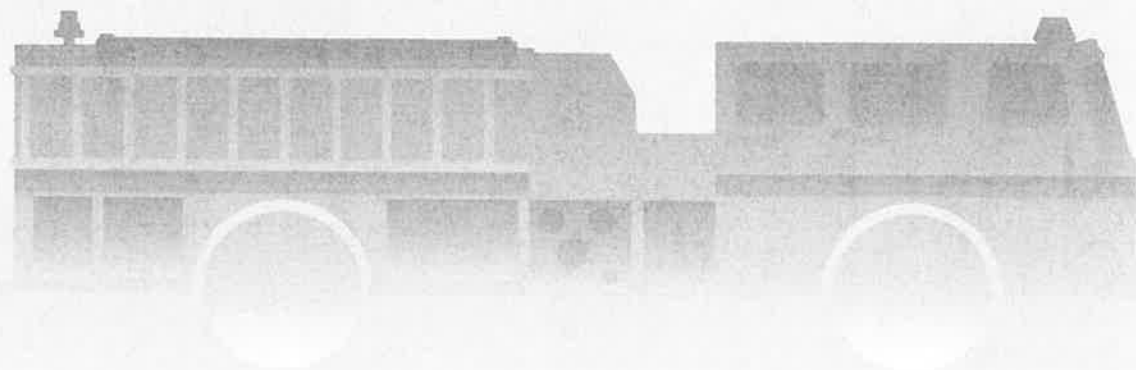
ALL LIMITED WARRANTY WORK MUST BE AUTHORIZED BY SPARTAN BEFORE REPAIRS ARE MADE.

THIS WARRANTY IS FURTHER LIMITED by the terms and conditions stated in the Fire Truck Chassis and Cab Limited Warranty in sections titled "Limitation on Damages", "Limitation on Implied Warranties", and "Arbitration Provision". Please review these provisions carefully as they will further limit warranty.



Cummins Warranty

Worldwide
Fire Apparatus/Crash Trucks



Coverage

Products Warranted

This Warranty applies to new diesel Engines sold by Cummins and delivered to the first user on or after April 1, 2007, that are used in fire apparatus truck and crash truck* applications Worldwide.

Base Engine Warranty

The Base Engine Warranty covers any failures of the Engine which result, under normal use and service, from a defect in material or factory workmanship (Warrantable Failure). This Coverage begins with the sale of the Engine by Cummins and ends five years or 100,000 miles (160,935 kilometers), whichever occurs first, after the date of delivery of the Engine to the first user.

Engine aftertreatment components included in the Cummins Critical Parts List (CPL) and marked with a Cummins part number are covered under Base Engine Warranty.

Additional Coverage is outlined in the Emission Warranty section.

These Warranties are made to all Owners in the chain of distribution and Coverage continues to all subsequent Owners until the end of the periods of Coverage.

Cummins Responsibilities

Cummins will pay for all parts and labor needed to repair the damage to the Engine resulting from a Warrantable Failure.

Cummins will pay for the lubricating oil, antifreeze, filter elements, belts, hoses and other maintenance items that are not reusable due to the Warrantable Failure.

Cummins will pay for reasonable labor costs for Engine removal and reinstallation when necessary to repair a Warrantable Failure.

Cummins will pay reasonable costs for towing a vehicle disabled by a Warrantable Failure to the nearest authorized repair location. In lieu of the towing expense, Cummins will pay reasonable costs for mechanics to travel to and from the location of the vehicle, including meals, mileage and lodging when the repair is performed at the site of the failure.

Owner Responsibilities

Owner is responsible for the operation and maintenance of the Engine as specified in Cummins Operation and Maintenance Manuals. Owner is also responsible for providing proof that all recommended maintenance has been performed.

Before the expiration of the applicable Warranty, Owner must notify a Cummins distributor, authorized dealer or other repair location approved by Cummins of any Warrantable Failure and make the Engine available for repair by such facility. Except for Engines disabled by a Warrantable Failure, Owner must also deliver the Engine to the repair facility.

Service locations are listed on the Cummins Worldwide Service Locator at cummins.com.

Owner is responsible for the cost of lubricating oil, antifreeze, filter elements and other maintenance items provided during Warranty repairs unless such items are not reusable due to the Warrantable Failure.

Owner is responsible for communication expenses, meals, lodging and similar costs incurred as a result of a Warrantable Failure.

Owner is responsible for non-Engine repairs and for "downtime" expenses, cargo damage, fines, all applicable taxes, all business costs and other losses resulting from a Warrantable Failure.

Owner is responsible for a \$100 (U.S. Dollars) deductible per each service visit under this plan in the 3rd, 4th and 5th years of Base Engine Warranty. The deductible will not be charged during the first 2 years of the Base Engine Warranty.

Limitations

Cummins is not responsible for failures or damage resulting from what Cummins determines to be abuse or neglect, including, but not limited to: operation without adequate coolants or lubricants; overfueling; overspeeding; lack of maintenance of lubricating, cooling or intake systems; improper storage, starting, warm-up, run-in or shutdown practices; unauthorized modifications of the Engine.

Any unauthorized modifications to the aftertreatment could negatively effect emissions certification and void Warranty.

Cummins is also not responsible for failures caused by incorrect oil, fuel or diesel exhaust fluid or by water, dirt or other contaminants in the fuel, oil or diesel



exhaust fluid.

This Warranty does not apply to accessories supplied by Cummins which bear the name of another company. Such non-warranted accessories include, but are not limited to: alternators, starters, fans, air conditioning compressors, clutches, filters, transmissions, torque converters, vacuum pumps, power steering pumps, fan drives and air compressors. Cummins branded alternators and starters are covered for the first two years from the date of delivery of the Engine to the first user, or the expiration of the Base Engine Warranty, whichever occurs first.

Failures resulting in excessive oil consumption are not covered beyond the duration of the Coverage or 100,000 miles (160,935 kilometers) or 7,000 hours from the date of delivery of the Engine to the first user, whichever of the three occurs first. Before a claim for excessive oil consumption will be considered, Owner must submit adequate documentation to show that consumption exceeds Cummins published standards.

Failures of belts and hoses supplied by Cummins are not covered beyond the first year from the date of delivery of the Engine to the first user or the duration of the Warranty, whichever occurs first.

Parts used to repair a Warrantable Failure may be new Cummins parts, Cummins approved rebuilt parts or repaired parts. Cummins is not responsible for failures resulting from the use of parts not approved by Cummins.

A new Cummins or Cummins approved rebuilt part used to repair a Warrantable Failure assumes the identity of the part it replaced and is entitled to the remaining Coverage hereunder.

Cummins Inc. reserves the right to interrogate Electronic Control Module (ECM) data for purposes of failure analysis.

CUMMINS DOES NOT COVER WEAR OR WEAROUT OF COVERED PARTS.

CUMMINS IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

THIS WARRANTY AND THE EMISSION WARRANTY SET FORTH HEREINAFTER ARE THE SOLE WARRANTIES MADE BY CUMMINS IN REGARD TO THESE ENGINES. CUMMINS MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, OR OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Emission Warranty

Products Warranted

This Emission Warranty applies to new Engines marketed by Cummins that are used in the United States** in vehicles designed for transporting persons or property on a street or highway. This Warranty applies to Engines delivered to the first user on or after September 1, 1992.

Coverage

Cummins warrants to the first user and each subsequent purchaser that the Engine is designed, built and equipped so as to conform at the time of sale by Cummins with all U.S. federal emission regulations applicable at the time of manufacture and that it is free from defects in material or factory workmanship which would cause it not to meet these regulations within the longer of the following periods: (A) Five years or 100,000 miles (160,935 kilometers) of operation, whichever occurs first, as measured from the date of delivery of the Engine to the first user or (B) The Base Engine Warranty.

If the vehicle in which the Engine is installed is registered in the state of California, a separate California Emission Warranty also applies.

Limitations

Failures, other than those resulting from defects in material or factory workmanship, are not covered by this Warranty.

Cummins is not responsible for failures or damage resulting from what Cummins determines to be abuse or neglect, including, but not limited to: operation without adequate coolants or lubricants; overfueling; overspeeding; lack of maintenance of lubricating, cooling or intake systems; improper storage, starting, warm-up, run-in or shutdown practices; unauthorized modifications of the Engine.

Any unauthorized modifications to the aftertreatment could negatively effect emissions certification and void Warranty.

Cummins is also not responsible for failures caused by incorrect oil, fuel or diesel exhaust fluid or by water, dirt or other contaminants in the fuel, oil or diesel exhaust fluid.

Cummins is not responsible for non-Engine repairs, "downtime" expenses, cargo damage, fines, all applicable taxes, all business costs or other losses resulting from a Warrantable Failure.

**CUMMINS IS NOT RESPONSIBLE FOR INCIDENTAL
OR CONSEQUENTIAL DAMAGES.**

* Airport operated crash trucks and fire department
operated trucks employed to respond to fires,
hazardous material releases, rescue and other
emergency-type situations.

** United States includes American Samoa, the
Commonwealth of Northern Mariana Islands, Guam,
Puerto Rico and the U.S. Virgin Islands.



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Allison Transmission
Division of General Motors Corporation

Important

“Participating OEM & Allison Distributor/Dealer Warranty Document Only”

The following warranty statement is for transmissions purchased by Participating OEMs (**O**riginal **E**quipment **M**anufacturers) and by Allison Transmission Distributor/Dealers. The term Participating means that the OEM participates in the warranty coverage provided by Allison Transmission and utilizes Allison Transmission authorized Distributor/Dealer network for warranty repairs.

In the event that an OEM is a Non-Participating OEM then the OEM provides the warranty to the customer by utilizing their own network for warranty repairs.

Please refer to your vehicle’s operator/owner’s manual and or selling vehicle dealer for powertrain coverage.

NEW PRODUCT WARRANTY



PARTICIPATING OEM SALES DISTRIBUTOR SALES

LIMITED WARRANTY ON NEW ALLISON AUTOMATIC TRANSMISSIONS USED IN ON-HIGHWAY TRUCK APPLICATIONS OTHER THAN AUTOMOTIVE FIRE APPARATUS APPLICATIONS

Allison Transmission will provide for repairs or replacement, at its option, during the warranty period of each new Allison transmission listed below that is installed in an On-Highway Truck other than Automotive Fire Apparatus in accordance with the following terms, conditions, and limitations.

WHAT IS COVERED

- **WARRANTY APPLIES** — This warranty is for new Allison transmission models listed below installed in an On-Highway Truck other than Line Haul and Automotive Fire Apparatus and is provided to the original and any subsequent owner(s) of the vehicle during the warranty period.
- **REPAIRS COVERED** — The warranty covers repairs or replacement, at Allison Transmission's option, to correct any transmission malfunction resulting from defects in material or workmanship occurring during the warranty period. Needed repairs or replacements will be performed using the method Allison Transmission determines most appropriate under the circumstances.
- **TOWING** — Towing is covered to the nearest Allison Transmission Distributor or authorized Dealer only when necessary to prevent further damage to your transmission.
- **PAYMENT TERMS** — Warranty repairs, including parts and labor, will be covered per the schedule shown in the chart contained in section "APPLICABLE MODELS, WARRANTY LIMITATIONS, AND ADJUSTMENT SCHEDULE."
- **OBTAINING REPAIRS** — To obtain warranty repairs, take the vehicle to any Allison Transmission Distributor or authorized Dealer within a reasonable amount of time and request the needed repairs. A reasonable amount of time must be allowed for the Distributor or Dealer to perform necessary repairs.
- **TRANSMISSION REMOVAL AND REINSTALLATION** — Labor costs for the removal and re-installation of the transmission, when necessary to make a warranty repair, are covered by this warranty.
- **WARRANTY PERIOD** — The warranty period for all coverages shall begin on the date the transmission is delivered to the first retail purchaser, with the following exception:

Demonstration Service - A transmission in a new truck or bus may be demonstrated to a total of 5000 miles (8000 kilometers). If the vehicle is within this limit when sold to a retail purchaser, the warranty start date is the date of purchase. Normal warranty services are applicable to the demonstrating Dealer. Should the truck or bus be sold to a retail purchaser after these limits are reached, the warranty period will begin on the date the vehicle was first placed in demonstration service and the purchaser will be entitled to the remaining warranty.

The warranty period for all coverages shall end at the expiration of the coverage set forth below:

APPLICABLE MODELS, WARRANTY LIMITATIONS, AND ADJUSTMENT SCHEDULE

APPLICABLE MODELS	WARRANTY LIMITATIONS (Whichever occurs first)		ADJUSTMENT CHARGE TO BE PAID BY THE CUSTOMER	
	Months	Transmission Miles Or Kilometers	Parts	Labor
MD, MT, HD, HT, 3000, 3500, 4000, 4500, 4700, 4800, 3000 HS, 4000 HS, 4500 HS, 3000 RDS, 3500 RDS, 4000 RDS, 4500 RDS, 4700 RDS	0-24*	No Limit	No Charge	No Charge
AT, 1000 Series™, 2000 Series™, 2400 Series™, 1000, 2100, 2200, 2500, 1000 HS, 2100 HS, 2200 HS, 2350 HS, 2500 HS, 2550 HS, 1000 RDS, 2100 RDS, 2200 RDS, 2350 RDS, 2500 RDS, 2550 RDS	0-36*	No Limit	No Charge	No Charge
<u>Emergency Vehicle Use Only</u> 1000 EVS, 2100 EVS, 2200 EVS, 2500 EVS, 3000 EVS, 3500 EVS, 4000, 4000 EVS, 4500, 4500 EVS, 4700, 4700 EVS, 4800, 4800 EVS	0-60	No Limit	No Charge	No Charge

* Effective July 2006, the Allison transmission in your vehicle may be covered by additional extended coverage, dependent on the Original Equipment Manufacturer (OEM) which manufactured your vehicle. **This additional coverage requires continued use of Allison TranSynd™ synthetic transmission fluid and genuine Allison filters.** Please consult your OEM Dealer or authorized Allison Transmission Distributor or Dealer for specific information.

WHAT IS NOT COVERED

• DAMAGE DUE TO ACCIDENT, MISUSE, or ALTERATION

Defects and damage caused as the result of any of the following are not covered:

- Flood, collision, fire, theft, freezing, vandalism, riot, explosion, or objects striking the vehicle;
- Misuse of the vehicle;
- Installation into unapproved applications and installations;
- Alterations or modification of the transmission or the vehicle, and
- Damage resulting from improper storage (refer to long-term storage procedure outlined in the applicable Allison Service Manual)
- Anything other than defects in Allison Transmission material or workmanship

NOTE: This warranty is void on transmissions used in vehicles currently or previously titled as salvaged, scrapped, junked, or totaled.

- **CHASSIS, BODY, and COMPONENTS** — The chassis and body company (assemblers) and other component and equipment manufacturers are solely responsible for warranties on the chassis, body, component(s), and equipment they provide. Any transmission repair caused by an alteration(s) made to the Allison transmission or the vehicle which allows the transmission to be installed or operated outside of the limits defined in the appropriate Allison Installation Guideline is solely the responsibility of the entity making the alteration(s).
- **DAMAGE CAUSED by LACK of MAINTENANCE or by the USE of TRANSMISSION FLUIDS NOT RECOMMENDED in the OPERATOR'S MANUAL** — Defects and damage caused by any of the following are not covered:
 - Failure to follow the recommendations of the maintenance schedule intervals applicable to the transmission;
 - Failure to use transmission fluids or maintain transmission fluid levels recommended in the Operator's Manual.
- **MAINTENANCE** — Normal maintenance (such as replacement of filters, screens, and transmission fluid) is not covered and is the owner's responsibility.
- **REPAIRS by UNAUTHORIZED DEALERS** — Defects and damage caused by a service outlet that is not an authorized Allison Transmission Distributor or Dealer are not covered.
- **USE of OTHER THAN GENUINE ALLISON TRANSMISSION PARTS** — Defects and damage caused by the use of parts that are not genuine Allison Transmission parts are not covered.
- **EXTRA EXPENSES** — Economic loss and extra expenses are not covered. Examples include but are not limited to: loss of vehicle use; inconvenience; storage; payment for loss of time or pay; vehicle rental expense; lodging; meals; or other travel costs.
- **"DENIED PARTY" OWNERSHIP** — Warranty repair parts and labor costs are not reimbursed to any participating or non-participating OEMs, dealers or distributors who perform warranty work for, or on behalf of, end users identified by the United States as being a "denied party" or who are citizens of sanctioned or embargoed countries as defined by the U.S. Department of Treasury Office of Foreign Assets Control. Furthermore, warranty reimbursements are not guaranteed if the reimbursement would be contrary to any United States export control laws or regulations as defined by the U.S. Department of Commerce, the U.S. Department of State, or the U.S. Department of Treasury.

OTHER TERMS APPLICABLE TO CONSUMERS AS DEFINED by the MAGNUSON-MOSS WARRANTY ACT

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Allison Transmission does not authorize any person to create for it any other obligation or liability in connection with these transmissions. **ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE APPLICABLE TO THESE TRANSMISSIONS IS LIMITED IN DURATION TO THE DURATION OF THIS WRITTEN WARRANTY. PERFORMANCE OF REPAIRS AND NEEDED ADJUSTMENTS IS THE EXCLUSIVE REMEDY UNDER THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY. ALLISON TRANSMISSION SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES (SUCH AS, BUT NOT LIMITED TO, LOST WAGES OR VEHICLE RENTAL EXPENSES) RESULTING FROM BREACH OF THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY.****

** Some states do not allow limitations on how long an implied warranty will last or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

OTHER TERMS APPLICABLE TO OTHER END-USERS

THIS WARRANTY IS THE ONLY WARRANTY APPLICABLE TO THE ALLISON TRANSMISSION MODELS LISTED ABOVE AND IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ALLISON TRANSMISSION DOES NOT AUTHORIZE ANY PERSON TO CREATE FOR IT ANY OTHER OBLIGATION OR LIABILITY IN CONNECTION WITH SUCH TRANSMISSIONS. ALLISON TRANSMISSION SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM BREACH OF THIS WARRANTY OR ANY IMPLIED WARRANTY.

QUESTIONS

If you have any questions regarding this warranty or the performance of warranty obligations, you may contact any Allison Transmission Distributor or Dealer or write to:

Allison Transmission
General Motors Corporation
P.O. Box 894
Indianapolis, IN 46206-0894
Attention: Warranty Administration 462-470-PF9
Form SE0617EN (200606)

CONDITIONAL 5-YEAR WARRANTY POLICY

WATEROUS warrants, to the original Buyer only, that products and parts manufactured by WATEROUS will be free from defects in material and workmanship under normal use and service for a period of five (5) years from the date the product is first placed in service, or five and one-half (5-1/2) years from the date of shipment by Waterous, whichever period shall be the first to expire, provided the Buyer notifies WATEROUS, in writing, of the defect in said product within the warranty period, and said product is found by WATEROUS to be nonconforming with the aforesaid warranty. When required in writing by WATEROUS, defective products must be promptly returned by Buyer to WATEROUS at WATEROUS' plant at South St. Paul, Minnesota, or at such other place as may be specified by WATEROUS, with transportation and other charges prepaid. A Returned Material Authorization (RMA) is required for all products and parts and may be requested by phone, fax or mail. The aforesaid warranty excludes any responsibility or liability of WATEROUS for:

- (a) damages or defects due to accident, abuse, misuse, abnormal operating conditions, negligence, accidental causes, or improper maintenance, or attributable to written specifications or instructions furnished by Buyer;
 - (b) defects in products manufactured by others and furnished by WATEROUS hereunder, it being understood and agreed by the parties that the only warranty provided for such products shall be the warranty provided by the manufacturer thereof which, if assignable, WATEROUS will assign to Buyer, if requested by Buyer;
 - (c) any product or part, altered, modified, serviced or repaired other than by WATEROUS, without its prior written consent; and
 - (d) the cost of dismantling, removing, transporting, storing, or insuring the defective product or part and the cost of reinstallation.
- (e) normal wear items (packing, strainers, filters, light bulbs, anodes, intake screens, mechanical seals, etc.).

This warranty is subject to WATEROUS' Conditions of Sale (Waterous Company form number F-2190) as currently in effect all of which are herein incorporated and by this reference made a part hereof.

All other warranties are excluded, whether express or implied by operation of law or otherwise, including all implied warranties of merchantability or fitness for purpose. WATEROUS shall not be liable for consequential or incidental damages directly or indirectly arising or resulting from the breach of any of the terms of this limited warranty or from the sale, handling, or used of any WATEROUS product or part. WATEROUS' liability hereunder, either for breach of warranty or for negligence, is expressly limited at WATEROUS' option:

- (A) to the replacement at the agreed point of delivery of any product or part, which upon inspection by WATEROUS or its duly authorized representative, is found not to conform to the limited warranty set forth above, or
- (B) to the repair of such product or part, or
- (C) to the refund or crediting to buyer of the net sales price of the defective product or part.

Buyer's remedies contained herein are exclusive of any other remedy otherwise available to Buyer.

Waterous Company
125 Hardman Avenue South
South St. Paul, MN 55075 USA
www.waterousco.com

WATEROUS

Fire Pumps - Since 1886

F-2113

UPF POLY-TANK® IIE Tank

The ALL-OUT™ Lifetime Warranty

UNITED PLASTIC FABRICATING, INC. warrants each UPF POLY-TANK® IIE Booster/Foam Tank to be free from manufacturing defects in material and workmanship for the service life of the original vehicle (vehicle must be actively used in fire suppression). The warranty is transferable* within the United States and Canada by notifying UPF within thirty (30) days of the vehicle transfer date. Every UPF POLY-TANK® IIE is thoroughly inspected and tested for leaks before leaving our facility and must be installed in accordance with the United Plastic Fabricating Installation Guidelines. Should any problems develop with your UPF POLY-TANK® IIE Booster/Foam Tank, please notify UPF in writing or call our TOLL FREE HOTLINE at 1-800-USA-POLY and provide UPF with the serial number and a description of the problem. If UPF determines that the tank problem has rendered the truck out-of-service, UPF will dispatch a service technician WITHIN 48 HOURS (2 DAYS) to repair the tank (This time period is for the United States and Canada only). If it is determined that the vehicle can remain in service, UPF will dispatch a service technician within a mutually agreed upon time period. Should the vehicle be located outside of the United States and Canada, UPF will assume costs for labor and material for the repair and for any travel costs to the U.S. port of embarkation. Cost for airline or other means of travel outside of the U.S. and Canada will not be the responsibility of United Plastic Fabricating, Inc.

UPF will repair or, at its option, replace the tank with a new UPF POLY-TANK® IIE. UPF will cover customary and reasonable costs to remove and install the UPF POLY-TANK® IIE. This warranty will not cover tanks that have been improperly installed, misused or abused, and the serial number must not have been altered, defaced or removed. UPF will not cover any unauthorized third party repairs or alterations. Any of these actions may void the warranty.

THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION OF THE FACE HEREOF. THERE IS NO EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. ADDITIONALLY, THIS WARRANTY IS IN LIEU OF ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF UNITED PLASTIC FABRICATING, INC.

This warranty contains the entire warranty. It is the sole warranty and price agreements or representation, whether oral or written, are either merged herein or expressly canceled. UNITED PLASTIC FABRICATING, INC. neither assumes, nor authorizes any person supposing to act on its behalf to change, nor assume for it, any warranty or liability concerning its product.

IN NO EVENT WILL UNITED PLASTIC FABRICATING, INC. BE LIABLE FOR AN AMOUNT IN EXCESS OF THE CURRENTLY PUBLISHED RETAIL PRICE PLUS INSTALLATION AND REMOVAL COST OF THE BOOSTER TANK, FOR ANY LOSS OR DAMAGE, WHETHER DIRECT OR INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR OTHERWISE ARISING OUT OF FAILURE OF ITS PRODUCT.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Some states do not allow exclusion or limitation of incidental or consequential damage, so the above limitation or exclusion may not apply to you. Since some states do not allow limitations on the length of an implied warranty, the above limitation may not apply to you.



**UNITED PLASTIC
FABRICATING, INC.**
"Think Tank . . . Think UPF"

FILL IN THE INFORMATION CONTAINED ON YOUR WARRANTY CARD IN THE FORM TO THE RIGHT. PLEASE KEEP THIS INFORMATION IN A SAFE PLACE FOR REFERENCE. IF SERVICE SHOULD EVER BE NEEDED, CALL 1-800-USA-POLY.

POLY-TANK® IIE is a registered trademark of UPF, Inc.
ALL-OUT™ and PT2E™ are all trademarks of UPF, Inc.
AccTuf™ is a trademark of Amoco Polymers, Inc.
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Transfer of Ownership Form

Serial Number: _____

Original Owner: _____

Address: _____

City/Town: _____ St: _____ Zip: _____

Complete and fax or mail to UPF to transfer warranty

Date of transfer: _____

New Owner: _____

Address: _____

City/Town: _____ St: _____ Zip: _____

*All transfers subject to approval by UPF.

The Industry Standard in
Fire Tank Technology

UPF's POLY-TANK® IIE
With Amoco's
AccTuf™ Resin

For Service Call:
1-800-USA-POLY

- ❖ Booster/Foam Tanks
- ❖ Slide-In Units
- ❖ Foam Trailers
- ❖ Wet-Side Tanks
- ❖ Elliptical Tanks

Call: 800-638-8265
Fax: 800-966-4520
Email: info@unitedplastic.com
Web: www.unitedplastic.com

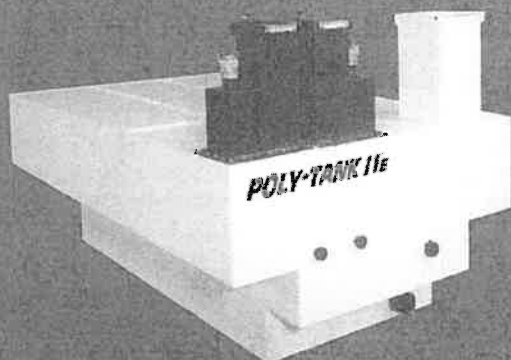
To:

Place
Postage
Here

UNITED PLASTIC
FABRICATING, INC.
165 Flagship Drive
North Andover, MA 01845



The POLY-TANK® IIE



The Last Tank You'll Ever Need™

UPF's ALL-OUT™
LIFETIME WARRANTY
IS THE ONLY
TRANSFERABLE
TANK WARRANTY IN
THE FIRE INDUSTRY!

THE AMERICAN INSTITUTE OF ARCHITECTS



AIA Document A310

Bid Bond

KNOW ALL MEN BY THESE PRESENTS, that we, Smeal Fire Apparatus, Co. PO Box 8, Snyder, NE 68664 as Principal, hereinafter called the Principal, and Travelers Casualty and Surety Company of America a corporation duly organized under the laws of the State of Connecticut

as Surety, hereinafter called the Surety, are held and firmly bound unto City of Goodyear
190 N Litchfield Road
Goodyear, AZ 85338

as Obligee, hereinafter called the Obligee, in the sum of Ten Percent (10%) Amount of Bid

for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for: 3-Smeal Rear Mount 1250 G.P.M. Pumpers and Accessories mounted on 3-Spartan Metro Star Custom Chassis as per specifications.

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and Sealed this 17th Day of November, 2016.

Cindy Kreibemeier
(Witness)

Eunice J. Cantrell
(Witness)

Smeal Fire Apparatus Co.
(Principal) (Seal)
Jeffrey M. Scherer, CFO
Jeffrey M. Scherer CFO
Travelers Casualty and Surety Company of America
(Surety) (Seal)
Sandi Hakes-Gall
Sandi Hakes-Gall, Attorney-in-fact



POWER OF ATTORNEY

Farmington Casualty Company
 Fidelity and Guaranty Insurance Company
 Fidelity and Guaranty Insurance Underwriters, Inc.
 St. Paul Fire and Marine Insurance Company
 St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
 Travelers Casualty and Surety Company
 Travelers Casualty and Surety Company of America
 United States Fidelity and Guaranty Company

Attorney-In Fact No. 228499

Certificate No. 006822603

KNOW ALL MEN BY THESE PRESENTS: That Farmington Casualty Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company are corporations duly organized under the laws of the State of Connecticut, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc., is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint

Eunice J. Cantrell, Sandi Hakes-Gall, Douglas R. Steffensmeier, Capri McGuire, and Lisa M. Dixon

of the City of Beemer, State of Nebraska, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 3rd day of June, 2016.

Farmington Casualty Company
 Fidelity and Guaranty Insurance Company
 Fidelity and Guaranty Insurance Underwriters, Inc.
 St. Paul Fire and Marine Insurance Company
 St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
 Travelers Casualty and Surety Company
 Travelers Casualty and Surety Company of America
 United States Fidelity and Guaranty Company



State of Connecticut
 City of Hartford ss.

By: _____

Robert L. Raney, Senior Vice President

On this the 3rd day of June, 2016, before me personally appeared Robert L. Raney, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.
 My Commission expires the 30th day of June, 2021.



Marie C. Tetreault
 Marie C. Tetreault, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, Kevin E. Hughes, the undersigned, Assistant Secretary, of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 17th day of November, 20 16.


Kevin E. Hughes, Assistant Secretary



To verify the authenticity of this Power of Attorney, call 1-800-421-3880 or contact us at www.travelersbond.com. Please refer to the Attorney-In-Fact number, the above-named individuals and the details of the bond to which the power is attached.



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
8/3/2016

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER The Harry A. Koch Co. P.O. Box 45279 Omaha NE 68145-0279		CONTACT NAME: Gina Schlake PHONE (A/C, No, Ext): E-MAIL ADDRESS: gina.schlake@hakco.com FAX (A/C, No):	
INSURED Smeal Fire Apparatus Co. 610 West 4th Street PO Box 8 Snyder NE 68664		INSURER(S) AFFORDING COVERAGE INSURER A: Charter Oak Fire Insurance Co. INSURER B: The Phoenix Insurance Co INSURER C: Commerce & Industry Ins Co INSURER D: Zurich American Insurance Company INSURER E: INSURER F:	
SME30800		NAIC # 25615 25623 19410 16535	

COVERAGES

CERTIFICATE NUMBER: 895025408

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
B	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:			6309F042908	7/1/2016	7/1/2017	EACH OCCURRENCE \$1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$300,000 MED EXP (Any one person) \$5,000 PERSONAL & ADV INJURY \$1,000,000 GENERAL AGGREGATE \$2,000,000 PRODUCTS - COM/PO/ AGG \$2,000,000 \$
A	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS			8109F05833A	7/1/2016	7/1/2017	COMBINED SINGLE LIMIT (Ea accident) \$1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
C	<input checked="" type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> EXCESS LIAB <input checked="" type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$10,000			BE012985315	7/1/2016	7/1/2017	EACH OCCURRENCE \$20,000,000 AGGREGATE \$20,000,000 \$
D	<input checked="" type="checkbox"/> WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	N/A	WC102078500	7/1/2016	7/1/2017	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$1,000,000 E.L. DISEASE - EA EMPLOYEE \$1,000,000 E.L. DISEASE - POLICY LIMIT \$1,000,000
A	Garagekeepers Legal Liability			8109F05833A	7/1/2016	7/1/2017	GKLL - Snyder \$3,500,000 GKLL - Neligh/PA/WI \$2,500,000 \$1,000 Collision Ded \$5K/\$10K Comp Ded

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

RE: Fire Apparatus

CERTIFICATE HOLDER

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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