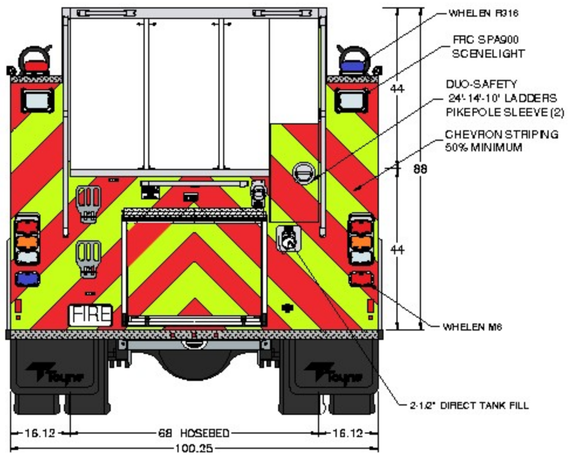
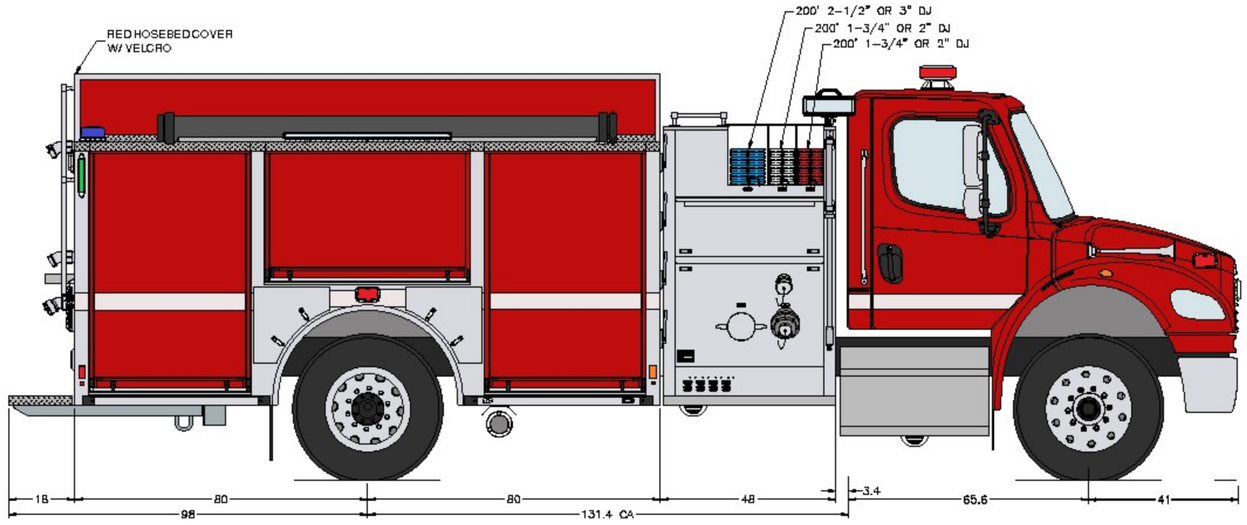
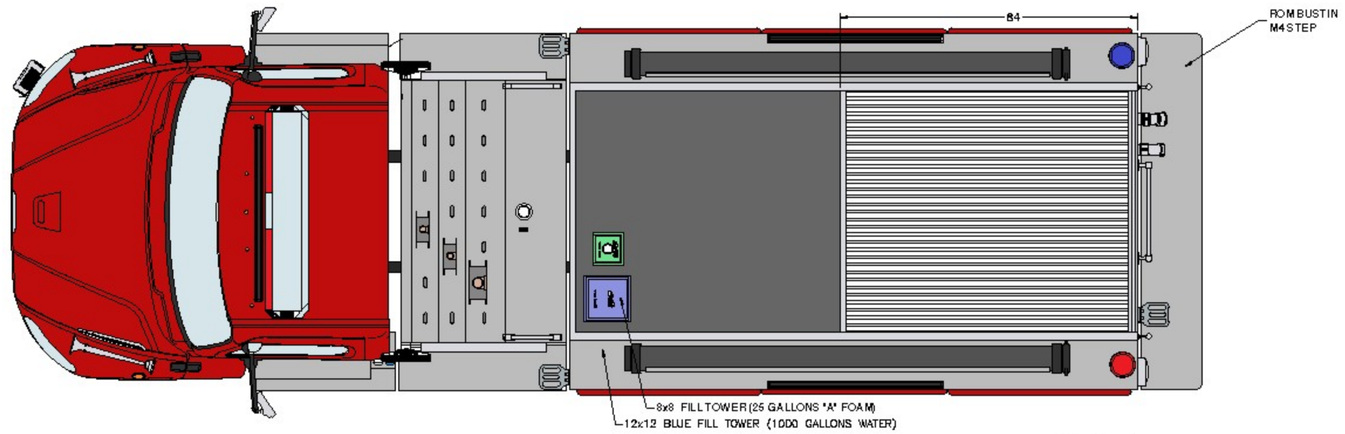


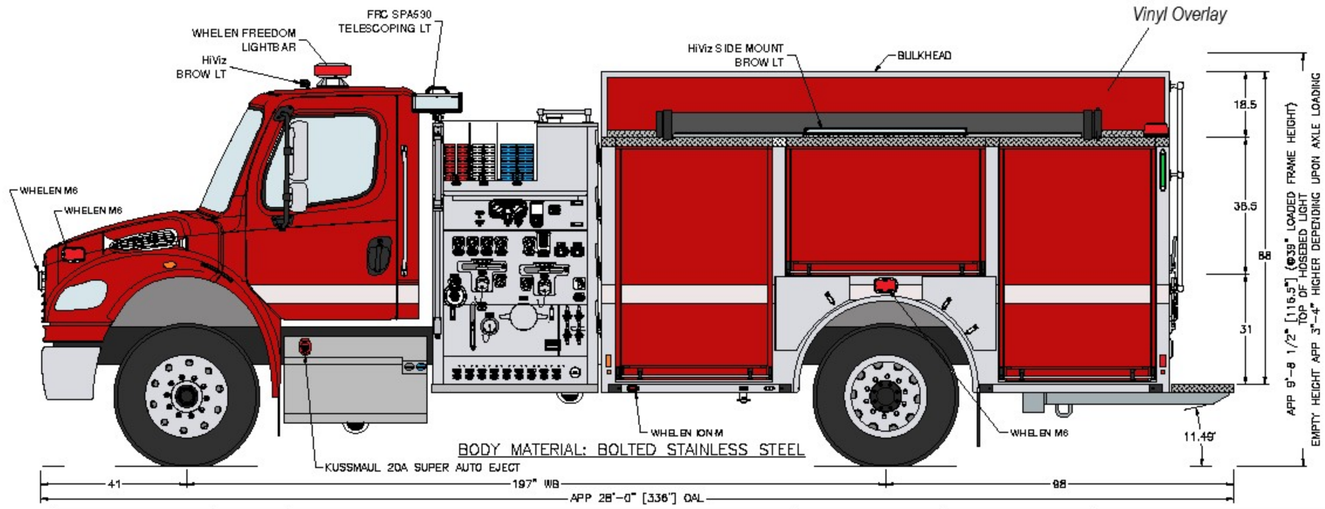


TREADBRITE TEXTURE NOT SHOWN IN TOP VIEW

REFERENCE SCALE IN INCHES
0 10 20 30 40

COMP.	HEIGHT	WIDTH	USABLE DEPTH UPPER	USABLE DEPTH LOWER	DMDE HEIGHT	FT³
DFW	67.12	47.88	14	26	26	35.35
DAW	37.12	63.75	14	–	–	19.18
DRW	67.12	44.00	14	26	26	32.49
PFW	67.12	47.88	14	26	26	35.35
PAW	37.12	63.75	14	–	–	19.18
PRW	67.12	44.00	14	26	26	32.49
R-1	30.12	44.00	–	30	–	22.92
HOSEBED	44	68	–	84	–	145.44
FRONT XLAY	16	7.5	–	73.75	–	5.12
MIDDLE XLAY	16	7.5	–	73.75	–	5.12
REAR XLAY	16	11	–	73.75	–	7.51





NOTE:
DIMENSIONS SHOWN ARE APPROXIMATE AND ARE SUBJECT TO MINOR CHANGE AS MAY BE FOUND NECESSARY DURING CONSTRUCTION. MINOR DETAILS MAY NOT BE SHOWN. IF DISCREPANCIES EXIST BETWEEN THIS DRAWING AND THE WRITTEN SPECIFICATIONS PROVIDED BY TOYNE, THE WRITTEN SPECIFICATIONS SHALL PREVAIL.

ORIGINAL DRAWING	13 JUN 25	CHASSIS:	FREIGHTLINER M2 106 2 DOOR 4x2	SCALE: 1/66	SHEET: A
		WB-CA-AF:	197"-131.4"-47" D17	CITY:	--
		BODY MATL:	BOLTED STAINLESS STEEL	STATE:	--
		PUMP:	WATEROUS CSU 1500	DLR:	TOY
		TANK:	1000/25 "L" POLY TANK	CAD:	GROSSMAN
		FOAM SYSTEM:	PRE-PIPE	DATE:	13 JUNE 2025
		GENERATOR:	N/A	FILE:	14395 DEMO

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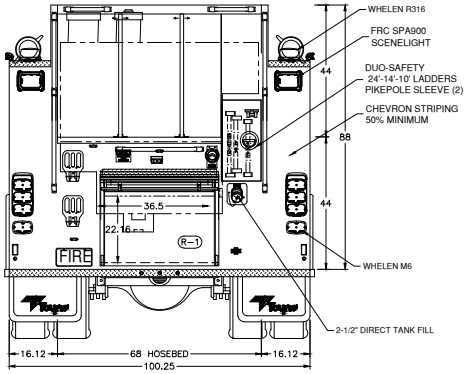
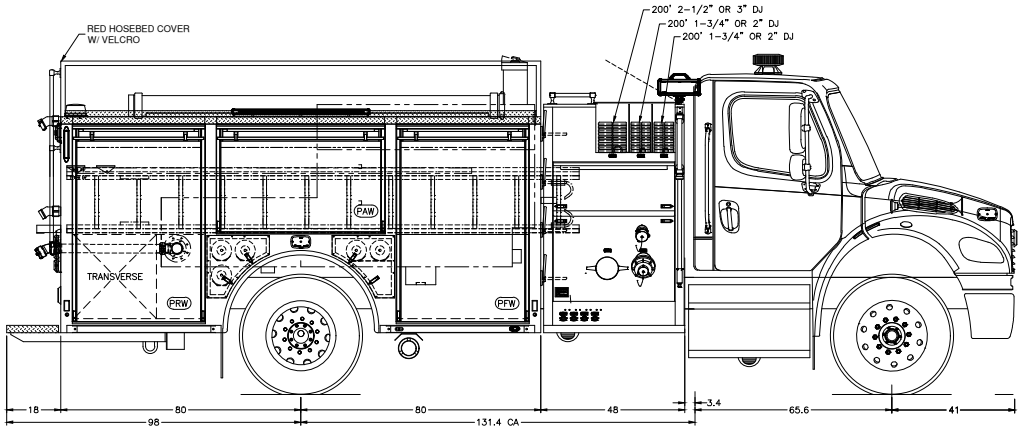
DEMO
CUSTOM PUMPER





TREADBRITE TEXTURE NOT SHOWN IN TOP VIEW

REFERENCE SCALE IN INCHES
0 10 20 30 40

COMP.	HEIGHT	WIDTH	USABLE DEPTH UPPER	USABLE DEPTH LOWER	DIVIDE HEIGHT	FT²
DFW	67.12	47.88	14	26	28	35.35
DAW	37.12	63.75	14	–	–	19.18
DRW	67.12	44.00	14	26	28	32.49
PFW	67.12	47.88	14	26	28	35.35
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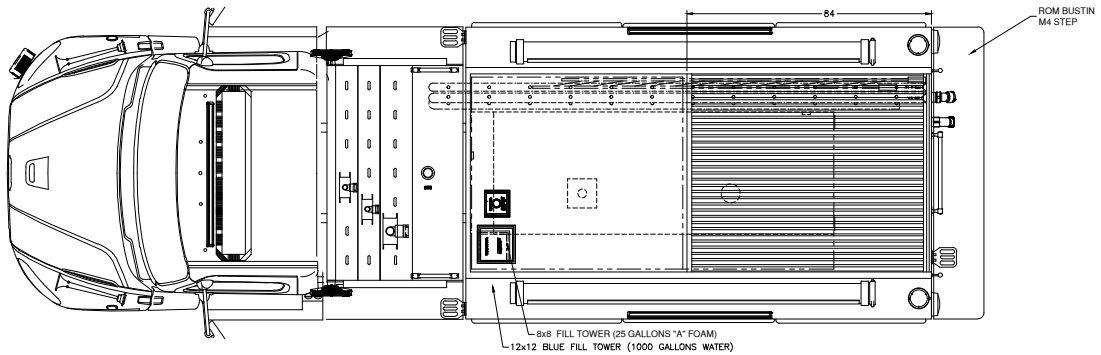

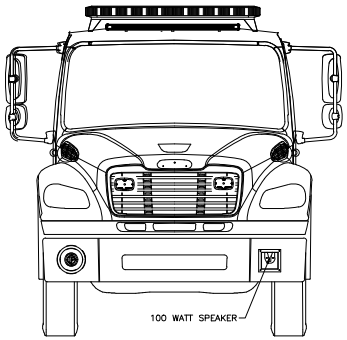

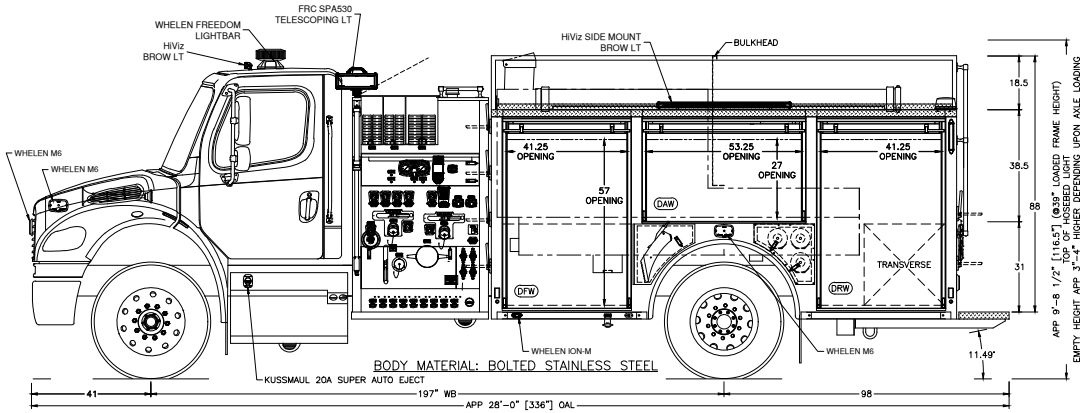

BODY MATERIAL: BOLTED STAINLESS STEEL

NOTE:
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		PUMP:	WATEROUS CSU 1500	DLR:	TOY
		TANK:	1000/25 "L" POLY TANK	CAD:	GROSSMAN
		FOAM SYSTEM:	PRE-PIPE	DATE:	13 JUNE 2025
		GENERATOR:	N/A	FILE:	14395 DEMO

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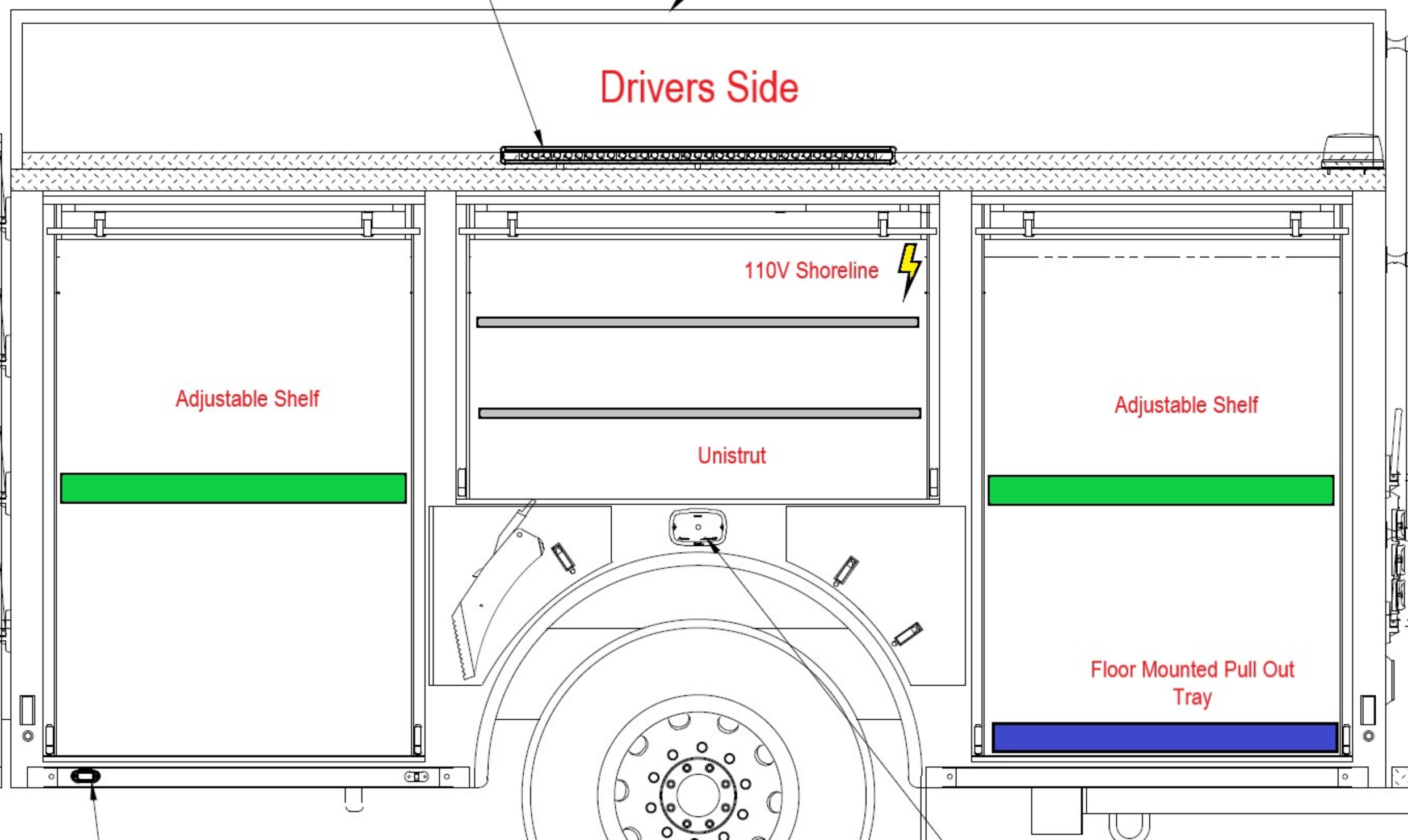
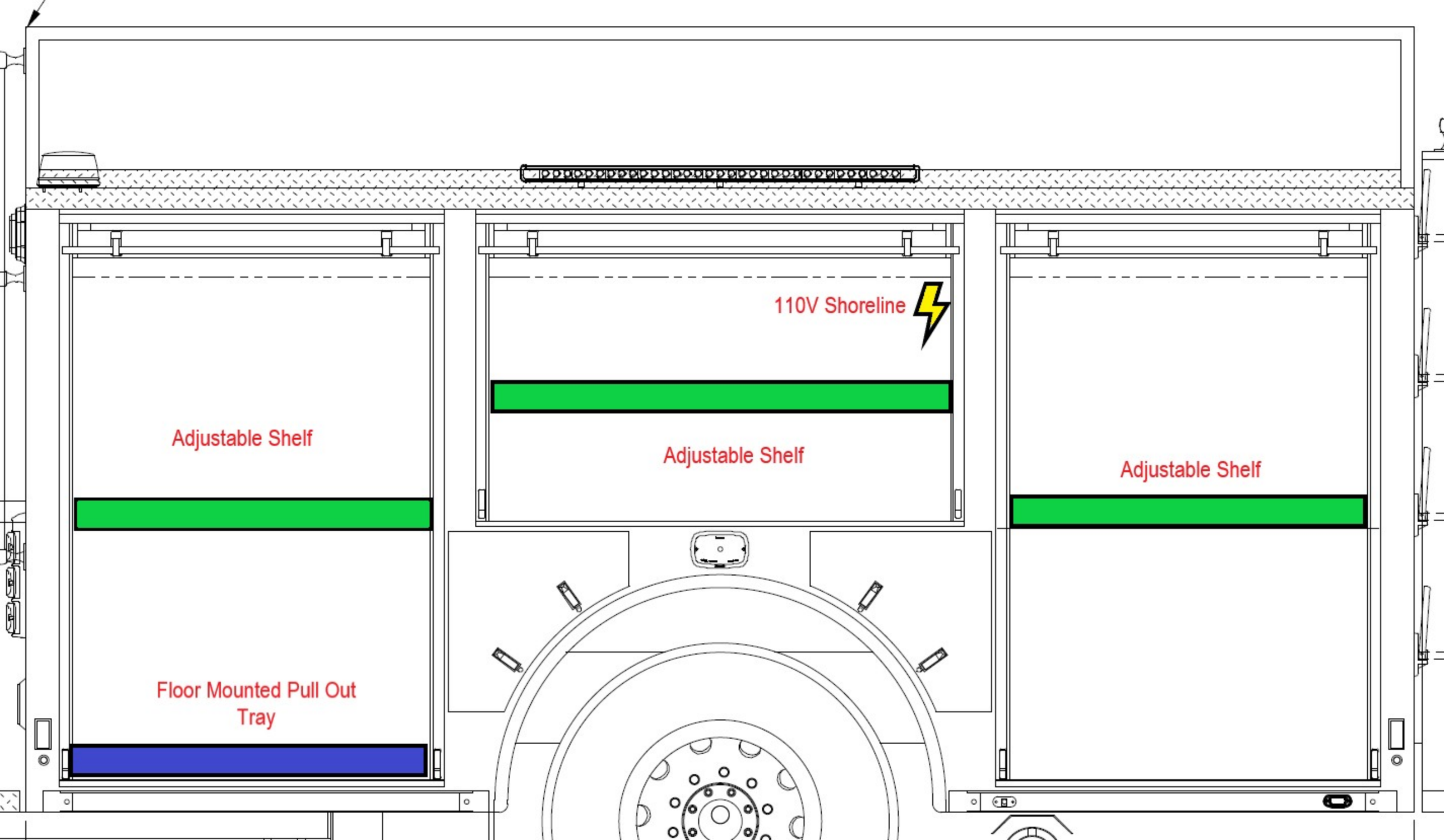

Drivers Side
110V Shoreline
Adjustable Shelf
Unistrut
Adjustable Shelf
Floor Mounted Pull Out
Tray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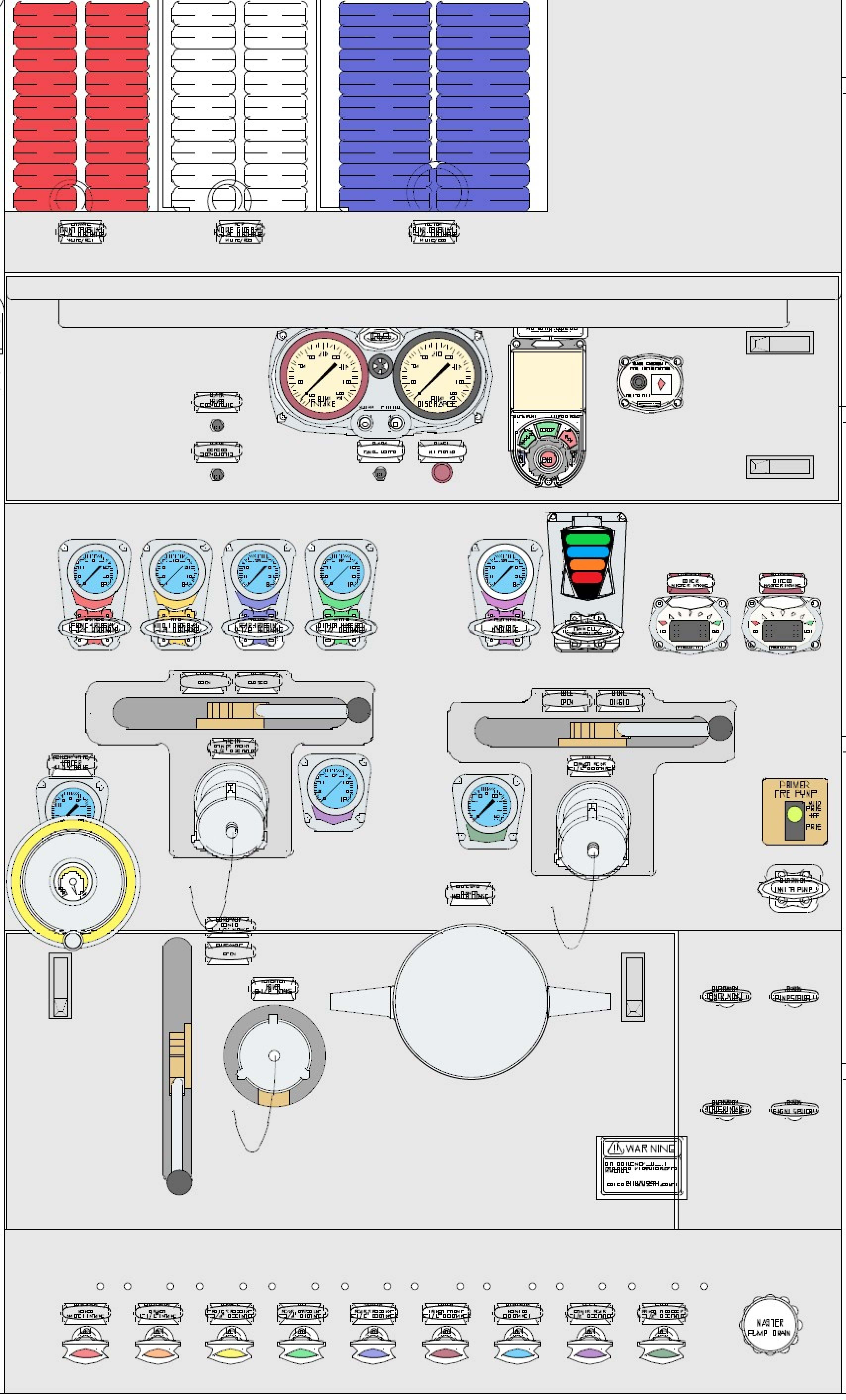

PRIMER
WARNING
MASTER

F R E I G H T L I N E R S P E C I F I C A T I O N P R O P O S A L

Vehicle Configuration

M2 106 PLUS CONVENTIONAL CHASSIS

2026 MODEL YEAR SPECIFIED

SET BACK AXLE - TRUCK

General Service

DOMICILED, USA (EXCLUDING CALIFORNIA AND CARB OPT-IN STATES)

FIRE/EMERGENCY SERVICE

MEDIUM TRUCK 2 YEAR WARRANTY

EXPECTED FRONT AXLE LOAD: 14600 lbs

EXPECTED REAR DRIVE AXLE LOAD: 27000 lbs

EXPECTED GROSS VEHICLE CAPACITY: 41600 lbs

Engine

CUM L9 360EV HP @ 2200 RPM, 2200 GOV RPM, 1150 LB-FT @ 1200 RPM, FIRE/EMERGENCY

Engine Equipment

EPA 2010/GHG 2024 CONFIGURATION

AIR INTAKE WITH NFPA COMPLIANT EMBER SCREEN AND FIRE-RETARDANT DONALDSON AIR CLEANER

DR 12V 300 AMP 40-SI BRUSHLESS PAD MOUNT ALTERNATOR WITH REMOTE BATTERY VOLTAGE SENSE

(2) DTNA GENUINE, FLOODED STARTING, MIN 2000CCA, 370RC, THREADED STUD BATTERIES WITH POSITIVE JUMP START POST

BATTERY BOX FRAME MOUNTED

WIRE GROUND RETURN FOR BATTERY CABLES WITH ADDITIONAL FRAME GROUND RETURN

NON-ESSENTIAL POSITIVE LOAD DISCONNECT, IN CAB CONTROL SWITCH MOUNTED OUTBOARD OF DRIVER

CUMMINS TURBOCHARGED 18.7 CFM AIR COMPRESSOR WITH INTERNAL SAFETY VALVE

C-BRAKE BY JACOBS WITH HIGH MED LOW BRAKE SWITCH

RH MTD HORIZONTAL AFTERTREATMENT SYSTEM ASSEMBLY WITH RH HORIZONTAL TAILPIPE

AIR POWERED ON/OFF ENGINE FAN CLUTCH

AUTOMATIC FAN CONTROL WITHOUT DASH SWITCH

CUMMINS SPIN ON FUEL FILTER

COMBINATION FULL FLOW/BYPASS OIL FILTER

1100 SQUARE INCH ALUMINUM RADIATOR WITH AUXILIARY COOLING

ANTIFREEZE TO -34F, OAT (NITRITE AND SILICATE FREE) EXTENDED LIFE COOLANT

GATES BLUE STRIPE COOLANT HOSES OR EQUIVALENT

CONSTANT TENSION HOSE CLAMPS FOR COOLANT HOSES

ELECTRIC GRID AIR INTAKE WARMER

DELCO 12V 38MT HD STARTER WITH INTEGRATED MAGNETIC SWITCH

Transmission

ALLISON 3000 EVS 5 SPD AUTOMATIC TRANSMISSION

Transmission Equipment

MAGNETIC PLUGS, ENGINE DRAIN, TRANSMISSION DRAIN, AXLE(S) FILL AND DRAIN

HEAVY DUTY ELECTRONIC TRANSMISSION SHIFT CONTROL, COLUMN MOUNTED

TRANSMISSION PROGNOSTICS - ENABLED 2013

WATER TO OIL TRANSMISSION COOLER

TRANSMISSION OIL CHECK AND FILL WITH ELECTRONIC OIL LEVEL CHECK

SYNTHETIC TRANSMISSION FLUID (TES-295 COMPLIANT)

Fire Pump

CUSTOM DRIVELINE JACKSHAFT SPACER FOR FIRE PUMP

Front Axle and Equipment

DETROIT DA-F-14.7-3 14,700# FF1 71.5 KPI/3.74 DROP SINGLE FRONT AXLE

MERITOR 16.5X5 Q+ CAST SPIDER CAM FRONT BRAKES, DOUBLE ANCHOR, FABRICATED SHOES

FIRE AND EMERGENCY SEVERE SERVICE, NON-ASBESTOS FRONT LINING

FRONT BRAKE DUST SHIELDS

FRONT OIL SEALS

HALDEX AUTOMATIC FRONT SLACK ADJUSTERS

TRW TAS-85 POWER STEERING

SYNTHETIC 75W-90 FRONT AXLE LUBE

Front Suspension

14,600# TAPERLEAF FRONT SUSPENSION

MAINTENANCE FREE RUBBER BUSHINGS

FRONT SHOCK ABSORBERS

Rear Axle and Equipment

MERITOR 27,000# R-SERIES FIRE/EMERGENCY SERVICE SINGLE REAR AXLE

IRON REAR AXLE CARRIER WITH STANDARD AXLE HOUSING

MXL 17T MERITOR EXTENDED LUBE MAIN DRIVELINE WITH HALF ROUND YOKES

DRIVER CONTROLLED TRACTION DIFFERENTIAL

MERITOR 16.5X7 P CAST SPIDER CAM REAR BRAKES, DOUBLE ANCHOR, CAST SHOES

FIRE AND EMERGENCY SEVERE SERVICE NON-ASBESTOS REAR BRAKE LINING

REAR BRAKE DUST SHIELDS

REAR OIL SEALS

HALDEX AUTOMATIC REAR SLACK ADJUSTERS

SYNTHETIC 75W-90 REAR AXLE LUBE

Rear Suspension

27,000# FLAT LEAF SPRING REAR SUSPENSION WITH HELPER AND RADIUS ROD FOR FIRE/EMERGENCY

FORE/AFT CONTROL RODS

Brake System

AIR BRAKE PACKAGE

WABCO 4S/4M ABS WITH TRACTION CONTROL AND ESC

STANDARD AIR SYSTEM PRESSURE PROTECTION SYSTEM

BW AD-9 BRAKE LINE AIR DRYER WITH HEATER

CUSTOM STEEL AIR BRAKE RESERVOIRS

BW DV-2 AUTO DRAIN VALVE WITH HEATER - WET TANK, PETCOCKS ALL OTHERS

Wheelbase & Frame

(197 INCH) WHEELBASE / (131.3 INCH) CA

11/32X3-1/2X10-15/16 INCH STEEL FRAME 120KSI

(47 INCH) REAR FRAME OVERHANG

Chassis Equipment

THREE-PIECE 14 INCH CHROME STEEL BUMPER WITH COLLAPSIBLE ENDS AND CUTOUT FOR SPEAKER

FRONT TOW HOOKS - FRAME MOUNTED

FENDER AND FRONT OF HOOD MTD FRONT MUDFLAPS

GRADE 8 THREADED HEX HEADED FRAME FASTENERS

Fuel Tanks

50 GALLON RECTANGULAR ALUMINUM FUEL TANK - LH

6 GALLON DIESEL EXHAUST FLUID TANK

FUEL/WATER SEPARATOR WITH WATER IN FUEL SENSOR AND 12 VOLT PREHEATER

Tires

MICHELIN XZE 12R22.5 16 PLY RADIAL FRONT TIRES

MICHELIN XDN2 12R22.5 16 PLY RADIAL REAR TIRES

Hubs

CONMET PRESET PLUS PREMIUM IRON FRONT HUBS

CONMET PRESET PLUS PREMIUM IRON REAR HUBS

Wheels

22.5X8.25 10-HUB POLISHED ALUMINUM DISC FRONT WHEELS WITH DURA-BRIGHT FINISH

22.5X8.25 10-HUB POLISHED ALUMINUM DISC REAR OUTER WHEELS W/ OUTER DURA-BRIGHT FINISH

Cab Exterior

106 INCH BBC FLAT ROOF ALUMINUM CONVENTIONAL AIR RIDE CAB

2-1/2 INCH FENDER EXTENSIONS

NFPA COMPLIANT LH AND RH EXTERIOR GRAB HANDLES

HOOD MOUNTED CHROMED PLASTIC GRILLES

FIBERGLASS HOOD WITH FIREWALL INSULATION

DUAL 25 INCH ROUND STUTTER TONE HOOD MOUNTED AIR HORNS WITH DUAL LANYARDS

DUAL ELECTRIC HORNS

LED HEADLIGHT ASSEMBLY AND INCANDESCENT MARKER/TURN LAMP W/ CHROME BEZELS & DAYTIME RUNNING LIGHTS

LED AERODYNAMIC MARKER LIGHTS

DUAL 102” WEST COAST BRIGHT FINISH HEATED MIRRORS WITH LH AND RH REMOTE

LH AND RH 8 INCH BRIGHT FINISH CONVEX MIRRORS MOUNTED UNDER PRIMARY MIRRORS

REAR WINDOW DELETE

TINTED DOOR GLASS LH AND RH WITH TINTED NON-OPERATING WING WINDOWS

RH AND LH ELECTRIC POWERED WINDOWS & DOOR LOCKS

1-PIECE SOLAR GREEN GLASS WINDSHELD

2 GALLON WINDSHIELD WASHER RESERVOIR WITH FLUID LEVEL INDICATOR

Cab Interior

GRAY & CARBON VINYL INTERIOR

MOLDED DOOR PANELS WITH ALUMINUM KICK PANELS LOWER DOORS

BLACK MATS WITH PREMIUM INSULATION

FORWARD ROOF MOUNTED CONSOLE

AM/FM/WB WORLD TUNER RADIO WITH BLUETOOTH, USB AND AUXILIARY INPUTS

(2) CUP HOLDERS LH AND RH DASH

M2 DASH WITH DUAL USB CHARGING PORTS (2) IN DASH

HEATER, DEFROSTER AND AIR CONDITIONER

MAIN HVAC CONTROLS WITH RECIRCULATION SWITCH

SOLID-STATE CIRCUIT PROTECTION AND FUSES

12V NEGATIVE GROUND ELECTRICAL SYSTEM

LED PREMIUM CAB LIGHTING

H.O. BOSTROM SIERRA AIR-30 HIGH BACK AIR SUSPENSION DRIVER SEAT WITH ADJUSTABLE RECLINE, FIXED LUMBAR NFPA COMPLIANT

H.O. BOSTROM SIERRA AIR-30 HIGH BACK AIR SUSPENSION PASSENGER SEAT WITH ADJUSTABLE RECLINE, FIXED LUMBAR NFPA COMPLIANT

BLACK DURAWEAR FABRIC SEAT COVERS, SEAT BOLSTERS AND INSERTS

NFPA 1901-2009 HIGH VISIBILITY ORANGE SEAT BELTS

ADJUSTABLE TILT AND TELESCOPING STEERING COLUMN

4-SPOKE 18 INCH BLACK STEERING WHEEL

DRIVER AND PASSENGER INTERIOR SUN VISORS

Instruments & Controls

BRIGHT ARGENT FINISH GAUGE BEZELS

LOW AIR PRESSURE INDICATOR LIGHT AND AUDIBLE ALARM

DUAL NEEDLE PRIMARY AND SECONDARY AIR PRESSURE GAUGE

ELECTRONIC AIR RESTRICTION INDICATOR DISPLAYED IN DRIVER DISPLAY

87 DECIBELS TO 112 DECIBELS AUTOMATIC SELF-ADJUSTING BACKUP ALARM

ELECTRONIC CRUISE CONTROL WITH CONTROLS ON STEERING WHEEL SPOKES

PREMIUM INSTRUMENT CLUSTER WITH 5.0 INCH TFT COLOR DISPLAY

FIRE AND EMERGENCY SERVICE VEHICLES ENGINE WARNING

2 INCH ELECTRIC FUEL GAUGE

ELECTRICAL ENGINE COOLANT TEMPERATURE GAUGE

DIGITAL TRANSMISSION OIL TEMPERATURE IN DRIVER DISPLAY

ENGINE AND TRIP HOUR METERS INTEGRAL WITHIN DRIVER DISPLAY

ELECTRIC ENGINE OIL PRESSURE GAUGE

ELECTRONIC MPH SPEEDOMETER WITH SECONDARY KPH SCALE

ELECTRONIC 3000 RPM TACHOMETER

IGNITION SWITCH CONTROLLED ENGINE STOP

DIGITAL VOLTAGE DISPLAY INTEGRAL WITH DRIVER DISPLAY

SINGLE ELECTRIC WINDSHIELD WIPER MOTOR WITH DELAY

ROTARY HEADLAMP SWITCH, MARKER LIGHTS/HEADLIGHTS SWITCH

ONE VALVE PARKING BRAKE SYSTEM WITH DASH VALVE CONTROL

SELF CANCELING TURN SIGNAL SWITCH WITH DIMMER, HEADLAMP FLASH, WASH / WIPE /INTERMITTENT

INTEGRAL ELECTRONIC TURN SIGNAL FLASHER

Paint Design

ONE SOLID CUSTOM BASE CLEAR COAT CAB COLOR

BLACK, HIGH SOLIDS POLYURETHANE FRAME/CHASSIS PAINT

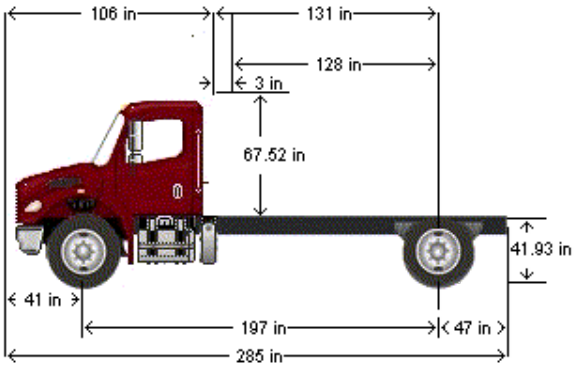
Weight Summary

	Weight Front	Weight Rear	Total Weight
Factory Weight+	7264 lbs	4126 lbs	11390 lbs

(+) Weights shown are estimates only. If weight is critical, contact Customer Application Engineering.

(***) All cost increases for major components (Engines, Transmissions, Axles, Front and Rear Tires) and government mandated requirements, tariffs, and raw material surcharges will be passed through and added to factory invoices.

D I M E N S I O N S



CONTENTS

KUSSMAUL CHIEF 4012 BATTERY CHARGER

A Kussmaul Chief 4012 (091-266-12-40) fully automatic battery charger with 40-amp output shall be installed on the apparatus. Remote voltage sensing shall be provided to compensate the charger output for the voltage drop in the charging wires.

- A 20-amp DC auxiliary output circuit shall be provided on the charger.

KUSSMAUL AUTO-PUMP AIR COMPRESSOR

A Kussmaul Auto-Pump 120-volt air compressor shall be provided on the apparatus. The compressor shall have a .76 cfm open flow with a maximum pressure of 100 psi. The pressure switch shall be pre-set at 70 psi cut in and 90 psi cut out.

AUTO-EJECT SHORELINE CONNECTION WITH CHARGE DISPLAY

A Kussmaul 120-volt Auto-Eject with charge display on cover shall be provided. The unit shall automatically eject the connecting plug when the engine is cranked.

- The connection shall be located on the driver's side pump panel in the lower drain area.
- The eject shall have a red spring-loaded cover.
- A NEMA 5-20P mating female cord end shall be shipped loose with the apparatus to allow the Fire Department to connect the cord end to a Fire Department provided charging cord.

BACKUP ALARM

One (1) 97db backup alarm shall be provided and shall automatically activate when the apparatus transmission is placed into reverse. The backup alarm shall exceed all NFPA and SAE J994 Type D requirements and testing.

CONSOLE MOUNTED CONTROL PANEL

A control console constructed of aluminum treadbrite shall be provided between the driver's and officer's seats for all warning/auxiliary light controls and pump shift.

- A 16" long (side to side) x 2 3/4" wide (front to rear) and 8" depth storage pocket shall be provided on the rear of the console for storing books, maps, etc. The pocket shall be constructed of aluminum treadbrite.
- The console panel shall be constructed of brushed stainless steel.

OBSERVATION SYSTEM DISPLAY

An ASA Voyager observation system shall be provided on the apparatus. The system shall include a VOM718 7" flat panel color display.

- A VCMS24-B color camera shall be provided and mounted on the rear of the apparatus. The camera shall have an integrated microphone.
- The camera shall activate automatically when the transmission is placed into reverse.

12 VOLT "BATTERY SWITCH HOT" RADIO POWER FEED

One (1) 12 volt "battery switch hot" power feed wire(s) shall be provided in the cab for customer supplied and installed radio equipment. 48" of wire shall be provided to allow the installer to trim to the required length.

- Note: Any equipment connected to this power feed will be powered only with master battery switch in the on position.
- The power feed shall be in the center console.

FIRE HELMET MOUNTING

The end user of the apparatus shall be responsible for insuring that all helmets are either stored in an exterior compartment or securely mounted to NFPA standards inside the cab.

TIRE PRESSURE VISUAL INDICATORS - SHIP LOOSE

Real Wheels RWTG1234 valve stem mounted visual indicators shall be provided for each tire. The LED indicators shall flash when the tire pressure drops 8 psi.

- The indicators shall be shipped loose for customer or dealer installation.

ENGINE HORIZONTAL EXHAUST SHIELDING

Shielding shall be provided between the apparatus body and the exhaust pipe if necessary to deflect heat away from the body. The exhaust system shall be designed and installed to comply with EPA equipment requirements and shall not be modified.

CAB ENTRY STEP COVER

The OEM provided cab entry step on the side opposite the fuel tank shall be removed from the chassis provided brackets and replaced with a fabricated aluminum treadbrite step assembly.

FUEL TANK/STEP COVER

The OEM provided cab entry step on the same side as the fuel tank shall be removed from the chassis provided brackets and replaced with a fabricated aluminum treadbrite step assembly.

FRONT MUD FLAPS

The front mud flap shall be provided on the chassis.

REAR MUD FLAPS

Heavy duty black rubber mud flaps shall be provided on the rear wheels. The mud flaps shall be attached to the apparatus in the rear wheel well area using heavy-duty stainless-steel retention straps that are secured into place using stainless steel fasteners.

FRONT/REAR AXLE DRESS UP KIT

The front and rear axles shall have stainless steel nut covers and baby moons.

WATEROUS MODEL CSU 1,500 GPM SINGLE STAGE PUMP

The fire pump shall be a Waterous Fire Pump Company model CSU that complies with all applicable requirements of the latest edition of the "Standard for Automotive Fire Apparatus" published by the National Fire Protection Association.

WATEROUS SEVEN-YEAR LIMITED WARRANTY - PARTS ONLY

The following "PARTS ONLY" warranty shall be provided on the Waterous Fire Pump:

Waterous warrants, to the original Buyer only, that products manufactured by Waterous will be free from defects in material and workmanship under normal use and service for a period of seven (7) years from the date the product is first placed in service, or seven and one-half (7-1/2) years from the date of shipment by Waterous, whichever period shall be the first to expire provided the Buyer notifies Waterous, in writing, of the defect in said product within the warranty period, and said product is found by Waterous to be nonconforming with the aforesaid warranty.

When required in writing by Waterous, defective products must be promptly returned by Buyer to Waterous in South St. Paul, Minnesota, or at such other place as may be specified by Waterous, with transportation and other charges prepaid. A Returned Material Authorization (RMA) is required for all products and parts and may be requested by phone, fax, email, or mail.

The aforesaid warranty excludes any responsibility or liability of Waterous for:

(a) damages or defects due to accident, abuse, misuse, abnormal operating conditions, negligence, accidental causes, use in non-firefighting applications, or improper maintenance, or attributable to written specifications or instructions furnished by Buyer;

(b) defects in products manufactured by others and furnished by Waterous hereunder, it being understood and agreed by the parties that the only warranty provided for such products shall be the warranty provided by the manufacturer thereof which, if assignable, Waterous will assign to Buyer when requested;

(c) any product or part, altered, modified, serviced or repaired other than by Waterous, without its prior written consent;

(d) the cost of dismantling, removing, transporting, storing, or insuring the defective product or part and the cost of reinstallation; and

(e) normal wear items (packing, strainers, filters, light bulbs, anodes, intake screens, mechanical seals, etc.).

ALL OTHER WARRANTIES ARE EXCLUDED, WHETHER EXPRESS OR IMPLIED BY OPERATION OF LAW OR OTHERWISE, INCLUDING ALL IMPLIEDWARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT, WHETHER AS A RESULT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, OR ANY OTHER CAUSE OF ACTION, SHALL WATEROUS BE LIABLE FOR ANY PUNITIVE, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR FOR PERSONAL INJURY OR PROPERTY DAMAGES.

The exclusive remedy of Buyer and the sole liability of Waterous, whether based on contract, warranty, tort or any other basis of recovery whatsoever, are expressly limited at the election of Waterous to:

(a) the replacement at the agreed point of delivery of any product or part, which upon inspection by Waterous or its duly authorized representative, is found not to conform to the limited warranty set forth above, or

(b) the repair of such product or part, or

(c) the refund or crediting to Buyer of the net sales price of the defective product or part.

BUYER'S REMEDIES CONTAINED HEREIN ARE EXCUSIVE OF ANY OTHER REMEDY OTHERWISE AVAILABLE TO BUYER.

PUMP PERFORMANCE - 1,500 U.S. GPM.

The pump shall be a single stage centrifugal with a class "A" rated capacity of 1,500 United States gallons per minute. The pump shall deliver the percentage of rated discharge pressures as indicated below:

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

PUMP CONSTRUCTION

The fire pump shall be midship mounted. The pump shall be mounted across the chassis frame rails and shall be mounted at the fire pump manufacturer's recommended angular position with the drive shafts.

The pump shall be free from objectionable pulsation and vibration under all normal operating conditions. The engine shall provide sufficient horsepower and revolutions per minute to allow the pump to meet or exceed its rated performance.

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the NFPA performance requirements.

The pump body shall be close-grained gray iron and shall be horizontally split in two sections for easy removal of the entire impeller shaft assembly and designed for complete servicing from the bottom of the truck without disturbing the setting of the pump in the chassis or apparatus piping which is connected to the pump. The pump body halves shall be bolted together on a single horizontal face to minimize leakage and facilitate re-assembly.

The impeller shaft shall be stainless steel, accurately ground to size and supported at each end by oil or grease lubricated anti-friction ball bearings for rigid and precise support. The bearings shall be protected from water and sediment by suitable stuffing boxes, flinger rings, and oil seals. The impeller shaft shall be of a two-piece construction separable between the pump and pump transmission to allow true separation of the transmission from the pump without disassembly of either component. No sleeve type bearings shall be used.

The pump transmission shall be rigidly attached to the pump body assembly and be of the latest design incorporating a high strength, involute, tooth-form Hy-Vo chain drive and driven sprockets capable of operating at high speeds to provide smooth, quiet transfer of power.

IMPELLER - FLAME PLATE

The impeller shall be bronze with double suction inlets, accurately balanced (mechanically and hydraulically), of the mixed flow design with reverse-flow, labyrinth-type, wear rings that resist water bypass and loss of efficiency due to wear. The impeller shall have a **Flame Plated Hub** to assure maximum pump life and efficiency despite the presence of abrasive particles, such as fine sand, in the water being pumped.

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

MECHANICAL SEAL

The pump shaft shall have self-adjusting corrosion and wear resistant mechanical seals.

SACRIFICIAL PUMP ANODES - (3)

To aid in protecting the pump from internal corrosion, three sacrificial anodes shall be provided and located one in the lower section of each side inlet and one on the discharge side of the pump.

FRC PUMP BOSS MAX PRESSURE GOVERNOR SYSTEM

Fire Research Pump Boss Max pressure governor and monitoring display kit shall be installed. The kit shall include a control module, pressure sensor, and cables.

The following continuous displays shall be provided on shown on the LCD screen:

- Check engine/stop engine warning
- Engine rpm
- Engine oil pressure
- Engine temperature
- Battery voltage
- PSI / RPM setting
- Throttle ready LED.

An on LCD screen message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator.

The program shall store the accumulated operating hours for the pump and engine with push button display. The program shall display and provide audible and visual warning alarms for the following conditions:

- High Transmission Temperature
- Low Battery Voltage (Engine Off)
- Low Battery Voltage (Engine Running)
- High Battery Voltage
- Low Engine Oil Pressure
- High Engine Coolant Temperature
- Out of water (visual alarm only)
- No engine response (visuall alarm only)
- Accumulated engine and pump hours.

The governor shall operate in two control modes, pressure and RPM. No discharge pressure or engine RPM variation shall occur when switching between modes.

A throttle ready LED shall illuminate when the interlock signal is recognized. The governor shall start in pressure mode and set the engine RPM to idle. In pressure mode the governor shall automatically regulate the discharge pressure at the level set by the operator. In RPM mode the governor shall maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase. The governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 psi. Other safety features shall include recognition of no water conditions with an automatic programmed response and a push button to return the engine to idle.

TFT A-18 INTAKE RELIEF VALVE

A TFT model A-18 intake relief/dump valve shall be provided on the intake side of the pump to relieve excess incoming pressure. The system shall be designed to automatically restore to a non-relieving position when excessive pressure is no longer present. The pressure adjustment range shall be from 50 psi to 200 psi. The relief system shall be adjustable with a common type box end wrench.

- The intake relief valve shall be pre-set to 125 psi.

PUMP SHIFT MECHANISM -AIR/ELECTRIC

The pump shall be shifted from road to pump by means of a cab mounted air over electric pump shift switch. The switch shall have a built-in positive locking mechanism to prevent accidental movement of the switch. The locking mechanism shall require the operator to manually lift on the switch lever to disengage the lock.

The switch shall have three positions:

- Position 1 = road position
- Position 2 = neutral position
- Position 3 = pump position

A green indicator light shall be provided in the driving compartment and shall be energized when the pump shift has been completed. This light shall be labeled "PUMP ENGAGED".

When the apparatus is equipped with an automatic transmission, a green indicator light shall be provided in the driver's compartment. It shall be energized when both the pump shift has been completed and the chassis transmission is in pump gear. This light shall be labeled "OK TO PUMP".

MANUAL PUMP SHIFT OVERRIDE- REMOTE CABLE ACTUATION

A manual pump shift override shall be provided on the apparatus. The shift shall be remote cable actuated. The remote cable shall have a "T" handle control which shall be positioned just inside the pump compartment on the driver's side. The control shall be easily accessed through the side panel hinged access door. The control shall be clearly labeled "MANUAL PUMP SHIFT".

- A label shall be provided near the manual pump shift describing the proper procedure to follow when using the manual shift.

TRIDENT AUTOMATIC PRIMING SYSTEM

A Trident automatic air priming system shall be provided.

- A toggle switch shall be provided on the pump panel to choose priming mode. The switch shall be pushed to initially prime the pump. After the pump is primed, the switch may be placed in "auto" mode. The system shall monitor the discharge pressure of the pump and automatically restart the primer if discharge pressure is lost.
- The auto prime system shall be interconnected to the pump shift to allow priming activation only in pump mode.
- A pressure protection valve shall be provided in the priming system air line assembly.

HEAT EXCHANGER - CHASSIS PROVIDED

The heat exchanger (engine cooler) shall be provided on the chassis.

If current or future EPA regulations or engine re-design make the heat exchanger installation impractical or impossible, it will not be provided, and the purchaser will be credited for the cost of the exchanger.

MANIFOLD DRAIN VALVE

The pump shall have a manifold type drain valve assembly consisting of a stainless steel plunger in a bronze body with multiple ports. The control for the valve shall be on the left side along the bottom of the panel and above the side running board. The valve shall be a rotary type with a large easy to grip handle. The valve shall be labeled “PUMP DRAIN”.

ICI "LEVER LIFT" BLEEDER/DRAIN VALVES

ICI 3/4" quarter turn ball type bleeder/drain valve shall be provided for each discharge and auxiliary intake. A hose shall be connected to the valve that will direct water below the apparatus and away from the immediate pump operator's location.

The control handle shall be "lever lift" style for easy actuation. The handle for the control shall have a recessed area for the color-coded identification label.

LOW POINT AUTO-DRAINS

Automatic drains shall be provided in low points of any discharge piping. The drain shall drain to the ground below its location. This drain shall be a supplementary drain and will not be considered the required 3/4" bleeder drain.

6" LEFT (DRIVER) SIDE MASTER INTAKE

A 6" master intake shall be provided on the left (driver) side of the apparatus. The intake shall have a 6" male NST connection. The intake shall have a removable screen to prevent the entry of large objects into the pump. The screen shall be constructed of a material that will provide cathodic protection to the pump. A label shall be provided above the intake that states "DRIVER SIDE MASTER INTAKE". The label shall be color coded burgundy.

LEFT SIDE WATEROUS MONARCH MASTER INTAKE VALVE

The left intake shall be equipped with a Waterous Monarch electrically operated intake valve. The valve shall be a Jamesbury wafer sphere valve designed to mount on the fire pump between the suction tube extension and the suction tube behind the pump panel. The valve shall not interfere with other suction or discharge openings on the fire pump or with the operating control properly mounted.

- The valve shall be hydrostatically tested to 600 psig and vacuum tested to 26" hg.
- The valve shall be operated by a 12 VDC electric motor with the control on the pump panel. Indicator lights shall be provided to indicate whether the valve is open, closed, or traversing from one position to the other.
- A label stating the following will be provided near the intake: "WARNING-SERIOUS INJURY OR DEATH COULD OCCUR IF INLET IS SUPPLIED BY A PRESSURIZED SOURCE WHEN THE VALVE IS CLOSED.
- A 3/4" drain shall be provided on the intake to allow draining of the outer side of the valve.
- A 1/4" bleeder valve shall be provided on the intake to bleed off air on the outer side of the valve.

TFT A-18 INTAKE RELIEF VALVE - LH SIDE INTAKE

A TFT model A-18 intake relief/dump valve shall be provided in the supply side of the left side gated master intake to relieve excess incoming pressure. The system shall be designed to self-restore to a non-relieving position when excessive pressure is no longer present. The pressure adjustment range shall be from 50 psi to 200 psi. The relief system shall be adjustable with a common type box end wrench.

- The intake relief valve shall be pre-set to 125 psi.

LEFT SIDE MASTER INTAKE CAP

A 6" FNST LH chrome cap shall be provided on the left side master intake.

6" RIGHT (PASSENGER) SIDE MASTER INTAKE

A 6" master intake shall be provided on the right (passenger) side of the apparatus. The intake shall have a 6" male NST connection. The intake shall have a removable screen to prevent the entry of large objects into the pump. The screen shall be constructed of a material that will provide cathodic protection to the pump. A label shall be provided above the intake that states "PASSENGER SIDE MASTER INTAKE". The label shall be color coded burgundy.

RIGHT SIDE WATEROUS MONARCH MASTER INTAKE VALVE

The right intake shall be equipped with a Waterous Monarch electrically operated intake valve. The valve shall be a Jamesbury wafer sphere valve designed to mount on the fire pump between the suction tube extension and the suction tube behind the pump panel. The valve shall not interfere with other suction or discharge openings on the fire pump or with the operating control properly mounted.

- The valve shall be hydrostatically tested to 600 psig and vacuum tested to 26" hg.
- The valve shall be operated by a 12 VDC electric motor with the control on the pump panel. Indicator lights shall be provided to indicate whether the valve is open, closed, or traversing from one position to the other.

- A label stating the following will be provided near the intake: "WARNING-SERIOUS INJURY OR DEATH COULD OCCUR IF INLET IS SUPPLIED BY A PRESSURIZED SOURCE WHEN THE VALVE IS CLOSED.
- A 3/4" air bleeder/drain valve shall be provided on the valve body to allow bleeding of air while the valve is closed.
- A 1/4" bleeder valve shall be provided on the intake to bleed off air on the outer side of the valve.

TFT A-18 INTAKE RELIEF VALVE

A TFT A-18 intake relief/dump valve shall be provided in the supply side of the right side gated master intake to relieve excess incoming pressure. The system shall be designed to self-restore to a non-relieving position when excessive pressure is no longer present. The pressure adjustment range shall be from 50 psi to 200 psi. The relief system shall be adjustable with a common type box end wrench.

- The intake relief valve shall be pre-set to 125 psi.

RIGHT SIDE MASTER INTAKE CAP

A 6" FNST LH chrome cap shall be provided on the right-side master intake.

LEFT SIDE FORWARD AUXILIARY INTAKE

An auxiliary intake shall be provided on the left side of the pump compartment in the forward position.

- The intake valve and piping shall be 2 1/2" and shall be manually controlled from the pump operator's position.
- The intake shall have a 2 1/2" chrome plated female NST swivel connection with screen and a male NST chrome plated intake plug and chain.
- A 3/4" bleeder/drain valve shall be provided.

WATEROUS OPM OVERHEAT PROTECTION MANAGER W AUDIBLE

A Waterous OPM overheat protection manager shall be provided and installed on the discharge side of the pump. The valve shall function automatically when the water temperature in the pump exceeds 120 degrees Fahrenheit. The valve shall discharge a 3/8" stream of water helping to prevent pump overheat. The valve shall be self-resetting after the temperature of the water in the pump drops below 120 degrees Fahrenheit. A pump panel mounted light shall be provided to indicate when the relief valve is discharging water.

- An audible alarm shall also be provided.
- The water shall be discharged to the ground and shall be directed to the area that the pump operator would normally be standing.

FUTURE FOAM CAPABILITIES

The apparatus shall be pre-piped for future installation of a foam system. The manifold shall be stainless steel. This manifold shall be fed from the main pump discharge manifold and shall have a spacer pipe installed between the two manifolds with Victaulic couplings on each end. The spacer pipe shall be the length required for future installation of an electronic foam system.

PUMP PANEL CUTOUT - FOAM PRO 1600

A cut out shall be provided in the pump panel for all foam system controls for a Foam Pro 1600 system. The cut out shall be covered with a brushed stainless steel cover plate.

- The cut out shall fit the current model (at time of apparatus production) control panel.

25 GALLON CLASS A FOAM TANK

A 25-gallon Class A foam tank shall be provided. The tank shall have all connections necessary to connect to the foam system and shall also have a 1/4 turn drain valve with hose attached to allow the tank to be drained.

- The tank shall have an **8" x 8"** fill tower with hinged type lid with latch. A vent shall be provided in the lid.
- A label shall be provided on the lid that reads "CLASS A FOAM TANK FILL" and "WARNING: DO NOT MIX BRANDS OR TYPES OF FOAM".
- The class A foam tank shall be integrated into the apparatus booster tank. The foam tank shall not be separate from the booster tank.

STAINLESS STEEL PIPING

All piping for discharges not bolted directly to the pump body or pump discharge manifold casting shall be stainless steel using stainless steel fittings. High pressure helix wire reinforced flexible piping with an NFPA compliant minimum burst pressure may be used in some areas to minimize friction losses. All flexible piping couplings shall be high tensile strength stainless steel.

All piping shall be properly supported and braced to prevent movement of piping other than what is allowed by the flexible couplings to compensate for apparatus flexing.

Any discharge manifolds provided on the apparatus that are not part of a pump casting must be fabricated of a minimum of schedule 10 marine grade stainless steel piping. Use of any welded light gauge (less than Schedule 10) manifolding or plumbing will not be acceptable.

The stainless steel piping shall be warranted to be free from corrosion perforation for a period of 10 years following the delivery of the apparatus.

VICTAULIC COUPLINGS - GALVANIZED

Galvanized Victaulic style couplings shall be used in the assembly of the pump piping system. The couplings shall allow flex in the piping and provide for a disassembly point for maintenance and repairs.

VENTED LUG CAPS AND PLUGS

All discharges and intakes that specify caps and/or plugs shall be provided with vented lug type designed to relieve trapped pressure and help reduce possible operator injuries.

AKRON HD-8800 SERIES VALVES

All discharge and small diameter auxiliary intakes shall have heavy duty Akron 8800 series brass ball valves with stainless steel ball. This shall include the tank to pump and tank fill valve.

TANK REFILL/RECIRCULATION DISCHARGE

A discharge shall be provided from the pump discharge manifold to allow pump cooling when necessary as well as to refill the booster tank.

- The water tank fill gauge shall be directly in line with this discharge control.
- The valve and piping shall be 2" and shall be manually controlled on the pump panel.

RIGHT-SIDE DISCHARGES

One 4" and one 2 1/2" discharge shall be provided on the right-side pump panel. The discharges shall be in the forward section of the side pump panel, vertically stacked with the 4" below the 2 1/2".

One (1) right side 2 1/2" discharge:

- The right side 2 1/2" discharge shall be manually controlled on the pump panel.
- The discharge shall be equipped with a chrome plated brass or bright finish stainless steel discharge elbow with 2 1/2" MNST thread.

One (1) right side 4" discharge:

- The right side 4" discharge shall be manually controlled from the pump operator's position with a gear actuated hand wheel control featuring position indication.
- A Kochek model SKE5T4R 4" FNST x 5" locking swivel Storz elbow adapter with a model ZS36S525 5" locking Storz x 2 1/2" MNST reducer cap and a model ZCP2552 cap and chain shall be provided.

LEFT SIDE DISCHARGES

Two 2 1/2" discharges shall be provided on the left side pump panel. The discharges shall be located one forward of the intake and one located rear of the intake.

- Two (2) left side 2 1/2" discharge(s):
- The left side 2 1/2" discharge shall be manually controlled on the pump panel with a horizontal side-to-side lever control.
- The discharge shall be equipped with a chrome plated brass or bright finish stainless steel discharge elbow with MNST thread.
- A 2 1/2" chrome plated NST cap and chain shall be provided.

RIGHT REAR 2 1/2" DISCHARGE

One (1) 2 1/2" discharge shall be provided on the right rear of the apparatus.

- The valve and piping will be 2 ½ inch and shall be manually controlled on the pump panel.
- A chrome discharge elbow with cap and chain shall be provided with 2 1/2" NST threads.
- The right rear (passenger) 2 1/2" discharge shall be pre-piped for future foam system installation.
- Any piping for the discharge that is visible above the pump compartment and extending into the exterior front wall of the apparatus body shall be concealed with a cover.

3" MONITOR DISCHARGE

A 3" monitor discharge shall be provided above the pump compartment. The discharge piping shall extend above the pump compartment a sufficient distance to allow use of the deck gun.

The valve shall be manually controlled on the pump panel. The control shall have an integrated slow closing mechanism to comply with NFPA 1901.

CAPPED MONITOR DISCHARGE

The monitor discharge shall be capped with a female National Pipe Thread cap for future installation of monitor assembly.

1 3/4" CROSSLAY PRECONNECTS

Two 1 3/4" preconnected crosslays shall be provided and located above the side mount pump panel.

- The crosslay compartment shall be constructed of 5052 smooth aluminum sheet material with a random brushed finish applied after fabrication.
- Each crosslay shall be piped using 2" piping or high-pressure hose incorporating a 2" ball valve with the control on the side mount pump operator's panel.
- There shall be two (2) 2" swivel elbows with 1 1/2" male NST hose thread connections provided on the 1 3/4" cross lay hose beds. The swivels shall be mounted in a position to prevent hose "pinching" at the hose thread connection.
- 3/4" manual drain valves shall be provided for all 1 3/4" crosslays. The valves shall have an all brass body with heavy duty neoprene seal.
- Each crosslay shall have the capacity to hold 200' of 1 3/4" or 2" fire hose and nozzle.
- Each crosslay shall be pre-piped for future foam system installation.

2 1/2" CROSSLAY PRECONNECT

One (1) 2 1/2" pre-connected crosslay shall be provided and located above the side mount pump panel.

- The crosslay compartment shall be constructed of 5052 smooth aluminum sheet material with a random brushed finish applied after fabrication.
- Each crosslay shall be piped using 2 1/2" piping or high-pressure hose incorporating a 2 1/2" ball valve with the control on the side mount pump operator's panel.
- There shall be one (1) 2 1/2" swivel elbow with a 2 1/2" male NST hose thread connection provided on the 2 1/2" cross lay hose bed. The swivel shall be mounted in a position to prevent hose "pinching" at the hose thread connection.
- 3/4" manual drain valves shall be provided for all 2 1/2" crosslays.
- The valves shall have an all brass body with heavy duty neoprene seal.
- The 2 1/2" crosslay shall have the capacity to hold 200' of 2 1/2" or 3" fire hose and nozzle.

CROSSLAY COMPARTMENT ENDS - RED WEBBING

The crosslay compartment shall be enclosed on each end using a heavy-duty webbing to prevent hose from accidentally unloading. The webbing shall be red.

- A yellow nozzle strap shall be provided for each crosslay. The strap shall be designed to loop through the nozzle handle and secured to the apparatus to keep nozzle from coming out of the crosslay compartment without manually disconnecting the nozzle strap.
- The crosslay/speedlay end cover shall be secured with footman loops and Velcro straps.

HINGED ALUMINUM TREADBRITE CROSSLAY COVER

An aluminum treadbrite hinged cover shall be provided to cover the crosslay compartment. The cover shall have a full length polished stainless-steel hinge. A chrome-plated lift handle shall be provided on each end of the cover. Rubber protection blocks shall be provided in any area where the cover may encounter a painted surface.

PUMP COMPARTMENT

A modular pump compartment with side mounted pump operator's panel shall be provided. The modular design of the pump compartment shall allow the compartment to be fully independent of the apparatus body. A 1" flex joint shall be provided between the pump compartment and the apparatus body.

The modular design of the pump compartment shall allow the entire pump system, including the pump itself, to be removed from the apparatus in a one-piece assembly while leaving the body intact and without having to cut any sheet metal or welds.

STAINLESS STEEL PUMP COMPARTMENT CONSTRUCTION

The entire pump compartment shall be constructed using only 304 marine grade stainless steel fabricated sheeting with a #4 annealed and polished finish on all exterior surfaces. The pump compartment shall not require any finish painting.

PUMP COMPARTMENT RUNNING BOARDS

The pump compartment side running boards shall be constructed of NFPA compliant slip resistant aluminum treadbrite.

PUMP MODULE SEAL

An extruded rubber seal shall be installed between the pump compartment and the body to help prevent entry of road debris, snow, ice, etc., into the pump compartment.

PUMP HEAT PAN ENCLOSURE - ALUMINUM

An aluminum heat pan shall be provided to enclose the bottom of the pump compartment. Aluminum material shall be used to prevent rust and corrosion that is commonly found in pans made of steel. The assembly shall completely enclose the underside of the pump to aid in the prevention of freezing in winter weather. The bottom of this enclosure shall be designed to be easily removed without the need to remove any bolts or fasteners. For ease of handling, the bottom enclosures shall be installed in two sections. One section shall slide out each side for maintenance and pump compartment clean out. Drain holes shall be provided in the bottom.

PUMP COMPARTMENT HEATER

A minimum 40,000 BTU hot water type heater shall be provided and mounted within the pump compartment. Both the feed and return coolant hoses shall be routed within the frame rails from the engine compartment to the heater in the pump compartment. A 12-volt fan shall be provided and shall be mounted to direct heated air toward the back of the gauge panel.

- Shutoff valves shall be provided in both lines and shall be in an easily accessible location within the engine compartment.
- A lighted switch shall be provided on cab console to activate/de-activate the heater fan.

PUMP COMPARTMENT HEATER HOSE

The pump compartment heater shall be connected to the chassis engine using Gates Green Stripe or comparable rubber heater coolant hose.

PUMP COMPARTMENT FRONT WALL

The center section of the pump compartment front wall shall be constructed of *brushed stainless steel* which is bolted to the pump compartment assembly and removable.

PUMP COMPARTMENT RIGHT SIDE ACCESS DOOR - SIDE MOUNT

A brushed stainless steel horizontally hinged access door shall be provided on the right side of the pump compartment above the lower pump discharge/intake panel. The door shall have a pneumatic hold open device and push button type flush latches.

SIDE MOUNT BRUSHED STAINLESS STEEL PUMP PANEL

All controls and instruments shall be located on the left side of the apparatus. All discharge and designated intake valve controls shall be located on the left side pump panel.

BRUSHED STAINLESS STEEL PUMP PANELS

The left and right side lower pump panels shall be constructed of 304 2B marine grade brushed stainless steel with a #4 brushed and polished finish. The panels shall be held into place with two latches on the top to allow for easy removal of the panels.

- The upper section of the left side pump panel shall be constructed of the same 304 2B marine grade stainless steel. The upper section shall be vertically hinged and have a chrome plated latch to secure the panel when closed.

LED SIDE MOUNT PUMP PANEL LIGHTS

The side mount pump panel shall be illuminated using a track type LED light assembly.

- The light shall be constructed of an unbreakable type clear poly flexible material housed in an aluminum extrusion mounted behind a brushed stainless steel light shield provided across the top of the gauge panel.

LED RIGHT SIDE DISCHARGE/INTAKE PANEL LIGHTS

The right side discharge and intake panels shall be illuminated using a track type LED light assembly.

- The light shall be constructed of an unbreakable type clear poly type flexible material housed in an aluminum extrusion mounted behind a brushed stainless steel light shield provided across the top of the hinged access door.

AUTOMATIC PUMP PANEL LIGHT ACTIVATION

The pump panel lights above the pump control panel shall function automatically with the pump shift activation.

LED PUMP COMPARTMENT LIGHTS (2)

Two LED compartment lights shall be provided to illuminate the pump compartment and shall function with the pump operator's gauge panel lights.

PUSH/PULL VALVE CONTROL HANDLES

Unless otherwise specified in these specifications, the apparatus pump panel shall be equipped with Innovative Controls side mount valve controls to open/close the manually operated discharge valves.

The ergonomically designed ¼ turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and verbiage. The control rod shall provide a true positive lock to eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall minimize rod deflection, never need lubrication, and ensure consistent long term operation.

The control shall include a decorative chrome plated zinc panel mounting bezel.

DISCHARGE VALVE CONTROL HANDLE LAYOUT

All discharge valve control handles shall be in one or two horizontal lines across the mid-section of the pump panel. The control handles shall be located immediately below their corresponding pressure gauge for ease of pump operation.

- Any pump operator's panel discharge(s) shall have direct horizontal lever style control(s) with the gauge adjacent to the control.

VALVE CONTROL LINKAGES

All manual valve controls requiring remote actuation shall have control rod linkages constructed of 1/2" galvanized pipe and shall implement heavy ball swivel joints and clevises for smooth valve operation.

ICI MASTER PUMP DISCHARGE PRESSURE GAUGE

An ICI 4" diameter master pressure gauge shall be provided to indicate the main pump discharge pressure. The gauge shall read from 30" hg vacuum to 400 psi and shall be accurate within +/- 1%. The gauge shall be glycerin filled (-40F to +150F) and have a high impact resistant clear acrylic lens.

ICI MASTER PUMP INTAKE PRESSURE GAUGE

An ICI 4" diameter master pressure gauge shall be provided to indicate the pump intake pressure. The gauge shall read from 30" hg vacuum to 400 psi and shall be accurate within +/- 1%. The gauge shall be glycerin filled (-40F to +150F), read up to 400 psi, be accurate within +/- 1% and have a high impact resistant clear acrylic lens.

- The master intake and discharge gauges shall have bright finish bezels.
- The master gauge dials shall be white with black markings. The needle shall match the color of the markings.
- The master intake/discharge gauges shall have white/clear backlighting.
- The master intake gauge shall be clearly labeled "PUMP INTAKE" and shall be located to the left of the master discharge pressure gauge. The label shall be burgundy color.
- The master discharge gauge shall be clearly labeled "PUMP DISCHARGE" and shall be located to the right of the intake pressure gauge. The label shall be black color.

The master intake/discharge pressure gauges shall have a lifetime non-yellowing and freeze warranty. The gauges shall also be warrantied for 4 years for defects in materials and workmanship, including fluid leakage. The warranty will not cover labor costs and/or transportation costs.

PRESSURE/VACUUM TEST PLUGS

Underwriter's test plug adapters shall be provided for connection of pump test gauges.

INNOVATIVE CONTROLS SOFT-GLO TANK GAUGE - PUMP PANEL

An Innovative Controls Soft-Glo tank gauge shall be provided on the pump panel. The gauge shall feature a 180 degree highly visible wide view Soft-Glo LED display showing the level of the booster tank.

- The gauge shall have a chrome bezel.

INNOVATIVE CONTROLS SOFT-GLO MINI TANK GAUGE - CAB

An Innovative Controls Soft-Glo MINI tank gauge (rocker switch style) shall be provided on or near the cab control panel in clear view from the driver's and officer's position.

- The gauge shall have Soft-Glo LED lights displaying the level of the booster tank.
- The tank gauge shall be enabled with the park brake set and/or pump is engaged.

INNOVATIVE CONTROLS SOFT-GLO MONSTER GAUGE - RIGHT SIDE

An Innovative Controls Soft-Glo monster tank gauge shall be provided on the right side of the body. The gauge shall feature a 180 degree highly visible wide view Soft-Glo LED display showing the level of the booster tank.

- The gauge shall have a chrome bezel.

INNOVATIVE CONTROLS SOFT-GLO MONSTER GAUGE - LEFT SIDE

An Innovative Controls Soft-glo monster tank gauge shall be provided on the left side of the body. The gauge shall feature a 180 degree highly visible wide view Soft-Glo LED display showing the level of the booster tank.

- The gauge shall have a chrome bezel.

TANK GAUGE PARK BRAKE DISABLE

The tank gauges shall be disabled when the park brake is released so that the lights are not a distraction when the vehicle is in motion.

ICI DISCHARGE PRESSURE GAUGES

Unless otherwise specified, each 1 1/2" or larger discharge shall have an ICI pressure gauge. The gauge shall be glycerin filled (-40F to +150F), read from 0 - 400 psi, be accurate within +/- 1% and have a high impact resistant clear acrylic lens.

- The individual discharge pressure gauges shall have a 2 3/4" diameter.
- The discharge pressure gauge dials shall be white with black markings. The needle shall match the color of the markings.
- The discharge pressure gauges shall have blue backlighting.
- The pressure gauge shall be directly in line with or adjacent to the discharge control handle for the discharge that they provide pressure readout for.
- The gauges shall be clearly labeled with permanent color-coded labels.

The discharge pressure gauges shall have a lifetime non-yellowing and freeze warranty. The gauge shall also be warrantied for four years for defects in materials and workmanship including fluid leakage. Warranty will not cover labor costs and/or transportation costs.

PUMP PANEL AIR HORN BUTTON

A momentary push button shall be provided on the pump panel to activate air horns.

- Red reflective material shall be provided behind the air horn button.
- The button shall be labeled "Bail Out".

IDENTIFICATION LABELS FOR PUMP PANEL

Innovative Controls verbiage label bezels shall be installed. The bezel assemblies will be used to identify apparatus components. These labels shall be designed and manufactured to withstand the specified apparatus service environment.

Where required, the verbiage label bezel assemblies shall include a chrome plated panel mount bezel with durable easy to read UV resistant polycarbonate inserts featuring the specified verbiage and color coding. The UV resistant polycarbonate verbiage and color inserts shall be sub-surface screen printed to eliminate the possibility of wear and protect the inks from fading. Both the insert labels and bezel shall be backed with 3M permanent adhesive (200MP), which meets UL969 and NFPA standards.

The color scheme for the discharge and intake labels shall be per NFPA.

SPECIAL TANK DESIGN

The booster tank shall be "L" shaped to allow for a lower hose bed height. The front section of the tank shall be higher than the rear section bringing the overall hose bed height down to a more accessible height.

BOOSTER TANK CAPACITY 1,000 GALLONS

The poly booster tank shall have a capacity of 1,000 U.S. gallons.

BOOSTER TANK FILL TOWER - LEFT SIDE FRONT

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" polypropylene and shall be a minimum of **12" x 12"** outer dimension. The tower shall be located in the left front corner of the hose bed. The tower shall have a 1/4" thick removable polypropylene screen and polypropylene hinged type cover.

4" TANK OVERFLOW

A 4" diameter tank vent/overflow shall be provided and integrated into the tank. The piping shall be a minimum of schedule 40 polypropylene designed to run through the tank and discharge behind the rear wheels to the ground.

1" TANK SUMP DRAIN

A 1" drain shall be provided in the bottom of the tank sump to fully drain the tank. The drain shall use 1" stainless steel piping with a 1" valve.

- The control for the valve shall be remoted to the driver's side of the apparatus just under and behind the side rub rail. The drain control handle shall be labeled "TANK DRAIN".

3" TANK SUMP CLEAN OUT PLUG

A 3" tank sump clean out plug shall be provided in the bottom of the tank sump.

3" AUTO FILL VALVE TANK FILL - RIGHT REAR

A 3" Auto-Fill Valve rear fill shall be provided on the right rear of the apparatus. The fill shall be located on the exterior face of the rear compartment on the right side.

- The system shall include an internally mounted check type valve and be designed to be self-deflecting.
- A flow diffuser shall be integrated into the fill to break up water flow into the tank.
- The fill shall terminate in a 2 1/2" FNST swivel connection with screen.
- A 2 1/2" MNST x 2 1/2" FNST elbow with plug and chain shall be provided on the rear tank fill.
- A 3/4" bleeder/drain valve shall be provided on the tank fill.

3" TANK TO PUMP

One 3" tank to pump line and valve shall be provided between the tank and the pump. The piping from the sump to the valve shall be 4".

- The tank to pump valve shall be manually controlled on the pump panel.

TANK TO PUMP CHECK VALVE

A check valve assembly shall be provided on the pump. The valve shall prevent unintentional back filling of the tank through the tank to pump line. The connection from the valve to the tank shall be made by using a non-collapsible flexible rubber hose.

HOT DIPPED GALVANIZED SUB FRAME

The tank cradle and body substructure shall be constructed of high strength ASTM A-36 structural steel with 36,000 psi minimum yield strength. The entire substructure shall be framed and jig welded together to ensure a truly square assembly. The substructure shall be fastened to the chassis rails so that it may be easily removed from the chassis for repair, replacement or mounting to a new chassis.

- After complete assembly of the tank cradle substructure, the entire assembly shall be hot dipped galvanized for superior corrosion protection.
- The tank cradle and body substructure shall have a 20-year warranty covering failure due to corrosion perforation or structural design error.

***HYPER-FLEX* BODY MOUNTING**

The body module assembly shall be mounted to the chassis frame rails with "*Hyper-Flex'"* vibration and shock isolators using a forward mounting system. Flexible neoprene pads, or U-springs especially developed for the expected weight and torsional flexing of the apparatus body, shall be incorporated into the system to eliminate chassis frame rail flex from transmitting harmful loads and twisting onto the body.

REAR PULLING EYES

Two rear 3/4" CRS pulling eyes shall be provided under the rear tailboard. The eyes shall have a minimum of a 3" clear opening for passing chains through the eye.

100" BODY WIDTH

The apparatus body shall be 100" wide from side-to-side measuring from the rub rail mounting surface.

APPARATUS BODY MATERIAL

The entire apparatus body shall be constructed of 304 marine-grade stainless steel with a #4 annealed and polished finish on both the interior and exterior surfaces. The interior or exterior of the apparatus body shall not require any finish painting.

APPARATUS BODY CONSTRUCTION

The entire apparatus body shall be formed by sheering and bending the sheet metal. Metal tubular structures or extrusions shall not be used in the construction of the apparatus body. All edges of the sheared metal shall be sanded to remove any sharp shearing edges prior to bending the metal. After sheering and bending, the body shall be assembled on a jig table that is designed to hold all parts securely in place to ensure an accurately built apparatus body.

APPARATUS BODY ASSEMBLY METHOD

The entire apparatus body shall be assembled using only bolted type construction. All apparatus body parts shall be able to be unbolted without the need to cut welds, etc. No exceptions to this requirement as all apparatus manufacturers have the capability to manufacture apparatus bodies in this manner.

STAINLESS STEEL COATED FASTENERS

All fasteners used in the finish construction of the apparatus body shall be marine grade stainless steel. Fasteners that pass through a dissimilar metal panel shall be Magna-Gard, or equal, coated to help prevent metal reaction and corrosion.

COMPARTMENT FLOORS

All compartment floors shall be constructed of 304 marine grade stainless steel with a # 4 annealed and polished finish on the interior surface. The drain ports shall be designed to prevent road spray from entering the compartment. The front edge shall consist of a minimum of two bends to provide additional strength in the compartment floor and shall then form the lower door jamb.

All compartment floors shall be of a sweep-out design. This shall include the lower side compartments, any compartments above the wheel well, any transverse compartments, and the rear face compartment(s).

INTERIOR COMPARTMENT SURFACES

All visible interior compartment surfaces shall be 304 marine grade stainless steel with a # 4 annealed and polished finish.

FRONT COMPARTMENT CORNERS

The apparatus body front compartment corners and vertical faces on both sides shall be constructed of 304 marine grade stainless steel with a # 4 annealed and polished finish. The corners shall be a one-piece fabrication from top to bottom and from the inner body panel to the outer face of the compartment to provide maximum strength. Corners using structural support channels or extrusions that require two or more pieces shall not be implemented.

- The # 4 finish corner shall wrap around the side of the apparatus body and form the front compartment door jamb providing front corner protection.

REAR COMPARTMENT CORNERS - BRUSHED

The apparatus body rear compartment corners and vertical faces on both sides shall be constructed of 304 marine grade stainless steel with a # 4 annealed and polished finish. The corners shall be a one- piece fabrication from top to bottom and from the inner body panel to the outer face of the compartment to provide maximum strength. Corners using structural support channels or extrusions that require two or more pieces shall not be implemented.

- The # 4 finish corner shall wrap around the side of the apparatus body and form the rear compartment door jamb providing front corner protection.

COMPARTMENT TOPS/CEILINGS

The apparatus body compartment tops shall be constructed of 304 marine grade stainless steel with a # 4 annealed and polished finish on the interior surface.

COMPARTMENT TOP OVERLAY

The compartment top shall be overlaid with 1/8" aluminum treadbrite. The aluminum treadbrite shall be an overlay only and shall not form any structural part of the apparatus body or shall the bottom side of the treadbrite be visible when looking into the compartment.

COMPARTMENT VENTILATION

Each compartment shall be ventilated to the exterior of the body through a removable metal ventilation plate in the compartment wall or through pass through ventilation into an adjoining compartment.

- A cleanable filter material shall be provided behind the plate.

FENDERWELLS

The left and right-side rear fender wells shall be constructed of 304 2B marine grade stainless steel with a # 4 annealed and polished finish. The fender wells shall have a full circular liner to prevent pockets and for ease of cleaning. Sufficient clearance shall be provided for tire chains. A minimum of a 1" gap shall be provided on the bottom of each side of the circular liner to allow automatic drainage of water and for easy washout.

UPPER DOOR POSTS - BRUSHED STAINLESS

The upper door post to the front and rear of the compartment door above the rear wheels shall be constructed of 304 2B marine grade stainless steel with a # 4 annealed and polished finish.

The outer surface of these door posts shall be brushed stainless steel.

REMOVABLE INNER FENDER LINER

The fender wells shall be radius cut and shall have a circular inner liner to prevent corrosion pockets and for ease of cleaning. The inner liner shall be constructed of high impact polypropylene material and shall be fully removable for chassis suspension access.

STAINLESS STEEL FENDERETTE

The fender wells shall be trimmed with a polished stainless steel fenderette. The stainless steel fenderette shall be secured into place with stainless steel fasteners and shall be easily removable for replacement. A black rubber fender welting shall be provided between the fenderette and the inner liner surface. The fenderettes shall protrude from the apparatus body a maximum of 1".

RUBRAILS - BRIGHT ANODIZED ALUMINUM

Extruded aluminum rub rails shall be provided on the apparatus body sides. The rub rails shall have a bright finish with anodized coating to protect the finish. The rub rails shall be spaced from the apparatus body a minimum of 1/4" with poly spacers.

- The rub rails must be bolted on to the apparatus body to allow easy replacement if damaged.
- The rub rail ends shall be 'capped' with a high impact resistant black EPDM contoured block.

HOSE BED FLOORING

The floor of the hose bed shall be constructed of fiber reinforced Dura-Dek, or equal, material.

The top portion of each "T" cross section shall measure 1 5/8" wide x 3/16" thick with beaded ends. The vertical portion shall be 3/16" thick tapering out at the bottom to a thickness of 1/2" and have an overall height of 1". The "T" sections shall be spaced 3/4" apart to allow for drainage and ventilation.

The flooring shall then be protected with a polyurethane coating to screen out ultraviolet rays. The gray colored coating shall be baked on and include a slip resistant material.

HOSE BED - 68" WIDE

The hose bed shall be 68" wide from side to side.

HOSE BED CAPACITY

The hose bed shall have the capacity to carry the following hose load:

HOSE BED DIVIDERS WITH DOUBLE BENDS

There shall be two (2) hose bed dividers to partition off hose. The dividers shall be constructed of 3/16" thick aluminum plate material. The lower edge of the dividers shall have a two inch, 90-degree bend toward one side and a 2" x 2" x 3/16" aluminum angle welded to the other side.

- The dividers shall be adjustable by sliding in tracks which are recessed flush into the hose bed flooring, one on front and one on rear. The divider shall be held in place by two bolts on each end.
- The upper rear corner of the dividers shall have a minimum of a 3" radius cut with a double bent top and rear edge.
- The divider height shall be the same height as the side as the apparatus body walls.

RIGHT SIDE PERMANENT HOSEBED DIVIDER

The side of the slide in the ladder compartment shall be extended up forming a separate permanent hose bed area above the compartment.

HOSE BED DIVIDER UPPER SUPPORT

An aluminum treadbrite upper horizontal support shall be provided at the rear of the hose bed to help prevent hose bed divider deflection. The support shall have an integrated adjustment track to allow for hose bed divider support and adjustment.

HOSE BED BULKHEAD

A bulkhead divider shall be provided in the front area of the hose bed separating the hose bed from the tank fill towers.

FORWARD DUNNAGE AREA

The floor of the dunnage area in front of the hose bed shall be constructed of fiber reinforced Dura-Dek, or equal, material. The top portion of each "T" cross section shall measure 1 5/8" wide x 3/16" thick with beaded ends. The vertical portion shall be 3/16" thick tapering out at the bottom to a thickness of 1/2" and have an overall height of 1". The "T" sections shall be spaced 3/4" apart to allow for drainage and ventilation. The flooring shall then be protected with a polyurethane coating to screen out ultraviolet rays. The gray colored coating shall be baked on and include a slip resistant material.

- This area shall be open on top without any type of cover.
- The Department will have the responsibility to ensure that all equipment stored in the dunnage area is properly secured to NFPA recommendations.

HOSE BED COVER WITH VELCRO FASTENERS - RED

A heavy-duty vinyl coated nylon hose bed cover shall be provided to protect the hose load from the weather. The cover shall extend from the front of the hose bed to the rear and then extend downward to cover the exposed rear of the bed.

The cover shall have a double reinforced area where the cover encounters the upper rear corners of the hose bed dividers. The cover shall be secured to the apparatus using Velcro on the sides and lift dots on the front.

The rear of the cover shall be secured to the apparatus using Velcro loop latches.

ILI HOSE BED STRIP LIGHT

One 48" ILI LED strip light shall be provided and mounted in the front of the hose bed and shall be activated by the pump panel light.

ROM SERIES IV ROLL UP COMPARTMENT DOORS

For all compartments requiring roll up doors, Robinson (ROM) Series IV roll up doors shall be installed.

Each shutter slat, track, bottom rail, and drip rail shall be constructed from anodized 6063 T6 aluminum.

The shutter slats shall feature a double wall extrusion 0.315" thick with a concave interior surface to minimize loose equipment jamming the shutter door closed. Shutter slats shall feature an interlocking end shoe to prevent side to side binding of the shutter door during operation. Slats must have interlocking joints with an inverted locking flange. The slat inner seal shall be a one-piece PVC extrusion designed to prevent metal to metal contact while minimizing dirt and water from entering the compartment.

The shutter door tracks shall be one piece design with an integral overlapping flange to provide a clean finished look without the need of caulk. Door tracks shall feature an extruded Santoprene rubber double lip low profile side seal with a silicone co-extruded back to reduce friction during shutter operation.

The shutter bottom rail shall be a one-piece double wall extrusion with integrated finger pull. The finger pull shall be curved upward with a linear striated surface to improve the operator's grip while operating the shutter door. The bottom rail shall have a smooth contoured interior surface to prevent loose equipment from jamming the shutter door. Bottom rail seal shall be made from Santoprene and shall be a double "V" seal to prevent water and debris from entering compartment.

The bottom rail lift bar shall be a one piece "D" shaped aluminum extrusion with linear striations to improve operator grip during operation. The lift bar shall have a wall thickness of 0.125" and be supported by no less than two pivot blocks constructed from Type 66 Glass filled reinforced nylon for superior strength. The bottom rail end blocks shall have incorporated drain holes which will allow any moisture that collects inside the extrusion to drain out.

The shutter doors shall have an enclosed counterbalance system. The system shall be 4" in diameter and held in place by 2 heavy duty 18-gauge zinc plated plates. The counterbalance system shall have 2 over-molded rubber guide wheels to provide a smooth transition from vertical track to counterbalance system; no foam material of any kind shall be permitted or used in this area.

PAINTED ROLL UP DOOR EXTERIOR TRIMS

The side and upper trims on the roll up door shall be painted a single color to match the primary exterior color of the apparatus.

DRIVER'S SIDE COMPARTMENT IN FRONT OF THE REAR WHEELS

A compartment shall be provided in front of the rear wheels. The compartment interior dimensions shall be 67" high x 47.75" wide with the lower 28" of the compartment being 26" usable depth and the remaining upper section being 14" usable depth.

- The compartment shall have a roll up door which shall be painted to match the primary exterior color of the apparatus.

DRIVER'S SIDE ABOVE WHEEL COMPARTMENT

A compartment shall be provided above the rear wheels. The compartment interior dimensions shall be 37" high x 63.75" wide x 14" usable depth.

- The compartment shall have a roll up door which shall be painted to match the primary exterior color of the apparatus.

DRIVER'S SIDE COMPARTMENT BEHIND REAR WHEELS

A compartment shall be provided behind the rear wheels. The compartment interior dimensions shall be 67" high x 44" wide x 26" useable depth in in a portion of the lower section and the remaining upper section being 14" usable depth.

- The compartment shall have a roll up door which shall be painted to match the primary exterior color of the apparatus.
- The driver's side compartment behind the rear wheels shall be open into the rear facing compartment (transverse).

PASSENGER'S SIDE COMPARTMENT IN FRONT OF THE REAR WHEELS

A compartment shall be provided in front of the rear wheels. The compartment interior dimensions shall be 67" high x 47.75" wide with the lower 28" of the compartment being 26" usable depth and the remaining upper section being 14" usable depth.

- The compartment shall have a roll up door which shall be painted to match the primary exterior color of the apparatus.

PASSENGER'S SIDE ABOVE WHEEL COMPARTMENT

A compartment shall be provided above the rear wheels. The compartment interior dimensions shall be 37" high x 63.75" wide x 14" usable depth.

- The compartment shall have a roll up door which shall be painted to match the primary exterior color of the apparatus.

PASSENGER'S SIDE COMPARTMENT BEHIND REAR WHEELS

A compartment shall be provided behind the rear wheels. The compartment interior dimensions shall be 67" high x 44" wide x 26" useable depth in in a portion of the lower section and the remaining upper section being 14" usable depth.

- The compartment shall have a roll up door which shall be painted to match the primary exterior color of the apparatus.
- The passenger's side compartment behind the rear wheels shall open into the rear facing compartment (transverse).

REAR FACE COMPARTMENT

A rear compartment shall be provided on the apparatus just ahead of the rear step. The compartment shall be a minimum of 30" useable depth.

- The rear facing compartment shall extend upward and shall be flush with the top of the booster tank to maximize the height of the rear compartment.
- There shall not be a void area between the top of the rear facing compartment and the bottom of the hose bed nor shall the booster tank extend over the rear compartment.
- The rear compartment shall have a roll up door. The door shall have a satin finish.

DRIVER FRONT WHEELWELL COMPARTMENT

There shall be a compartment located in the driver's side wheel area ahead of the rear axle to hold one set of wheel chocks.

- A safety strap shall be provided across the door opening. The strap shall be designed to prevent the chocks from sliding out of the compartment if the door is not latched or fails.

WHEELWELL SPARE CYLINDER COMPARTMENTS

A compartment shall be provided in the wheel area behind the rear axle on the driver's side to hold three spare SCBA cylinders.

A compartment shall be provided in the wheel area in front of the rear axle on the passenger's side to hold two spare SCBA cylinders in the upper portion and miscellaneous storage in the lower portion.

A compartment shall be provided in the wheel area behind the rear axle on the passenger's side to hold three spare SCBA cylinders.

The compartment shall be injection molded high strength polyethylene designed specifically for the SCBA cylinder storage. The compartment shall be slanted towards the rear and have a drain port at the low point of the compartment.

One 1" wide loop of high visibility yellow webbing shall be installed in each wheel well spare cylinder compartment for each cylinder to be stored in the compartment. The loop(s) shall be designed to loop around the cylinder valve and help prevent the cylinder from sliding out of the compartment if the door is not latched or fails.

WHEELWELL STORAGE COMPARTMENT DOORS – BRUSHED FINISH STAINLESS

Brushed finish stainless steel access doors shall be provided on each wheel well storage compartment in the wheel well.

- The doors shall be secured using chrome plated thumb lever latches.
- Labels shall be provided on or near the wheel well compartment door exterior listing the intended contents of the compartment.

LOW MOUNT ENCLOSED LADDER COMPARTMENT

A ladder storage compartment shall be provided on the right side of the apparatus with an access door on the rear. The compartment shall be located below the hose bed level and shall not be located above or through the booster tank. The compartment shall be located between the booster tank and the right-side compartments.

For ease of removal and replacement with limited staffing, the compartment shall be designed to carry all portable ladders vertically on their beams. Ladder racks that carry the ladders horizontally shall not be acceptable.

The compartment shall be constructed of 5052 1/8" aluminum with a brushed finish. Individual slides fabricated of 5052 H32 alloy aluminum shall be provided in the compartment on both sides to allow individual storage for all ladders. The slides shall be provided with permanently attached Rodex poly slip blocks with tapered front and rear edges allow easier loading/unloading of the ladders.

All ladders shall be capable of being removed individually without disturbing the remaining ladders.

LADDER COMPARTMENT DOOR

A smooth aluminum vertically hinged door with a slam-type latch shall be provided on the compartment. The latch shall be activated by a large "D" ring control. The use of lift-and-turn or small snap type latches on this door shall not be acceptable.

- The door shall be covered with Chevron material.

PIKE POLE STORAGE

Storage for two straight handle pike poles shall be provided in the ladder storage compartment.

LADDER COMPARTMENT LIGHT

An LED light shall be provided in the ladder storage compartment. The light shall be mounted just inside the ladder compartment access door and activated with an automatic door switch.

- The light switch shall be incorporated into the door ajar warning system in the cab.

HARD SUCTION MOUNTINGS

Two hard suction hose troughs shall be provided and mounted one above the high side compartments on left side and one above the high side compartments on the right side. The troughs shall be constructed of 1/8" 5052 smooth aluminum sheeting material with a brushed finish.

HARD SUCTION LATCHES

The hard suction troughs shall have spring loaded latches on each end to hold the hard suction hoses in place.

COMPARTMENT SHELF TRACKS - ALUMINUM

Four (4) sets consisting of two heavy duty aluminum adjustable tracks shall be provided in specified compartments, one for each end of shelf.

- The tracks shall not be welded to the apparatus body.

SHALLOW DEPTH COMPARTMENT SHELVING

There shall be five (5) shallow depth shelves provided. The shelves shall be constructed of 1/8" smooth aluminum with a 2" upward bend on the front and rear edges.

- The shelves shall have a random orbit sanded finish.
- Each shallow depth shelf shall have Turtle Tile matting.

ADJUSTABLE TRACK FOR SCBA BRACKETS

One (1) set(s) consisting of two heavy-duty horizontally mounted adjustable tracks shall be provided in specified compartments. The tracks shall allow SCBA brackets to be mounted to the compartment wall and be adjustable.

- The tracks shall be removable and shall not be welded to the apparatus body.

ROLL OUT TRAYS

There shall be two (2) roll out trays provided. The tray shall be constructed of 3/16" aluminum. The tray shall have a 2" upward bent lip on all four sides of the tray, be 24" depth and 38" wide.

- 500 lb. total capacity heavy duty ball bearing type telescoping slides shall be provided.
- A positive latching mechanism shall be provided to hold the tray in either the fully open or fully closed position.
- The floor of the tray shall be covered with a 3/4" black poly board for mounting miscellaneous equipment and brackets.

TURTLE TILE FLOOR MATS

All lower-level apparatus body compartment floors shall be provided with 3/4" thick Turtle Tile modular 12" x 12" square tiles with perforated surface for ventilation and air circulation. The tiles shall be easily removable for cleaning the compartment. The tiles shall interlock into each other to form a "one piece" floor liner.

- Floors with permanent mounted or bolted in place accessories will not have floor mats.
- The Turtle Tile shall be black in color.
- The Turtle Tile shall have red beveled edge "ramps" on the outer edge of the compartments.

110 VOLT SHORELINE CONNECTION IN COMPARTMENT

There shall be two (2) duplex 110-volt shoreline connections provided in the apparatus body compartment(s) for charging accessory items.

DUAL TRACK TYPE LED COMPARTMENT LIGHTING

Each apparatus body compartment shall have two track type LED lights vertically mounted in the compartment. The lights shall be constructed of an unbreakable type clear poly type flexible material housed in an aluminum extrusion.

A compartment that is considered a 'full height' compartment shall each have two 48" long light sections and a 'low height' or above wheel compartment shall each have two 18" long sections.

The lights shall function automatically and independently of other compartments when the compartment door is opened.

COMPARTMENT LIGHT SWITCHES

Each hinged apparatus body door compartment shall have a magnetic style reed indicator switch.

Each roll up door shall have an integral door open indicator magnet in the lift bar. If the bar is not properly closed, it shall activate the "Door Open" light in the cab.

The compartment lights shall function automatically when the door is opened.

FOLDING ACCESS STEPS

Austin FS-200 CHR chrome-plated folding access steps shall be provided in areas listed in these specifications. All access steps provided on the apparatus shall support a minimum static load of 500 lbs. and be mounted in accordance to recommended mounting procedures as outlined by NFPA. The steps shall be **minimum** of 6.5" wide x 6.5" depth. The steps shall be attached to the apparatus using stainless steel bolts with locking type nuts.

- Four NFPA compliant folding steps shall be provided on the right-side front compartment face.
- Four NFPA compliant folding steps shall be provided on the left side front compartment face.

ACCESS LADDER

An access ladder shall be provided on the rear of the apparatus to access the upper area of the apparatus. A minimum of 8" of clearance shall be provided between the rung and the body or any obstruction.

- The rear access ladder shall be mounted on the left (driver) side of the apparatus.

INTERMEDIATE HOSEBED STEP

A full width aluminum treadbrite step shall be provided on the rear face of the apparatus. The step assembly shall be bolted into place using stainless steel fasteners.

- The rear intermediate step shall be 8" depth.

REAR STEP MATERIAL - ROM BUSTIN M4

The rear step shall be constructed of ROM Bustin M4 galvanized steel safety grating. The grating shall be supported by a 3" structural galvanized steel subframe.

- The outer rear edge of the rear step shall be positioned 18" from the rear face of the apparatus. This shall include an approximate 3/4" wash out gap at the rear face of body.

NFPA KNURLED FINISH HANDRAILS

All handrails shall be 1 1/4" diameter extruded aluminum "knurled finish" with chrome plated stanchions. Rubber gaskets shall be provided between the stanchions and any painted surfaces.

- An NFPA compliant handrail shall be provided on the left rear of the apparatus for boarding the rear step and using the left rear hose bed access steps.
- An NFPA compliant handrail shall be provided on the right rear of the apparatus for boarding the rear step and using the right rear hose bed access steps.
- A 12" NFPA compliant horizontal handrail shall be provided on the upper right front of the apparatus towards the front of the hose bed.
- A 12" NFPA compliant horizontal handrail shall be provided on the upper left front of the apparatus towards the front of the hose bed.

- A 12" NFPA compliant horizontal handrail shall be provided on the right rear of the apparatus towards the rear of the hose bed.
- A 12" NFPA compliant horizontal handrail shall be provided on the left rear of the apparatus towards the rear of the hose bed.
- A 12" NFPA compliant horizontal handrail shall be provided on the left rear of the apparatus towards the rear of the hose bed.
- An intermediate horizontal handrail shall be provided on the rear of the apparatus.
- Two NFPA compliant horizontal handrails shall be provided on the rear face of the hose bed crossbar support.

NFPA CERTIFIED 12 VOLT ELECTRICAL SYSTEM

The 12-volt apparatus body electrical system shall be provided and shall follow NFPA testing and certification procedures as follows:

NFPA MINIMUM ELECTRICAL LOAD DEFINITION

The NFPA defined minimum electrical load shall consist of the total amperage required to simultaneously operate the following in a stationary mode:

- Propulsion engine and transmission.
- The clearance and marker lights.
- Communication equipment (5-amp default).
- Illumination of all control and instrument panels.
- Illumination of all walking surfaces, the ground at all egress points, control and instrumentation panels and 50% of total compartment lighting.
- Minimum warning lights required for "blocking right of way" mode.
- The current to simultaneously operate and fire pump and all specified electrical devices.
- Anything defined by the purchaser, in the advertised specifications, to be critical to the mission of the apparatus.

RESERVE CAPACITY TEST

A Reserve Capacity Test shall be performed on the completed apparatus. All items listed in NFPA Minimum Load Definition shall be activated with the engine shut off. After 10 minutes of operation, those items shall be deactivated. After deactivation, the battery system shall have ample reserve to start the engine.

ALTERNATOR PERFORMANCE TEST AT IDLE

An "alternator performance test at idle" test shall be completed. The minimum continuous electrical load shall be activated with the engine running at idle speed. When the engine temperature has been stabilized at idle speed, the battery system shall be tested to detect any battery discharge current.

ALTERNATOR PERFORMANCE TEST AT FULL LOAD

An "alternator performance test at full load" test shall be completed. The minimum continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed for a 2 hour period.

TEST CONDITIONS

All electrical testing shall be performed with the engine compartment at approximately 200 degrees.

12-VOLT WIRING SYSTEM

All 12-volt electrical wiring shall be SXL cross link rated to carry 125% of the maximum current for which the circuit is protected. The wire shall be of sufficient size so that voltage drop in any electrical device does not exceed 10%. All wiring shall be color, number, and function coded with the number and function being printed every 3" along the entire length of all apparatus body wires (as required by NFPA). All wiring shall be routed through heavy duty PVC split loom securely attached and protected against heat, oil, and physical damage. All locations where the wire passes through a body panel shall be protected with electrical grommets.

All connections shall be made using mechanical connectors and be screwed to terminal or junction box with machine screws. Wire nut, insulation displacement, or piercing connections shall not be used.

All circuits shall be provided with properly rated low voltage over current protective devices of the automatic reset type.

Removable access panels shall be provided to provide access to the wire and electrical components.

MULTI-PLEXED ELECTRICAL SYSTEM

The apparatus body electrical system shall incorporate a Multiplexed Electrical System. The multiplex system shall consist of all solid-state components contained inside aluminum extrusions referred to as nodes. Each node shall consist of (24) output channels and (24) input channels. All inputs and outputs will be configured into an electrical harness utilizing Deutsch connectors. The nodes must be waterproof and not require special mounting requirements.

The system, at a minimum, shall be capable of performing the following functions: load management sequencing, switch loads, receive digital and analog signals, perform and report diagnostics, continuously report vehicle status and the system is expandable.

Placement of nodes throughout the apparatus enables a reduction in wire harness bundles, elimination of redundant harnesses and separate circuit boards, relay and circuit breakers, electrical hardware, separate electrical or interlock subsystems and associated electronics for controlling various electrical loads and inputs. The multiplex system shall be field re-programmable and re-configurable by any authorized dealer or service center. This complete system shall eliminate the need for the following separate components or devices: load manager, load sequencer, warning lamp flasher, door open notification system, interlock modules, separate volt meter and ammeter.

The base system shall include:

- Total Load Management
- Load Shedding Capabilities
- Load Sequencing Capabilities
- “On-Board” Diagnostics Readout
- Very Reliable, Solid-State Hardware
- Error Reporting
- Continuous system monitoring and reporting
- Emergency warning lamp flasher
- Door Ajar System
- Field Configurable
- Expandability Capabilities
- Advanced PC Diagnostics

As-built wiring harness drawings and a master circuit list of electrical circuits that the apparatus builder installs shall be furnished in the delivery manuals. These schematics must show the electrical system broken down into separate functions, or small groups of related functions. Schematics shall depict circuit numbers, electrical components, harnesses, and connectors from beginning to end.

V-MUX VFD DISPLAY PANEL

An interface display shall be provided on the center console just above the switch panel to report and display “Real Time” data.

DIGITAL 'DOOR OPEN' INDICATOR

The VFD display shall indicate which individual door or doors are open using alpha-numeric symbols (letters and numbers). For example, if the driver front compartment door is open, the display shall read "DRIVER FRONT COMPARTMENT DOOR".

VMUX WARRANTY

The VMUX multiplexed electrical system shall be warranted, under normal use and service, for a period of four years. One year parts and labor and the remaining three years parts only.

AUTOMATIC HIGH IDLE FUNCTION WITH MANUAL SWITCH

An automatic high idle system shall be installed and will automatically activate whenever the system voltage drops below determined voltage. The high idle will remain on until adequate voltage is achieved.

- A manual high idle switch shall also be provided on the cab switch panel to allow manual activation of high idle system.

REAR LICENSE PLATE LIGHT/BRACKET

A chrome plated LED license plate light and license plate mounting posts shall be provided on the lower left rear of the apparatus.

CLEARANCE LIGHTS/REFLECTORS

All apparatus body clearance lights shall be LED style. All lower clearance lights and reflectors shall be mounted in a manner that provides protection from damage and shall comply with FMVSS-108 regulations.

MID-MOUNTED SIDE TURN SIGNAL - LED

An amber LED side turn signal shall be provided in the mid-section area of the apparatus on both sides.

DOOR AJAR INDICATOR - LED

A red LED flashing light shall be provided in clear view of the driver to warn of an open compartment or personnel door.

- A label shall be provided that states "Do Not Move Apparatus When Light Is On".

SUPPLEMENTAL DOOR AJAR INDICATOR

In addition to the standard door ajar light, a 1" X 2" red LED flashing light shall be provided in clear view of the driver to warn of an open compartment or personnel door.

- A label shall be provided adjacent to the light that states "Do Not Move Apparatus When Light Is On".

AUDIBLE DOOR AJAR INDICATOR

In addition to the flashing door ajar indicator, an audible alarm shall be provided in the cab to warn of an open compartment or personnel door.

DOOR AJAR INDICATOR PARK BRAKE DISABLE

All apparatus body door ajar indicators shall be disabled when the park brake is set.

PERIMETER GROUND LIGHTING

There shall be seven (7) 4" diameter underbody LED perimeter lights furnished and installed. The lights shall have an unbreakable polycarbonate lens and housing. The lights shall be sealed to help prevent moisture entry.

- The ground lights shall be activated with the parking brake.

LED APPARATUS BODY STEP LIGHTING

All apparatus steps and running boards shall be illuminated using chrome plated or stainless-steel LED lights. The lights shall function automatically with the park brake.

GROUND/STEP LIGHTING CUTOFF SWITCH

A ground/step light cut off switch shall be provided in the cab to allow the driver to disable the ground lights and other lights that activate when the parking brake is set. The switch shall automatically re-set itself when the parking brake is released.

WHELEN M6 TRI-CLUSTER TAILLIGHTS - LED

Whelen M6BTT 4" x 6" LED taillights and M6T 4" x 6" LED turn signals shall be provided. The backup lights shall be M6BUW 4" x 6" clear LEDs.

- M6FCV3 polished trim housings shall be provided.

BACKUP LIGHTS PARK FUNCTION

The backup lights shall automatically activate when the park brake is set to provide work lighting at the rear of the apparatus.

WARNING LIGHT SWITCH - SINGLE

A single master optical warning device switch shall be provided that will activate all minimum optical warning lighting through a single switch. Individual switches shall not be provided for any minimum optical warning lighting to insure total compliance to the warning lighting requirements defined in NFPA 1901. All lighting controlled by this switch shall not be subject to load management.

Any warning lights that are installed on the apparatus that are not required to meet the minimum optical warning lighting requirements shall be subjected to load management and shall have individual switches to activate/de-activate the warning light.

All switches shall be clearly labeled as to their function.

ZONE A UPPER WARNING LIGHTING

A Whelen F4XORRRRLED lightbar shall be mounted on the top of the cab roof. The lightbar shall be 60" in length and mounted with low-profile stainless-steel brackets.

- Each side of the lightbar shall have a red LED in the front/side/rear corner locations three red forward-facing LED on each front side and two white forward facing LEDS for a total of 16 light heads.
- The lenses on the Officer's and Driver's shall be clear.

ZONE C UPPER WARNING LIGHTING

Two Whelen R316*F LED beacons shall be provided one on each side on the rear.

- The right-side light shall be blue, and the left side shall be red.

FRONT GRILLE WARNING LIGHTS

Two Whelen M6R red LED lights shall be provided in the grille area on the apparatus.

- M6FC chrome trim housings shall be provided.

INTERSECTION WARNING LIGHT - SIDES

One Whelen M6R red LED light shall be provided on each side as low and far forward as possible on the apparatus.

- M6FC chrome trim housings shall be provided.

MID-SECTION WARNING LIGHTS - SIDES

Two Whelen TLMIR ION Mini T red LED lights shall be provided on each side in the mid-section of the apparatus.

- TIONMFC chrome trim housings shall be provided.

SIDE FACING LOWER REAR WARNING LIGHTS

One Whelen M6R red LED light shall be provided on each side of the apparatus as low and as far rearward as possible on the apparatus.

- M6FC chrome trim housings shall be provided.

REAR FACING LOWER WARNING LIGHTS

Two Whelen model M6 LED lights shall be provided on the lower rear of the apparatus.

- M6FC chrome trim housings shall be provided.
- The Driver's side light shall be blue and the Passenger's side shall be red.

POWER CALL UDX7 SIREN

A Power Call UDX7 siren shall be provided and mounted in the cab.

The siren shall have wail, yelp, hi-lo, Powercall, 6-Adam, Intersection, Phaser, Whoop and air horn tones as well as public address (PA). A hard-wired microphone and single USB port shall be provided.

100 WATT SPEAKER

A 100-watt speaker shall be provided and recessed into the front bumper.

FEDERAL SIGNAL Q2B MECHANICAL SIREN - RECESS MOUNTED

A Federal Signal Q2B-12NNSD chrome-plated mechanical siren shall be provided. The motor portion of the siren shall be recessed into the front bumper. The siren shall have a maximum sound output of 123 db. at 10'.

- Two floor-mounted pad switches shall be provided to operate the mechanical siren, one on the right side and one on the left side.
- A siren brake push button switch shall be provided on the dash or console.

FRC SPA900-Q70 SCENE LIGHTS (2)

Two FRC SPA900-Q70 scene lights shall be provided and mounted one on each side on the rear. The lights shall be 12VDC and create up to 7,000 lumens each.

- Chrome trim housings shall be provided.
- The rear facing scene lights shall activate automatically when the apparatus transmission is placed into reverse.

12 VOLT SCENE LIGHT ACTIVATION SWITCH (1)

A single switch shall be located on the cab control console to activate the 12-volt scene lights.

FRC SPECTRA LED TELESCOPING LIGHTS - 12 VOLT

Two (2) Fire Research SPA530-Q15 bottom raising telescoping light(s) shall be mounted on the apparatus. The light heads shall be 12-volt LED and shall draw a maximum of 13.9 amps creating 15,000 lumens.

- The telescoping pole shall be constructed of heavy wall anodized tube. The pole shall be secured in any raised position with a non-directional advanced twist lock locking device. The twist lock mechanism shall have a knurled positive grip.
- The lights shall include a three-wire coiled cord extended from the pole bottom.
- The lights shall be electrically tested so that they are safe for their intended use. The lights shall be certified by Underwriters Laboratories (UL) and shall meet/exceed NFPA 1901.
- The light heads shall be white.
- The poles shall be equipped with a FRC "NS" no scratch kit to help prevent contact with the pole mounting surface.
- The telescoping lights shall be equipped with an on/off switch on the pump panel.
- The telescoping lights shall be mounted at the pump panel.

FIRETECH HIVIZ 46" BROW LIGHT - 12 VOLT L.E.D.

One (1) Firetech HiViz FT-B-46" LED brow mounted light shall be mounted on the brow of the cab roof.

- The light head shall be a 12-volt DC LED and shall draw 15 amps creating 12,420 effective lumens.
- The light housing shall be black.
- The brow light shall be switched with a single switch activating all light positions.

FIRETECH HIVIZ 46" SIDE BROW LIGHTS (2)

Two Firetech HiViz FT-B-46" LED side mounted brow lights shall be mounted on the apparatus.

- The light heads shall be 12-volt DC LED and shall draw 15 amps each creating 12,420 effective lumens each.
- One light shall be mounted on both side compartments tops.
- The light housing shall be black.
- Both side mounted brow lights shall be switched with a single shared switch activating all light positions.

APPARATUS BODY BRUSHED FINISH

The apparatus body shall remain its natural # 4 brushed stainless steel finish. No paint shall be applied to the apparatus body.

All seams or flanges on the apparatus body shall be caulked or properly sealed to prevent moisture accumulation in flanged areas.

ELECTROLYSIS CORROSION CONTROL

The apparatus shall be assembled using ECK or electrolysis corrosion control, on all high corrosion potential areas, such as door latches, door hinges, trim plates, fenderettes, etc. This coating is a high zinc compound that shall act as a sacrificial barrier to help minimize electrolysis and corrosion between dissimilar metals. This shall be in addition to any other barrier material that may be used.

APPARATUS BODY UNDERCOATING

The apparatus body shall be undercoated after assembly is completed. A bituminous based automotive type undercoat shall be used. Care shall be taken to avoid undercoat application to items that would hinder normal maintenance.

COMPARTMENT INTERIORS - BRUSHED STAINLESS FINISH

The compartment interiors shall be brushed stainless steel # 4 finish. The brushed finish shall be as provided by the manufacturer of the material.

LETTERING AND STRIPING

The apparatus dealer shall provide and apply all vehicle lettering, numbering, and striping.

INNER CAB DOOR REFLECTIVE STRIPING - 2 DOOR

A minimum of 100 square inches of reflective material shall be provided on the inner door liner of each cab door.

REAR CHEVRON STRIPING

A minimum of 50 percent of the rear vertical surface of the apparatus shall be covered with 6 inch alternating red and fluorescent yellow green retro-reflective striping. The striping shall slope downward away from the centerline of the apparatus at a 45-degree angle.

The retro-reflective material shall conform to the requirements of ASTM D 4956 "Standard Specification for Retro-Reflective Sheeting for Traffic Control", Type I or better.

DUO SAFETY 24' 2-SECTION ALUMINUM LADDER

One (1) Duo Safety 900A 24' NFPA compliant two section aluminum extension ladder provided and mounted.

DUO SAFETY 14' ALUMINUM ROOF LADDER

One (1) Duo Safety model 775A 14' NFPA compliant aluminum roof ladder with folding hooks shall be provided and mounted.

DUO SAFETY 10' ALUMINUM FOLDING ATTIC LADDER

One (1) Duo Safety 585A 10' NFPA compliant aluminum folding attic ladder shall be provided and mounted.

6" X 10' HARD SUCTION HOSES (2)

Two sections of Harrington 6" diameter x 10' length clear lightweight PVC hard suction hose shall be provided.

- The hard suction shall be coupled long handle FNST x rocker lug MNST.