SVI TRUCKS – PROPOSAL

TO THE:
DeKalb County – Board of Commissioners
Department of Purchasing and Contracting
1300 Commerce Drive, 2nd Floor
Decatur, GA 30030

DATE: December 10, 2020

We hereby propose and agree to furnish the following firefighting equipment upon your acceptance of this proposal via the Houston Galveston Area Council Contract #FS-12-19:

Two (2) SVI Heavy Duty Air & Light (Product Code:FS19HHD03) Specialty Support Vehicles including Custom Two-Door Severe Duty Chassis and Rear Walk-In Fill Station with LED Light Tower Complete and Delivered for the Total Sum of

$1,399,824.31

The unit shall be manufactured completely in accordance to the following proposal and *inspected at the manufacturing facility* in approximately **500** days from the date of the contract signing or purchase order, subject to delays from all causes beyond our control.

This proposal shall be valid until January 31st, 2020. If the contract or purchase order is not received within this proposed duration, we reserve the right to extend, withdraw, or modify our proposal, including pricing, delivery times, and prepayment discounts as applicable.

Respectfully submitted,

Jerry Harley

Jerry Harley
Authorized Representative for SVI Trucks

SVI Trucks | 3842 Redman Drive | Fort Collins, CO 80524 | svitrucks.com | 1-888-784-1112

December 10, 2020

DeKalb County Board of Commissioners

To whom it may concern,

Regarding HGAC Contract Number FS-12-19, Non-published options are allowable as long as they do not exceed 25% of the project price. All non-published pricing is based on manufacturer's materials and labor cost. All non-published pricing is extended to all manufacturer's customers as a standard option for consideration.

Regards,
Dwayne Woodard
SVI Trucks
Eastern Regional Manager
dwaynew@svitrucks.com
970-420-0600

Contract Pricing Worksheets

Rev 02-05-07

NOTE: Purchase Orders are not valid unless a copy of the completed worksheet and the customer's order are faxed to HGACBuy at: 713-993-4548

This Workbook contains three versions of HGACBuy's Contract Pricing Worksheet. One is for Standard Equipment / Services, one is for Catalog or Price Sheet type purchases, and the third is for Motor Vehicles only. See tabs at bottom to select appropriate Worksheet.

Please contact H-GAC staff about use of the worksheets if you have any questions.

CONTRACT PRICING WORKSHEET
For MOTOR VEHICLES Only

Contract No.:	FS12-19	Date Prepared:	11/19/20

This Worksheet is prepared by Contractor and given to End User. If a PO is issued, both documents MUST be faxed to H-GAC @ 713-993-4548. Therefore please type or print legibly.

Buying Agency:	DeKalb County Fire Department	**Contractor:**	**Super Vacuum Mfg. Co., Inc. - SVI Trucks**
Contact Person:	Bryan Dobson	**Prepared By:**	Dwayne Woodard
Phone:	404-808-0844	**Phone:**	970-297-7100
Fax:		**Fax:**	970-297-7099
Email:	bcdobson@dekalbcountyga.gov	**Email:**	dwaynew@svitrucks.com

Product Code:	**FS19HHD03**	**Description:**	**Heavy Duty Rescue, Custom**

A. Product Item Base Unit Price Per Contractor's H-GAC Contract: **$ 394,749.00**

B. Published Options - Itemize below - Attach additional sheet(s) if necessary - Include Option Code in description if applicable.
(Note: Published Options are options which were submitted and priced in Contractor's bid.)

Description	Cost	Description	Cost
Spartan Chassis Options (1 - 783) Total	$51,210.00		
Wildland / Options (784 - 829) Total	$0.00		
Pumper / Options (830 - 906) Total	$29,492.00		
Rescue / Options (907 - 1192) Total	$211,299.00		
Mobile Air / Options (1193 - 1219) Total	$0.00		
Tanker / Options (1220 - 1235) Total	$0.00		
Misc. Options (1236 - 1243) Total	$0.00		
Equipment Price Books (1244 - 1250)	$0.00		
		Subtotal From Additional Sheet(s):	
		Subtotal B:	**$292,001.00**

C. Unpublished Options - Itemize below / attach additional sheet(s) if necessary.
(Note: Unpublished options are items which were not submitted and priced in Contractor's bid.)

Description	Cost	Description	Cost
Un-Listed Options Total	$12,662.00		
		Subtotal From Additional Sheet(s):	
		Subtotal C:	**$12,662.00**

Check: Total cost of Unpublished Options (C) cannot exceed 25% of the total of the Base Unit Price plus Published Options (A+B). **For this transaction the percentage is:** 2%

D. Total Cost Before Any Applicable Trade-In / Other Allowances / Discounts (A+B+C)

Quantity Ordered: 2 **X Subtotal of A + B + C:** $699,412.00 = **Subtotal D:** **$1,398,824.00**

E. H-GAC Order Processing Charge (Amount Per Current Policy) **Subtotal E:** **$2,000.00**

F. Trade-Ins / Other Allowances / Special Discounts / Freight / Installation

Description	Cost	Description	Cost
Customer Multiple Discount	($1,500.00)		
		Subtotal F:	**($1,500.00)**

Delivery Days After PO: 490 **G. Total Purchase Price (D+E+F):** **$1,399,324.00**

Offeror Name:	Super Vacuum Mfg. Co., Inc. - SVI Trucks			
	Option Description - (Note: When done with option selection, hide all rows with a zero quantity.)			
	HH. SVI Trucks			
Code or Part No.	Option Description	Qty.	Offered Price	Option Total
	********** SPARTAN CHASSIS OPTIONS (1 - 783) **********		Total	$51,210
1	Metro Star Cab Style LTD 10" Raised Roof	1	$9,212	$9,212
34	LH Mid EMS Compartment Full Height 10"RR	1	$1,444	$1,444
36	LH Mid EMS Cmpt Ext Access Hng Door w/Ptd Dr Pnl	1	$912	$912
52	RH Mid EMS Compartment Full Height 10"RR	1	$1,444	$1,444
54	RH Mid EMS Cmpt Ext Access Hng Door w/Ptd Dr Pnl	1	$912	$912
65	Mid EMS Compartment Lighting LED	1	$125	$125
118	MUX Display Class1 ES-Key UV700 Sw Pnl	1	$4,863	$4,863
140	Engine Exhaust Brake Jacobs Extarder	1	$799	$799
180	Fuel Tank 68 Gallon	1	$166	$166
184	Fuel Tank Material SS & Finish Natural	1	$1,036	$1,036
201	Rear Axle 27000# Meritor RS-25-160	1	$2,382	$2,382
215	Rear Susp Hendrickson FireMaax Air 27000#	1	$3,103	$3,103
270	Rear Tire 12R 22.5 Goodyear Endurance RSA, Each	2	$67	$134
299	Rr Whl Alcoa Dura-Bright LvL One 22.5 x 8.25 Alum, Each	4	$333	$1,332
330	Tire Chains Rear Axle ON-Spot 6 Strand Auto XDuty	1	$2,716	$2,716
346	Frt Brakes Meritor EX225 Disc 17"	1	$409	$409
347	Rr Brakes Meritor EX225 Disc 17"	1	$533	$533
348	Supplemental Brake Frt Service Brakes Push-Pull Valve w/Prk Brk Interlock	1	$180	$180
385	Moisture Ejectors Auto Htd w/Cable	1	$378	$378
405	Frt Bumper Formed Steel Channel	1	$1,385	$1,385
407	Frt Bumper Extension Length 12.5"	1	$181	$181
437	Frt Bumper Apron For 12.5" Extension	1	$720	$720
459	Mechanical Siren Federal Signal Q2B Recess Mnt	1	$2,422	$2,422
499	Glass Frt Dr Pwr	1	$1,073	$1,073
501	Glass Tint Frt Dr Automotive Dark Gray	1	$182	$182
538	Interior Door Trim (2) Piece Brushed SS	1	$1,183	$1,183
541	Door Trim Kickplate Brushed SS	1	$851	$851
624	Windshield Wiper System, Prk Brk Interlock	1	$162	$162
626	Cab Door Hardware Chrome w/Scuff Plate	1	$776	$776
655	Batt (6) Group 31 Delco	1	$912	$912
663	Alternator Leece-Neville 320A	1	$393	$393
673	Headlights 4 Headlamps LED	1	$1,476	$1,476
675	Frt Turn Signals Whelen M6 LED Above Headlight	1	$150	$150
697	Frt Scene Lts Whelen Pioneer 12V LED PFH2	1	$2,504	$2,504
724	Inboard Frt Warn Lts Whelen M6 LED Chrm Bezel	1	$513	$513
728	Outboard Frt Warn Lts Whelen M6 LED Chrm Bezel	1	$556	$556
732	Intersection Warn Lts Whelen M6 Super LED	1	$513	$513
736	Side Warn Lts Whelen M6 Super LED	1	$513	$513
745	Mars Warn Lts LED Clear	1	$1,978	$1,978
750	Air Horn Actv L/R Lanyard	1	$50	$50
751	Mech Siren Actv R/L Ft Sw/Brk Sw	1	$100	$100
760	Camera LH Teardrop	1	$272	$272
761	Camera RH Box	1	$265	$265
	********** SVI WILDLAND / OPTIONS (784 - 829) **********		Total	$0
	********** SVI PUMPER / OPTIONS (830 - 906) **********		Total	$29,492
863	Mount	1	$22,932	$22,932
865	Electric Cable Reel 150' on 10/3 Cable	2	$2,375	$4,750

866	Akron Lighted Junction Box with (4) 120 VAC Outlets, TP Box Mounted	2	$905	$1,810
********** SVI RESCUE / OPTIONS (907 - 1192) **********			Total	$211,299
990	Hub & Nut Covers: Stainless Steel, 2 Axles	1	343	$343
1021	Painted Roll-up Door, Ea.	8	504	$4,032
1024	Door Pull Strap Roll-up Door, Ea.	8	135	$1,080
1025	Door Drip Pan/Guard Roll-up Door, Ea.	8	232	$1,856
1034	Stationary Mount, OnScene Tray, 1000 lb. - 46" D, Ea.	2	2,047	$4,094
1036	Stationary Mount, OnScene Out/Down Tray, 1000 lb. - 46" D, Ea.	3	2,019	$6,057
1044	SCBA Cylinder Storage Module, 8" PVC, 8 Bottles	6	946	$5,676
1046	Transverse Storage Module	1	1,438	$1,438
1057	Lower Rub Rail, OSS Aluminum	1	1,845	$1,845
1078	PTO Generator, Lima 40 kW, Three Phase, System (Use with Bauer 18.1/22.42 Air Compressors)	1	24,632	$24,632
1100	Light Tower Cab Mount	1	736	$736
1101	Light Tower Branch Guard, 3-Sided, Painted	1	1,615	$1,615
1103	Bauer K-18.1-20-E3, 25.2 SCFM @ 6,000 PSI Air Compressor, 100 Amp Shore Power, (4) ASME Storage, with Bauer Training	1	81,849	$81,849
1107	(6) ASME 6,000 PSI Storage with Mounting	1	30,528	$30,528
1113	Resolve Specialty, Space Saver 100A, 2-Position Fill Station, 4-Bank Manual	2	16,385	$32,770
1114	Hannay HP Breathing Air Reel, 300' 3/16" Hose with CGA-347 End, HP Regulator Panel, Ea.	1	6,476	$6,476
1117	Hannay LP Air Reel, 200' 3/8" Hose with Quick-Connect End, LP Regulator Panel, Ea.	1	3,650	$3,650
1125	Roof Mounted Low Pro, 13,500/5,600 BTU HVAC, Ea.	1	2,622	$2,622
********** SVI MOBILE AIR / OPTIONS (1193 - 1219) **********			Total	$0
********** SVI TANKER / OPTIONS (1220 - 1235) **********			Total	$0
********** MISC. OPTIONS (1236 - 1243) **********			Total	$0
1237	On Site Training During Delivery, By Dealer, Included All Fire Apparatus	1	$0	$0
1239	Bauer Compressor Training, (1) Day On-Site, Included All Bauer Compressor Systems	1	$0	$0
********** EQUIPMENT PRICE BOOKS (1244 - 1250) **********			Total	$0

********** SPARTAN CHASSIS OPTIONS (1 - 783) **********	Total:	$51,210
********** SVI WILDLAND / OPTIONS (784 - 829) **********	Total:	$0
********** SVI PUMPER / OPTIONS (830 - 906) **********	Total:	$29,492
********** SVI RESCUE / OPTIONS (907 - 1192) **********	Total:	$211,299
********** SVI MOBILE AIR / OPTIONS (1193 - 1219) **********	Total:	$0
********** SVI TANKER / OPTIONS (1220 - 1235) **********	Total:	$0
********** MISC. OPTIONS (1236 - 1243) **********	Total:	$0
********** EQUIPMENT PRICE BOOKS (1244 - 1250) **********	Total:	$0
	Total Listed Options	$292,001

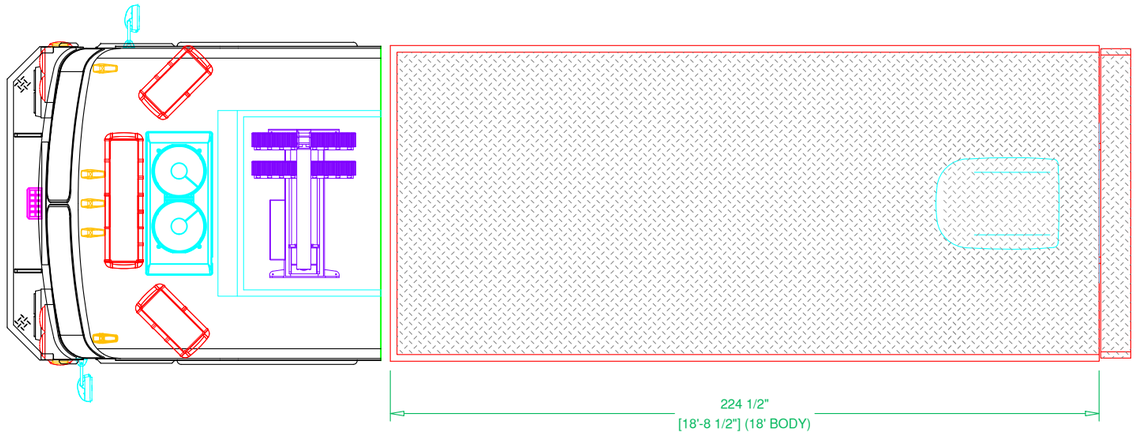
UN-PUBLISHED OPTIONS - Procurement No: FS12-19				
Offeror Name:	**Super Vacuum Mfg. Co., Inc. - SVI Trucks**			
Code or Part No.	**Option Description**	**Qty.**	**Price**	**Option Total**
********** UN-LISTED OPTIONS **********			**Total**	**$12,662**
UO-1	**Change Spartan Metro-Star Chassis to Sutphen Monarch 2-Door Chassis w/ Class1 ESKey**	**1**	**$9,143**	**$9,143**
UO-2	**Provide (2) additional side light bars on cab roof.**	**1**	**$3,519**	**$3,519**
UO-3		0	$0	$0
UO-4		0	$0	$0
UO-5		0	$0	$0
UO-6		0	$0	$0
UO-7		0	$0	$0
UO-8		0	$0	$0
UO-9		0	$0	$0
UO-10		0	$0	$0
UO-11		0	$0	$0
UO-12		0	$0	$0
UO-13		0	$0	$0
UO-14		0	$0	$0
UO-15		0	$0	$0
UO-16		0	$0	$0
UO-17		0	$0	$0
UO-18		0	$0	$0
UO-19		0	$0	$0
UO-20		0	$0	$0
UO-21		0	$0	$0
UO-22		0	$0	$0
UO-23		0	$0	$0
UO-24		0	$0	$0
UO-25		0	$0	$0

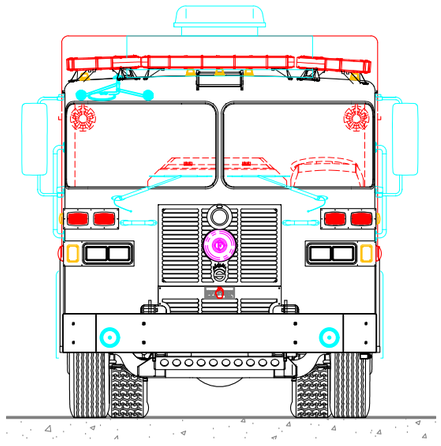
PRELIMINARY DRAWING - FOR LAYOUT PURPOSES ONLY

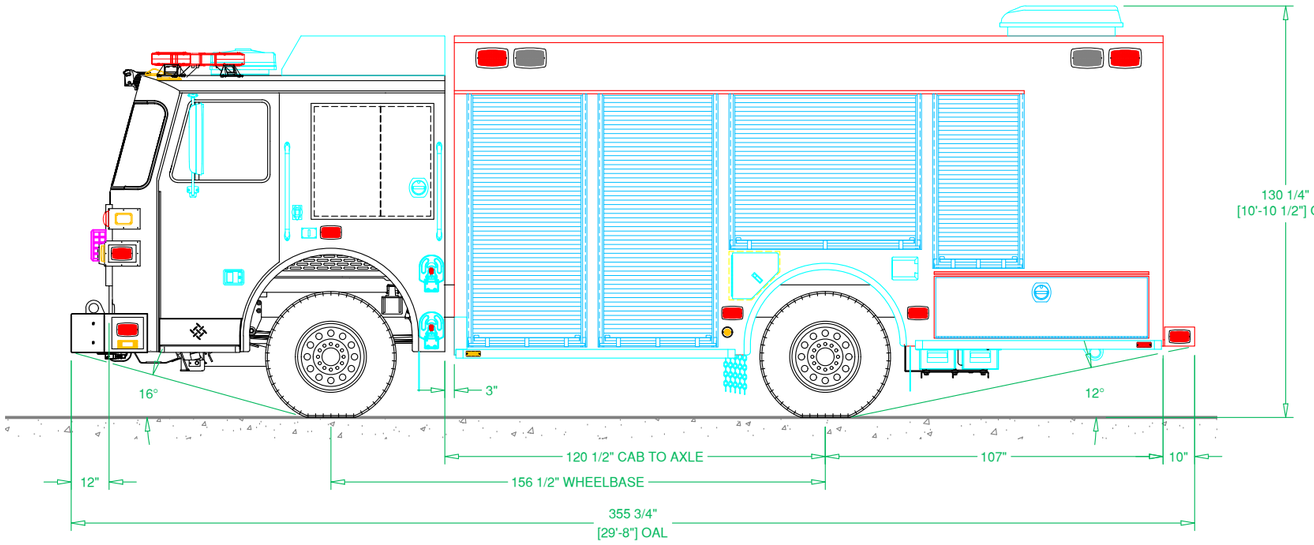
REVISIONS			
REV	DESCRIPTION	DATE	BY

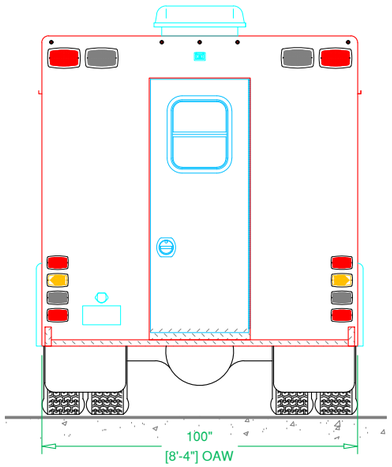
NOTE 1: Do not scale drawing. This drawing is for general truck configuration only. All items and dimensions shown are approximate and may vary with final production. The drawing may not provide illustration for all items in the specification. In all situations where the drawing may contradict the specifications, the specifications shall prevail. This drawing and all data herein are provided as confidential materials and shall not be reproduced without written consent of the manufacturer.

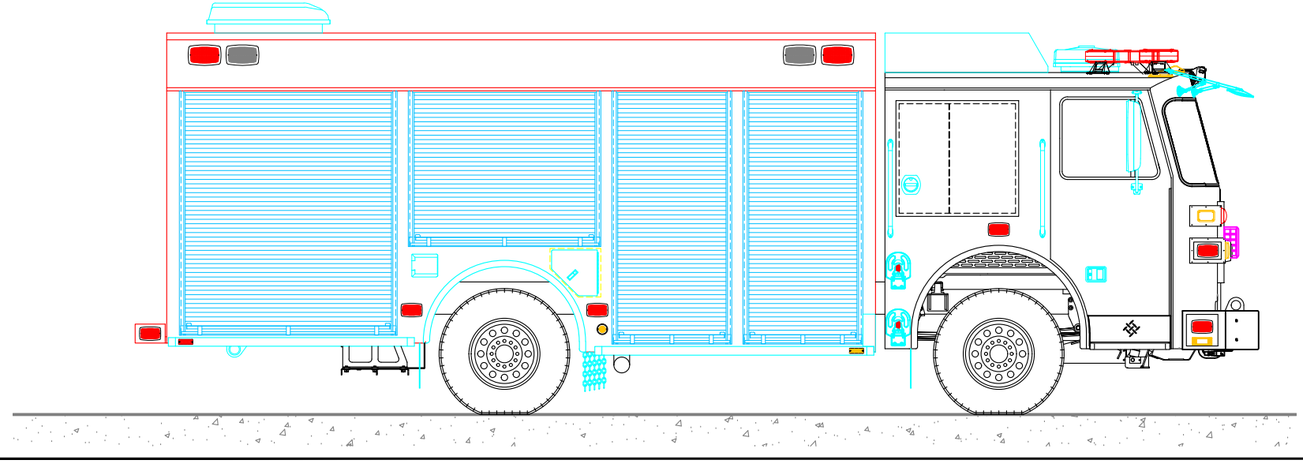
NOTE 2: Chassis frame height will change due to axle characteristics, loading and tire dimensions which will effect the overall height dimension shown. Any overall height restrictions should take this into consideration and allow approximately 2-3 inches of tolerance.











FORT COLLINS SVI COLORADO
SVI FIRE & RESCUE TRUCKS
3842 REDMAN DRIVE, FORT COLLINS, CO 80524 PHONE 970-297-7100, FAX 970-297-7099

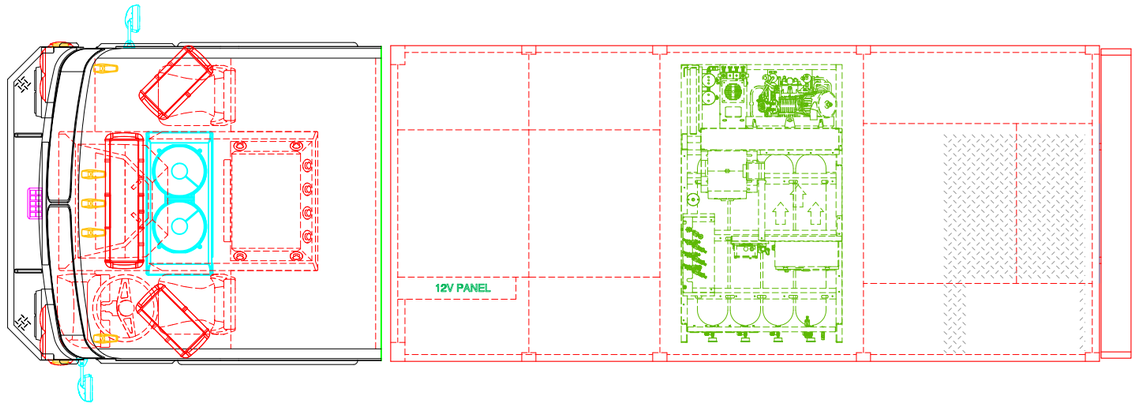
DEKALB
FIRE DEPARTMENT

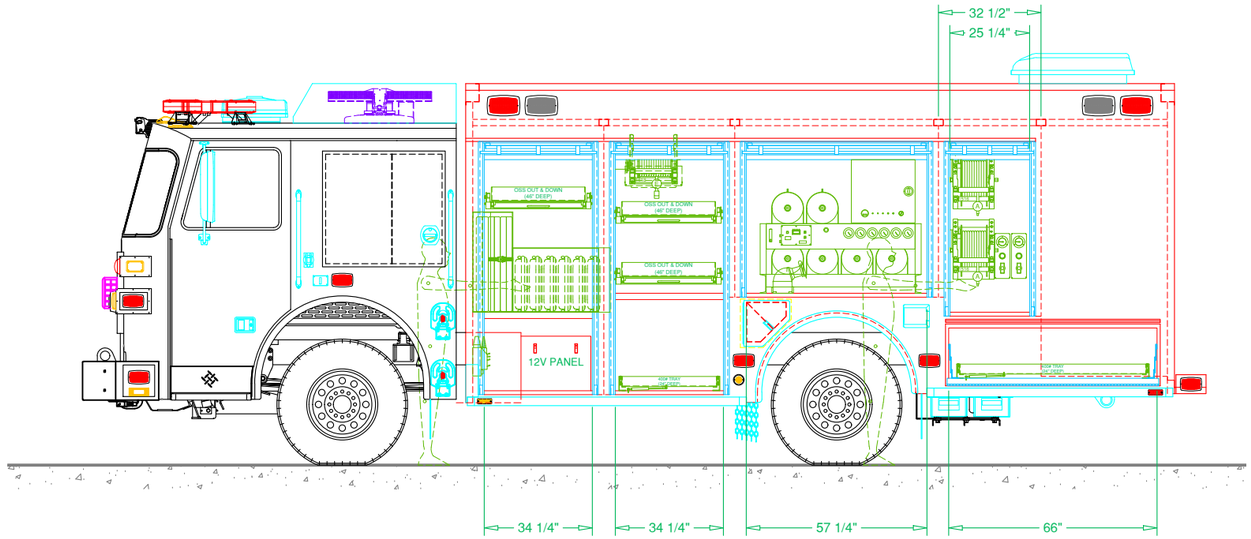
BODY SIZE: 18' BODY	UNIT TYPE: AIR/LIGHT	
BODY MATERIAL: 3/16" ALUMINUM	TRUCK NO: SVI #xxx	
CHASSIS TYPE: SUTPHEN	WHEELBASE:	SEE DWG
-	CAB TO AXLE:	SEE DWG
FLAT	OVERALL LENGTH (OAL):	SEE DWG
	OVERALL WIDTH (OAW):	SEE DWG
TWO DOOR	OVERALL HEIGHT (OAH):	SEE DWG
DRAWN BY: HJR	DATE: November 19, 2020	SCALE: 1/4" = 1'-0"
DRAWING NO: DekalbCo GA al SVI PreLim1		SHEET 1 OF 3

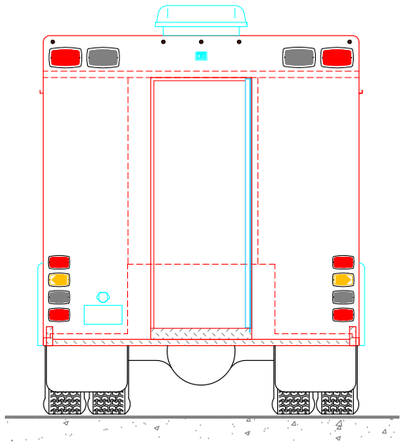
PRELIMINARY DRAWING - FOR LAYOUT PURPOSES ONLY

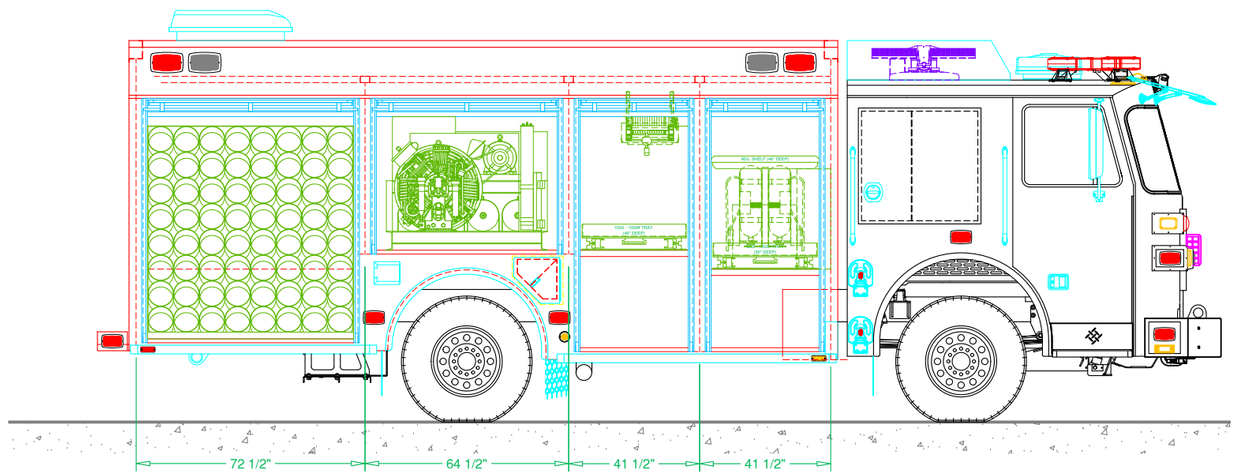
REVISIONS			
REV	DESCRIPTION	DATE	BY

NOTE 1: Do not scale drawing. This drawing is for general truck configuration only. All items and dimensions shown are approximate and may vary with final production. The drawing may not provide illustration for all items in the specification. In all situations where the drawing may contradict the specifications, the specifications shall prevail. This drawing and all data herein are provided as confidential materials and shall not be reproduced without written consent of the manufacturer.









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DEKALB

FIRE DEPARTMENT

DRAWN BY: HJR	DATE: November 19, 2020	SCALE: 1/4" = 1'-0"
DRAWING NO: DekalbCo GA al SVI PreLim1		SHEET 2 OF 3

PRELIMINARY DRAWING - FOR LAYOUT PURPOSES ONLY

REVISIONS			
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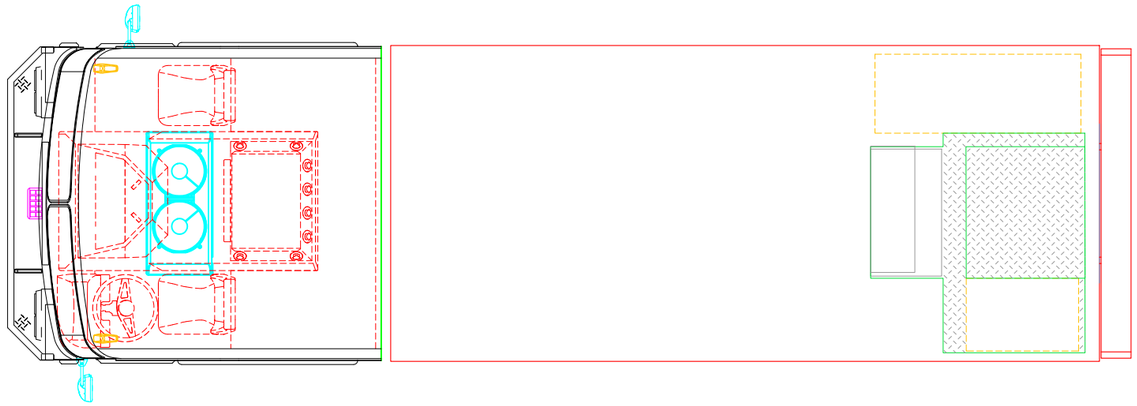
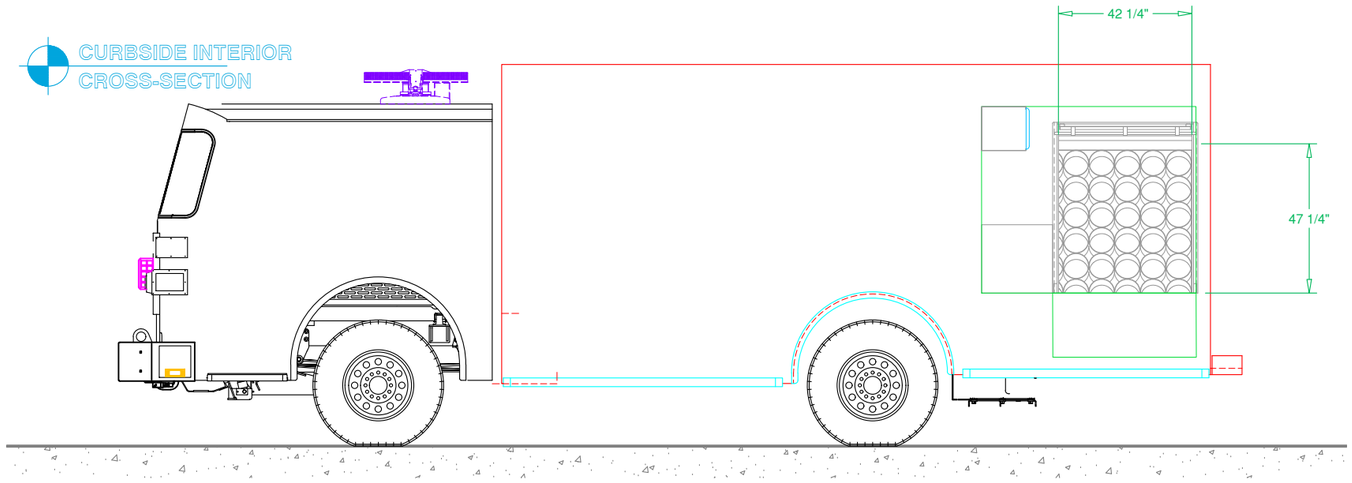
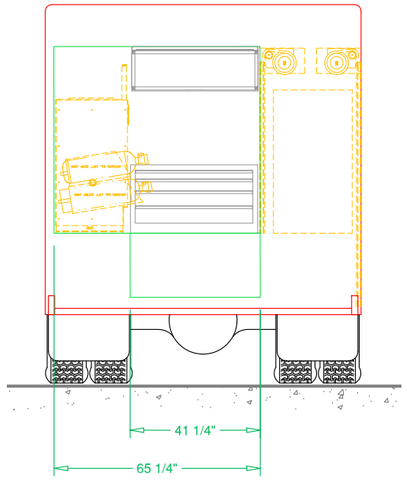
PLAN VIEW
CROSS-SECTION



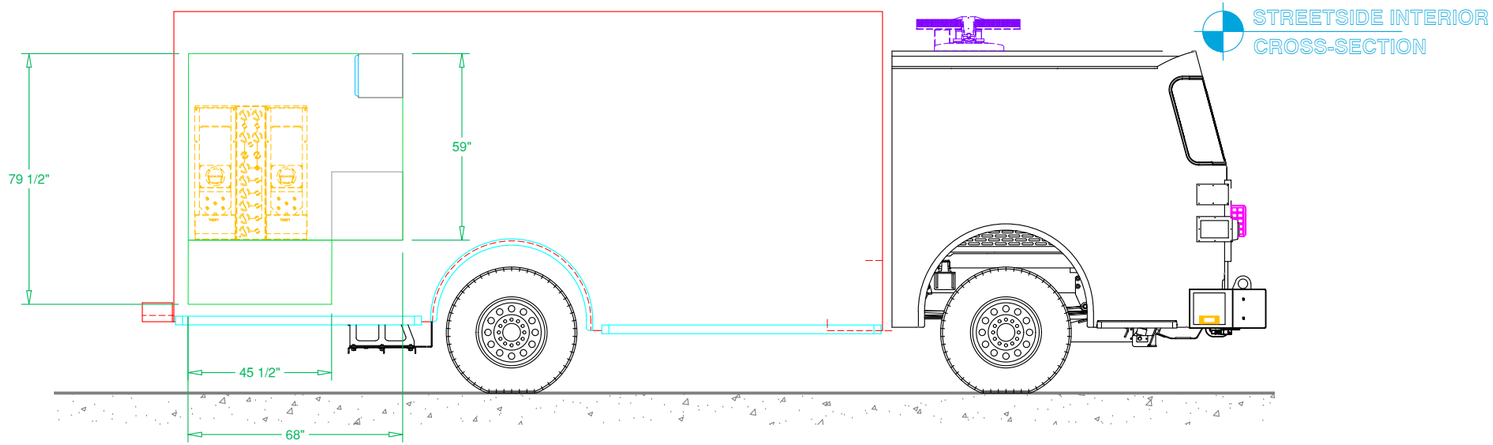
CURBSIDE INTERIOR
CROSS-SECTION



REAR VIEW
CROSS-SECTION



STREETSIDE INTERIOR
CROSS-SECTION



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DEKALB
FIRE DEPARTMENT

DRAWN BY: HJR	DATE: November 19, 2020	SCALE: 1/4" = 1'-0"
DRAWING NO: DekalbCo GA al SVI PreLim1		SHEET 3 OF 3

INTENT OF SPECIFICATIONS

It is the intent of these specifications to cover the furnishing and delivery to the purchaser a complete apparatus equipped as hereinafter specified. With a view of obtaining the best results and the most acceptable apparatus for service in the fire department, these specifications cover only the general requirements as to the type of construction and tests to which the apparatus must conform, together with certain details as to finish, equipment and appliances with which the successful bidder must conform. Minor details of construction and materials where not otherwise specified are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features. The apparatus shall conform to the requirements of the current (at the time of bid) National Fire Protection Association Pamphlet #1901 for Motor Fire Apparatus unless otherwise specified in these specifications.

Bids shall only be considered from companies which have an established reputation in the field of fire apparatus construction and have been in business for a minimum of ten (10) years.

Each bid shall be accompanied by a set of "Contractor's Specifications" consisting of a detailed description of the apparatus and equipment proposed and to which the apparatus furnished under contract must conform. Computer run-off sheets are not acceptable as descriptive literature.

The specifications shall indicate size, type, model and make of all component parts and equipment.

STATEMENT OF EXCEPTIONS TO NFPA 1901

If, at the time of delivery, the apparatus manufacturer is not in compliance, a statement of exceptions must be provided as follows:

- The specific standard affected.
- A statement describing why the manufacturer is not in compliance.
- A description of the remedy, and who the responsible party is.

The document must be signed by an officer of the company, and an authorized agent of the purchaser. NO EXCEPTIONS

QUALITY AND WORKMANSHIP

The design of the apparatus must embody the latest approved automotive engineering practices.

The workmanship must be the highest quality in its respective field. Special consideration shall be given to the following points: Accessibility to various areas requiring periodic maintenance, ease of operation (including both pumping and driving) and symmetrical proportions.
Construction must be rugged and ample safety factors must be provided to carry loads as specified and to meet both on and off-road requirements and speed as set forth under "Performance Test and Requirements."

PERFORMANCE TESTS AND REQUIREMENTS

A road test shall be documented with the apparatus fully loaded and a continuous run of ten (10) miles or more shall be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts, and rear axles shall run quietly and free from abnormal vibration or noise throughout the operating range of the apparatus. The apparatus, when loaded, shall be approximately 66% on the rear axle. The successful bidder shall furnish a weight certification showing weight on the front and rear axle, and the total weight of the completed apparatus at the time of delivery.

a. The apparatus must be capable of accelerating to 30 MPH from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed engine RPM.

b. The service brakes shall be capable of stopping the fully loaded vehicle within 35 feet from a speed of 25 MPH on a level concrete highway.

c. The apparatus, fully loaded, shall be capable of obtaining a speed of 50 MPH on a level highway with the engine not exceeding 95% of its governed RPM (full load).

d. The apparatus shall be tested and approved by a qualified testing agency in accordance with their standard practices for pumping engines.

e. The contractor shall furnish copies of the Pump Manufacturer's Certification of Hydrostatic Test (if applicable), the Engine Manufacturer's current Certified Brake Horsepower Curve and the Manufacturer's Record of Construction Details.

f.

FAILURE TO MEET TESTS

In the event the apparatus fails to meet the test requirements of these specifications on the first trial, a second trial may be made at the option of the bidder within thirty (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. Permission to keep and/or store the apparatus in any building owned or occupied by the purchaser shall not constitute acceptance of same.

EXCEPTIONS TO SPECIFICATIONS

The following specifications shall be strictly adhered to. Exceptions shall be considered if they are deemed equal to or superior to the specifications, provided they are fully explained on a separate page entitled "EXCEPTIONS TO SPECIFICATIONS." Exceptions shall be listed by page and paragraph.

Failure to denote exceptions in the above manner shall result in immediate rejection of the proposal. In addition a general statement taking "TOTAL EXCEPTION" to the specifications shall result in immediate rejection of bid.

GENERAL CONSTRUCTION

The apparatus shall be designed and the equipment mounted with due consideration to distribution of load between the front and rear axles so that all specified equipment, including filled water tank, a full complement of personnel and fire hose shall be carried without injury to the apparatus. Weight balance and distribution shall be in accordance with the recommendations of the International Association of Fire Chiefs and National Fire Association (or American Insurance Association). Certified Laboratories certificate shall be submitted by the manufacturer. Weight of apparatus shall meet all federal axle load laws.

DELIVERY REQUIREMENTS

The apparatus shall be completely equipped as per these specifications upon arrival and on completion of the required tests shall be ready for immediate service in the fire department of the purchaser. Any and all alterations required at the scene of delivery to comply with these specifications must be done at the contractor's expense.

PURCHASER RIGHTS

The Purchaser reserves the right to accept or reject any bid. The purchaser also reserves the right to award in their best interest and reserves the right to waive any formalities.

U.S.A. MANUFACTURER

The entire apparatus shall be assembled within the borders of the Continental United States to insure more readily available parts (without added costs and delays caused by tariffs and customs) and service, as well as protecting the purchaser should legal action ever be required.

MANUFACTURER'S EXPERIENCE

Each manufacturer shall have been in business making similar apparatus for a minimum of seventy-five (75) years and must have had single ownership for more than fifty (50) years.

FAMA COMPLIANCE

Manufacturer must be a current member of the Fire Apparatus Manufacturer's Association.

DETAILED WIRING SCHEMATICS

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

CHASSIS

The chassis shall be designed and built by the manufacturer with strict standards of quality and service.

DOUBLE FRAME RAILS/SINGLE AXLE

The chassis frame shall be of a ladder type design utilizing industry accepted engineering best practices. The frame shall be specifically designed for fire apparatus use.

Each frame rail shall be constructed of two .375" thick-formed channels. The outer channel shall be 10.188" x 3.50” x .375” and the inner channel (liner) shall be 9.31” x 3.13” x .375”.

Over the entire length of the frame rail, the section modulus shall be 31.8 $in.^3$. The resistance to bending moment (RBM) shall be 3,498,000 in./lbs.

Each rail is media blasted to remove scale, oil, and contaminants. This blasting also ensures paint adhesion. Each rail will be primed with Cathacoat 302HB, a high performance, two component, reinforced inorganic zinc-rich primer with proven cathodic protection of steel structures, prior to assembly.

The cross-members shall be constructed of minimum .375" formed channels and have formed gusseted ends at the frame rail attachment. Single axle rear suspensions will utilize 3 piece bolt assembled cross-members at each suspension hanger

.625 inch, grade 8 flange, Huck bolt fasteners shall be used on all permanently attached brackets to the frame to eliminate the need for bolt re-tightening. Additional hardware will be Grade 8 Zinc coated flange head locking fasteners.

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

FRONT TOW EYES, TOP OF BUMPER

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

TOW EYES, PAINTED FINISH

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

STEERING

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

DRIVELINE

The driveline shall consist of Spicer 1710 series dual grease fitting universal joints with "Half-Round" end yokes. The drive shaft shall be built with a heavy-duty steel tube 4.095" outside diameter x .180 wall thickness. The shafts shall be dynamically balanced prior to installation into the chassis. A splined slip joint shall be provided in each shaft assembly. Universal joints shall be extended life. There shall be two (2) Zerk fittings in each universal joint assembly so the joint can be greased without turning the shaft.

ENGINE

Cummins Diesel L 9, 380HP @ 2000 R.P.M 1150 ft. lb. Torque @ 1400 R.P.M Displacement:
8.9 liter displacement.

Cylinders:	6
Bore:	4.49" (114mm)
Stroke:	5.69" (145mm)

AIR COMPRESSOR

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

LUBE OIL

Lube oil cooler, and a full flow lube oil filter shall be provided.

STARTER

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

EXHAUST SYSTEM

The engine exhaust system shall include the following components:
Diesel Particulate Filter (DPF) Diesel
Oxidation Catalyst (DOC) Diesel
Exhaust Fluid (DEF)
Selective Catalytic Reduction Filter (SCR)

The SCR catalyst utilizes the DEF fluid, which consists of urea and purified water, to convert NOx into nitrogen and water. This will meet or exceed 2017 EPA emissions requirements.

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

AFTER TREATMENT SYSTEM

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

ON-BOARD DIAGNOSTIC (OBD) SYSTEM

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

ENGINE WARRANTY

The engine shall have a five (5) year or 100,000 mile warranty and approval by Cummins Diesel for Full Engine Coverage Plan (RVF) – which is their most complete engine coverage plan, which includes EGR components installation in the chassis. There shall be no deductible for the first two years. A one hundred dollar deductible shall apply for service beginning the third year.

AIR CLEANER/INTAKE

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

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

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

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

PRIMARY FUEL FILTER/WATER SEPARATOR

A Cummins approved Fleetguard FS1090 fuel filter/water separator shall be remote mounted to the chassis frame rail.

SECONDARY FUEL FILTER

A Cummins approved Fleetguard FF63009 fuel filter will be remote mounted to the rear of the engine.

TRANSMISSION

The chassis shall be equipped with a Generation 5 Allison EVS3000 six (6) speed automatic transmission. It shall be programmed five (5) speed, sixth gear locked out, for fire apparatus vocation, in concert with the specified engine.

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

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

Ratings: Max Input (HP) 450 Max Input (Torque) 1255 (lb ft)
Max Turbine (Torque) 1700 (lb ft)

Mechanical Ratios: 1st - 3.49:1 2nd - 1.86:1
3rd - 1.41:1
4th - 1.00:1
5th - 0.75:1
Reverse - -5.03:1

TRANSMISSION FLUID

The transmission shall come filled with an Allison approved Synthetic Transmission Fluid that meets the Allison TES-295 specification.

ENGINE BRAKE

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

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

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

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

TRANSMISSION COOLER

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

TRANSMISSION SHIFTER

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

COOLING SYSTEM

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

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

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

RADIATOR

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

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

CHARGE AIR COOLER

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

COOLANT

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

HOSES & CLAMPS

Silicone hoses shall be provided for all engine coolant lines.

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

FAN

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

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

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

FAN CLUTCH

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

SURGE TANK

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

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

FUEL TANK

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

The tank shall be removable by means of six (6) bolted connections and dropped. One (1) tank baffle shall be used.

Dual pick-up and return ports with a single 3/4" tank drawtube shall be provided for diesel generators if required.

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

The fuel tank shall be mounted in a saddle with 1/4" rubber, contact cemented to the saddle. The bottom of the

fuel tank shall contain a 1/2" drain plug.

DUAL FUEL FILLS

The fuel tank shall be equipped with two (2) 2-1/4" filler neck assemblies with a 3/4" vent, one located on the driver's side and one on the officer's side of the truck. A fuel fill cap attached with a lanyard shall be provided for each fill.

FUEL COOLER

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

DIESEL EXHAUST FLUID TANK

The exhaust system shall include a molded cross linked polyethylene tank. The tank shall have a capacity of 5 usable gallons and shall be mounted behind the exterior of the cab.

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

A placard shall accompany fill location noting DEF specifications.

ALTERNATOR

A 320 ampere Prestolite/Leece Neville alternator with serpentine belt shall be provided The alternator shall generate 260 amperes at idle.

LOW VOLTAGE ALARM

A Floyd Bell TXB-V86-515-QF low voltage alarm, audible and visual, shall be provided.

MASTER BATTERY DISCONNECT SWITCH

A master battery disconnect switch shall be installed under the driver's seat. The switch shall be installed on the vertical face of the seat riser so it is visible when the cab door is opened.

BATTERY JUMPER TERMINAL

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

120V MANUAL SHORELINE INLET

The apparatus shall be equipped with a Kussmaul WPR-1-XX 120V 20 amp manual shoreline inlet to provide power to the battery charger from an external source.

A 20 amp connector shall be provided and shipped loose for connecting the external source electric cord to the shoreline inlet.

BATTERY CHARGER

A Kussmaul Auto Charge LPC 40 model #091-200-12-IND low profile 40 amp battery charger shall be provided and installed in the cab. The unit shall include an auxiliary 15 amp output circuit with power source selector for operating accessory loads. The charger shall be wired to the 120V shoreline inlet.

The charger shall include a Model #091-200-IND remote bar graph display.

FRONT AXLE

A Meritor™ MFS-18-133A non-driving, front steer axle with a capacity 18,000 pounds shall be provided. The axle shall have a 3.74" dropped I-beam, 10 bolt, hub piloted, furnished with oil seals.

SUSPENSION (FRONT)

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

ENHANCED FRONT SUSPENSION SYSTEM

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

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

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

FRONT TIRES

Front tires shall be Goodyear 315/80R22.5, load range L, G291 highway tread, single tubeless type with a GAWR of 18,000 pounds. Wheels shall be disc type, hub piloted, 22.5 x 9.00 10 stud 11.25 bolt circle.

REAR AXLE

The rear axle shall be a Meritor™ RS-26-185 Single reduction drive axle with a capacity of 27,000 lbs. The axles shall be hub piloted, 10 studs, furnished with oil seals.

TOP SPEED

The top speed shall be approximately 68 MPH.

SUSPENSION (REAR)

27,000 LB AIR RIDE
A Hendrickson FIREMAAX model FMX272 air ride rear suspension shall be provided. The suspension shall be a dual air spring design equipped with dual height control valves to maintain proper ride height. To reduce axle stress and maintain axle position and pinion angle the suspension design shall incorporate three torque rods. The ground rating of the suspension shall be 27,000 pounds.

REAR TIRES

Rear tires shall be Goodyear 12R22.5, load range H, Endurance RSA highway tread, dual tubeless type with a GAWR up to 27,000 pounds. Wheels shall be disc type, hub piloted, 22.5 x 8.25 10 stud with 11.25" bolt circle.

TIRE PRESSURE MONITOR

A Quick Pressure mechanical tire pressure sensor/indicator shall be provided for each wheel. The pressure sensor shall indicate if the tire is properly inflated. Each indicator shall have a green & red display visible inside a sight glass on the sensor. Full green indicates that the pressure is correct. Partial green/red indicates that the tire is under inflated by as little as 10%. Full red indicates that the tire is under inflated by 25% or more. The indicators shall replace the standard valve stem caps. A total of six (6) indicators shall be provided.

WHEELS

The front and rear wheels shall be ALCOA® brand aluminum. DURA-BRIGHT® finish shall be provided on front and outside-rear wheels.

The same finish shall be provided on the inside-rear wheels.

HUB COVERS

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

LUG NUT CAPS

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

FRONT MUD FLAPS

Hard rubber mud flaps shall be provided for front tires.

REAR MUD FLAPS

Hard rubber mud flaps shall be provided for rear tires.

AIR DISC BRAKES

The apparatus shall be equipped with Arvin Meritor DiscPlus EX225 Air Disc Brakes. Each disc brake assembly shall include one (1) 17” vented rotor, one (1) lightweight hub, one (1) twin-piston caliper, and two (2) quick- change pads.

PARKING BRAKE GUARD

A guard shall be provided over the parking brake knob.

PARKING BRAKE

A four-wheel parking brake system shall be provided.

AIR BRAKE SYSTEM

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

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

systems.

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

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

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

Four (4) supply tanks shall be provided. One air reservoir shall serve as a wet tank and a minimum of one tank shall be supplied for each the front and rear axles. A Schrader fill valve shall be mounted in the front of the driver's step well.

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

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

CENTRAL LOCATION FOR AIR TANK DRAINS

The air brake system shall have all the air tank drain valves located in a customer specified location on the apparatus.

AIR INLET

An air system inlet/fill connection shall be provided. The inlet shall be connected to the air brake to allow constant air feed. The location of the inlet shall be on the left hand side of the driver's step well.

ELECTRONIC STABILITY CONTROL SYSTEM

An Arvin Meritor / Wabco Electronic Stability Control (ESC) system shall be provided and installed. The ESC system continually monitors the vertical acceleration, and yaw (horizontal plain rotation) of the vehicle, and compares it to a critical threshold where vehicle rollover may occur. When the critical threshold is met, the ESC shall intervene by reducing engine torque and engaging the engine retarder, while automatically applying both the steering and drive axle brakes as needed. In many cases, activation occurs before the driver is even aware it is needed.

AIR BRAKING ABS SYSTEM

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

The system shall constantly monitor wheel behavior during braking. Sensors on each wheel transmit wheel speed data to an electronic processor, which shall sense approaching wheel lock and instantly modulate brake pressure up to 5 times per second to

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

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

AUTOMATIC SLIP RESPONSE

The Rockwell/Wabco 4 Channel Anti-lock braking system shall be provided. The system shall be supplied with (ASR) Automatic slip response. The ASR controls slip under acceleration.

ASR SWITCH

An on/off switch for the Acceleration Slip Resistance shall be provided on the dash. This will allow the driver to override the computer and turn the ASR on when at a higher speed for better traction in deep snow or mud.

AUTOMATIC TIRE CHAIN SYSTEM

The apparatus shall be equipped with an On-Spot brand Automatic Tire Chain System. There will be one

driver's side and one passenger's side chain unit.

A continuous duty solenoid shall be provided and activated by the dashboard switch, which opens and allows compressed air to flow to the chain units. Compressed air will be delivered to the solenoid from the vehicle's air tank. The solenoid shall be mounted on the frame rail or crossmember in close proximity of the chain units. This air/electric solenoid shall be 12-volts and draw no more than 1 ampere of current. Electrical wire shall be in accordance with NFPA 1901.

A 12-volt dashboard switch shall be provided so that the operator may engage the chains from the driver's seat. The switch shall be lighted to indicate when the chains are engaged. The switch shall come complete with a switch guard to avoid accidental engagement of the automatic chains. The switch guard shall be properly labeled. A dashboard sticker with operating instructions shall be provided.

COMPRESSION FITTINGS ON AIR SYSTEM

All air line fittings installed on the chassis shall be compression style fittings. The following locations shall utilize push-on fittings:

- Pressure protection valve (accessory block)
- Double check valve (braking system, park brake)
- One way check valve (brake valve tank)
- Elbow Male Modified 1/4" tube x 1/4" MP (low air switch)
- Elbow Male 1/4" tube x 3/8"MP (brake pedal solenoid)
- Connector 1/4" x 3/8"MPT (brake pedal solenoid)
- Switch stoplight (Wabco sealed switch/brake light and service brake switch)
- Low pressure switch (PTC) (Wabco sealed switch/low air switch)

MISCELLANEOUS CHASSIS EQUIPMENT

Fluid capacity plate affixed below driver's seat.
Chassis filter part number plate affixed below driver's seat. Maximum rated tire speed plaque near driver.
Tire pressure label near each wheel location.
Cab occupancy capacity label affixed next to transmission shifter. Do not wear helmet while riding plaque for each seating position. NFPA compliant seat belt and standing warning platesprovided.

ALUMINUM CAB

The cab shall be a full tilt 2-person cab designed specifically for the fire service and manufactured by the chassis builder. Apparatus cabs that are not manufactured by the apparatus manufacturer shall not be acceptable.

CAB DESIGN

The apparatus chassis shall be of an engine forward, fully enclosed tilt cab design. There shall be two (2) side entry doors.

The cab shall be of a fully open design with no divider wall or window separating the front and rear cab sections. Cab designs that utilize roof mounted air conditioning units, are not desired.

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

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

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

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

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

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

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

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

CAB SUB-FRAME

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

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

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

CAB DIMENSIONS

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

Cab Width (excluding mirrors) 98" Cab
Length (from C/L of front axle)
To front of cab (excluding bumper) 70" To rear
of cab 36"
Total Cab Length (excluding bumper) 106"

ROOF DESIGN

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

Cab Dimensions Interior
Front 59"
Rear 59"

Cab Dimensions Exterior
Front 65"
Rear 65"

FENDER CROWNS

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

CAB INSULATION

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

EXTERIOR GLASS

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

SUN VISORS

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

CAB STRUCTURAL INTEGRITY

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

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

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

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

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

SEAT BELT TESTING

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

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

CAB LOCKDOWN LATCHES

Cab lockdown latches shall be provided to prevent the cab from being tilted in the down position. Once the cab tilt switch is engaged the cab latches will release to allow the cab to be tilted.

CAB TILT SYSTEM

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

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

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

MANUAL CAB LIFT

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

BARRIER STYLE CAB DOORS

Barrier style cab doors shall be provided. The lower part of the door shall be removed to expose the cab entry step well.
The cab doorframes shall be constructed from 6061 T6 aluminum extrusions fitted with a 5052 H32 aluminum sheet metal skin and shall be equipped with dual weather seals. The outside cab door window opening shall be framed by a black anodized aluminum trim, to provide a clean appearance. The cab doors shall be equipped with heavy-duty door latching hardware, which complies with FMVSS 206. The door latch mechanism shall utilize control cable linkage for positive operation. A rubber coated nylon web doorstop shall be provided.
The doors shall be lap type with a 10 gauge full-length stainless steel flange and 3/8" diameter hinge pin and shall be fully adjustable.
All openings in the cab shall be grommeted or equipped with rubber boots to seal the cab from extraneous noise and moisture.
The cab doors shall be designed to satisfy the following minimum opening and step area dimensions: Door Opening: 36.5"
x 73"

STEP WELLS

The lower cab step wells shall be sprayed with a black Raptor urethane blend. The back and side walls of the step well shall also be lined with 1/8” aluminum treadplate.

CAB STEPS

The lower cab steps shall be no more than 22" from the ground. Grip strut material shall be installed on the stepping surface.

An intermediate step shall be provided, mid way between the lower cab step, and the cab floor. The intermediate step shall be slightly inset to provide for safer ingress and egress. Diamondplate material shall be installed on the stepping surface.

All steps shall be covered with material that meets or exceeds the NFPA requirements for stepping surfaces.

POWER WINDOWS

The cab entry doors shall have power windows. Each door shall be individually operated and the driver’s position shall have master control over both windows. Both windows shall roll down completely.

WINDSHIELD WIPERS

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

WINDSHIELD WASHER RESERVOIR

A four quart capacity windshield washer reservoir shall be provided. The fill access shall be located in the forward officer’s step well area.

MIRROR, BLIND SPOT

One (1) Velvac 8" diameter exterior blind spot mirror assembly shall be provided and mounted on the brow of the cab, officer's side.

UPPER GRILLE

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

UPPER GRILLE LOGO

The upper grille shall have a laser cut flaming "S" logo in the upper portion of the grille. The cut out shall contain reflective material behind.

LOWER GRILLE

The front of the cab shall be equipped with a polished stainless steel lower grille with custom laser engraved design per customer specifications. The lower grille shall also be backlit with LEDs. Color shall be specified by customer. The design shall allow proper airflow into the cooling system and engine compartment. Plastic chrome plated lower grille shall not be acceptable.

PAINTED STEEL BUMPER

There shall be a 12" high painted formed steel wrap-around (45 degree) bumper provided at the front of the apparatus. The bumper shall be mounted to a reinforcement plate constructed of 1/4" x 12" x 70" carbon steel. The frame rail extension shall be a reinforced four-sided boxed frame rail for superior safety protection. A gravel shield shall be provided, constructed of .188" aluminum diamond plate. The bumper extension shall be approximately 12".

BUMPER SIDES

The sides of the bumper shall also be painted steel in lieu of diamond plate. Each side shall feature a recessed painted steel pocket for the marker light and any auxiliarly lighting option selected. The pocket shall be a welded integral part of the bumper skin.

AIR HORNS

Two (2) Grover 1510 round, 24" long chrome plated, air horns shall provided.

AIR HORN BUMPER CUT-OUTS

The air horns shall be installed thru the front bumper.

AIR HORNS WIRED TO STEERING WHEEL

The air horns shall be wired through the steering wheel button. A selector switch shall be provided on the instrument panel to switch between functions.

ELECTRONIC SIREN

One (1) Whelen 295HFSA7 electronic siren shall be installed at the cab instrument panel complete with noise canceling removable microphone. The remote control head shall be flush mounted in a location specified by the fire department.

SIREN SPEAKERS

Two (2) Cast Products SA4201-5-A 100 watt weatherproof siren speakers shall be provided and wired to the electronic siren.

SPEAKER MOUNTING

The electronic siren speaker(s) shall be installed behind the main cab grille.

FEDERAL Q2B SIREN

There shall be a Federal Q2B-NN siren installed in the center of the cab grille. The siren shall be securely mounted and activated by means of a solenoid and shall include a brake.

FOOT SWITCH, DRIVER'S SIDE

A foot switch for the mechanical siren shall be provided on the driver's side.

FOOT SWITCH, OFFICER'S SIDE

A foot switch for the mechanical siren shall be provided on the officer's side.

CAB EXTERIOR LIGHTING

Exterior lighting and reflectors shall meet or exceed Federal Motor Vehicle Safety Standards and National Fire Protection Association requirements.

HEADLIGHTS

The front low and high beam headlights shall be FIRETECH model FT-4X6 LED, rectangular shaped, quad style installed in custom rectangular shaped stainless steel housings on the front of the cab. Each housing shall accommodate a forward-facing turn signal in the outboard location and a side-facing warning light.

An additional pair of rectangular shaped stainless steel housings shall be installed on the front of the cab above the headlight housings. Each housing shall accommodate two (2) forward-facing warning lights and a side-facing turn signal.

HEADLIGHT FINISH

The interior components of the headlights shall have a chrome finish.

ALTERNATING HEAD LAMP

The headlights shall have an alternating flash feature for emergency response use.

FRONT TURN SIGNALS

There shall be four (4) Whelen 400 Series Model 40A00AAR LED rectangular amber turn signal lights mounted one (1) each side in the front of the headlight housings and one (1) mounted on the side of each warning light housing.

CORNERING LIGHTS

Two (2) Whelen Model M6 LED cornering lights shall be mounted on the sides of the bumper, one each side. The lights shall come on steady with their coordinating turn signal.

ICC/MARKER LIGHTS

Five (5) Gorte 47183 ICC/marker lights shall be provided on top of the roof of the cab to meet D.O.T. requirements.

EXTERIOR CAB HANDRAILS

There shall be two (2) 24" long, handrails provided and installed, at each front cab entrance. The handrails shall be constructed of type 304 stainless steel 1.25 inch diameter tubing with bright finish and knurled gripping surface. Mounting flanges shall be constructed from 7 gauge, .180 thick, stainless sheet. Each grab rail shall have 90 degree returns to flanges. The ends of grab rail shall pass through the flanges and be welded to form one structural unit. The handrails shall be mounted using 1.25" SS Hex bolts, with a barrier rubber gasket at each flange.

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

COAT HOOKS FOR GRAB HANDLES

There shall be a coat hook installed on the upper portion of the exterior cab handrail, on the driver's side, for hanging of coats, turnout gear, etc.

COAT HOOKS FOR GRAB HANDLES

There shall be a coat hook installed on the upper portion of the exterior cab handrail, on the officer's side, for hanging of coats, turnout gear, etc.

HANDRAILS, FRONT OF CAB

There shall be a pair of knurled stainless steel handrails on the front face of the cab, below the windshields.

INTERIOR CAB HANDRAILS

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

DRIVER'S SIDE EXTERIOR CAB COMPARTMENT

There shall be a cabinet constructed of .125 aluminum plate recessed in the cab behind driver's side door. The compartment shall be approximately 36" wide x 36" high x 27" deep.

The compartment shall be operated by an individual switch and illuminated with two (2) LED lights.

INTERIOR STORAGE AREA

An opening, approximately 16” wide x 36” high shall be provided into the interior compartment storage area on the driver's side.

EXTERIOR DOOR

The exterior compartment shall have a hinged door that is hinged at the front. The doors shall have an Austin Hardware slam catch single-point "D"-ring door closure and held open with gas struts.

ADDITIONAL FOLDING STEPS

Two (2) Innovative Control fold-down steps with integrated step light shall be provided on the side of cab behind the front axle located no more than 22" from the ground.

ADDITIONAL EXTERIOR CAB HANDRAIL

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

OFFICER'S SIDE EXTERIOR CAB COMPARTMENT

There shall be a cabinet constructed of .125 aluminum plate recessed in the cab behind officer's side door. The compartment shall be approximately 36" wide x 36" high x 25.5" deep.

The compartment shall be operated by an individual switch and illuminated with two (2) LED lights.

INTERIOR STORAGE AREA

An opening, approximately 16” wide x 36” high shall be provided into the interior compartment storage area on the officer's side.

EXTERIOR DOOR

The exterior compartment shall have a hinged door that is hinged at the front. The doors shall have an Austin Hardware slam catch single-point "D"-ring door closure and held open with gas struts.

ADDITIONAL FOLDING STEPS

Two (2) Innovative Control fold-down steps with integrated step light shall be provided on the side of cab behind the front axle located no more than 22" from the ground.

ADDITIONAL EXTERIOR CAB HANDRAIL

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

with a barrier rubber gasket at each flange. Sufficient space shall allow for a gloved hand to firmly grip the rail.

CAB REAR WALL COVERING

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

The interior back wall of the cab and the side walls near the forward-facing crew seats shall be covered with 3/16” smooth aluminum.

CAB INTERIOR

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

The front and rear headliners, as well as the rear cab wall, shall be finished in black Embossed FRP board.

INTERIOR DOOR PANELS

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

CAB FLOOR COVERING

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

DIAMOND PLATE, CAB FLOOR

The cab floor shall be covered with 1/8" embossed diamondplate in the driver's and officer's area.

ENGINE ENCLOSURE

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

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

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

ENGINE ENCLOSURE COVERING

The top of the engine enclosure shall be covered with Scorpion heavy duty, black polyurethane blended coating. The textured coating

shall provide paramount durability and wear resistance against foreign objects and normal wear and tear as well as sound deadening and insulation. The rubberized cab floor covering shall extend up the lower exterior sides of the engine enclosure to aid in sound deadening and heat resistance.

WORK SURFACE

There shall be a flat work surface in front of the officer's seat.

CHASSIS WIRING, MULTIPLEX

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

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

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

MASTER ELECTRICAL PANEL

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

MULTIPLEX ELECTRICAL SYSTEM

The apparatus shall be equipped with the Class1 ESKEY, no substitutes accepted. The Manufacturer of the Multiplex system shall provide at a minimum three cities of reference; each city should have at least ten of the bid multiplex systems operation in ten vehicles for more than two years period.

The Multiplex system hardware that is being put into the apparatus of this bid should be field proven for a minimum of four years.

There are several key benefits to multiplexing, one is to reduce the number of connectors and splices in a vehicle's electrical system. To achieve this it is important to integrate many of the stand alone components and modules listed below into the node or nodes. Wherever it is stated that an "add-on" module will not be acceptable, there shall be no exceptions.

The Vehicle Manufacturer shall design from the ground up, the wiring harnesses needed to interface with the modules. Cut up or modification of existing hardwired harnesses is not expectable.

The grounds from each device should return to the main ground trunk in each sub harness by the use of ultrasonic splices. Terminal strips should be reduced as much as possible or eliminated, as each crimp is a weak point in the harness that may fail over time.

The multiplex network must be Peer to Peer. That is, no one module should hold the programming for other modules.

The definition of Peer to Peer for the purpose of this specification is that each module that controls a device shall holds it's own configuration program and be able to turn that device on, even if disconnected from the network, if the interlocks are local. Inputs such as Emergency Master and Front Lightbar in the same node as the outputs for the lightbar will turn on the light bar even if

disconnected from the network – Stand Alone.

Outputs:

The Node outputs shall perform all the following items without the use of add on modules.

1. Load Shedding: The System shall have the capability to Load Shed any output specified.
2. Load Sequencing: The System shall be able to sequence from 0 – 8 levels any output. Sequencing is used to prevent excusive voltage dips and spikes when the warning lights are turned on.
3. 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-FET's 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.
4. Flashing Outputs: The System shall be able to flash any output in any phases at several different flash rates.
5. PWM: The modules shall have the ability to PWM (Pulse Width Modulate) outputs. PWM can be used to for a DTRL option, without the use of an add on module.
6. Diagnostics: Outputs shall be able to detect either a short or open circuit. The System should be able report in "real time" a text based message that points the maintenance person to a specificoutput.

Inputs:

1. The inputs shall have the ability to switch by a ground or vbatt signal.
2. 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.

Automatic High Idle:

The Multiplex system shall be able to perform automatic high idle via a network gateway or by using an existing output on a module to provide the proper signals to an OEM Engine ECU. This task should be handled with existing inputs and outputs. The Multiplex system will monitor the voltage and turn the high idle on until the voltage set point is reached. The engine should remain at high idle for a period of time after the set point is reached.

Display Section:

Displays shall be able to provide real time information regarding Load Shedding and System Status, such as network traffic/errors or shorts and open circuits. The display used must meet all the requirements listed below. Test data must be made available upon request to prove the display will "operate" in the environmental parameters listed.

Flash card or other "Consumer" devices should be considered un-appropriate. They are not suitable for automotive applications, as they will not survive EDS, Transient voltages and extreme temperature conditions.

ULTRA-VIEW COLOR DISPLAY

One (1) UltraView 3 color displays shall be installed. Located on the driver's side center dash.

An ergonomically designed center dash console shall be provided to house each Vista screen and other switches. The screens shall be mounted at a 45 deg. angle, to facilitate a better viewing angle.

The center dash shall be constructed from 1/8" aluminum plate and shall be painted with a zolatone paint finish to match the interior of the cab.

Dash consoles made from ABS plastic, or other less rugged materials are not desired and will not be accepted. NO EXCEPTION.

Size

The color display shall be at least 7 inches in diagonal measurement. And shall be mounted in the center dash area easily accessible for both the driver and the officer.

Aspect Ratio

The Display's aspect ratios shall be 16:9 (Wide Screen), the standard square 4:3 aspect ratio is not acceptable.

Virtual Switches

The Display shall be able turn on and off multiple devices around the vehicle; including all warning lights, scene lights and interior lights. Engage the pump, engine brake and more. The status of each device should be shown on the display in the form of a button. The text for the device will be inside each button on the screen. The display shall have the capability of having at least 80 virtual switches. The color of each virtual button shall change to reflect its status, eliminating the need for the words on/off or enable/disable.

Door and other Devices Ajar Indicator

The display shall have a graphical image to represent the apparatus; the image should resemble the apparatus. This image shall display the doors that are open and their locations. Ladder racks, telescopic lights and booms should also be represented.

Real Time Clock

The display shall have a real time clock and display the time.

Timer

The display shall have timer capabilities so that an EMT can use it for taking pulses or a Fire Truck Caption can retrieve pump hours or other times requested to be stored in the final order of the truck.

Virtual Gauges

The display will have the ability to display engine and vehicle information in a gauge format.

Temperature

Cold

The display shall startup and function normally within 2 minutes after being cold soaked at -40° Celsius for 30 minutes. This must be accomplished without the aide of power draining add-on heaters.

Hot

The display shall be able to function in +85° Celsius. If the displays contrast gets dark beyond the ability to be easily read in any day or night lighting, then the display should be considered unacceptable.

Electrical Environment

Reverse Polarity

The display shall not be damaged when its polarity is reversed with 24volts for one minute.

Transients

The display shall be able to withstand positive and negative going transients from 100 to 300 volts and all other tests outlined in SAE 1999 J1113/11

Electrostatic Discharge

The display shall not be damaged in any way when subjected to electrostatic discharge as outlined in SAE J1455 1999 4.11.2.2.5.1

Mechanical Performance

The display shall not be damaged and shall function normally after any of the environmental factors listed below are encountered

1. Temperature Cycle Test (SAE J1455 1999 4.1.3.1) 2. Thermal Shock (SAE J1455 1999 4.1.3.2)
3. Humidity (SAE J1455 1999 4.2.3 Figure 4a)
4. Mechanical Vibration (SAE J1399)

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.

INSTRUMENT PANEL

The main dash shroud, which covers the area directly in front of the driver from the doorpost to the engine hood, shall be constructed of vacuum formed ABS material with scorpion texture. The dash shall be a one- piece hinged panel that tilts outward for easy access to service the internal components. The gauge panel shall be constructed with a .125” aluminum panel, covered with a scratch resistant reverse printed and laminated poly carbonite.

The gauges shall be AMETEK Vehicular Instrumentation Systems (VIS), Next Generation Instrumentation System (NGI) with built-in self-diagnostics and red warning lights to alert the driver of any problems. All gauges and controls shall be backlit for night vision and identified for function. All main gauges and warning lights shall be visible to the driver through the steering wheel.

MASTER BATTERY & IGNITION SWITCH

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

DIESEL PARTICULATE FILTER CONTROLS

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

INSTRUMENTATION & CONTROLS

Instrumentation on dash panel:
Tachometer/hourmeter with built in high exhaust system regeneration temperature, and instrument malfunction indicators
Speedometer/odometer with built in turn signal, high beam and re-settable trip odometer Voltmeter
Diesel fuel gauge
DEF (Diesel Exhaust Fluid) gauge
Engine oil pressure Transmission
temperature Engine temperature
Primary air pressure
Secondary air pressure

Indicators and warning lights in front of thedriver: Parking brake
engaged
Low air with buzzer Antilock
brake warning Check
transmission Transmission

temperature Upper power
indicator Seat belt
Engine temperature
Low oil indicator
Low voltage indicator Air
filter restriction light Low
coolant indicator High idle
indicator Power on indicator
Check engine
Stop engine
Check engine MIL lamp DPF
indicator
High exhaust temperature Wait to
start

Other indicator and warning lights (if applicable):
Differential locked
PTO (s) engaged Auto-
slip response
Retarder engaged
Retarder temperature ESC
indicator

Controls located on main dash panel:
Master power disconnect with ignition switch Engine
start switch
Headlight switch
Windshield wiper/washer switch Differential
lock switch (if applicable) Dimmer switch for
backlighting

Controls included in steering column: Horn
button
Turn signal switch
Hi-beam low-beam switch 4-
way flasher switch
Tilt-telescopic steering wheel controls

CENTER CONTROL CONSOLE

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

Controls located in the console conveniently accessible to the driver:
Transmission shifter Remote
mirror control

Illuminated rocker switches to control high idle, Jacob's brake, siren/horn, siren brake, master emergency, and other customer specified components

12V power point (if applicable)

Controls located in the console conveniently accessible to the driver and the officer (center): Pump shift control with OK TO PUMP and PUMP ENGAGED lights

Parking brake control with a guard to prevent accidental engagement

Controls located in the console conveniently accessible to the officer:

Illuminated rocker switches to control customer specified components that are easily reachable to the officer and do not allow for compromise of the driver's view, and eliminate the need for foot switches

Surface to recess siren head, radio head, or other desired items as space permits 12V power point (if applicable)

Driving compartment warning labels shall include: HEIGHT OF

VEHICLE

OCCUPANTS MUST BE SEATED AND BELTED WHEN APPARATUS IS IN MOTION DO NOT USE

AUXILIARY BRAKING SYSTEMS ON WET OR SLIPPERY ROADS

EXIT WARNINGS

Additional labels included:

COMPUTER CODE SWITCH ABS

CODE SWITCH

FLUID DATA TAG

CHASSIS DATA TAG

OVERHEAD CONTROL CONSOLE

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

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

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

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

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

ENGINE WARNING SYSTEM

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

audible buzzer activation and a CHECK ENGINE (amber) light. Note: (Some engine configurations may also include a fluid warning light.)

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

DOOR AJAR ALARM

A door ajar alarm with silence button shall be provided. The location of the button shall be determined at the preconstruction conference.

HIGH IDLE

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

AUXILIARY POWER POINTS

Two (2) 12-volt 20-ampere auxiliary lighter socket type plug-ins, shall be provided in the cab, one near the driver and one near the officer.

USB POWER POINTS

Two (2) 12-volt dual port USB power points shall be provided in the cab.

CAB ACCESSORY FUSE PANEL

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

POWER & GROUND STUDS, OVERHEAD COMMAND CONSOLE

There shall be a set three of (3) threaded power studs provided in the cab’s overhead Command Console for future installation of two-way radios.

The studs shall be wired as follows:

- One (1) 12-volt 60-amp, direct to the battery
- One (1) 12-volt 30-amp controlled by the ignition switch
- One (1) 12-volt 125-amp ground

POWER & GROUND STUDS, LOWER COMMAND CONSOLE

There shall be a set three of (3) threaded power studs provided in the cab’s lower Command Console for future installation of two-way radios.

The studs shall be wired as follows:

- One (1) 12-volt 60-amp, direct to the battery

- One (1) 12-volt 30-amp controlled by the ignition switch
- One (1) 12-volt 125-amp ground

VEHICLE DATA RECORDER

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

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

LIGHTING CAB INTERIOR

Interior lighting shall be provided inside the front of the cab for passenger safety. Two (2) Whelen 6" round ceiling mounted combination red/clear LED dome lights with a push button on/off switch in the light lens. One light shall be located over each the officer and driver's position. The lights shall also activate from the open door switch located in each cab doorjamb.

HEATER/DEFROSTER/AIR CONDITIONER

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

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

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

HEATER/DEFROSTER/AIR CONDITIONING CONTROLS

The heater/defroster/air conditioning shall be in the overhead console in the center of the apparatus cab within reach of the driver and officer. The controls shall be illuminated for easy locating in dark conditions. The controls shall be in such a way that the driver will not be forced to turn away from the road to make climate control adjustments. Control of all heater/defroster/air conditioning functions for the entire apparatus cab shall be achieved through these controls.

FLOORBOARD HEATING DUCT

There shall be ductwork to the floor of the cab, facing forward to provide heat for the front of cab floor area.

DEFROSTER DIFFUSER

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

TOOL MOUNTING PLATE

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

AUXILIARY DEFROSTER FAN

There shall be a Red Dot model RD-5-5786-OP 12-volt fan mounted under the upper command console, outboard of console position 1, directed at the driver's side windshield. The fan shall be activated by a 3- position toggle switch located at the base of the fan. The switch positions shall be High, Low and Off.

AUXILIARY DEFROSTER FAN

There shall be a Red Dot model RD-5-5786-OP 12-volt fan mounted under the upper command console, outboard of console position 7, directed at the officer's side windshield. The fan shall be activated by a 3- position toggle switch located at the base of the fan. The switch positions shall be High, Low and Off.

DRIVER'S SEAT

A H.O. Bostrom Sierra electric high back ABTS seat shall be provided for the driver. The seat shall be equipped with a red 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The seat shall have 8-way adjustment including fore/aft, height, front/rear seat cushion tilt, and reclining back. The seat shall be upholstered with heavy duty Low Seam Durawear Plus material.

HELMET STORAGE

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

OFFICER'S SEAT

An H.O. Bostrom Sierra ABTS high back seat shall be provided for the officer. The seat shall be equipped with a red 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The seat shall have fore/aft adjustment and shall be upholstered with heavy duty Low Seam Durawear Plus material.

UNDER SEAT STORAGE COMPARTMENT

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

HELMET STORAGE

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

SEAT UPHOLSTERY COLOR

The cab seat upholstery shall be black in color.

SEAT BELT WARNING SYSTEM

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

LED ICC/MARKER LIGHTS

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

INTERIOR LED LIGHTS

Two (2) OnScene Solution model #70156, 10” x 10” x 7/8”, 10-30 VDC, surface mount dual red and white LED light(s) with clear lens shall be provided throughout the vehicle. In addition light(s) will be capable of a five (5) second delay after switching off.

The light(s) shall be switched with high/low intensity setting at the entry door(s). An Innovative Controls black back-lit switch panel shall be provided to control specified lighting or other control switching.

TAIL LIGHTS

Rear body tail lights shall be vertically mounted and located per Federal Motor Vehicle Safety Standards, FMVSS and Canadian Motor Vehicle Safety Standards CMVSS. The following lights shall be furnished;

- Two (2) Whelen specified lower Zone "C" warning lights
- Two (2) Whelen M6 Series M6T amber LED turn signal lights
- Two (2) Whelen M6 Series M6BTT red LED stop/tail lights
- Two (2) Whelen M6 Series M6BUW LED back-up lights with clear lens

Each of the lights above shall be mounted in an M6FCV4, 4-light chrome finish bezels.

MIDSHIP MARKER/TURN SIGNAL

Two (2) Whelen model T0A00MAR 2" round amber LED midship body clearance marker/turn signal lights shall be provided and installed, one (1) light on each side of the body, in forward wheel well of rear axle. Midship marker/turn lights shall be wired to the headlight circuit of the chassis.

MARKER LIGHTS

The body shall be equipped with all necessary side and rear clearance lights and reflectors in accordance with Federal Motor Vehicle Safety Standards (FMVSS) and Canadian Motor Vehicle Safety Standards (CMVSS). Clearance lights shall be Truck-Lite model 18 series, 3 diode LED, reflectorized type to reduce the need for maintenance and lower the amp draw. Clearance lights on body shall be connected to the clearance light circuit of the chassis.

LICENSE PLATE LIGHT

One (1) Arrow #437 chrome plated LED license plate light shall be installed on the rear of the body. License plate light shall be wired to the headlight circuit of chassis. A fastener system shall be provided for license plate installation.

OPTICAL WARNING SYSTEM

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

A momentary rocker switch shall be provided near the driver and labeled Master Emergency to energize all of the optical warning devices provided. A secondary momentary rocker switch shall be provided near the officer. All lights shall operate at not less than the minimum flash rate per minute as specified by NFPA.

UPPER LEVEL WARNING DEVICES

The upper level shall be divided into zones A (front), B (officer's side), C (rear) and D (driver's side). Zone A shall be

provided by the chassis manufacturer as follows:

UPPER REAR CORNER WARNING LIGHTS

There shall be two (2) Whelen M9 SurfaceMax, linear super-LED Light(s) with full-fill optic provided, one (1) each side. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities. Component shall be covered by a five year Whelen factory warranty.

Each Light shall have:
- Red LEDs
- Red Lens

Each light shall have a chrome flange.

– Flash Pattern shall be (factory default) Action Scan.

The Lights shall be controlled at the Switch Panel in Cab.

UPPER FORWARD CORNER WARNING LIGHTS

There shall be two (2) Whelen M9 SurfaceMax, linear super-LED Light(s) with full-fill optic provided, one (1) each side. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities. Component shall be covered by a five year Whelen factory warranty.

Each Light shall have:
- Red LEDs
- Red Lens

Each light shall have a chrome flange.

– Flash Pattern shall be (factory default) Action Scan.

The Lights shall be controlled at the Switch Panel in Cab.

ZONE C - REAR WARNING LIGHTS

There shall be two (2) Whelen M9 SurfaceMax, linear super-LED Light(s) with full-fill optic provided, one (1) each side. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities. Component shall be covered by a five year Whelen factory warranty.

Each Light shall have:
- Red LEDs
- Red Lens

Each light shall have a chrome flange.

– Flash Pattern shall be (factory default) Action Scan.

The Lights shall be controlled at the Switch Panel in Cab.

LOWER LEVEL WARNING DEVICES

The lower level shall be divided into zones A (front), B (officer's side), C (rear) and D (driver's side). Zone A shall be provided by the chassis manufacturer as follows:

Zone A (front) shall have four (4) Whelen M6 series model M6* Super LED warning lights.

The lights shall be installed two (2) each side on the front of the cab in the warning light housings.

ZONES B AND D - BODY LIGHT (BODY WHEELWELL AREA)

There shall be two (2) Whelen M6 SurfaceMax, linear super-LED Light(s) with full-fill optic provided, one (1) each side. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities. Component shall be covered by a five year Whelen factory warranty.

Each Light shall have:
- Red LEDs
- Red Lens

Each light shall have a chrome flange.

– Flash Pattern shall be (factory default) Action Scan.

The Lights shall be controlled at the Switch Panel in Cab.

ZONES B AND D - BODY INTERSECTOR LIGHT (BODY REAR CORNERS)

There shall be two (2) Whelen M6 SurfaceMax, linear super-LED Light(s) with full-fill optic provided, one (1) each side. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities. Component shall be covered by a five year Whelen factory warranty.

Each Light shall have:

- Red LEDs
- Red Lens

Each light shall have a chrome flange.

– Flash Pattern shall be (factory default) Action Scan.

The Lights shall be controlled at the Switch Panel in Cab.

ZONE C - REAR WARNING LIGHTS (LOWER REAR CORNERS)

There shall be two (2) Whelen M6 SurfaceMax, linear super-LED Light(s) with full-fill optic provided, one (1) each side. The light head shall include an integral flasher with programmable flash patterns and Hi/Lo intensities. Component shall be covered by a five year Whelen factory warranty.

Each Light shall have:
- Red LEDs
- Red Lens

Each light shall have a chrome flange.

– Flash Pattern shall be (factory default) Action Scan.

The Lights shall be controlled at the Switch Panel in Cab.

ADDITIONAL WARNING LIGHTS

There shall be (2) additional Whelen M6 Series model M6* Super LED warning lights installed on the apparatus.

BROW MOUNTED LED SCENE LIGHT

A Whelen Pioneer PFH2 brow mounted LED scene light shall be provided. The lamp head shall operate at 12 volts DC, draw 12.5 amps, and generate 16,000 lumens of light. The light shall be mounted at the front brow of the cab and shall be controlled from a switch in the cab.

SIDE LED SCENE LIGHTS

There shall be four (4) Whelen M9 Series Model M9LZC , 9" x 7" surface mounted Scene Light(s) provided on the upper Body. Light quantity shall be divided equally per side. The M9LZC configuration shall consist of 24 clear Super-LEDs and a clear gradient optic polycarbonate lens with chrome flange. The M9LZC series light shall have 6,500 useable lumens each. The scene light is covered by a five year factory warranty.

Two (2) switches shall be provided, one (1) for the streetside scene lights, and one (1) for the curbside scene lights. The Lights

shall be controlled at the Switch Panel in Cab.

REAR LED SCENE LIGHTS

Two (2) Whelen M9 Series Model M9LZC , 9" x 7" surface mounted scene light(s) shall be provided on the upper rear body to light the work area. The M9LZC configuration shall consist of 24 clear Super-LEDs and a clear gradient optic polycarbonate lens with chrome flange. The M9LZC series light shall have 6,500 useable lumens each. The scene light is covered by a five year factory

warranty

The above scene lights shall light to a level of at least 3 fc (30 lx), measured at 25 equally spaced points on a 2.5 ft (750 mm) grid with in a 10 ft x 10 ft (3 m x 3m) square to the rear of vehicle.

The Lights shall be controlled at the Switch Panel in Cab.

The rear scene lights shall also be activated when the apparatus is in reverse.

LIGHT TOWER

One (1) Command Light Knight 2, KL Series light tower(s) shall be provided and installed on the completed unit.

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.

Light Tower Construction and Design

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 two-stage articulating device with a lighting bank on top of the second stage capable of continuous 360 degree rotation. The light shall be elevated by electric linear actuators, one (1) actuator shall elevate the light bank and one (1) actuator shall adjust the light bank angle from 0 to 110 degrees. Power for the light bank shall be supplied through power collecting rings thus allowing continuous 360 degree rotation in either direction.

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

A red flashing or rotating light located in the driving compartment shall be illuminated automatically whenever the vehicles parking brake is not fully engaged, indicating that the light tower is not in stowed position, as required by NFPA 1901.

Light Tower Floodlights

The Command Light model KL415D-W2 shall be equipped with the following bank of floodlights:

Floodlight manufacturer:	Whelen Engineering
Number of lamp heads:	Four (4) Pioneer Plus PFH2BLED
Voltage:	12 VDC

Watts of each lamp head:	150
watt Total watts of light tower:	750
watts Total lumens of light tower:	71,000
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 electro-statically powder coated with a hammer tone gray color. Light

Tower Controls

The light tower(s) shall be operated with a hand-held 15-foot umbilical line remote control. The storage station for the remote control unit shall be equipped with a button to activate the "Auto-Park" automatic nesting feature. The remote control shall be located per the itemized compartment list and include;

Three (3) 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) switch for the optional strobe.
One (1) indicator light to indicate when light bank is out of the roof nesting position. One (1) 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.

Where the light tower is to be mounted above a finished walk-in area; the roof backing plates and structure shall have threaded holes to allow removal of light tower without removal of the interior paneling.

Where the light tower is mounted in close proximity to other roof mounted Items (i.e. antennas, air conditioners, and weather stations) the light tower shall be orientated in order to help prevent a operator driven collision.

TREE LIMB GUARD

A three-sided tree limb guard shall be provided fabricated from 1/8" smooth aluminum and painted to match the upper paint color to provide protection to the specified roof mounted equipment from small tree branches.

LINE VOLTAGE ELECTRICAL SYSTEM

LIMA PTO GENERATOR

The vehicle shall be equipped with a Lima MAC 360 series, single bearing generator system with a capacity of 40,000 watts at 120/208 volt, 3-phase. Current frequency shall be stable at 60 hertz.

The transmission's PTO port and PTO, or the split shaft PTO, and all associated drive shaft components shall be rated to support the continuous duty torque requirements of the generator's continuous duty rating as stated on the power source nameplate.

Where the generator is driven by the chassis engine and transmission through a split shaft PTO, the driving compartment speedometer shall register when the generator drive system is engaged.

Where the generator is driven by the chassis engine and transmission through a split shaft PTO and a chassis transmission retarder is furnished, it shall be automatically disengaged for generator operations.

The direct drive generator shall be mounted so that it does not change the ramp break-over angle, angle of departure, or angle of approach as defined by other components, and it shall not extend into the ground clearance area.

The direct drive generator shall be mounted away from exhaust and muffler areas or provided with a heat shield to reduce operating temperatures in the generator area.

GENERATOR BONDING

A minimum of four (4) 16" x 2 gauge copper ground straps shall be bolted to body sub-frame and chassis sub-frame for proper bonding of high voltage system. The conductor shall have a minimum amperage rating, as defined in 310.15, "Ampacities for Conductors Rated 0–2000 Volts," of *NFPA 70*, of 115 percent of the rated amperage on the power source
specification label.

GENERATOR ENGAGEMENT

A "Generator Engaged" indicator shall be provided in the driving compartment to indicate that the generator shift has been successfully completed.

An “OK to Operate Generator” indicator shall be provided in the driving compartment to indicate that the generator is engaged (if not always engaged), the transmission is in the proper gear (if required, automatic transmissions only), and the parking brake is engaged (if applicable).

An interlock system shall be provided to prevent advancement of the engine speed in the driving compartment or at any operator’s panel unless the parking brake is engaged, and the transmission is in neutral or the output of the transmission is correctly connected to a pump or generator instead of the drive wheels.

WARRANTY PERIOD

Provided such goods are operated and maintained in accordance with Marathon's written instruction; Marathon warrants that the MAC series PTO continuous duty generators shall be free from defects in material and workmanship for a period of one (1) year, from the date of delivery to the first purchaser.

GENERATOR CONTROL

The generator shall be engaged at the multiplex display(s) in the cab.

GENERATOR MOUNTING - LIMA MAC

The generator shall be mounted between the chassis frame rails. The generator mounting brackets shall be fabricated using steel plate and/or tubing and powder coat primed and painted black. The generator mounting shall be bolted betweem and/or to the sides of the chassis frame rails and removable so that the generator can be lowered from under the apparatus for service if necessary. The generator case shall extend above the top edge of the chassis frame rails and requires additional subframe height for clearance. There shall also be an access panel added to the body floor above the generator (where possible) to allow for wiring box access for service.

POWER-TAKE-OFF GENERATOR DRIVE

There shall be a "Hot Shift" power-take-off (PTO) installed on the transmission PTO opening of the chassis. The "Hot Shift" PTO is provided to allow the engagement of the PTO at higher engine RPM speeds. The PTO output shall be connected to the generator through hollow tube type driveline with heavy duty universals.

The engagement of the PTO shall be in the chassis cab with a rocker switch and red pilot light to note engagement of the PTO or via the V-Mux screen if so equipped.

The power supply to the PTO engagement control shall be wired to the parking brake and a neutral position transmission switch to prevent engagement unless the vehicle is stopped and transmission has been placed in neutral.

The installation of the engine, transmission, driven accessories (power takeoffs (PTO), etc.) shall meet the engine and transmission manufacturers’ installation recommendations for the service intended.

Model part number shall be Chelsea 280 series.

ENGINE SPEED CONTROL

An engine speed auxiliary control device (high idle switch or throttle) shall be installed to maintain a stable cycle output from generator when the apparatus is parked.

An interlock shall prevent the operation of the engine speed auxiliary control device unless the parking brake is engaged and the transmission is in neutral or park, or the parking brake is engaged and the engine is disengaged from the drive wheels.

The engine shall be prevented from regulating its own engine speed during times when engine rpm control is critical for consistent apparatus functions such as generator, water pump, or aerial operation.

LOADCENTER

The loadcenter shall be an Eaton BR Series specifically designed for protection and distribution of AC line voltage such as lighting and small motor branch circuits. The loadcenter enclosure is made of 16 gauge galvanized sheet steel with a galvanized coating provided for corrosion protection. All trims used on BR loadcenters are chromate sealed and finished with an electro-disposition epoxy paint (ANSI-61) which exceeds requirements for outdoor and indoor applications. A combination surface/flush cover with integral door is supplied with indoor loadcenters rated from 100 through 400 amperes. All plug-in loadcenters are CSA listed to file LL98266. CSA Certified to C22.2 No.29, to loadcenter type and CSA listing.

GENERATOR MONITORING PANEL

An Accuvim CL digital meter package shall be provided to properly monitor the generator performance and load demand during operation. The electrical parameters can be viewed on a backlit LCD screen. The 15 screens are accessible via four buttons on the front panel allowing the user to scroll between various screens. The following shall be displayed
full-time;

- Generator frequency in hertz
- Line voltage, phase to neutral or phase to phase, in volts
- Line current in amperes
- Generator voltage in volts

In addition, an elapsed generator hours gauge shall be provided near the digital meter.

SHORE POWER INLET - BATTERY CHARGER

The above mentioned shore power inlet, and battery conditioner shall be specified in the 12 volt section.

LINE VOLTAGE ELECTRICAL SYSTEM

GENERAL REQUIREMENTS

Stability

Any fixed line voltage power source producing alternating current (ac) shall produce electric power at 60 Hz, ±3 Hz when producing power at all levels between no load and full rated power. Any fixed line voltage power source shall produce electric power at the rated voltage ±10 percent when producing power at all levels between no load and full rated power.

The maximum voltage supplied to portable equipment shall not exceed 275 volts to ground. Higher voltage shall be permitted only

when used to operate fixed wired, permanently mounted equipment on the apparatus.

Conformance with National Electrical Code

All components, equipment, and installation procedures shall conform to *NFPA 70*, *National Electrical Code*, except where superseded by the requirements of this chapter. Where the requirements of this chapter differ from those in *NFPA 70*, the requirements in this chapter shall apply.

Where available, line voltage electrical system equipment and materials included on the apparatus shall be listed and used only in the manner for which they have been listed. All equipment and materials shall be installed in accordance with the manufacturer's instructions.

Location Ratings

Any equipment used in a dry location shall be listed for dry locations. Any equipment used in a wet location shall be listed for wet locations.

Any equipment, except a PTO-driven generator, used in an underbody or under chassis location that is subject to road spray shall be either listed as Type 4 or mounted in an enclosure that is listed as Type 4.

If a PTO-driven generator is located in an underbody or under chassis location, the installation shall include a shield to prevent road spray from splashing directly on the generator.

Grounding

Grounding shall be in accordance with 250.34(A) and 250.34(B) of *NFPA 70*. Ungrounded systems shall not be used. Only stranded or

braided copper conductors shall be used for grounding and bonding.

The grounded current-carrying conductor (neutral) shall be insulated from the equipment-grounding conductors and from the equipment enclosures and other grounded parts.

The neutral conductor shall be colored white or gray in accordance with 200.6, "Means of Identifying Grounded Conductors," of *NFPA 70*.

Any bonding screws, straps, or buses in the distribution panel board or in other system components between the neutral and equipment-grounding conductor shall be removed and discarded.

Bonding

The neutral conductor of the power source shall be bonded to the vehicle frame. The neutral bonding connection shall occur only at the power source. In addition to the bonding required for the low voltage return current, each body and each driving or crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor.

The conductor shall have a minimum amperage rating, as defined in 310.15, "Ampacities for Conductors Rated 0–2000 Volts," of *NFPA 70*, of 115 percent of the rated amperage on the power source specification label.

A single conductor that is sized to meet the low voltage and line voltage requirements shall be permitted to be used.

Ground Fault Circuit Interrupters

In special service vehicles incorporating a lavatory, sink, toilet, shower, or tub, 120 V, 15 or 20 A receptacles within 6 ft (1.8 m) of these fixtures shall have ground fault circuit interrupter (GFCI) protection. GFCIs integrated into outlets or circuit breakers or as stand-alone devices shall be permitted to be used in situations.

Power Source General Requirements

All power source system mechanical and electrical components shall be sized to support the continuous duty nameplate rating of the power source.

The power source shall be shielded from contamination that would prevent the power source from operating within its design specifications.

Power Source Rating

For power sources of 8 kW or larger, the power source manufacturer shall declare the continuous duty rating that the power source can provide when installed on fire apparatus according to the manufacturer's instructions and run at 120°F (49°C) air intake temperature at 2000 ft (600 m) above sea level.

The rating on the power source specification label shall not exceed the declared rating from the power source manufacturer.

Access shall be provided to permit both routine maintenance and removal of the power source for major servicing. The power source shall be located such that neither it nor its mounting brackets interfere with the routine maintenance of the fire apparatus.

Instrumentation

If the power source is rated at less than 3 kW, a "Power On" indicator shall be provided. If the power source is rated at 3 kW or more but less than 8 kW, a voltmeter shall be provided.

If the power source is rated at 8 kW or more, the following instrumentation shall be provided at an operator's panel:

1) Voltmeter
2) Current meters for each ungrounded leg
3) Frequency (Hz) meter
4) Power source hour meter

The instrumentation shall be permanently mounted at an operator's panel. The instruments shall be located in a plane facing the operator. Gauges, switches, or other instruments on this panel shall each have a label to indicate their function.

The instruments and other line voltage equipment and controls shall be protected from mechanical damage and not obstructed by tool mounting or equipment storage.

An instruction plate(s) that provides the operator with the essential power source operating instructions, including the power-up and power-down sequence, shall be permanently attached to the apparatus at any point where such operations can take place.

Operation

Provisions shall be made for placing the generator drive system in operation using controls and switches that are identified and within

convenient reach of the operator.

Where the generator is driven by the chassis engine and engine compression brakes or engine exhaust brakes are furnished, they shall be automatically disengaged for generator operations.

Any control device used in the generator system power train between the engine and the generator shall be equipped with a means to prevent unintentional movement of the control device from its set position in the power generation mode.

If there is permanent wiring on the apparatus that is designed to be connected to the power source, a power source specification label that is permanently attached to the apparatus at the operator's control station shall provide the operator with the information required.

The power source, at any load, shall not produce a noise level that exceeds 90 dBA in any driving compartment, crew compartment, or onboard command area with windows and doors closed or at any operator's station on the apparatus.

Power Supply Assembly

The conductors used in the power supply assembly between the output terminals of the power source and the main over current protection device shall not exceed 12 ft (4 m) in length.

All power supply assembly conductors, including neutral and grounding conductors, shall have an equivalent amperage rating and shall be sized to carry not less than 115 percent of the amperage of the nameplate current rating of the power source.

If the power supply assembly connects to the vibrating part of a generator (not a connection on the base), the conductors shall be flexible cord or other fine-stranded conductors enclosed in metallic or nonmetallic liquid tight flexible conduit rated for wet locations and temperatures not less than 194°F (90°C).

Over-current Protection

Manually re-settable over current devices shall be installed to protect the line voltage electrical system components. Power Source

Protection

A main over current protection device shall be provided that is either incorporated in the power source or connected to the power source by a power supply assembly.

The size of the main over current protection device shall not exceed 100 percent of the rated amperage stated on the power source specification label or the rating of the next larger available size over current protection device, where so recommended by the power source manufacturer.

If the main over current protection device is subject to road spray, the unit shall be housed in a Type 4–rated enclosure.

Branch Circuit Over-current Protection

Over current protection devices shall be provided for each individual circuit and shall be sized at not less than 15 amps in accordance with 240.4, "Protection of Conductors," of *NFPA 70*.

Any panel board shall have a main breaker where the panel has six or more individual branch circuits or the power source is rated 8 kW or larger.

Each over current protection device shall be marked with a label to identify the function of the circuit it protects.

Dedicated circuits shall be provided for any large appliance or device (air conditioning units, large motors, etc.) that requires 60 percent or more of the rated capacity of the circuit to which it is connected, and that circuit shall serve no other purpose.

Panelboards

All fixed power sources shall be hardwired to a permanently mounted panel board unless one of the following conditions exists:

1) All line voltage power connections are made through receptacles on the power source and the receptacles are protected by integrated over current devices.
2) Only one circuit is hardwired to the power source, which is protected by an integrated over current device.

The panel shall be visible and located so that there is unimpeded access to the panel board controls. All panel boards shall be designed for use in their intended location. The panel(s) shall be protected from mechanical damage, tool mounting, and equipment storage.

Where the power source is 120/240 V and 120 V loads are connected, the apparatus manufacturer or line voltage system installer shall consider load balancing to the extent that it is possible.

Wiring Methods

Fixed wiring systems shall be limited to the following:

1) Metallic or nonmetallic liquid tight flexible conduit rated at temperatures not less than 194°F (90°C) with stranded copper wire rated for wet locations and temperatures not less than 194°F (90°C)
2) Type SOW, SOOW, SEOW, or SEOOW flexible cord rated at 600 V and at temperatures not less than 194°F (90°C)

Electrical cord or conduit shall not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring and shall be arranged as follows:

1) Separated by a minimum distance of 12 in. (300 mm) from exhaust piping or shielded from such piping
2) Separated from fuel lines by a minimum distance of 6 in. (150 mm)

A means shall be provided to allow “flexing” between the driving and crew compartment, the body, and other areas or equipment whose movement would stress the wiring.

Electrical cord or conduit shall be supported within 6 in. (150 mm) of any junction box and at a minimum of every 24 in. (600 mm) of run.

Supports shall be made of nonmetallic materials or of corrosion-resistant or corrosion-protected metal. All supports shall be of a design that does not cut or abrade the conduit or cord and shall be mechanically fastened to the apparatus.

Only fittings and components listed for the type of cord or conduit being installed shall be used. Splices shall

be made only in a listed junction box.

Additional Requirements for Flexible Cord Installations

Where flexible cord is used in any location where it could be damaged, it shall be protected by installation in conduit, enclosures, or guards.

Where flexible cord penetrates a metal surface, rubber or plastic grommets or bushings shall be installed.

Wiring Identification

Each line voltage circuit originating from the main panel board shall be identified.

The wire or circuit identification either shall reference a wiring diagram or wire list or shall indicate the final termination point of the circuit.

Where pre-wiring for future power sources or devices exists, the un-terminated ends shall be marked with a label showing their wire size and intended function.

Wiring System Components

Only stranded copper conductors with an insulation rated for temperatures of at least 194°F (90°C) and wet locations shall be used. Conductors in flexible cord shall be sized in accordance with Table 400.5(A) of *NFPA 70*. Conductors used in conduit shall be sized in accordance with 310.15, "Ampacities for Conductors Rated 0–2000
Volts," of *NFPA 70*. Aluminum or copper-clad aluminum conductors shall not be used.

All boxes shall conform to and be mounted in accordance with Article 314, "Outlet, Device, Pull, and Junction Boxes; Conduit Bodies; Fittings; and Manholes," of *NFPA 70*. All boxes shall be accessible using ordinary hand tools. Boxes shall not be permitted behind welded or pop-riveted panels.

The maximum number of conductors permitted in any box shall be in accordance with 314.16, "Number of Conductors in Outlet, Device, and Junction Boxes, and Conduit Bodies," of *NFPA 70*.

All wiring connections and terminations shall provide a positive mechanical and electrical connection. Connectors shall be installed in accordance with the manufacturer's instructions. Wire nuts or insulation displacement and insulation piercing connectors shall not be used.

Each switch shall indicate the position of its contact points (i.e., open or closed) and shall be rated for the continuous operation of the load being controlled. All switches shall be marked with a label indicating the function of the switch. Circuit breakers used as switches shall be "switch rated" (SWD) or better. Switches shall simultaneously open all associated line voltage conductors. Switching of the neutral conductor alone shall not be permitted.

Line voltage circuits controlled by low voltage circuits shall be wired through properly rated relays in listed enclosures that control all non-grounded current-carrying conductors.

Receptacles and Inlet Devices

Wet and Dry Locations

All wet location receptacle outlets and inlet devices, including those on hardwired, remote power distribution boxes, shall be of the grounding type, provided with a wet location cover, and installed in accordance with Section 406.8, "Receptacles in Damp or Wet Locations," of *NFPA 70*.

All receptacles located in a wet location shall be not less than 24 in. (600 mm) from the ground. Receptacles on off road fire apparatus shall be a minimum of 30 in. (750 mm) from the ground. All receptacles located in a dry location shall be of the grounding type and shall be at least 12 in. (300 mm) above the interior floor height. No receptacle shall be installed in a face-up position.

The face of any wet location receptacle shall be installed in a plane from vertical to not more than 45 degrees off vertical.

Receptacle Label

Each receptacle shall be marked with a label indicating the nominal line voltage (120 volts or 240 volts) and the current rating in amps of the circuit. If the receptacle is DC or other than single phase, that information shall also be marked on the label.

All receptacles and electrical inlet devices shall be listed to UL 498, *Standard for Safety Attachment Plugs and Receptacles*, or other recognized performance standards.

Receptacles used for DC voltages shall be rated for DC service.

Wiring Schematics

An "As-Built" Wiring diagrams for line voltage systems shall be provided to include the following information.

(x) Pictorial representations of circuit logic for all electrical components and wiring
(y) Circuit identification
(z) Connector pin identification
(aa)Zone location of electrical components
(ab)Safety interlocks
(ac)Alternator–battery power distribution circuits
(ad)Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems

BODY DESIGN

The importance of public safety associated with emergency vehicles requires that the construction of this vehicle meet the following specifications. These specifications are written to establish the minimum level of quality and design. All Bidders shall be required to meet these minimum requirements.

It is the intent of these specifications to fully describe the requirements for a custom built emergency type vehicle. In order to extend the expected service life of this vehicle, the body module shall be removable from the chassis frame and be capable of being installed on a new chassis.

The sheet metal material requirements, including alloy and material thickness, throughout the specifications are considered to be a minimum. Since such materials are available to all Manufacturers, the material specifications shall be strictly adhered to.

The fabrication of the body shall be formed sheet metal. Formed components shall allow the Dekalb County Fire Department to have the body repaired locally in the case where any object has struck the body and caused damage. The use of proprietary extrusions will prevent the Dekalb County Fire Department from such repair and shall NOT be used.
All fabricated body components to be cut by a laser or water-jet for superior cut edge quality.

Following construction of the subframe, which supports the apparatus body, the sheet metal portion of the body shall be built directly on the subframe. The joining of the subframe and body shall be of a welded integral construction.

The sheet metal fabrication of the body shall be performed using inert gas continuous feed welders only. The entire body shall be welded construction. The use of pop rivets in any portion of structural construction may allow premature failure of the body structure. Therefore, pop rivets shall NOT be used in the construction of the structural portions of the body. This includes side body sheets, inner panels of compartment doors, and any other structural portions of the body.

EXTERIOR ALUMINUM BODY

The fabrication of the body shall be constructed from aluminum 3003H-14 alloy smooth plate. This shall include compartment front panel, vertical side sheets, side upper rollover panels, rear panels and compartment door frames.

The body compartment floors and exterior panels shall be constructed with not less than 3/16" (.187) aluminum 3003H-14 smooth plate. Interior compartment dividing walls shall be constructed with not less than 1/8" (.125) aluminum 3003H-14 smooth plate. Lighter gauge sheet metal will not be acceptable in these areas, No Exceptions.

The front and rear corners of body shall be formed as part of the front or rear body panels. This provides a stronger body corner and finished appearance. The use of extruded corners, or caps will not be acceptable, No Exceptions.

The door side frame openings shall be formed "C" channel design. An electrical wiring conduit raceway running the full length of exterior compartments shall be provided. This raceway shall contain all 12 volt wiring running to the rear of the apparatus, permitting easy accessibility to wiring.

Individual compartment modules, with dead air space voids between compartments, will not be an acceptable method of compartment construction.

The compartments shall be an integral part of the body construction. Compartment floors from front of body to ahead of rear axle, also from rear axle to rear of body shall be single one-piece sections. Compartment floors shall be preformed, then positioned in body and welded into final position.

Compartment floors shall have a "sweep-out" design with door opening threshold positioned lower than compartment floor, permitting easy cleaning of compartments. Angles, lips, or door moldings are not acceptable in the base of compartment door opening. One-way rubber drain valves shall be provided in compartment floors so that a water hose may be used to flush-out compartment area.

All exterior seams in sheet metal below frame, and around the rear wheel well area shall be welded and caulked to prevent moisture from entering the compartments. All other interior seams and corners shall be sealed with silicone based caulk prior to painting.

Only stainless steel bolts, nuts, and sheet metal screws shall be used in mounting exterior trim, hardware and equipment.

DRIP RAILS

The body shall have drip rails over the side full height compartments. The drip rails shall be formed into the upper body panels providing a ridged lower panel and a flat upper body panel surface. The use of mechanically fastened, taped or glued on drip rails will not be acceptable, No Exceptions.

ROOF CONSTRUCTION

The roof structure shall be integral with the body sheet metal construction and shall be an all welded assembly. The body roof structure shall be overlaid with not less than 3/16" aluminum 3003H-14 alloy tread plate and welded to roof structure and body sheet metal. All seams in roof material shall be fully and continuously welded to prevent entry of moisture.

There shall be a total of four (4) 2" x 2" x 1/4" 6061-T6 alloy aluminum "C" channels running the length of body, two (2) on each outboard side. These "C" channels shall be used for roof support and in addition shall be used for mounting of any specified reels. This open "C" channel design along with special reel mounting clips allows for a universal location of any specified reels within each compartment.

In between the two (2) center "C" channels running the length of body shall be 2" x 2" x 1/4" 6061-T6 alloy aluminum tubing running in between and welded in place on approximate 16" centers to support roof and/or walkway structure if specified.

A 2" formed radius shall be provided along the body sides and utilized as a wiring trough. The use of aluminum extrusions in this area shall not be acceptable, .

BODY SUBFRAME

The chassis frame rails shall be fitted with 1/4" custom extruded UHMW polyethylene rail cap to isolate the body frame members from direct contact with chassis frame rails.

The body subframe shall be constructed from 6061T6 aluminum alloy tubing. Subframe shall consist of two (2) 2" x 6" x 1/4" aluminum tubes, the same width as the chassis frame rails, NO EXCEPTION. Welded to this tubing shall be cross members of 2" x 6" x 1/4" aluminum. These cross members shall extend the full width of the body to support the compartments. Cross members shall be located at front and rear of the body, below compartment divider walls, and in front and rear of wheel well opening. Additional aluminum cross members shall be located on 16" centers, or as necessary to support walkway or heavy equipment.

To form the frame, the tubing shall be beveled and welded at each joint using 5356 aluminum alloy welding wire.

BODY MOUNTING

The body subframe shall be fastened to the chassis frame with six (6) spring loaded body mounts. Each mount shall be configured using a two-piece encapsulated slide bracket. The two (2) brackets shall be fabricated of heavy duty 1/4" thick steel and shall have a powder coat finish to prevent any corrosion. Each mounting assembly shall utilizing two (2) 3/4" diameter x 6" long grade 8 bolts and two (2) heavy duty springs. The assembly design shall allow the body and subframe to act as one (1) component, separate from the chassis. As the chassis frame twists under driving conditions, the spring mounting system shall eliminate 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 will not be acceptable.

10" REAR STEP BUMPER

The full width rear bumper shall be constructed from 2" x 2" x 1/4" aluminum tubing frame and covered with 3/16" NFPA compliant aluminum tread plate. The bumper shall extend from the rear vertical body panel 10" and provide a rear step with a minimum of 1/2" space at body for water drainage.

REAR TOW EYES

There shall be two (2) heavy duty rear mounted tow eyes securely attached to the body subframe, below body. The tow eyes shall be fabricated from 3/4" thick steel plate with a 3" diameter opening. Tow eyes shall have a black powder coat finish.

GROUND LIGHTS

There shall be two (2) OnScene 8" Access white LED lights installed below bumper capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.

EXTERIOR COMPARTMENT DOORS

ROLL-UP DOOR CONSTRUCTION - AMDOR

The apparatus shall be equipped with Amdor brand exterior roll-up compartment doors. Amdor roll-up doors shall be complete with the following features;

- 1” aluminum double wall slats with continuous ball & socket hinge joint and recessed dual durometer slat seal
- Double wall reinforced bottom panel with stainless steel lift bar latching system
- Bottom panel flange with cut-outs for ease of access with gloved hands
- Reusable slat shoes with positive snap-in securement
- Smooth interior door curtain to prevent equipment hang-ups
- One-piece aluminum door track / side frame, top gutter with non-marring seal
- Non-marring recessed side seals with UV stabilizers to prevent warping
- Dual leg bottom seal, with all wear component material to be Type 6 Nylon
- The door shall be warranted for a period of 36 months from the date of delivery. AMDOR Inc. liability covers the replacement or repair of any component that fails due to defects in material and / or workmanship during the coverage period.

Each shutter door shall decrease the compartment door frame opening approximately 2.00" in width and approximately 5.50" in height for the bottom section of door assembly.

The specified retroreflective stripe material shall be applied on the roll-up compartment doors. The stripe shall be precision machine cut for each door slat of the roll-up doors. Under no circumstance will the stripe material be cut on roll-up door surface.

BODY HEIGHT MEASUREMENTS

The vertical body dimensions shall be as follows:

AHEAD OF REAR AXLE

	Description	Dimension
A	Bottom of Subframe to Top of Body	74.0
B	Bottom of Subframe to Bottom of Body	21.5C
Vertical Door Opening		
	-with roll-up door	67.5"
	-with hinged door	70.5"

ABOVE REAR AXLE

	Description	Dimension
D	Vertical Door Opening - Above Rear Wheel	
	-with roll-up door	36.0"
	-with hinged door	39.5"

BEHIND REAR AXLE

	Description	Dimension
E	Bottom of Subframe to Bottom of Body	18.5"
F	Vertical Door Opening	
	-with roll-up door	64.5"
	-with hinged door	68.0"

GENERAL

	Description	Dimension
G	Bottom of Drip Rail to Top of Body	20.5"

(Dimensions are approximate and subject to change during construction or design process.)

BODY WIDTH DIMENSIONS

The body shall be 100.0" wide, and 102.0" wide at drip rails. Interior compartment depth dimensions shall be approximately:

Area Description	Dimension
Transverse above subframe	95.0"
Compartment depth below subframe	24.5"

STREETSIDE COMPARTMENT - FRONT (S1)

The interior useable compartment width shall be approximately 41.5" wide. The

compartment door opening shall be approximately 34.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) 1" wide nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.

- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.

- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be an extruded aluminum shape with an un-painted anodized finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.

- There shall be one (1) OnScene Solutions 84 series slide-out, drop-down style aluminum tray base with 90% extension, and rating of 250 lbs. Slide-out tray(s) base shall be approximately 46" deep and as wide as the compartment layout or door opening permits. It shall be located above the level of the chassis frame rails and shall be vertically adjustable in height. Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will hold the tray in the closed position. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".

  - The above component(s) shall have a smooth un-painted finish.

- There shall be one (1) transverse table and chair storage module for the following equipment;

  - There shall be four (4) OnScene Solutions Velcro cargo straps provided to secure the stored equipment.

- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.

- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.

- The controls for the specified light tower(s).

- The controls for the specified awning(s).

- The 12 volt electrical distribution panel shall be located in the front lower compartment.

STREETSIDE COMPARTMENT - AHEAD OF REAR WHEELS (S2)

The interior useable compartment width shall be approximately 41.5" wide. The

compartment door opening shall be approximately 34.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.

- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.

- There shall be NO keyed lock on this roll-up compartment door.

- One (1) 1" wide nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.

- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.

- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be an extruded aluminum shape with an un-painted anodized finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.

- There shall be one (1) 400 lbs. slide-out tray(s) approximately 24" deep and as wide as the compartment layout or door opening permits. The tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.

  - The above component(s) shall have a smooth un-painted finish.

- There shall be two (2) OnScene Solutions 84 series slide-out, drop-down style aluminum tray base with 90% extension, and rating of 250 lbs. Slide-out tray(s) base shall be approximately 46" deep and as wide as the compartment layout or door opening permits. It shall be located above the level of the chassis frame rails and shall be vertically adjustable in height. Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will hold the tray in the closed position. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".

  - The above component(s) shall have a smooth un-painted finish.

- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.

- One (1) Hannay ECR1618-17-18 electric cable reel(s) capable of storing 200' of 10/3 electric cable. Reel(s) shall be designed to hold 110% of the capacity of cord length, with fully enclosed 45 amp, three (3) conductor collector rings. Reel(s) shall be mounted to channel structure that allows for side-to-side adjustment of reel position.

  - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator's standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.

- A label shall be provided in a visible location adjacent to reel with following information: Current rating, Current type, Phase, Voltage, and Total cord length.

- The cable reel shall equipped with 200' of 10/3 SEOW black cable, a molded plastic ball clamp, and a single heavy duty L5-30 twist-lock female plug at the end.

- One (1) Akron model EJBX series, cast aluminum electrical power distribution box with gray powder coat painted finish shall be provided. The power distribution box shall meet all requirements described in NFPA 1901. The power distribution box shall include the following outlets mounted on a backlit face plate;

  - A 12" pigtail that terminates in an L5-30 configuration to match the cable on the cord reel. The outlet configuration shall include:

  - One (1) 120 VAC, 5-20 duplex straight-blade receptacle

  - One (1) 120 VAC, 5-20 duplex straight-blade receptacle

  - One (1) 120 VAC, L5-15 dual twist lock receptacles

  - One (1) 120 VAC, L5-15 dual twist lock receptacles

- One (1) Akron Brass model EJB-VMT aluminum treadplate vertical mounting bracket for specified power distribution box shall be provided and mounted in compartment per Dekalb County Fire Department.

- The reel shall be supplied with OnScene Solutions fairlead extension with a 6" - 10" extension (depending on compartment depth). The fairlead extension shall allow hoses or cords to be extended out and away from compartment door edges, slide trays, or shelving that may result in wear damage.

- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.

- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S3)

The interior useable compartment width shall be approximately 64.5" wide. The

compartment door opening shall be approximately 57.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.

- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.

- There shall be NO keyed lock on this roll-up compartment door.

- One (1) 1" wide nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower

left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.

- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.

- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be an extruded aluminum shape with an un-painted anodized finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.

- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.

- A Bauer model K-18.1-20-E3 air compressor with a recharging rate of 25.2 SCFM @ 6,000 PSI shall be provided, . Compressor skid shall include 20 HP, 3-phase soft start electric motor, P5 Securus purification system, electronic CO monitor with calibration kit, and fill station inter-connecting harness. Compressor module shall be approximately 88" L x 51" W x 41" H and weigh 1,400 pounds (not inc. air storage).

  High pressure air hose and couplings are to have a pressure rating equal to or greater than the highest pressure expected to be encountered, with a safety factor of 4 to 1.

  – An Appleton inlet and base shall be provided in compartment near compressor. The compressor shall have a 2/00 AWG SO cord with a matching Appleton plug for operating compressor from the on-board generator system. Another matching Appleton plug shall be provided with completed vehicle for operating the compressor from an in-house electrical system. All required building wiring shall be responsibility of Dekalb County Fire Department.

- Air storage consisting of six (6) ASME 491 SCF @ 6,000 PSI, (does not require hydrostatic testing) air storage cylinders with gauges and valves. Each cylinder shall be 9.6" dia. x 55" long and weigh 400 lbs.

  The manufacturer's test date (month and year) on each air tank shall be current within 12 months of the apparatus delivery date.

  Air tanks shall be marked with a label that reads;

  “High Pressure 6,000 PSI Breathing Air” or “High Pressure 41,368 kPa Breathing Air.”

  High pressure air hose and couplings are to have a pressure rating equal to or greater than the highest pressure expected to be encountered, with a safety factor of 4 to 1.

- The Bauer compressor shall be free from defects in material and workmanship for a period of two (2) years. The foregoing warranty period shall be extended to five (5) years from the date of shipment from Bauer for Customers that are Municipal Fire Departments with respect to the compressor block (breathing air application), provided that such extended warranty period shall only apply to product parts with proof of proper maintenance being completed in accordance with published Bauer factory recommendations. To be eligible for this limited warranty to cover Customer’s product, Customer must return a properly completed start-up/warranty registration form to Bauer within ninety (90) days from the date of start-up.

- One (1) day of training and instruction shall be provided by compressor manufacturer per NFPA 24.2.13 at Dekalb County Fire Department location on proper use of air compressor, purification system, filling of SCBA, and air reel operations, if specified.

- The NFPA required air quality test shall be completed by manufacturer prior to delivery. Complete results of test shall be provided to Dekalb County Fire Department upon delivery.

COMPARTMENT INSULATION

Compartment insulation shall be provided with heavy duty sound insulation applied to the rear wall of the air compressor compartment and the ceiling of the rear compartment. Insulation shall have a high temperatures rating with a foil facing and attached to walls and ceiling with a positive type fasteners, glue type adhesive shall not be acceptable.

STREETSIDE COMPARTMENT - REAR (S4)

The interior useable compartment width shall be approximately 32.0" wide. The

compartment door opening shall be approximately 25.0" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.

- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.

- There shall be NO keyed lock on this roll-up compartment door.

- One (1) 1" wide nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.

- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.

- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be an extruded aluminum shape with an un-painted anodized finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.

The interior useable compartment space shall be approximately 72.5" wide. The

compartment door opening shall be approximately 65.0" wide.

- This compartment shall have a flush fitting horizontally hinged, drop-down style compartment door. The door exterior shall be painted job color.

- The interior door panel shall have a smooth un-painted aluminum panel.

- The hinged door(s) shall have a stainless steel 6" offset bent D-ring non-locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

- The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.

- There shall be one (1) 400 lbs. slide-out tray(s) approximately 24" deep and as wide as the compartment layout or door opening permits. The tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.

  - The above component(s) shall have a smooth un-painted finish.

- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.

- One (1) Hannay EFH1516-17-18 high pressure air hose reel(s) shall be provided in this compartment. Reel shall be designed to hold 110% of the capacity needed.

  - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator's standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.

  - A label shall be provided in a visible location adjacent to reel with following information: (1) Utility air or breathing air, (2) Operating pressure, (3) Total hose length, (4) Hose size (ID).

  - The hose reel shall be equipped with 300' of 3/16" Parker 527BA 7,000 PSI, high pressure air hose. A molded plastic ball clamp shall be provided on the hose to stop it at the 4-way roller. The hose shall be Blue in color with a red color coded end. High pressure air hose and couplings are to have a pressure rating equal to or greater than the highest pressure expected to be encountered, with a safety factor of 4 to 1.

  - The fitting on the end of the high pressure air hose reel shall be a CGA-347 high pressure fitting.

  - The air supply shall be from the specified mobile breathing air system.
  - The air supply for specified reel(s) shall be from the on-board specified mobile breathing air system. The reel shut-off valve, pressure regulator, and gauge shall be provided at the specified breathing air control panel, not exceeding 72" from ground.

- The fairlead roller shall be mounted directly to the reel.
- One (1) Hannay EF1516-17-18 low pressure air hose reel(s) shall be provided in this compartment. Reel shall be designed to hold 110% of the capacity needed.
  - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator's standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.
  - A label shall be provided in a visible location adjacent to reel with following information: (1) Utility air or breathing air, (2) Operating pressure, (3) Total hose length, (4) Hose size (ID).
  - The hose reel shall equipped with 150' of 3/8" Parker Series 7092 GST II low pressure air hose rated for 300 PSI maximum pressure. A molded plastic ball clamp shall be provided on the hose to stop it at the 4-way roller. The hose shall be Red in color with blue color coded end.
  - The air supply shall be from the specified mobile breathing air system.
  - The air supply for specified reel(s) shall be from the on-board specified mobile breathing air system. The reel shut-off valve, pressure regulator, and gauge shall be provided at the specified breathing air control panel, not exceeding 72" from ground.
- The fairlead roller shall be mounted directly to the reel.
- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

CURBSIDE COMPARTMENT - FRONT (C1)

The interior useable compartment width shall be approximately 41.5" wide. The

compartment door opening shall be approximately 34.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- There shall be NO keyed lock on this roll-up compartment door.

- One (1) 1" wide nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel-plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.

- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.

- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be an extruded aluminum shape with an un-painted anodized finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.

- There shall be one (1) adjustable shelf/shelves approximately 46" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edges.

  - The above component(s) shall have a smooth un-painted finish.

- There shall be one (1) OnScene Solutions 81 series aluminum tray base with rating of 1,000 lbs. Slide-out tray(s) base shall be approximately 30" deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails. Slide base shall extend depth specified, less 4".Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed and full extension positions. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".

  - Vertical partition(s) shall be provided on slide-out tray base dividing the tray into left and right sides. Each vertical partition shall be horizontally adjustable; mounted on aluminum Shelf Trac on tray floor. The vertical partition(s) shall be 3/16" (.188) 3003H-14 alloy smooth aluminum sheet.

  - The above component(s) shall have a smooth un-painted finish.

- There shall be four (4) Zico ULLH walkaway type SCBA air pack bracket(s) with "V" type clip and strap assembly to hold SCBA in place.
- SCBA brackets to be mounted to vertical partion in tray. Location TBD at PreCon.

- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.

- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.

CURBSIDE COMPARTMENT - AHEAD OF REAR WHEEL (C2)

The interior useable compartment width shall be approximately 41.5" wide. The

compartment door opening shall be approximately 34.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) 1" wide nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be an extruded aluminum shape with an un-painted anodized finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) OnScene Solutions 81 series aluminum tray base with rating of 1,000 lbs. Slide-out tray(s) base shall be approximately 46" deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails. Slide base shall extend depth specified, less 4". Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed and full extension positions. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray surface with an internal depth of approximately 3 ½”.
  - The above component(s) shall have a smooth un-painted finish.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- One (1) Hannay ECR1618-17-18 electric cable reel(s) capable of storing 200' of 10/3 electric cable. Reel(s) shall be designed to hold 110% of the capacity of cord length, with fully enclosed 45 amp, three (3) conductor collector rings. Reel(s) shall be

mounted to channel structure that allows for side-to-side adjustment of reel position.

- Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator's standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.
- A label shall be provided in a visible location adjacent to reel with following information: Current rating, Current type, Phase, Voltage, and Total cord length.
- The cable reel shall equipped with 200' of 10/3 SEOW black cable, a molded plastic ball clamp, and a single heavy duty L5-30 twist-lock female plug at the end.

- One (1) Akron model EJBX series, cast aluminum electrical power distribution box with gray powder coat painted finish shall be provided. The power distribution box shall meet all requirements described in NFPA 1901. The power distribution box shall include the following outlets mounted on a backlit face plate;
  - A 12" pigtail that terminates in an L5-30 configuration to match the cable on the cord reel. The outlet configuration shall include:
  - One (1) 120 VAC, 5-20 duplex straight-blade receptacle
  - One (1) 120 VAC, 5-20 duplex straight-blade receptacle
  - One (1) 120 VAC, L5-15 dual twist lock receptacles
  - One (1) 120 VAC, L5-15 dual twist lock receptacles
- One (1) Akron Brass model EJB-VMT aluminum treadplate vertical mounting bracket for specified power distribution box shall be provided and mounted in compartment per Dekalb County Fire Department.
- The reel shall be supplied with OnScene Solutions fairlead extension with a 6" - 10" extension (depending on compartment depth). The fairlead extension shall allow hoses or cords to be extended out and away from compartment door edges, slide trays, or shelving that may result in wear damage.
- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C3)

The interior useable compartment width shall be approximately 64.5" wide. The

compartment door opening shall be approximately 57.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment

interior door track to activate compartment lighting and door ajar signal in cab when door is opened.

- There shall be NO keyed lock on this roll-up compartment door.

- One (1) 1" wide nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.

- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.

- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be an extruded aluminum shape with an un-painted anodized finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.

- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.

- Specified breathing air compressor and air storage system in center of compartment.

CURBSIDE COMPARTMENT - REAR (C4)

The interior useable compartment space shall be approximately 72.5" wide. The

compartment door opening shall be approximately 65.2" wide.

This compartment shall have an Amdor roll-up door.

- The roll-up door slats and the door track components shall be painted to match the single tone exterior color.

- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.

- There shall be NO keyed lock on this roll-up compartment door.

- One (1) 1" wide nylon strap shall be provided to assist in closing the compartment door. The strap shall be fastened to the lower left inside door sill with a nickel plated Footman loop secured to back of door. The strap shall extend from door to a nickel plated Footman loop secured to wall or vertical slot of Shelf-Trac on left side of the door opening.

- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.

- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be an extruded aluminum shape with an un-painted anodized finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.

- There shall be one (1) SCBA cylinder storage module for 7-5/8" OD (maximum) SCBA bottles. The maximum length of the SCBA cylinder shall be 24.75". The module shall have an exterior shell fabricated from 1/8" (.125) 3003H-14 aluminum alloy sheet. The module shall have a 2" slope, front to back to prevent cylinders from sliding out. The SCBA cylinder storage tubing shall be fabricated from PVC pipe to prevent damage or abrasion to cylinders. In addition there shall be rubber pad provided in the base of each storage tube for bottle protection and to prevent slipping.
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  - The SCBA cylinder module shall be capable of storing sixty four (64) SCBA cylinders up to 7-5/8" diameter.
  - **There will be twenty-five (25) pass through SCBA bottle storage tubes to be accessable from C-4 to RC-1 interior.**

- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).

- Two (2) OnScene Access white LED, full height compartment lights, vertically mounted.

- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

REAR COMPARTMENT - CENTER (RC1)

The rear center compartment shall be closed to both side rear compartments.

The rear center compartment shall begin just above the bumper height and be as high as the side compartments, unless specified otherwise. The body sub-frame shall extend at least 20" into the compartment to allow for the spring loaded body mounts.

The interior useable compartment width shall be approximately 49.5" wide. The

compartment door opening shall be approximately 42.2" wide.

REAR ENTRY DOOR

Access shall be provided to the interior through a single entry door with a clear door opening width of approximately 28.5" x full height.

Construction of the rear entry door shall be with 1/8" aluminum exterior smooth plate, the interior door pan shall be constructed from 1/8" aluminum treadplate.

The door shall be hung on full height 14 gauge stainless steel hinge, with a 1/4" stainless steel pin. The hinge shall be bolted to the door and body with stainless steel machine screws at offset 5" centers. The hinge shall be slotted horizontally and vertically for ease of adjustment. A polyester barrier film gasket shall be placed between the stainless steel hinge and door.

Full width padded foam cushion head bumper shall be provided above door opening. The head bumper shall be covered with matching interior vinyl and bolted to interior of door way.

The door latch mechanism shall include a stainless steel paddle type handle on interior. A polyester barrier film gasket shall be placed between the stainless steel handles and the aluminum door panels. The door latch shall be a double catch two-point safety slam latch recessed inside the double panel door with strike plate mounted top and bottom of door frame complying with FMVSS requirements.

- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

ENTRY HANDRAILS

There shall be two (2) handrails provided at entry door; one (1) 24" vertical on exterior of body on door handle side, and one (1) 30" on inside of door. The interior handrail shall be angled for optimum use when entering or exiting the interior body area.

Handrails shall be NFPA compliant 1-1/4" knurled 304 stainless steel with welded end stanchions.

A safety sign FAMA23, which warns of the proper climbing method, shall be visible to personnel entering the cab and at each designated climbing location on the body.

A safety sign FAMA24, which warns personnel not to ride on the vehicle, shall be located at the rear step areas and at any cross walkways.

WINDOW(S)

There shall be one (1) 18"wide x 22" high, double-paned insulated, vertical sliding window(s) installed in the entrance door. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish.

COMPARTMENT LAYOUT

This compartment shall have an Amdor roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior door track to activate compartment lighting and door ajar signal in cab when door is opened.
- There shall be NO keyed lock on this roll-up compartment door.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be an extruded aluminum shape with an un-painted anodized finish.
- One (1) C-Tech drawer cabinet shall be provided in compartment. The C-Tech cabinet shall be approx. x 40-1/4" wide x 21 3/4" high x 22-1/2" deep. Cabinet shall have four (4) individual locking drawers as follows; one (1) 2", one (1) 3", one (1) 4", and one (1) 5". The cabinet shall be Light Gray in color.
- There shall be one (1) 42" wide x 14" high x 14" deep overhead cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint

color shall be gray.

- One (1) OnScene Access white LED light mounted in cabinet.
- The above cabinet(s) shall have lift-up type door(s) with dry-erase outer surface.
- The compartment light(s) shall be controlled by a switch actuated by the compartment door.

INTERIOR UNDER CABINET LED LIGHTS

One (1) OnScene Solution model #70152, 10” x 6” x 7/8”, 10-30 VDC, surface mount dual red and white LED light(s) with clear lens shall be provided under cabinet. Each light shall be individually switched with a high/low intensity setting. In addition light(s) will be capable of a five (5) second delay after switching off.

AIR CONDITIONER - HEATER

One (1) Dometic Penguin II low profile, 120 VAC, 60 cycle, single phase air conditioner(s) shall be provided and installed on roof of vehicle. The unit shall be a roof top contemporary contoured integral evaporator/condenser type with built-in heating elements.

Each unit shall be rated at minimum of 13,500 BTU cooling capacity with a heating element rated at 5,600 BTU. A three-speed fan shall supply a maximum/minimum of 320/250 cfm air flow capacity. Air conditioner(s) shall be controlled by a wall mounted Comfort Control II LCD thermostat.

The roof mounted air conditioner shall be approximately 9.5" high x 29" wide x 40" long and weigh approximately 99 lbs.

- The above rooftop Air Conditioning units shall be powered by generator only.
- There shall be one (1) 120 VAC outlet(s) located in compartment on the forward wall.
  - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
  - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.
- Two (2) Resolve Specialty Space Saver model 100A vertical mobile filling station(s) designed for SCBA and SCUBA cylinders shall be provided. Fill station shall be capable of simultaneously filling (2) cylinders, with door safety interlocks. The fill enclosure shall meet NFPA 1901 testing certification, and shall be approx. 42.50” high (53" high with door open) x 13.00” wide x 23.00” deep and weigh 405 lbs. If a cascade air fill control panel is provided it will attach to either side of fill station or remotely.

  High pressure air hose and couplings are to have a pressure rating equal to or greater than the highest pressure expected to be encountered, with a safety factor of 4 to 1.
- The Resolve Space Saver fill station shall be provided with a four (4) bank, manual control cascade air fill control panel with black non-glare control panel. Panel is designed with embedded color graphics to help assure proper operation in the field. All gauges are premium glycerin filled which have a 1.5% accuracy rating. Panel includes; safety gauges, charge and bleed valves and pressure regulator for automatic SCBA filling. The panel housing swings open from the front to allow for easy access to gauges and valves in the event service is needed. A refill port for re-filling air storage with female fitting S252P with S44-2 dust cap is provided on front of panel. Panel shall be 42.50" x 9.75" x 18.00".

- The fill station fill whip(s) shall terminate in a high pressure CGA-347 threaded connectors for 4,500 - 5,500 PSI air pack cylinders.

- A Bauer remote control panel shall be provided near the specified fill station equipped Bauer compressor control panel with electronic controller, emergency start/stop button, and fault alarm. Panel will be approximately 9" wide (add 4.5" for wire connectors on side) x 7" high x 4" deep.

BODY OPTIONS AND UPGRADES

LOWER SIDE BODY PROTECTION - RUB RAIL

OnScene Solutions rub rails shall be provided below the compartment door openings on both the streetside and curbside.

The rub rail shall be fabricated from 6063 extruded aluminum, measuring approximately 2-3/4" high x 1-3/8" thick with tapered aluminum end caps. The rub rail shall be bolted to the body using stainless steel bolts and 1-1/2" diameter x 5/8" thick rubber mount isolators to prevent damage to the body.

The rails shall incorporate LED clearance marker lighting recessed into the rail fascia to avoid damage to the light in case of impact. The rub rail shall have an accessory mounting track integrated into the backside of the rail to allow mounting of accessories such as ground lighting.

3M™ Diamond Grade™ striping shall be provided in the rub rail. The striping shall be white in color.

FRONT GRAVEL GUARDS

Gravel guards shall be provided on front lower body corners. Guards shall be 12" high, extend from behind cab or step and wrap around to the front compartment door opening fabricated from 20 gauge brushed stainless steel.

Lighting shall be switchable but activated automatically when the vehicle park brake is set.

FOLD-DOWN STEP

There shall be one (1) fold-down step mounted on top of bumper to reduce the distance from the ground to the first step. The step surface shall be NFPA compliant aluminum treadplate and shall manually fold up onto the bumper with an over-center gas shock to hold step in position during travel. The step shall activate the "Hazard Warning Light" in the cab when not in the stowed position.

WHEEL WELL EXTERIOR PANEL

The exterior panel of the body wheel well enclosure shall be constructed from 3/16" smooth aluminum panels.

STAINLESS STEEL BODY FENDERETTES

The body wheel well openings shall be provided with round radius, polished stainless steel fenderettes. The fenderettes shall be bolted and easily replaceable if damaged. The fenderettes shall be installed using a rubber gasket to reduce buildup of moisture and/or debris.

WHEEL WELL LINERS

The wheel wells shall be provided with an easily removable polymer, circular inner fender liner. The inner liner shall be bolted to the wheel well with stainless steel bolts and spaced away from the wheel well so the liner will not accumulate dirt or water.

SCBA CYLINDER COMPARTMENTS

There shall be two (2) SCBA cylinder storage compartments located, one (1) on the curbside, and one (1) on the streetside of rear wheel well area. Each compartment shall be capable of storing two (2) SCBA (60 min.) cylinders. Each compartment shall have a vertically hinged aluminum door with 14ga stainless steel hinge, a positive catch latch and painted primary lower body color. Each compartment shall allow the storage of an SCBA cylinder or a fire extinguisher up to 7-3/4" in diameter x 24" deep. The door shall activate the "Hazard Warning Light" in the cab when not in the closed position.

CHASSIS PAINTING

All exposed metal surfaces not chrome plated, polished stainless steel or bright aluminum tread plate shall be thoroughly cleaned and prepared for painting. All irregularities in painted surfaces shall be rubbed down and all seams shall be caulked before the application of the finish coat.
All removable items such as brackets, door hinges, trim, etc. shall be removed and painted separately to insure finish paint behind all mounted items. Both aluminum and steel surfaces to be painted shall be primed with a two (2)-component primer which is compatible with the finish coat. The apparatus shall be finish painted with a polyurethane base/clear system. “No Exception”
A barrier gasket/washer of "High Density Closed Cell Urethane Foam" shall be used behind all lights, handrails, door hardware and any miscellaneous items such as stainless steel snaps, hooks, washers and acorn nuts. The gaskets/washers shall be coated with pressure sensitive acrylic adhesive. All screws used to penetrate painted surfaces shall be pre-treated/coated under the head with nylon and the threads shall have pre-coat #80. This procedure shall be strictly adhered to for corrosion prevention and damage to the finish painted surfaces.
The following paint process shall be utilized:
Surface Preparation:

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

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

1. Use a priming 615S pretreatment.
2. Use a self etching primer applied to achieve a 1.5 mil dft minimum.
3. Use Prime N Seal sealer compatible with polyurethane base coat. Color Coat:

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

1. Apply polyurethane clear coat 2 mil dft minimum.

SINGLE TONE PAINT

A single paint color shall be provided for the apparatus.

PAINTED FRAME

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

TEXTURED FRAME RAIL COATING

The area of the frame rails where the pump module shall be located. Shall be applied with a textured coating that matches the frame rail color.

AIR CONDITIONING CONDENSER

The air conditioning condenser shall be painted to match the cab roof.

MISCELLANEOUS EQUIPMENT FURNISHED

1 pt. touch-up paint

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

BODY PAINT SPECIFICATIONS

BODY PAINT PREPARATION

After the body and components have been fabricated they shall be disassembled so when vehicle is complete there shall be finish paint beneath the removable components. The body shall be removed from chassis during the paint process to insure proper paint coverage. The body and components shall be metal finished as follows to provide a superior substrate for painting.

The exterior (and interior, if painted) body shall undergo a thorough cleaning process starting with a biodegradable phosphoric acid solution to begin the etching process followed by a complete clear water rinse. The next step shall consist of a chemical conversion coating applied to seal the metal substrate and become part of the metal surface for greater film adhesion.

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

PAINT PROCESS

The paint process shall follow the strict standards set forth by PPG Industries guidelines. Painters applying PPG products will be PPG Certified Commercial Technicians, and re-certified every two (2) years. The body shall go through the following paint process;

11) Clean bare metal with a wax and grease remover using low lint rags.
12) Inspect, straighten, and hammer high points, grind all seams, sharp edges, and welds. DA sand entire paintable surfaces using 24-180 grit dry paper. Plastic fill all low spots and DA sand fill areas using 36-180 grit dry paper. Apply pinhole filler and DA sand areas using 80-180 grit dry paper.
13) Re-clean bare metal using a wax and grease remover and low lint rags.
14) Within 24 hours, a PPG Delfleet® epoxy color primer with proper hardener for corrosion resistance using a pressure pot spray gun and applying 2-5 full wet coats or 1.5-8.0 dry mils max. achieving full hiding and allow to air dry 60 minutes @ 70°F or bake for 45 minutes @ 140°F degree.
15) Inspect, putty fill, and dry guild coat entire body surface and DA sand using 180-400 grit dry paper.
16) Re-clean bare metal using a wax and grease remover using low lint rags.
17) A PPG Delfleet® primer sealer with proper hardener and thinner shall be sprayed using a pressure pot spray gun and applying 1 full wet coat or 1.0-2.0 dry mils achieving full hiding and allow to flash off in spray booth for minimum of 60 minutes @ 70°F.
18) A PPG Delfleet® FBCH basecoat (color) with proper hardener and dry additive shall then be sprayed using a pressure pot set @ 45-60 PSI and achieving full hiding or 1.5-2.0 wet mils and allow to flash off in spray booth 45-60 minutes before applying clearcoat.

19) A PPG Delfleet® clearcoat with proper hardener and thinner shall be sprayed using a pressure pot spray gun and applying 2-3 full wet coats or 5.0 wet mils for a uniform gloss and allow to flash off in spray booth 10 minutes and bake for 120-140 minutes @ 125°F (surface temp.).
20) After cooling, DA sand heavy orange peel or runs using 1000 grit dry sand paper and final DA sand using 1500-2000 grit dry sand paper. Wipe off all surfaces to remove dust and debris. Buff unit as needed using 3M rubbing compound and a white wool pad and inspect until all sand scratches are removed.
21) Polish as needed using 3M Perfect-It-Polish and a black foam pad, repeat as necessary and inspect until all sand scratches are removed.

PAINT - ENVIRONMENTAL IMPACT

The contractor shall meet or exceed their current State regulations concerning paint operations pollution control and shall include measures to protect the atmosphere, water and soil. PPG Delfleet® Evolution paint shall be free of all heavy metal (lead & chromate) components. Paint emissions from sanding and painting shall be filtered and collected. All paint wastes shall be disposed of in an environmentally safe manner. Solvents used in cleanup operations shall be collected, sent off-site for distillation and returned for reuse.

FASTENERS

Prior to the assembly and reinstallation of exterior components; i.e. warning and DOT lights, handrails, steps, door hardware, and miscellaneous items, a Mylar isolation tape, or gasket shall be used to prevent damage to the finish painted surface. These components shall be fastened to body using either a plastic insert into body metal with stainless steel screws or zinc coated nut-surts into body surface using stainless steel bolts to prevent corrosion from dissimilar metals.

ELECTROLYSIS CORROSION CONTROL

The vehicle shall be assembled using ECK brand or similar corrosion control compound on all high corrosion potential areas.

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.

PAINT FINISH - SINGLE COLOR

The body shall be painted with a single color of PPG Delfleet® Evolution per Dekalb County Fire Department approved paint spray out provided.

- Paint Color: Match cab/chassis supplied paint color.

BODY UNDERCOATING

The entire underside of body shall be sprayed with black automotive undercoating. Undercoating shall cover all areas underside of body and wheel well area to help prevent corrosion under the vehicle.

UNDERCOAT WARRANTY

The body undercoating shall have a warranty provided by the manufacturer for the lifetime of the vehicle or twenty (20) years, whichever occurs first. The warranty shall be transferable between vehicle owners. Should the undercoating material applied to the underside of the body and wheel wells of the vehicle ever flake off, peel, chip or crack due to drying out, the damaged area shall be re-sprayed without charge to the vehicle owner.

PAINT WARRANTY

The vehicle shall be provided with a ten (10) year non-prorated warranty to the original owner. Warranty is provided by PPG Inc. A warranty sheet with all conditions and maintenance procedures shall be provided with the delivered vehicle. **Pro-rated warranties will not be acceptable.**

COMPARTMENT INTERIOR FINISH

The interior of all exterior body compartments shall be a "Maintenance Free" smooth unpainted finish. All body seams shall be finished with a caulk sealant for both appearance and moisture protection.

OPERATION AND SERVICE MANUALS

Complete "Operation and Service" manuals shall be supplied with the completed apparatus, one (1) printed copy and one (1) USB flash drive. Service manual instructions shall include service, maintenance and troubleshooting for major and minor components of the truck. The apparatus manufacturer shall supply part numbers for major components (i.e. Engine, Axles, Transmission, Pump, etc.). A table of contents, hydraulic, air brake and overall apparatus wiring schematics shall be included.

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

DEALER PREP/INSPECTION

The apparatus dealer responsible for the sale of the Sutphen apparatus shall perform a pre-delivery inspection of the apparatus prior to the customer taking possession of the vehicle. This inspection allows for the dealer to record all applicable part and serial numbers for the apparatus so that service and parts can be easily facilitated during the service life of the vehicle. This inspection also allows for a second quality control check, prior to the apparatus being placed in service.

WARRANTIES

The following warranties shall be supplied:

1. The apparatus shall be warranted to be free from mechanical defects in workmanship for a period of three (3) years or 40,000 miles, whichever comes first. The apparatus shall be covered for parts and labor costs associated with repairs for a period three (3) years or 40,000 miles, whichever comes first.
2. Life-time warranty on the frame
3. Ten (10) year warranty on paint
4. Ten (10) body structural warranty
5. Ten (10) year cab structural warranty
6. Manufacturers Warranties for all major components

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