



**TOWN OF BETHEL BOARD OF COMMISSIONERS  
REGULAR MONTHLY MEETING  
September 2, 2025 @ 6:00PM  
BETHEL TOWN HALL**

- |  |        |
|--|--------|
| <b>A. CALL TO ORDER</b>  | 6:00pm |
| <b>B. INVOCATION</b>   | 6:00pm |
| <b>C. PLEDGE OF ALLEGIANCE</b>   | 6:00pm |
| <b>D. APPROVAL OF PROPOSED AGENDA</b>  | 6:05pm |
| <b>E. CONSENT AGENDA-MINUTES FROM REGULAR MEETING</b>  | 6:05pm |
| 1. Minutes from Regular Monthly Meeting –August 5, 2025  | 6:10pm |
| <b>F. PUBLIC COMMENTS</b>  | 6:15pm |
| (Provides an opportunity for residents to comment on any item included on the agenda or to address the Town Board on any matter related to the Town of Bethel. Comments are limited to 5 minutes.) |        |
| <b>G. PUBLIC HEARING</b>   | 6:30pm |
| 1. 2025 CDBG-NR Grant Project  |        |
| <b>H. PRESENTATIONS</b>  |        |
| 1. Greenville Utilities Commission   | 6:40pm |
| 2. “Payment Plans” for Real Property Taxes   | 6:50pm |
| <b>I. OLD BUSINESS</b>   |        |
| 1. CDBG Program Documents  | 7:00pm |
| <b>J. NEW BUSINESS</b>   |        |
| 1. Flood Damage Prevention Ordinance   | 7:10pm |
| 2. Budget/Financial Matters  | 7:20pm |
| a. Budget Amendment #2   | 7:25pm |
| b. Budget Amendment #3   | 7:30pm |
| <b>K. DEPARTMENTAL REPORTS</b>   |        |
| 1. INTERIM TOWN MANAGER  | 7:35pm |
| a. Monthly Town Public Safety Report July 2025   |        |
| b. Financials for July 2025  |        |
| c. Next Board Meeting Date: October 7, 2025  |        |
| d. Other Business  |        |

2. **FIRE DEPARTMENT**

7:40pm

3. **PUBLIC WORKS**

7:45pm

4. **TOWN ATTORNEY**

7:50pm

L. **ADJOURNMENT**

7:55pm

MEETING OF THE BOARD OF COMMISSIONERS  
REGULAR MONTHLY MEETING  
BETHEL TOWN HALL  
August 5, 2025

Present: Mayor Carl Wilson, Mayor Pro-Temp Barbara Bynum, Commissioner Ferrell Blount, Commissioner Thomas Lilley, Commissioner Tina Staton, and Commissioner Fred Whitehurst

Members of the Board Absent: None

Staff Present: Interim Town Manager, D. Scott Elliott, Attorney, Keen Lassiter, CPA, Beverly Stroud, and Deputy Clerk, Jalissa Griggs

**Call to Order**

Mayor Wilson called the meeting to order at 6:02 P.M. Mayor Pro Temp Bynum gave the invocation.

Mayor Wilson then led the pledge of allegiance.

*Commissioner Lilley made a motion to approve the proposed agenda, the motion carried unanimously.*

*Commissioner Staton made a motion to approve the minutes from the regular monthly meeting on June 3, 2025 and the special called meetings on May 13, 2025 and July 21, 2025, the motion carried unanimously.*

*Commissioner Lilley made a motion to approve the designation of "Mayor for a Day" to Mariah Harrell.*

Principal Bell from Bethel School commented that Mariah Harrell is a phenomenal 4<sup>th</sup> grade student at Bethel School.

Judge Wendy Hazelton then performed the swearing-in for Oath of Office to Mariah Harrell.

Mayor Wilson presented Mariah Harrell a Certificate of Recognition.

**Public Comments**

Curshenia Wilson, a citizen of Bethel, expressed her concerns of the mega site proposal for Alpine Taylor Rd.

Tricia Werkaw, a citizen of Bethel, mentioned that she has voter registration forms for the Municipal Election in November 2025.

Hometown Bethel, an organization of Bethel, announced that the Harvest Festival will take place on September 20, 2025 with a rain date of September 27, 2025 from 10am until 9pm.

### **Public Hearing**

Ben Jones with Faltor Consulting described the 2025 CDBG Neighborhood Revitalization Grant project and how the funding could assist the town's revitalization needs if funded (See Attachment A).

Interim Town Manager asked Ben Jones to explain how applicants will be vetted. All applicants will be surveyed to include name, address, phone number, household count, and income information, as well as a home evaluation.

Commissioner Staton asked how a citizen could receive an application. Citizens can call Town Hall to have their name added to a call back list for Faltor Consulting to complete the survey and home evaluation.

Commissioner Blount asked if the grant was awarded, are applicants burdened with a lien or will this be a gift. If awarded, the applicant will have a forgivable loan for eight years. The applicant will not have to pay it back unless they are to sell the property before the eight year period. Every year for eight years a percentage of the money originally spent on rehabilitation is forgiven. After eight years the Deed of Trust is cancelled.

Mayor Pro Temp Bynum asked how many homes could be done with the CDBG grant program. Depending on the size of the homes selected, four to five homes could be torn down and rebuilt per program.

A Public Hearing was held to receive public input regarding the 2025 CDBG Neighborhood Revitalization Grant project.

Mayor Wilson opened the public hearing.

No one spoke.

Mayor Wilson closed the public hearing.

Interim Town Manager announced that there will be a second Public Hearing on September 2, 2025 at 6:00pm.

### **Old Business**

Interim Town Manager stated that a motion of intent to purchase a new fire pumper was passed at the Special Called Meeting on May 13, 2025. Subsequent to that meeting, the Town was required to engage the LGC (Local Government Commission) into the process of the truck



purchase because the Town is still on the UAL (Unit Assistance List) and because the Town will be seeking financing terms on \$150,000 loan toward the purchase of the truck.

It was noted that the Town of Bethel will be ineligible to participate in the State's OFSM (Office of State Fire Marshall) 50-50 grant program for the purchase of the new fire truck. This would have leveraged an additional \$40,000 of funding to a town grant match of \$40,000. The reason the town will be ineligible is because no decision to purchase can be made before the grant submission date of March 1, 2026 as well as the grant award announcements by OSFM of May 15, 2026.

Commissioner Blount asked for the cons of waiting to purchase. Commissioner Lilley commented that if it were delayed, it would be another 16 to 24 months to purchase a pumper. Captain Wayne Bryant stated that the price would be significantly higher because the engine will change based on updated codes.

Mayor Pro Temp Bynum asked for clarity with the 50-50 grant. Commissioner Lilley explained that the Office of State Fire Marshall would consider a match up to \$40,000.

Commissioner Lilley mentioned that the 50-50 grant could still be utilized in the future to purchase equipment features for the new truck.

Commissioner Blount stated he would be willing to make a contribution toward the \$40,000 gap to purchase the fire truck.

Interim Town Manager stated that any monies raised could defer the \$376,548 Town fund balance appropriation. A purchase order will still have to be executed in the financial software system to account for the balance on the books.

***Commissioner Lilley made a motion to execute a purchase agreement for the E-ONE/FL VM8 Pumper (\$526,548) (See Attachment B), motion carried unanimously.***

It was noted that the \$40,000 cannot be contributed toward the apparatus purchase. The balance of \$376,548 is the Town's responsibility to be deferred potentially by fundraising efforts.

Rivers & Associates provided an update regarding the Town's Stormwater AIA Study. The first major phase of the study (Asset Inventory Assessment) is now considered complete. The second phase of the work is to then develop a Stormwater Asset Management Plan.

Rivers & Associates provided an overview of their initial study results as well as an explanation of the stormwater issues in the areas of town affected by the July 13, 2025 rain event (See Attachment C).

A Public Information/Input Meeting for the Stormwater Study is scheduled for Tuesday, August 12, 2025 6:00pm at the Bethel Fire Department Meeting Room. A Public Officials Workshop – Stormwater Plan Completion will be scheduled at a later date once the study is completed.

## **Public Comments**

Deborah Jordan, a citizen of Bethel, expressed heartfelt thanks to Interim Town Manager and Commissioner Lilley for their efforts in assisting her from a motor vehicle accident.

## **New Business**

Interim Town Manager commented that Pitt County, acting as the Town's administrative agent for Hazard Mitigation Matters, is asking for municipalities to adopt the recently revised Neuse River Regional Hazard Mitigation Plan. As referenced in the Plan, it states that "Communities with an adopted and federally approved hazard mitigation plan thereby became pre-positioned and more apt to receive available mitigation funding before and after the next disaster strikes." Attachment D is the first fifteen pages of a roughly 750-page overall document. These pages serve as a summary in the essence of the plan.

***Commissioner Lilley made a motion to adopt the Resolution in regard to the Neuse River Regional Hazard Mitigation Plan (See Attachment E), motion carried unanimously.***

Interim Town Manager presented two End of Year (FY24-25) budget adjustments:

- Budget Amendment #18 (See Attachment F)
- Budget Amendment #19 (See Attachment G)

These adjustments were within the Interim Town Manager's authority to approve. They were executed toward the purpose of preventing an over expenditure of funds within the budgets of the Senior Center and Fire Department.

Interim Town Manager presented one budget amendment for FY25-26. This budget amendment moves existing line-item funding within Public Works from Supplies (560-3330) to Street Maintenance (560-1500).

- Budget Amendment #1 (See Attachment H)

This has been discussed and prepared by the Town's outside financial consultant, Beverly Stroud, CPA.

***Mayor Pro Temp Bynum made a motion to approve Budget Amendment 1, motion carried unanimously.***

## **Departmental Reports**



Interim Town Manager referred the public safety report for the month of May 2025 and June 2025 from information provided by the Town of Bethel and the Sheriff's Office (Attachment I).

Beverly Stroud, CPA gave the financial report. The Town will be submitting the trial balance for fiscal year 2025 to Gregory Redman, CPA soon so that the 2025 audit can begin. The LGC-203 and Powell Bill expenditure report have been submitted.

The Town had an ending fund balance in fiscal year 2024 of \$3,214,460 and is projected to have a decrease in fund balance in fiscal year 2025 of approximately \$500,000 due to appropriations in fund balance for several projects. Appropriations from fund balance were made in the amount of \$1,009,002 during fiscal year 2025. Of this amount, \$746,410 has been spent at June 30, 2025. Some appropriations will need to be re-allocated in fiscal year 2026 to complete the projects (i.e. Stormwater Study) approved by the Board of Commissioners (See Attachment J).

***Commissioner Lilley made a motion to approve the financial report for the month of May 2025 and June 2025, motion carried unanimously.***

Interim Town Manager announced the Hometown Bethel Harvest Festival will be held September 20, 2025.

Interim Town Manager announced the 2025 Christmas Parade proposed date of Saturday, December 13, 2025 and the 2025 Tree Lighting proposed date of Saturday, December 6, 2025.

Awesome Radio would like to hold a 2025 Town of Bethel Candidate's Forum on October 9, 2025. Location to be announced.

It was announced that the next monthly meeting will be held September 2, 2025.

### **Fire Department**

Fire Chief Lilley gave a report of calls for June 2025 and July 2025 (See Attachment K).

Town Hall will take requests for smoke alarm installations.

September 20, 2025 BBQ Chicken Fire Department Fundraiser.

### **Public Works**

The LED street lighting conversion is ongoing by Dominion Energy at no cost to the Town and will yield a lower utility bill to the Town.

The existing mowing contractor terminated their contract to continue the municipal lawn care contract due to inability to fulfil the workload. The new contractor has begun as of August 1, 2025. The former contractor still holds the Residential Debris Pick up Contract, although if the

contractor is not able to fulfil the workload, the current municipal lawn care contractor is able to take over the contract.

**Town Attorney**

No report was given.

**Closing Remarks**

Mayor Pro Temp Bynum announced that Jerome Brown ran into difficulties with the grocery store and the coffee shop is proposed to open in November 2025.

Commissioner Staton announced the Harvest Festival 2025 vendor forms are available.

Mayor Wilson asked citizens to help keep the city clean by cleaning up grass clippings.

***Commissioner Lilley made a motion to adjourn the meeting at 7:51 pm, the motion carried unanimously.***

\_\_\_\_\_  
Mayor, Carl Wilson

ATTEST:

\_\_\_\_\_  
Linda Sheppard, Town Clerk

\_\_\_\_\_  
Date



# ATTACHMENT A

## **Community Development Block Grant Neighborhood Revitalization (CDBG-NR)**

*Funded by: U.S. Department of Housing & Urban Development (HUD)*

*Administered by: NC Department of Commerce / Rural Economic Development Division*

### ♦ **Purpose / Objective**

"Supports community-driven revitalization activities in low- to moderate-income areas to address housing, infrastructure, and public facility needs that improve quality of life."

### ♦ **Eligible Activities**

- Housing rehabilitation/reconstruction (main activity)
- Public infrastructure improvements (streets, sidewalks, water/sewer)
- Neighborhood parks & public spaces upgrades

### ♦ **Funding Information**

- **Maximum Grant Amount:** \$950,000.00
- **No Local Match Requirement:** (100% Grant funded)
- **Administration fees paid from grant**
- **No cost to Town**
- **Application Deadline:** (Oct. 29)
- **Grant Period:** 36 Months
- **Municipality can apply each year**

### ♦ **Recipient Eligibility Requirements**

- **Low and Moderate Income**
- **Owner Occupied Homes**
- **Real Property**



Presents To

**Bethel Fire Department**

**E-ONE/FL VM8 Pumper**

**EXPERIENCE THE DIFFERENCE.**





2520 N. Wesleyan Blvd. Rocky Mount, NC 27804  
Office | 1.877.358.FIRE sales@fireconnections.com

## EMERGENCY VEHICLE PROPSAL

March 26, 2025

This proposal has been prepared for:

### Bethel Fire Department

We hereby propose to furnish to you, subject to proper execution of the attached agreement by you and by an officer of Fire Connections, Inc., the following apparatus, and equipment to be built in accordance with the attached specifications:

**One (1) E-One/FL VM8 Pumper Q 141060 3-26-25**

**\$526,548.00**

- This proposal will expire April 26, 2025
- The delivery will be F.O.B. Fire Connections, Inc., Rocky Mount. The approximate delivery date will be determined once all changes are complete, and the order is released to production.
- Terms of payment are cash upon pick-up unless otherwise stated.

Fire Connections, Inc.

Travis Mayo  
President



## Dealer supplied Items:

Travel is included in this proposal for [4] FD personnel for final inspection only. All transportation, meals and lodging are included.

This proposal includes a **\$3,000.00** graphics allowance. This will cover any graphics not listed in this specification.

This proposal includes a **\$10,000.00** Equipment and Mounting allowance.

- [1] 1" Booster Nozzle TFT 1040
- [2] 100' X 1" Rubber booster hose.
- [2] Streamlight Vulcan LED handlights mounted.
- [1] 6" Barrel Strainer
- [2] 6" X 10' Hard Suction hose
- [2] Axes Mounted
- [2] pike poles

**The following items are included in the proposal price but not listed in the specification due to program restrictions.**

1. 2.5" front bumper discharge  
FCI will exchange the 1.5" discharge with a 2.5" and all its respective components.
2. Deck Gun Package  
An Akron Apollo Hi-Riser deck gun package will be include din the price of the truck and will have a ground mount, solid bore tips, and fog nozzle included. This gun rotates and extends up 13"

3. M9 Blue Light

FCI will replace in exchange a Whelen M9 upper rear Driver Side Red light with a blue light.

4. Ion-T in Rub Rail

FCI will add [2] ION-T Whelen lights in the rub rail area to improve on side warning lights.

5. Foam Gauge and Valve

FCI will add a foam level gauge on the pump panel and provide a 1" foam drain valve and to allow filling of buckets with foam concentrate.

6. Wheel Chocks

FCI will install 2 wheel chocks under the body.

7.

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Specification for: BETHEL FIRE DEPARTMENT

## **VM8 BASE MODEL**

### **TOP MOUNT PUMPER**

## **VM8 Compliance**

### **E-ONE Badging**

The following logos shall be provided:

(4) small E-ONE logos mounted one each side and rear

(1) vinyl logo on the front bumper

### **NFPA Compliance**

The E-ONE supplied components of the apparatus shall be compliant with NFPA 1900, 2024 edition.

## **CHASSIS PREP**

### **Chassis Processing**

Commercial chassis administrative, processing and handling,

## **VM8 CHASSIS OPTIONS**

### **Isolated Air Reservoir**

The air system shall have an additional 1738 cu. in. isolated reservoir. The supply side of the reservoir shall be equipped with a check valve and an 85 psi pressure protection valve.

Specified options shall be plumbed to the isolated air tank.

### **ALUMINUM WHEELS**

Aluminum wheels will be supplied by the commercial chassis manufacturer. Includes front wheels and rear wheels.

### **WHEEL TRIM PACKAGE**

The front wheels shall have stainless steel lug nut covers (for use with aluminum wheels) OR chrome plated plastic (for use with steel wheels). The wheels shall be covered with American made Real Wheels brand mirror finish, 304L grade, non-corrosive stainless steel universal baby moons for the front wheels and high



## **Specification for: BETHEL FIRE DEPARTMENT**

hats for the rear outer wheels. All shall carry a lifetime warranty plus a 2 year re-buffing policy. There shall be two (2) baby moons and twenty (20) lug nut covers.

### **CAB COLOR SPECIAL**

Commercial cab color special color as required by the customer. Provided as ordered with the commercial chassis.

### **OEM FRONT BUMPER AND TOW HOOKS**

The chassis OEM front bumper and tow hooks will be omitted to allow installation of extended front bumper assembly.

### **FREIGHTLINER**

Freightliner M2 106 Conventional

Minimum GVWR: 2-door – 39,000 lbs.

191 W/B Side Mount - 221 WB Top Mount

### **ENGINE**

Cummins L9 – 360EV HP @2200 RPM; 1150 lb/ft @ 1200 RPM

Maximum 68 MPH road speed limit (per NFPA 1901)

Side of hood air intake with NFPA compliant ember screen and fire retardant Donaldson or equal air cleaner.

Minimum 320 amp alternator

Minimum 2000CCA, 370RC batteries with threaded studs under left side cab

Positive load disconnect with cab mounted control switch mounted outboard of driver's seat

Turbocharged 18.7 cfm air compressor with internal safety valve and mechanical governor

Exhaust brake integral with variable geometry turbo and ON/OFF dash switch. Must automatically activate apparatus stop lamps.

Right side outboard under step mounted horizontal aftertreatment system with horizontal tailpipe exiting forward of right rear wheels

Engine aftertreatment device, automatic over the road active regeneration and dash mounted single regeneration request/inhibit switch



## Specification for: BETHEL FIRE DEPARTMENT

Diesel exhaust fluid tank – 6 gallon under left cab aft of fuel tank

Horton Drivemaster Advantage ON/OFF fan drive, automatic control

1100 square inch aluminum radiator

Electric grid air intake warmer

### **TRANSMISSION**

Allison 3000 EVS automatic

PTO provision for Chelsea 280 series PTO (2)

Vocation package 198 for fire vehicle applications

Magnetic drain plugs

Push-button electronic shift control – dash mounted

Water-to-oil cooler in radiator tank

Synthetic fluid

### **FRONT AXLE**

2-door cab models - 14,700 lb. Set-back with drop

16.5X5Q+ cast spider heavy duty cam front brakes, double anchor, fabricated shoes

Fire and Emergency Severe Service, non-asbestos front lining

Cast iron front brake drums

Front oil seals

Vented oil front hub caps with window, center and side plugs

Automatic slack adjusters with stainless steel clevis pins

Power steering

2-quart see-through power steering reservoir

14,600 lb. taperleaf suspension

Maintenance-free rubber bushings

Specification for: BETHEL FIRE DEPARTMENT

Shock absorbers

**REAR AXLE**

27,000 lb. T-Series fire vehicle service single

5.13 rear axle ratio

Iron carrier with standard axle housing

Extended lube main driveline with half-round yoke

16.6X7 P cast spider cam rear brakes, double anchor, cast shoes

Fire and Emergency Severe Service non-asbestos rear brake linings

Brake cams and chambers on forward side of drive axle

Rear oil seals

Longstroke 1-drive axle spring parking chambers

Automatic slack adjusters

27,000 lbs. flat leaf spring rear suspension with radius rod for Fire/Emergency service

Fore/Aft control rods

**BRAKE SYSTEM**

WABCO 4S/4M ABS

Air system pressure protection and 85 psi pressure protection for air horns

Relay valve with 5-8 psi crack pressure

WABCO System Saver HP with integral air governor and heater

Auto Drain valve – wet tank

**WHEELBASE**

2-door Side Mount models – Turning radius is considered critical for this apparatus, therefore the maximum wheelbase shall not exceed 191 inches

2-door Top Mount models – Turning radius is considered critical for this apparatus, therefore the maximum wheelbase shall not exceed 212 inches

## Specification for: BETHEL FIRE DEPARTMENT

### FUEL TANK & SYSTEM

Minimum 50 gallons/189 liter rectangular polished aluminum mounted beneath left front cab door.

Bright aluminum treadplate trim package will be installed beneath the cab doors above the secondary step and the bottom of the cab and the first and secondary step.

Cab steps shall be polished stainless steel

Fuel/water separator with water in fuel sensor

High temperature reinforced nylon fuel line

Fuel cooler

### TIRES & WHEELS

Front: Michelin or equal XZE 12R22.5 16 ply radial

Rear: Michelin or equal XDN2 12R22.5 16 ply radial

22.5x8.25 10-hub piloted steel disc (6)

### HUBS

Conmet Preset Plus premium iron

### CAB EXTERIOR

2-door cab models – 106 inch BBC flat roof aluminum conventional cab

Air cab mounting

Cab roof reinforcements for roof mounted lightbar

Safety yellow left and right interior grab handles and exterior non-slip grab handles

Chromed grille

Chromed air intake grille with ember screen

Fiberglass tilting hood

Dual 25 inch round Stuttertone hood mounted air horns (one left and one right) with shields.

Left and right air horn foot switches with momentary dash switch for horn button

## Specification for: BETHEL FIRE DEPARTMENT

Door locks and ignition switch keyed alike

Dual West Coast mirrors; bright finish; heated; left and right remote adjustment 8 inch bright finish convex mounted under primary mirrors; right side down view mirror

Aftertreatment system on right side with polished diamond plate cover

Electric horn warning system for park brake when not set with door open and all ignition key positions

Tinted windshield and door glass

Manual door window regulators

Three-piece 14 inch chromed steel bumper with collapsible ends

Front tow hooks – frame mounted (2)

### **CAB INTERIOR**

Molded inner door panels

Opal gray vinyl interior

Black mats with single insulation

Heater, defroster and air conditioner with standard HVAC ducts and controls with recirculation switch

Premium cab insulation

Door activated dome/red map lights, forward left and right and (if 4-door) rear left, right and center.

Manual cab door locks

Seats:

- Driver: High back air suspension driver seat with NFPA 1901 compliant seat sensor
- Officer: High back air suspension officer seat with NFPA 1901 compliant seat sensor

Black Cordura Plus cloth seat covers

NFPA compliant high visibility orange seatbelts



## Specification for: BETHEL FIRE DEPARTMENT

All seating positions shall have a seat sensor that advises the driver through a visual display on the dash within the driver zone of seatbelt status for all positions in the apparatus. The sensors shall be connected directly to the VDR (vehicle data recorder (VDR) integrated into the dash. Connection for downloading recorded data shall be through the J1939 port.

Adjustable tilt and telescoping steering column with 4-spoke 18 inch steering wheel

Driver and officer side interior sunvisors

### **INSTRUMENTS & CONTROLS**

Engine remote interface with park brake interlock

Low air pressure indicator light and audible alarm

2 inch primary and secondary air pressure gauges

Engine compartment mounted air restriction indicator with graduations and warning light in dash

Woodgrain driver and center instrument panel

Electronic cruise control with switches in left switch panel

Ignition switch with non-removable key

Heavy duty onboard diagnostics interface connector located below left dash

2 inch fuel gauge

Engine remote interface for remote throttle

Engine remote interface connector in engine compartment

Engine coolant temperature gauge

Engine oil pressure gauge

2 inch transmission temperature gauge

Engine and trip hour meters integral within driver display

Power and ground wiring provision in overhead console

Electronic MPH speedometer with secondary KPH scale without odometer

Vehicle speed sensor

## **Specification for: BETHEL FIRE DEPARTMENT**

Electronic 3000 rpm tachometer

Digital voltage display integral in driver display

Electric windshield wiper motor and display

Alternating flashing headlamp system with fire apparatus controlled engagement

Parking brake system with dash valve control auto/neutral and warning indicator

Self-cancelling turn signal switch with dimmer, washer/wiper and hazard in handle

### **AIR OUTLET**

A 1/4" male plug air hose inlet shall be connected to the air reservoir tank. A 1/4" inline check valve will be installed in the line. Air hose connection will provide the capability of filling the air brake system with air from an outside source. It will be located beneath the driver's cab door above the fuel tank.

### **CAB DOOR RETRO-REFLECTIVE STRIPING**

Chevron style retro-reflective striping shall be added to the inside of the cab doors in accordance to NFPA requirements. It shall cover not less than 96 sq.in of each door meeting MFPA 1901.

### **TIRE PRESSURE MONITORING SYSTEM**

There shall be a RealWheels LED AirGuard Set and Go, six (6) wheel stabilizer kit, for 2.00 inch round holes and LED indicators proper air pressure in the tire.

The inner tire on the rear dual axle shall have an extension provided that will pass through the outside rim and attach to the stabilizer providing an unobstructed view for inspection of the inner tire air pressure.

The indicators shall be installed by the department after the unit has been fully equipped and the tires set to the manufactures recommended pressure rating. The indicators will calibrate to that initial air pressure setting upon installation and will intermittently flash when the tire pressure is reduced by 5 to 10 psi from its original calibrated pressure.

### **EXTENDED FRONT BUMPER**

The chassis frame shall be extended twenty (20) inches. The extension shall provide added protection to the front of the chassis cab.

The bumper shall be stainless steel not less than 10" high contour wrapped on the end in place of the OEM bumper.



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Space between the bumper and the hood will be filled by minimum .125" bright aluminum treadplate. All seams shall be welded.

An additional Whelen 600 warning light shall be provided one each side of the front bumper extension.

### **Jacobs Engine Brake**

One (1) Jacobs engine brake shall be installed to assist in slowing and controlling the vehicle as required by NFPA 1901 for vehicles with gross vehicle weight ratings (GVWR) of 36,000 lbs. or greater. An on-off control switch and a high-medium-low selector switch shall be mounted in the cab accessible to the driver.

When activated, the Jacobs engine brake shall cut off the flow of fuel to the cylinders and alter the timing of the exhaust valves. This shall transform the engine into a high-pressure air compressor, driven by the wheels, and the horsepower absorbed by the engine in this mode shall slow the vehicle. The selector switch allows the driver to select the amount of retarding power.

When the on-off switch is in the "on" position, the engine brake shall be automatically applied whenever the accelerator is in the idle position and the automatic transmission is in the lock-up mode. If the accelerator is depressed or if the on-off switch is placed in the "off" position, the engine brake shall immediately release and allow the engine to return to its normal function.

### **Electronic Stability Control**

Electronic stability control shall be provided with commercial chassis.

## **CAB DOOR OPTIONS**

### **Cab Door Interior Striping**

Reflective striping shall be installed on commercial cab doors, visible when the door is open, meeting NFPA requirement of 96 sq. in. coverage for each door.

## **VM8 BODY OPTIONS**

### **Folding Steps**

Innovative Controls dual lighted LED folding steps(4) shall be located officer side front of body. The folding steps shall meet current NFPA in step height and surface area.

Innovative Controls dual lighted LED folding step with LED lights integral to the step on the top to provide NFPA requirements of 2 fc (20 lx) on the stepping surface. Folding step shall also have a LED light integral to the bottom of the step to meet NFPA requirements of a stepping surface up to 18" below the step. The folding step shall

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sustain a minimum static load of 500 lb. The folding step shall also meet NFPA slip resistance qualifications. Corrosion resistance shall be demonstrated by a 1000 hr salt spray test with no visible signs of deterioration of the step body or hardware.

One (1) hand rail shall be installed in compliance with current NFPA. The hand rail shall be constructed of 6063T5 1.25" OD anodized aluminum tube, with an integral ribbed surface to assure a good grip for personnel safety, mounted between chrome stanchions.

### REAR RUBRAIL

The lowest edge of the rear tailboard will be trimmed with an extruded C-Channel aluminum extrusion rub rail not less than 3" high x 1.50" deep. Each end of each rail will be capped with a contoured black formed PVC end cap for safety matching the shape of the rub rail.

The inside flat surface will be designed to apply retro-reflective striping for added visibility and rear clearance lights.

The rub rail will be secured with stainless steel fasteners and spaced away from the apparatus body with .50 inch nylon spacers to help absorb moderate impacts and prevent the collection of water and debris for easier cleaning.

### ROLL UP DOORS PAINTED

There will be a total of six (6) roll-up doors for compartments L-1, L-2, L3, R-1, R-2, R-3. Each compartment will have a non-locking ROM Series IV roll-up shutter door.

Each shutter slat, track, bottom rail, and drip rail will be constructed from anodized 6063 T6 aluminum. Shutter slats will feature a double wall extrusion with a concave interior surface to minimize loose equipment jamming the shutter door closed. Shutter slats will feature an interlocking end shoe to prevent side to side binding of the shutter door during operation. Slat must have interlocking joints with an inverted locking flange. Slat inner seal will be a one piece PVC extrusion; seal design will be such to prevent metal to metal contact while minimizing dirt and water from entering the compartment.

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

Shutter bottom rail will be a one piece double wall extrusion with integrated finger pull. Finger pull will be curved upward with a linear striated surface to improve operator grip while operating the shutter door. Bottom rail will have a smooth contoured interior surface to prevent loose equipment from jamming the shutter door. Bottom rail seal will be a double "V" seal to prevent water and debris from entering compartment. Bottom rail lift bar will be a one piece "D" shaped aluminum extrusion with linear striations to



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improve operator grip during operation. Lift bar will have a wall thickness of 0.125 inches. Lift bar will be supported by no less than two pivot blocks; pivot blocks will be constructed from Type 66 Glass filled reinforced nylon for superior strength. Bottom rail end blocks will have incorporated drain holes which will allow any moisture that collects inside the extrusion to drain out.

Shutter door will have an enclosed counter balance system. Counter balance system will be 4.00 inches in diameter and held in place by 2 heavy duty 18 gauge zinc plated plates. Counter balance system will have 2 over-molded rubber guide wheels to provide a smooth transition from vertical track to counter balance system.

The compartment doors will have a painted finish, matching the main body color. The track shall be painted aluminum with a finishing flange incorporated to provide a finished look around the perimeter of the door without additional trim or caulking.

Each roll up door will have an integral door open indicator magnet in the lift bar.

If the door is not properly closed and the transmission is placed into drive or reverse mode with the parking brake released, it will activate the "hazard light" in the cab to alert the crew.

### **HARD SUCTION HOSE STORAGE**

A compartment will be provided in the upper left side of the hosebed that will accommodate (2) lengths of 10-foot hard suction hoses.

### **HOSEBED DIVIDER ADDITIONAL [Qty: 3]**

There shall be an additional hose bed divider provided the full fore-aft length of the hose bed.

The hose bed divider shall be constructed of 1/4" (0.25") smooth aluminum plate with an extruded aluminum base welded to the bottom. The rear end of the divider shall have a 3" radius corner to protect personnel. The divider shall be natural finish aluminum for long-lasting appearance and shall be sanded and de-burred to prevent damage to the hose.

The divider shall be adjustable from side to side in the hose bed to accommodate varying hose loads.

### **DUAL SCBA STORAGE (8)**

Dual SCBA storage compartments shall be installed in the wheel well panels, two (2) each side, one (1) each ahead of and behind the rear wheels. Each compartment shall accommodate two (2) 8 inch diameter x 24 inch long spare SCBA bottles, for a total of eight (8) spare bottles.

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The compartments will be vacuum formed PVC material with a drain hole at the bottom rear. A hinged stainless steel door will be provided over the opening with a thumb-release latch.

### **ADJUSTABLE SHELF [Qty: 2]**

Compartment shelving (each) shall be provided as required by the customer. The shelving will be made out of .190 inch smooth aluminum sheet material with a formed 2.00 inch lip on the front and back.

Side mounting brackets will be provided for vertical adjustment.

### **SLIDE MASTER TRAY**

A SlideMaster roll out tray (each) shall be floor mount in the compartment as specified by the customer.

Each tray will feature all-aluminum structural rails to prevent corrosion. The rails shall be rated at a minimum of 700 lbs. capacity. A push-pull lever will be provided to release the tray from lock in or lock out position using rotary latch. The aluminum tray shall have 70% extension. The tray shall be fabricated of minimum .125 inch thick aluminum sheet material with four (4) 3.00 inch side flanges, corner welded for maximum strength and will be as wide and as deep as compartment allows.

### **HOSEBED ALLOWANCE**

Hosebed hose allowance: 1200 lbs.

### **EQUIPMENT ALLOWANCE**

Equipment allowance: 3000 lbs.

### **P-RUBBER / FLEX JOINT**

The area between the pump module and body shall include a rubber flex joint.

### **APPARATUS BODY**

#### **BODY MATERIAL TYPE**

At a minimum, all formed substructure crossmembers and associated assemblies, exterior panels and compartments will be emergency vehicle industry standard 5052-H32 aluminum alloy. Softer alloys will not be acceptable in the construction processes, except where non-structural bright aluminum treadplate is utilized. The subframe shall be constructed of 3/16" (.188") aluminum plate with cross beams constructed of 1/4" (.25") aluminum plate across the wheel wells and front of the body. The body side panels and compartments shall be constructed of a minimum 1/8" (.125") aluminum plate.



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### **FASTENERS**

All fasteners utilized on the substructure crossmembers, associated assemblies and body compartment structures will be precision engineered Huck® fasteners.

Once installed, no matter how vibration-intensive the environment, these fasteners are engineered to never come loose. Huck bolts are to provide direct metal-to-metal contact when installed, to eliminate the transverse vibration often found in conventional nuts and bolts that have a tendency to loosen over time.

### **ANTI-CORROSION PROCESS**

Absolutely no dissimilar metals will be used in the body and its supporting substructure without being separated by ECK®. This process is not required where the fastener is an aluminum Huck-bolt to aluminum components.

### **BODY FINITE ELEMENT ANALYSIS**

The proposed body design must have completed a review and analysis. The analysis is to include real world working load scenarios. Analysis to cover both static and dynamic situations must be completed. The purpose of the finite element analysis is to ensure proper design of the apparatus body, and that it is capable of carrying the typical fire apparatus loads and those specified by NFPA for equipment. The analysis process must conclude that the body structure is properly designed and manufactured to provide longevity under normal conditions. Proof of having completed this testing must be immediately submitted, upon request, during the bid review process.

### **BODY MOUNTING SYSTEM**

The entire body module assembly will be mounted above the chassis frame rails exclusively with not less than twelve (12) torsion isolator assemblies to reduce the vibration and stress providing an extremely durable body mounting system.

The body substructure will be mounted above the frame to allow independent flexing to occur between the body and the chassis. Each assembly will be mounted to the chassis frame rails with steel, gusseted mounting brackets. Each body mount bracket will be mounted to the side chassis frame flange with .625" (5/8") Grade 8 Geomet coated (anti-corrosion) bolts. Each mounting bracket will be bolted to the frame using not less than four (4) bolts.

There will be no welding to the chassis frame rail sides, web or flanges, or drilling of holes in the top or bottom frame flanges between axles. All body to chassis connections will be bolted so that in the event of an accident, the body will be easily removable from the truck chassis for repair or replacement.

Because of the constant vibration and twisting action that occurs in chassis frame rails and suspension, the torsion mounting system is required to minimize the possibility of premature body structural failures.

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### COMPARTMENT INTERIOR WALLS

All compartment interiors will be sanded smooth aluminum plate.

### COMPARTMENT FLOORS

All body compartment floors will be sanded smooth aluminum plate and have a .75" (3/4") lip downward at the door opening side of the compartment. This lip will form a "sweep-out" compartment. The design will also allow for a complete door / weather seal across the bottom.

Each compartment will have the ability to drain and louvers ventilation adequate to provide air circulation.

### EXTERIOR COMPARTMENT LOCATIONS AND CONFIGURATION

#### L-1 - Left Side Forward

There will be one (1) a compartment ahead of the rear wheels on the left side of the apparatus.

The approximate interior dimensions of this compartment will be not less than 51.5"W x 70.5"H x 26"D.

The approximate pass-thru opening will measure not less than 49"W x 60.5"H.

#### L-2 - Left Side Over Wheels

There will be a compartment above the rear wheels on the left side of the apparatus.

The approximate interior dimensions of this compartment will be not less than 63.75"W x 37.5"H x 26"D.

The approximate pass-thru opening will measure not less than 54.5"W x 27.5"H.

#### L-3 - Left Side Aft of Rear Wheels

There will be a compartment aft of the rear wheels on the left side of the apparatus.

The approximate interior dimensions of this compartment will be not less than 42"W x 70.5" x 26"D .

The approximate pass-thru opening will measure not less than 39.5"W x 60.5"H.

#### R-1 - Right Side Forward

There will be a compartment ahead of the rear wheels on the right side of the apparatus.



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The approximate interior dimensions of this compartment will be not less than 51.5"W x 33"H x 26"D lower and 55.5"W x 37.50"H x 13.5"D upper.

The approximate pass-thru opening will measure not less than 49"W x 60.5"H.

### **R-2 - Right Side Over Wheels**

There will be a compartment above the rear wheels on the right side of the apparatus.

The approximate interior dimensions of this compartment will be not less than 63.75"W x 37.5"H x 13.5"D.

The approximate pass-thru opening will measure not less than 54.5"W x 27.5"H.

### **R-3 - Right Side Aft of Rear Wheels**

There will be a compartment aft of the rear wheels on the right side of the apparatus.

The approximate interior dimensions of this compartment will be not less than 42"W x 33"H x 26"D lower and 42"W x 37.5"H x 13.5"D upper.

The approximate pass-thru opening will measure not less than 39.5"W x 60.5"H.

### **B-1 - Rear of Body below Hosebed**

There will be a compartment on the rear of the apparatus.

The approximate interior dimensions of this compartment will be not less than 43"W x 61"H x 26"D.

The approximate pass-thru opening will measure not less than 40.5"W x 51"H.

**NOTE:** *All compartment depths must be measured from back of wall to inside closed door.*

## **LADDER COMPARTMENT**

Located on the right rear of the body will be a ground ladder compartment that measures approximately 29"H x 10.50"W (pass-thru). The bottom of the opening will not more than approximately 60" (+/- 2") from ground level.

The compartment will accommodate, at a minimum, the following:

- one (1) 14-ft roof ladder
- one (1) 24-ft two-section ladder
- one (1) 10-ft attic ladder
- two (2) 10-ft pike poles

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### HOSEBED

The hosebed will be full width of the body to provide storage for not less than 800' of 3" double jacketed and 1500-feet of 5" hose LDH.

The hosebed will be constructed of extruded aluminum slats with adequate spacing between slats to allow airflow and drainage. It will be capable of removal as a two-piece unit for tank service access.

### CORNER TRIM – STAINLESS STEEL

The front and rear of the apparatus body vertical wall overlay will be integrated with a minimum .625" (5/8") satin finish stainless steel corner trim for edge protection. The vertical edge trim will extend from the top to bottom and will be attached with stainless steel fasteners.

### REAR TAILBOARD

The tailboard will be an independent assembly bolted to the rear body structural framing to provide body protection and a solid rear stepping platform.

The rear tailboard and body will be constructed such that the angle of departure will be not less than 8 degrees at the rear of the apparatus when fully loaded (NFPA) 1901, Standard for Automotive Fire Apparatus.

The rear tailboard will be approximately not less than 9.5"D x full width of the body. The step surface will be formed bright treadplate aluminum with an embossed aggressive anti-slip pattern.

Three (3) LED rear body marker lights will be centered on the face of the step.

On the rear body surface, a sign will be attached that states: "DO NOT RIDE ON REAR STEP, DEATH OR SERIOUS INJURY MAY RESULT."

### WHEEL WELLS

Wheel wells will have semicircular black polymer composite inner liners that are bolted to the wheel well panel. Each wheel well will be a continuous piece with no breaks or ledges where road grime or debris may accumulate. This liner will be removable for access to suspension assembly for repairs. There will be no exception to the bolted wheel well inner liner requirement.

### COMPARTMENT UNISTRUT

Vertically mounted Unistrut will be installed in all apparatus body compartments to accommodate the installation of shelves, trays, and or other miscellaneous equipment.



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### **SIDE RUB RAILS**

The lowest edge of the apparatus body side compartments will be trimmed with an extruded C-Channel aluminum extrusion rub rail not less than 3"H x 1.5"D. Each end of each rail will be capped with a contoured black formed PVC end cap for safety matching the shape of the rub rail. The rub rails will not be constructed as an integral part of the apparatus body structure, allowing each rub rail to be easily removed in the event of damage.

The inside flat surface will be designed to apply retro-reflective striping for added visibility, clearance lights, auxiliary turn signal and NFPA 1901 Lower Zone warning lights.

The rub rails will be secured with stainless steel fasteners and spaced away from the apparatus body with .5" (1/2") nylon spacers to help absorb moderate side impacts and prevent the collection of water and debris for easier cleaning.

### **FOLDING STEPS**

LED illuminated folding steps conforming to current NFPA requirements, will be provided and installed on the apparatus as specified below.

The steps will have a minimum of 46 sq. inches of surface area capable of sustaining a 1200 lb. static load. They will have a maximum 18" spread between each step.

### **HANDRAILS**

Three (3) handrails will be installed on the rear of the apparatus. Each handrail will be of an adequate length, as available usable space allows, to provide a suitable gripping area for personnel.

Two (2) vertical handrails will be installed, one on each side, just below the hose bed sides. The remaining handrail will be installed horizontally, just below the hose bed area.

### **TOW EYES**

There will be two rear tow eyes installed to the frame rails, one each side, accessible below the rear of the apparatus. They will be manufactured of 1" plate steel 5" wide with 2.5" round hole.

Each plate will be bolted to the chassis frame rail with minimum .625" (5/8") Grade 8 Geomet coated (anti-corrosion) bolts. All steel components will be painted black.

### **MUD FLAPS**

Heavy-duty black rubber mud flaps will be provided behind the rear wheels. The mud flaps will be bolted in place.

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### MINIMUM REQUIRED LABELING

Where not required in other paragraphs contained in this document, the minimum required labeling otherwise will include the following:

#### CHASSIS REQUIRED LABELING

Signs that state "Occupants must be seated and belted when apparatus is in motion" will be provided.

They will be visible from each seating position.

There will be a lubrication plate mounted inside the cab listing the type and grade of lubrication used in the following areas on the apparatus and chassis:

- Engine oil
- Engine Coolant
- Transmission Fluid
- Pump Transmission Lubrication Fluid
- Drive Axle Lubrication Fluid
- Generator Lubrication Fluid (where applicable)
- Tire Pressures

#### APPARATUS INFORMATION LABEL

There will be a high-visibility label installed in a location clearly detectable to the driver while in the seated position.

The label will indicate the following specified information:

- Overall Height (feet and inches)
- Overall Length (feet and inches)
- Overall GVWR (tons or metric tons)

### WATER TANK

#### TANK CAPACITY

A water tank will be installed with a minimum capacity of 1000 US gallons.

#### TANK CONSTRUCTION

The booster tank will be constructed of .50 inch thick Polypropylene sheet stock which is a non-corrosive stress relieved thermoplastic. It will be designed to be completely independent of the body and compartments. All joints and seams are extrusion welded and/or contain the "Bent Edge" and tested for maximum strength and integrity. The top of the booster tank is fitted with lifting eyes designed with a 3 to 1 safety factor to facilitate tank removal.



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The tank will feature a 0.5" recess for a drain / cleanout.

### **COVER**

The tank cover will be constructed of .50 inch thick Polyprene and will be recessed. A minimum of two lifting dowels will be drilled and tapped .50 inch x 2.00 inch to accommodate the lifting eyes.

### **BAFFLES**

The swash partitions will be manufactured from .50 inch Polyprene. All partitions will be equipped with vent and air holes to permit movement of air and water between compartments to provide maximum water flow. All swash partitions interlock and are welded to one another as well as to the walls of the tank.

### **MOUNTING**

The tank will be isolated from the body substructure cross members with .50 inch x 2.50 inch rubber strips that are 60 durometer in hardness. The tank will sit nested inside the center body substructure and will be completely removable without disturbing the body side panels. Tank stops on all four sides will keep the tank from shifting front to back or side to side.

### **FILL TOWER**

The fill tower opening will be approximately 13.00 inches x 12.00 inches.

The tower will have a .25 inch thick removable Polyprene screen and a Polyprene hinged type cover that will open if the tank is filled at an excess rate. There will be a removable .25 inch (6.40 mm) thick Polyprene screen to prevent debris from falling into the tank.

The fill tower will have a 4.00 inch overflow that will discharge underneath the tank, behind the rear axle(s), avoiding the chassis fuel tank and suspension components where applicable. The overflow will terminate above the tank water level when filled to the rated capacity.

The fill tower will be located to the left side at the front of the hose bed

### **OUTLETS**

An outlet shall be provided for the tank fill valve. If there are any additional options selected (such as an extra tank suction or direct tank inlets), there will be additional outlets provided to accommodate these items.

## **SATIN ROLL UP DOOR - B1**

There will be a roll-up door for compartment B-1. The compartment will have a non-locking ROM Series IV roll-up shutter door.

Each shutter slat, track, bottom rail, and drip rail will be constructed from anodized 6063 T6 aluminum. Shutter slats will feature a double wall extrusion with a concave interior surface to minimize loose equipment jamming the shutter door closed. Shutter slats will feature an interlocking end shoe to prevent side to side binding of the shutter door during operation. Slat must have interlocking joints with an inverted locking flange. Slat inner seal will be a one piece PVC extrusion; seal design will be such to prevent metal to metal contact while minimizing dirt and water from entering the compartment.

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

Shutter bottom rail will be a one piece double wall extrusion with integrated finger pull. Finger pull will be curved upward with a linear striated surface to improve operator grip while operating the shutter door. Bottom rail will have a smooth contoured interior surface to prevent loose equipment from jamming the shutter door. Bottom rail seal will be a double "V" seal to prevent water and debris from entering compartment. Bottom rail lift bar will be a one piece "D" shaped aluminum extrusion with linear striations to improve operator grip during operation. Lift bar will have a wall thickness of 0.125 inches. Lift bar will be supported by no less than two pivot blocks; pivot blocks will be constructed from Type 66 Glass filled reinforced nylon for superior strength. Bottom rail end blocks will have incorporated drain holes which will allow any moisture that collects inside the extrusion to drain out.

Shutter door will have an enclosed counter balance system. Counter balance system will be 4.00 inches in diameter and held in place by 2 heavy duty 18 gauge zinc plated plates. Counter balance system will have 2 over-molded rubber guide wheels to provide a smooth transition from vertical track to counter balance system.

The compartment door will have a satin aluminum finish.

The roll up door will have an integral door open indicator magnet in the lift bar.

If the door is not properly closed and the transmission is placed into drive or reverse mode with the parking brake released, it will activate the "hazard light" in the cab to alert the crew.

Brushed stainless steel sill plates will be installed at the bottom of each body compartment door opening.



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### **HOSEBED DIVIDER**

There will be a full height adjustable divider provided and installed in the hosebed area of the apparatus body.

The divider will be fabricated of .25 inch thick aluminum plate and attached to the adjustable slide rails. The rear of the divider will have a radius to provide a smooth corner.

Hose payout will be unobstructed by the divider.

### **Tool Board**

A pegboard style aluminum pull-out tool board will be installed in the left side rear compartment. The tool board will be attached to Unistrut material mounted on the floor and ceiling of the compartment, extending perpendicular to the rear wall, allowing for horizontal adjustment from compartment wall to partition.

The tool board shall be located offset to front of the compartment.

The tool board will be mounted utilizing an Austin Hardware slide with locking device at the bottom to keep the board in the stored and extended positions.

A .190 inch aluminum partition will be installed 25" off the forward compartment wall.

### **HOSEBED / CROSSLAY COVERS**

#### **HOSEBED**

The hosebed area will have a vinyl cover installed on the top and rear of the hosebed area.

The top cover will be held in place by an extrusion installed across the front edge of the hosebed and Velcro along the left and right edges. The top rear of the hosebed cover will be secured each side by a footman's loop and buckles allowing for the cover to be pulled tight on each side. Additional footman's loops will be provided each side at the lower corners at the floor of the hosebed to secure the cover to the apparatus.

The full cover will have a flap with Velcro closure providing access to each fill tower without necessitating removal of entire hosebed cover.

#### **CROSSLAY**

The crosslay hose bed area will have a vinyl cover installed on the top and each side of the crosslay area.



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The top cover will be held in place with velcro. The sides of the crosslay cover will be secured by means of two footman's loops and buckles, each side. The footman's loops will be installed at the lower corners to secure the cover to the apparatus.

The hosebed and crosslay covers will be Black color.

### **LADDER BRAND**

The ladder brand capable of being carried on the unit shall be Duo-Safety

### **Stainless Fenderette**

#### **FENDERETTES**

Two (2) polished stainless steel fenderettes will be provided and installed on body rear wheel well openings, one (1) each side. Rubber welting will be provided between the body and the crown to seal the seam and restrict moisture from entering.

## **VM8 PUMP MODULE OPTIONS**

### **Auxiliary Air Tank Plumbing**

The auxiliary air tank shall be plumbed to air primer.

### **Running Board Tray Securing Strap [Qty: 2]**

A heavy duty black nylon strap with an stainless steel quick-release buckle shall be provided for the running board hose tray(s). The strap shall be attached to the inboard side of the tray as low as practical to allow cinching of strap for securing tray contents and shall not reduce the overall tray capacity.

### **FRONT BUMPER DISCHARGE OUTLET**

One (1) 1.50" front bumper discharge and center bumper tray shall be provided. The center tray shall be provided with a cover matching the hosebed and crosslay cover. The discharge outlet will be provided and installed in the lower back wall of the hose tray.

The front bumper discharge includes 2" valve controlled at the pump panel. The brass swivel shall be located in the lower back wall of the hose tray.

### **BOOSTER REEL**

A Hannay booster reel shall be provided and floor mounted in the rear body compartment (B1). The booster reel shall be controlled at the pump panel and shall include an air blow out.

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The booster reel shall be constructed utilizing an all aluminum welded base. Reel bushings shall be manufactured from Nylatron to ensure maintenance-free operation. A 12 volt electrical motor shall be provided and will rewind the reel with a chain and sprocket drive mechanism. All electrical switch connections shall be coated to protect against moisture. The booster reel shall have a capacity for up to 200' of 1" booster hose.

Plumbing to the reel shall be a 1-1/2" flexible line with the discharge control located at the operator's control panel.

All fabricated piping shall be constructed of a minimum of Schedule 10 stainless steel pipe to reduce corrosion of the lines.

### **RIGHT SIDE INTAKE**

There will be one (1) gated 2.50 inch gated suction inlet installed on the right side pump panel. The right side intake shall be controlled at the intake.

### **FOAM CELL KIT**

#### **FOAM CELL KIT**

Integrated into the water tank will be a minimum 30 US gallon foam cell. It will have a fill tower matching the water tank fill tower and include foam connections on the front of the tank. Both fill towers will be clearly identified as "WATER" and "FOAM."

### **REAR TANK INLET**

A 2.50 inch rear tank inlet with inboard automatic check valve will be installed on the upper right rear of the tank. A colored LED tank level gauge shall be provided at the rear of the tank.

### **SPEEDLAY PRECONNECTS**

#### **PRE-CONNECT STORAGE**

Two (2) transverse storage areas shall be incorporated into the module to accommodate preconnected handlines. Plumbing for the handlines shall be located at the upper back wall of the storage area to facilitate use of optional removable trays.

### **SPEEDLAYS**

Each speed lay section shall include one (1) 2" brass swivel with a 1-1/2" hose connection to permit the use of the hose from either side of the apparatus. Each of the two (2) speedlay areas shall have a capacity for up to 200' of 2.0" double-jacket fire hose double stacked. The floor and side walls shall be constructed of 3/16" (.188) smooth aluminum plate. The floor shall be slotted to prevent the accumulation of water and allow for ventilation of wet hose.



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Each speedlay hose bed shall consist of a 2" heavy-duty hose coming from the pump discharge manifold to the 2" swivel for each hosebed. The hose shall be connected to a manually operated 2" Akron valve. The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.

The valve shall be of the unique Akron swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The valve control shall be located at the pump operator's panel and shall visually indicate the position of the valve at all times.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.

### TOP MOUNT PUMP MODULE

The complete apparatus pump compartment will be constructed of a combination of structural tubing and formed sheet metal. The same materials used in the body will be utilized in the construction of the pump compartment. The structure will be welded utilizing the same A.W.S. Certified welding procedure as used on the structural body module. These processes will ensure the quality of structural stability of the pump compartment module.

The pump compartment module will be separated from the apparatus body with a gap. This gap is necessary to accommodate the flexing of the chassis frame rails that are encountered while the vehicle is in transit so that harmful torsional forces are not transmitted into the structural framework.

### FLEX PUMP MODULE MOUNTING SYSTEM

The entire pump module assembly will be mounted above the chassis frame rails exclusively with not less than four (4) torsion isolator assemblies to reduce the vibration and stress providing an extremely durable body mounting system.

The pump module substructure will be mounted above the frame to allow independent flexing to occur between the body and the chassis. Each assembly will be mounted to the chassis frame rails with steel, gusseted mounting brackets. Each body mount bracket will be mounted to the side chassis frame flange with 5/8" Grade 8 Geomet coated (anti-corrosion) bolts. Each mounting bracket will be bolted to the frame using not less than four (4) bolts.

There will be no welding to the chassis frame rail sides, web or flanges, or drilling of holes in the top or bottom frame flanges between axles. All pump module to chassis connections will be bolted so that in the event of an accident, the module will be easily removable from the truck chassis for repair or replacement.



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Because of the constant vibration and twisting action that occurs in chassis frame rails and suspension, the torsion mounting system is required to minimize the possibility of premature pump module structural failures.

### **Top Mounted Pump Control Area**

The upper area of the module shall be configured for a top mount pump operator's panel. The upper side walls of the module shall be notched rearward and tapered for improved operator visibility.

### **Crosswalk**

An extruded aluminum crosswalk shall be provided at the front of the pump module. The crosswalk shall be integral to the pump module and be constructed entirely of aluminum extrusions. The crosswalk walkway shall be in accordance with NFPA in both step height and stepping surface. The crosswalk walkway floor shall be formed from .188" aluminum treadplate. The walkway floor shall be bolted on to the module and be easily removable to service chassis components or for replacement in the case of damage.

The crosswalk entry shall include two (2) 5" wide formed diamond plate steps located one (1) on each side offset forward and two (2) handrails, a minimum 24" long, located one (1) on each side mounted vertically on the forward extrusion of the pump module.

### **PUMP COMPARTMENT WIDTH**

The width of the pump module will be not exceed 34.00 inches.

### **AIR CHUCK OUTLET**

There will be a quick disconnect air chuck outlet provided and installed on the apparatus at the left side lower pump compartment panel/sill. The air chuck outlet will be plumbed to the chassis air system and have on/off valve and label.

### **LEFT & RIGHT SIDE PUMP PANELS STYLE**

There will be two (2) pump panels on each side of the pump compartment, one (1) upper and one (1) lower. Each panel will be accessible by a quick-release mechanical type latch, closing against a door seal. Both panels will be easily removed for access to the pump for service.

The panels for the pump compartment on the left and right side will be made from minimum 14 gauge 304 stainless steel capable of withstanding the conditions and effects of extreme weather and temperature changes.

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### **RUNNING BOARDS**

The pump compartment running boards will be made of a structural tubular framework. They will be not less than 12 inches deep. The tubular frame support all loads by transmitting the loads through the pump compartment structure directly to the chassis frame rails.

The running boards will be independent of the apparatus body and will be integrated to the pump compartment structure only, eliminating any pump compartment to body interference. This is essential in keeping a truly 'modular' configuration. Slip-resistant abrasive adhesive materials will be applied to the top surface of the running board framework to provide a suitable stepping surface where applicable.

They will have a .188 inch embossed (no exceptions) aluminum diamond plate overlays installed.

### **PLUMBING SYSTEM - QMAX XS 1500 GPM**

#### **MIDSHIP PUMP**

The pump will be a Hale single stage QMAX-XS mid-ship pump. The pump will have the capacity of 1500 gallons per minute, measured in U.S. Gallons.

#### **PUMP ASSEMBLY**

The entire pump will be assembled and tested at the pump manufacturer's factory. The pump will be driven by a drive line from the truck transmission. The engine will provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance.

The entire pump will be hydrostatically tested to a pressure of 600 PSI. The pump will be fully tested at the pump manufacturer's factory to the performance spots as outlined by (NFPA) 1901, Standard for Automotive Fire Apparatus. Pump will be free from objectionable pulsation and vibration.

The pump body and related parts will be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI (2069 bar). All metal moving parts in contact with water will be of high quality bronze or stainless steel. Pump utilizing castings made of lower tensile strength cast iron not acceptable.

Pump body will be vertically split, on a single plane for easy removal of entire impeller assembly including clearance rings.

Pump shaft to be rigidly supported by two bearings for minimum deflection. The bearings will be heavy-duty, deep groove ball bearings in the gearbox and they will be splash lubricated. Shaft seal comes standard with face-type, self-adjusting corrosion- and wear-resistant mechanical seals.



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The pump impeller will be hard, fine grain bronze of the mixed flow design; accurately machines, hand-ground and individually balanced. The vanes of the impeller intake eye will be hand ground and polished to a sharp edge and be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.

Impeller clearance rings will be bronze, easily renewable without replacing impeller or pump volute body.

The pump shaft will be heat-treated, electric furnace, corrosion resistant stainless steel. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

### GEAR BOX

Pump gearbox will be of sufficient size to withstand up to 16,000 lbs. ft. of torque of the engine. The drive unit will be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.

The gearbox drive shafts will be of heat-treated chrome nickel steel and at least 2.75 inches in diameter, on both the input and output drive shafts. They will withstand the full torque of the engine.

All gears, drive and pump, will be of highest quality electric furnace chrome nickel steel. Bores will be ground to size and teeth integrated and hardened, to give an extremely accurate gear for long life, smooth, quiet running, and higher load carrying capability. An accurately cut spur design will be provided to eliminate all possible end thrust.

The pump ratio will be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.

If the gearbox is equipped with a power shift, the shifting mechanism will be a heat treated, hard anodized aluminum power cylinder, with stainless steel shaft. An in-cab control for rapid shift will be provided that locks in road or pump.

For automatic transmissions, three green warning lights will be provided to indicate to the operator(s) when the pump has completed the shift from Road to Pump position. Two green lights to be located in the truck driving compartment and one green light on pump operator's panel adjacent to the throttle control. For manual transmissions, one green warning light will be provided for the driving compartment. All lights to have appropriate identification/instruction plates.

### APPARATUS PLUMBING LABELING

Verbiage tag bezels will be installed for each control. The bezel assemblies will be used to identify apparatus components. These tags will be designed and manufactured to withstand the specified apparatus service environment and will be backed by a warranty equal to that of the exterior paint and finish. The verbiage tag bezel assemblies will include a chrome-plated panel-mount bezel with durable easy-to-read UV resistant polycarbonate inserts featuring the specified verbiage and color coding.



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These UV resistant polycarbonate verbiage and color inserts will be subsurface screen printed to eliminate the possibility of wear and protect the inks from fading. Both the insert labels and bezel will be backed with 3M permanent adhesive, which meets UL969 and NFPA standards.

### PRESSURE GOVERNOR AND MONITORING DISPLAY

The pump shall be controlled by a Class 1, "TPG" Total Pressure Governor installed on the pump operator's panel. It shall be interfaced with a SAE J1939 Controller Area Network (CAN) device that controls engine speed using data communications directly to the engine ECU or with an analog control signal. Operating on the J1939 network, the governor is able to monitor engine RPM and other pertinent data directly from the engine ECU. Control algorithms shall be optimized to take advantage of the J1939 CAN data to yield crisp and accurate control of engine and subsequently pump speed and pressure output. Graphic diagnostics shall be integrated that provides wiring and troubleshooting information.

It shall control the engine fuel to maintain a desired pump pressure, or engine speed setting. Additionally the TPG will display important engine information specifically battery voltage, engine coolant temperature, oil pressure and RPM.

#### Features:

- A panel control module (display), a pressure transducer and appropriate cables and connectors.
- Large easy to read Alpha/numeric display.
- Sealed electronics which provide maximum resistance to water, condensation, and humidity.
- A panel display which consolidates throttle with preselect and high idle features in a single 4-1/2" weather resistant housing.
- Communicates with the engine ECU over the J1939 CAN bus for improved accuracy resolution and response. When in the "pressure" mode the TPG will operate as a pressure sensor (regulating) governor (PSG) eliminating any need for a relief valve on the discharge side of the pump. This feature will be set to operate at 100 psi unless specifically requested by the customer to use another pressure. This setting can be changed by the department.

The following parameters shall be visible at all times:

- Pump Intake Pressure
- Pump Discharge Pressure
- Engine RPM
- Engine Oil Pressure
- Engine Coolant Temperature
- Transmission Temperature
- System Voltage
- Throttle Ready Interlock Status
- Pump Engaged Interlock Status
- OKAY to Pump Interlock Status

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- Operating Mode Status (RPM or Pressure)
- Target Pressure Indication (when in pressure mode)

### TESTING PORTS

Test port connections for pressure and vacuum will be provided at the pump operator's panel. One (1) will be connected to the intake side of the pump, and the other to the discharge manifold side of the pump.

Each port will have 0.25 inch (6.35 mm) standard pipe thread connection and be manufactured of non-corrosive polished stainless steel or brass plugs.

### PRESSURE RELIEF VALVE

A pressure relief valve will be provided. The valve will have an easy to read adjustment range from 90 to 300 PSI with 90, 125, 150, 200, 250 and 300 PSI adjustment settings and an "OFF" position. Pressure adjustments will be made utilizing a 1/4" hex key, 9/16" socket or 14mm socket.

For corrosion resistance the cast aluminum valve will be a hardcoat anodized with a powder coat interior and exterior finish. The valve will meet (NFPA) 1901, Standard for Automotive Fire Apparatus, requirements for pump inlet relief valves. The unit will be covered by a five year warranty. The valve will be preset at 125 PSI (860 kPa) suction inlet pressure, unless otherwise shop noted. The valve will be installed inside the pump compartment where it will be easily accessible for future adjustment. The excess water will be plumbed to the atmosphere and will dump on the opposite side of the pump operator.

For normal pumping operations, the relief valve will not be capped and there will be a placard stating "DO NOT CAP" installed.

### TANK LEVEL GAUGE

There will be a Class 1 model #ITL-40M blue tank level gauge provided and installed at the pump operator's panel location.

The tank level gauge will indicate the liquid level for water in increments of 1/20th of a tank with a visual warning at 1/4 of a tank.

The tank level gauge will include a pressure transducer mounted on the outside of the tank, a super bright LED display with visual indication and weather resistant connectors.

### PUMP COMPARTMENT WORK LIGHT

A LED work light will be installed in the pump compartment module to illuminate the piping and plumbing components.



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The light will be activated by a weather resistant toggle switch installed inside the pump compartment.

### **MASTER DRAIN VALVE**

A Trident manifold type drain valve will be installed in the pump compartment. All pump drains will be connected to the master drain valve. The drain valve will be controlled from the left side lower pump house sill. The control will be a hand wheel knob marked "open" and "closed".

The drain will be located such that it will not interfere with pumping operations or function such as soft suction hoses, etc. nor will it protrude past the outer edge of the apparatus, to prevent damage to the valve.

In some cases, it is necessary to locate the master drain in a secondary location to ensure proper draining. If no lower or vertical sill exists, the drain will be located below the bottom outside edge of the hose body near the forward most corner on the driver's side hose body. The drain will not protrude past the outer edge of the body, thus preventing damage to the valve.

### **PUMP SEAL**

A mechanical, or packing style seal will be supplied on the inboard side.

### **PUMP SHIFT**

The drive unit will be provided with an air pump shift system.

A green light will be energized when the pump shift has been completed and will be labeled "PUMP ENGAGED"; a second green light will be labeled "OK TO PUMP" energized when both the pump shift has been completed and the chassis automatic transmission is engaged.

A third green indicator light will be installed adjacent to the throttle on the pump operator's panel. This light will be labeled "Throttle Ready".

### **PUMP SHIFT LOCATION**

The pump shift will be mounted in the "best fit" location as determined by the apparatus manufacture.

### **PUMP ANODE**

One (1) pump anode will be installed on the suction side of the pumping system to prevent damage from galvanic corrosion within the pump system.



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### **DISCHARGE AND INLET MANIFOLDS**

A 6.00 inch pump manifold inlet will be provided on each side of the pump. The inlets will protrude up to 2 inches (50mm) away from the side panels and maintain a low connection height. A discharge manifold will also be added to the pressure side of the pump to feed the specified discharge waterways.

The main pump inlets will have National Standard Threads and include removable screens designed to provide cathodic protection for reducing deterioration in the pump.

#### **MAIN PUMP INLET - LEFT SIDE**

A 6.00 inch pump manifold inlet will be provided on the left side of the pump. The inlet will protrude up to 2.00 inches away from the side panel and maintain a low connection height.

The main pump inlet will have National Standard Threads and includes a removable screen designed to provide cathodic protection for reducing deterioration in the pump.

#### **MAIN PUMP INLET - RIGHT SIDE**

A 6.00 inch pump manifold inlet will be provided on the right side of the pump. The inlet will protrude up to 2.00 inches away from the side panel and maintain a low connection height.

The main pump inlet will have National Standard Threads and includes a removable screen designed to provide cathodic protection for reducing deterioration in the pump.

### **6" CHROME PLATED BRONZE CAP**

There will be one (1) 6.00 inch long handled chrome plated cap installed on each Steamer Inlet.

### **STAINLESS STEEL PLUMBING**

All auxiliary suction and discharge plumbing related fittings, and manifolds will be fabricated with 3.00 inch (77 mm) schedule 10 stainless steel pipe; brass or high pressure flexible piping with stainless steel couplings. Galvanized components and/or iron pipe will NOT be accepted to ensure long life of the plumbing system without corrosion or deterioration of the waterway system. Where waterway transitions are critical (elbows, tees, etc.), no threaded fittings will be allowed to promote the smooth transition of water flow to minimize friction loss and turbulence. All piping components and valves will be non-painted, unless otherwise specified. All piping welds will be wire brushed and cleaned for inspection and appearance.

The high pressure flexible piping will be black SBR synthetic rubber hose with 300 PSI working pressure and 1200 PSI burst pressure for flexible piping sizes 1.50 inches (38 mm) through 4.00 inches (100 mm). Sizes .75 inch (19 mm), 1.00 inch (25 mm) and

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5.00 inches (125 mm) are rated at 250 PSI working pressure and 1000 PSI burst pressure. All sizes are rated at 30 in HG vacuum. Reinforcement consists of two plies of high tensile strength tire cord for all sizes and helix wire installed in sizes 1.00 inch (25 mm) through 5.00 inches (125 mm) for maximum performance in tight bend applications. The material has a temperature rating of -40 degrees Fahrenheit to +210 degrees Fahrenheit.

The stainless steel full flow couplings are precision machined from high tensile strength stainless steel. All female couplings are brass. Mechanical grooved and male .75 inch (19 mm) and 1.00 inch (25 mm) couplings are brass. A high tensile strength stainless steel ferrule with serrations on the I.D. is utilized to assure maximum holding power when fastening couplings to hose.

### **PUMP HOUSE LINE PROTECTION**

All drain lines for the discharges, suction, ABS discharge gauge lines and any other appropriate connections in the pump house area will have a protective cover provided on the lines in the required areas of the lines to prevent the lines from rubbing on any other components in the pump house area.

All drain lines, ABS lines, high pressure discharge lines and electrical wiring in the pump house area will be properly and neatly routed, wire tied and rubber coated "P" clamped, to keep the items secured.

### **DRAIN VALVES**

An Innovative Controls 3/4" quarter turn drain valve will be included on each discharge, gated intake, and steamer valve (if applicable). A side stem, long stroke chrome plated lift handle will be provided on the drain valve to facilitate use with a gloved hand. The drain valve will have an ergonomically designed handle with a recessed verbiage tag area easily read by the operator before opening.

The drain valve will be connected to the valve with a flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus.

### **VALVE CONTROL - T-HANDLE PULL ASSEMBLY**

Unless specified otherwise, the discharge valves will be controlled from an Innovative Controls side mount valve control assembly. The ergonomically designed handle will be chrome-plated with recessed areas for name plate and color code. A .75 inch (19.5 mm) diameter hardcoat anodized aluminum control rod and housing will, together with a stainless spring steel locking mechanism, eliminate valve drift. Teflon impregnated bronze bushings in both ends of the rod housing will minimize rod deflection, never need lubrication, and ensure consistent long-term operation. The control assembly will include a decorative chrome-plated panel-mounting bezel. The valve operating mechanism will indicate the position of the valve at all times.



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### **AUXILIARY LEFT SIDE INLET**

There will be one (1) auxiliary gated suction inlet with .75 inch bleeder installed on the left side pump panel.

### **INTAKE VALVE**

A 2.50 inch Akron Brass 8000 series swing-out valve with stainless steel ball.

The intake control valve will be a 'swing out type' direct operation manual lever actuator at the valve.

### **INTAKE PLUMBING**

The plumbing will consist of 2.50 inch piping, and will incorporate a manual drain control installed below the pump area for ease of access.

### **SUCTION/INTAKE TERMINATION**

The termination will include the following components:

One (1) 2.50 inch NST swivel female straight adapter with screen

One (1) 2.50 inch self-venting plug, secured by a chain

The inlet will be located on the pump panel.

### **DECK GUN MONITOR WATERWAY**

There shall be one (1) deck gun monitor waterway installed on the apparatus.

The deluge waterway shall consist of 3.00 inch piping and shall be drained with an auto-drain located at the lowest point of the waterway plumbing if required.

There shall be an air "blowout" system provided and installed for the front bumper discharge drainage.

The air blow out system shall be connected to the chassis air brake system. A check valve shall be provided between the chassis system and the front bumper discharge blow out system. There shall be a manual control valve provided on the pump operator's panel for the air blow out system.

### **LEFT SIDE DISCHARGE**

There will be two (2) 2.50 inch gated discharges installed on the left side of the apparatus.



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### **RIGHT SIDE DISCHARGE**

There will be one (1) 2.50 and one (1) 3.00 inch gated discharges installed on the right side of the apparatus.

### **REAR DISCHARGE**

A 2.50 inch discharge will terminate on the upper rear body below the hosebed.

### **DISCHARGE GAUGES**

A 2.50 inch gauge will be supplied for reading the pressure of each discharge greater than 1.50 inches in diameter, unless otherwise specified.

### **MASTER GAUGES**

A 4.50 inch Master Vacuum and Master Pressure gauge will be provided and installed on a panel to the right of the crosslays (side mount) OR centered on the pump panel (top mount).

### **GAUGE SCALE**

Each gauge will be marked for reading a pressure range of 0-400 PSI.

### **GAUGE FACE COLOR**

Each gauge will have black markings on a white face.

### **BEZELS FOR 2.5" DISCHARGE GAUGES**

There will be a Deluxe metal bezel supplied around each of the 2.50 inch discharge pressure gauges. The bezels will be constructed from chrome-plated zinc with large, easily identifiable recessed labels for color-coding and verbiage.

### **TANK TO PUMP LINE**

The connection between the tank and the pump will be capable of the flow recommendations as set forth in (NFPA) 1901, Standard for Automotive Fire Apparatus, latest revision and will be tested to those standards when the pump is being certified.

One (1) non-collapsible flexible hose and valve will be incorporated into the tank to pump plumbing to allow movement in the line as the chassis flexes to avoid damage during normal road operation. Four (4) inch stainless steel schedule 10 piping will be used to complete the connection from the tank to pump valve to the water tank.

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### **TANK TO PUMP CHECK VALVE**

There will be a tank to pump check valve, conforming to NFPA standard requirements to prevent water from back flowing at an excessive rate if the pump is being supplied from a pressurized source. The check valve will be mounted as an integral part of the pump suction extension. A hole up to .25 inch is allowable in the check valve to release steam or other pressure buildup so that the void between the valve and check valve may drain of water that could be subject to freezing.

### **TANK FILL LINE**

One (1) 2.00 inch tank fill/recirculating line will be installed from the pump directly to the booster tank.

A 3.00 inch Akron Brass 8000 series swing-out valve with a stainless steel ball.

The valve will be controlled from the pump operator's panel location.

### **PUMP PANEL LIGHTS**

There will be adequate illumination provided at the side pump panels with the installation of shielded LED light assemblies, one (1) on the left and one (1) on the right side pump compartment.

The lights will be controlled by a switch located on the side operator's panel.

### **RUNNING BOARD SUCTION TRAYS - EACH SIDE**

A running board suction hose tray approximately 10" D (9" to the slats) x maximum width available of the pump module shall be provided in the left and right side running board.

The tray shall be recessed mounted and constructed of 1/8" (.125) aluminum diamond plate (exterior) with a smoother surface interior. The tray shall be designed to store a minimum 15' length of soft suction hose. The bottom of the tray shall have removable turtle tile and drain holes to allow water drainage from hose stored in the tray.

### **Trident Primer**

A Trident air operated priming system shall be installed in place of standard primer. The unit shall be of all brass and stainless steel construction and designed for fire pumps of 1,250 GPM (4,600 LPM) or more. Due to corrosion exposure no aluminum or vanes shall be used in the primer design. The primer shall be three-barrel design with 3/4" NPT connection to the fire pump.

The primer shall be mounted above the pump impeller so that the priming line will automatically drain back to the pump. The primer shall also automatically drain when the panel control actuator is not in operation. The inlet side of the primer shall include



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a brass "we" type strainer with removable stainless steel fine mesh strainer to prevent entry of debris into the primer body.

The system shall create vacuum by using air from the chassis air brake system through a two-barrel multi-stage internal "venturi nozzles" within the primer body. The noise level during operation of the primer shall not exceed 75 Db.

### **Air Flow Requirements**

The primer shall require a minimum of 15.6 cubic foot per minute air compressor and shall be capable of meeting drafting requirements at high idle engine speed. The air supply shall be from a chassis supplied "protected" air storage tank with a pressure protection valve. The air supply line shall have a pressure protection valve set between 70 to 80 PSIG.

### **Primer Control**

The primer control shall have a manually operated, panel mounted "push to prime" air valve. The valve shall direct air pressure from the air brake storage tank to the primer body. To prevent freezing, no water shall flow to and from the panel control.

### **Warranty**

The primer shall be covered by a five (5) year parts warranty.

### **Discharge 2.5" additional**

An additional 2.5" discharge valve and pump panel controls shall be provided for use for dealer installed additional discharge option. The discharge valve shall be located ahead of the foam manifold and is not foam capable.

## **PUMP OPTIONS**

### **Pump Shift - Electric**

The pump shift shall be accomplished by activation of a single "ROAD/PUMP" switch in the cab.

A indicator light shall be located in the cab visible to the driver and be labeled "PUMP ENGAGED". The light shall not activate until the pump shift has completed its full travel into pump engagement position.

A second indicator light shall be located in the cab visible to the driver and be labeled "OK TO PUMP".



## **VM8 WARNING LIGHTS**

### **WHELEN LIGHT BAR**

A Whelen F4N2VLED 55" light bar shall be provided. The light bar will be mount on brackets forward facing above the cab roof.

The light bar shall meet the requirements for Upper Zone A.

### **REAR DIRECTION LIGHTBAR**

There will be a Whelen model #TAL65 36.00 inch long directional lightbar with six (6) amber 500 series LED light heads provided and installed on the rear of the apparatus. The traffic advisor will include model TACTL5 control head that includes remote flash control.

The rear directional lightbar will be installed as high as possible at the rear of the apparatus.

The rear directional lightbar control head shall be located at the center console in the cab.

### **WHELEN WARNING LIGHTS**

Whelen 900 series Super-LED lights (model 90RR5FCR) with chrome bezels shall be installed on the upper left and right body; one each fore and aft for a total of four (4).

## **EMERGENCY WARNING SYSTEM**

### **Upper Zone B&D:**

There will be a red Whelen 900 series Super-LED lights (model 90RR5FCR) with chrome bezels and clear lenses installed on the upper left and right rear body for a total of two (2).

### **Upper Zone C:**

There will be two (2) red Whelen 900 series Super-LED lights (model 90RR5FCR) with chrome bezels and clear lenses installed on the upper left and right rear body.

### **Lower Zone A:**

There will be two (2) red Whelen 600 series Super-LED lights (model 60R02FCR) with chrome bezels and clear lenses installed and installed on the grille of the apparatus chassis.

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### **Lower Zone B&D:**

There will be four (4) red Whelen ION-TLIR Super-LED lights with chrome bezels and clear lenses installed in the lower rubrails: two (2) each side forward and two (2) each side aft.

### **Lower Zone C:**

There will be two (2) red Whelen 600 series Super-LED lights (model 60R02FCR) with chrome bezels and clear lenses installed in the lower section of the taillight assembly.

### **Siren Control Head**

One (1) Whelen electronic siren, model #295SLSA1 will be provided and mounted in the top of the cab console.

The siren will be 100-200 watts and feature wail, yelp, phaser, air horn and manual wail. The microphone will have noise canceling circuitry and Public Address override.

The siren and hard wired microphone will be installed within reach of the driver and officer.

### **Siren Speaker**

A Federal Signal model ES100 100 watt siren speaker will be provided, located on the front bumper face on the left side outboard of the frame rail in the far outboard position.

### **Back Up Alarm**

An electronic back-up alarm will be supplied. The 97 dB alarm will be wired into the chassis back-up lights to signal when the vehicle is in reverse gear.

### **Rear View Camera**

There will be a shielded camera mounted up high at the rear of the vehicle to provide a wide angle rear view.

The camera image shall be shown in a color display mounted on the cab console.

The camera will be interlocked with the chassis transmission. When the apparatus is placed in reverse the camera will automatically be activated and when the transmission is placed in any other gear the screen will return to the previously displayed screen.



## **VM8 12V ELECTRICAL**

### **COMPARTMENT LIGHT ADDITIONAL**

An additional LED strip light model TecNiq E4S, will be installed in each body compartment for a total of two (2) per compartment. The tube light will be centered vertically along the rearward side of the door framing and at maximum length available to fit the opening.

Compartment lights in each compartment will be on a separate circuit, turning on only those lights that have open compartment doors.

### **FORWARD BROW FLOOD LIGHT**

A FireTech 46" long brow flood light with black housing shall be installed beneath the lightbar on the cab roof. The flood light will be 18,000 lumens with split optics

The brow light will be activated by separate switches located on the cab console, scene, spot and flood.

### **FLOOD LIGHTS**

There will be four (4) FireTech Guardian Elite flood lights installed on the body sides of the apparatus, two (2) on each side; one (1) located at the front and one (1) located at the rear corner of the body side walls for a total of four (4). Each light will be rated at 12,500 lumens (125 watts).

They will be activated by a switch marked "Work Light" located on the cab console

### **MECHANICAL Q2B SIREN**

The front bumper will include an electro mechanical Federal Signal Q2B™ siren, which will be streamlined, chrome-plated and will produce 123 decibels of sound at 10.00 feet.

The Q2B™ siren produces a distinctive warning sound that is recognizable at long distances. A unique clutch design provides a longer coast down sound while reducing the amp draw to 100 amps.

The siren will measure 10.50 inches wide by 10.00 inches high by 14.00 inches deep. The siren will include mounting hardware designed to recess mount.

The siren will be pedestal mounted on the right side of the bumper.

The mechanical siren will be actuated by two (2) black push buttons in the switch panel on the console. A momentary siren brake rocker switch will be provided in the switch



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panel on the console. Push buttons will be located one (1) to be accessed by driver side of console, and one (1) for officer on officer side of console

The switch will be labeled "SIREN".

The siren will only be active when the master warning switch is on to prevent accidental engagement.

NOTE: Requires extended front bumper.

### REAR SCENE WORK LIGHTS

There will be two (2) FireTech Guardian flood lights installed on the rear facing vertical surface of the body, one (1) on each side. Each light will be rated at 6500 lumens (75 watts).

They will be activated by a switch marked "Work Light" located on the cab console or whenever the apparatus is placed in the reverse mode of operation to access with backing.

### ELECTRICAL SYSTEM - VMUX

#### Electrical System

The apparatus body shall incorporate a Weldon V-MUX powered by Digital Truck Designer multiplexing system. The system shall use active/standby architecture and communicate via J1939 CAN bus. The electrical system installed by the apparatus manufacturer shall conform to current SAE standards, the latest FMVSS standards, and the requirements of the applicable NFPA standards.

The electrical circuits shall be provided with low voltage over-current protective devices. Such devices shall be accessible and located in required terminal connection locations or weather-resistant enclosures. The over-current protection shall be suitable for electrical equipment and shall be automatic reset type and meet SAE standards. All electrical equipment, switches, relays, terminals, and connectors shall have a direct current rating of 125 percent of maximum current for which the circuit is protected. The system shall have electro-magnetic interference suppression provided as required in applicable SAE standards.

Any electrical junction or terminal boxes shall be weather-resistant and located away from water spray conditions.

#### Multiplex System

For superior system integrity, the networked multiplex system shall meet the following minimum component requirements:

- The network system shall use the J1939 protocol.

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- Modules shall be IP67 rated to handle the extreme operating environment found in the fire service industry.
- All modules shall be solid state circuitry utilizing MOS-FET technology and utilize Deutsch series input/output connectors.
- Load shedding power management (8 levels).
- Switch input capability for chassis functions.
- Responsible for lighting device activation.
- Self-contained diagnostic indicators.
- Wire harness as need to interface electrical devices with multiplex modules.
- The grounds from each device should return to the main ground trunk in each sub harness by the use of ultrasonic splices.

### Wiring

All harnessing, wiring and connectors shall be manufactured to the following standards/guidelines. No exceptions.

- NFPA (Specific edition documented elsewhere in these specifications)
- SAE J1127 and J1127
- IPC/WHMA-A-620 – Requirements and Acceptance for Cable and Wire Harness Assemblies. (Class 3 – High Performance Electronic Products)

All wiring shall be copper or copper alloys of a gauge rated to carry 125 of the maximum current for which the circuit is protected. Insulated wire and cable 8 gauge and smaller shall be SXL, GXL, or TXL per SAE J1128. Conductors 6 gauge and larger shall be SXL or SGT per SAE J1127.

All wiring shall be colored coded and imprinted with the circuits function. Minimum height of imprinted characters shall not be less than .082" plus or minus .01". The imprinted characters shall repeat at a distance not greater than 3".

A coil of wire shall be provided behind electrical appliances to allow them to be pulled away from mounting area for inspection and service work.

### Wiring Protection

The overall covering of the conductors shall be loom or braid.

Braid style wiring covers shall be constructed using a woven PVC-coated nylon multifilament braiding yarn. The yarn shall have a diameter of no less than .04" and a tensile strength of 22 lbs. The yarn shall have a service temperature rating of -65 F to 194 F. The braid shall consist of 24 strands of yarn with 21 black and 3 yellow. The yellow shall be oriented the same and be next to each other.

Wiring loom shall be flame retardant black nylon. The loom shall have a service temperature of -40 F to 300 F and be secured to the wire bundle with adhesive-backed vinyl tape.



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### **Wiring Connectors**

All connectors shall be Deutsch series unless a different series of connector is needed to mate to a supplier's component. The connectors and terminals shall be assembled per the connector/terminal manufacturer's specification. Crimble/Solderless terminals shall be acceptable. Heat shrink style shall be utilized unless used within the confines of the cab.

### **Fast Idle System**

A fast idle system shall be provided and controlled by a switch accessible by the driver. The system shall increase engine idle speed to a preset RPM for increased alternator output.

### **NFPA Required Testing of Electrical System**

The apparatus shall be electrical tested upon completion of the vehicle and prior to delivery. The electrical testing, certifications, and test results shall be submitted with delivery documentation per requirements of NFPA. The following minimum testing shall be completed by the apparatus manufacturer:

#### **1. Reserve capacity test:**

The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load shall be activated for ten (10) minutes. All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a test fail.

#### **2. Alternator performance test at idle:**

The minimum continuous electrical load shall be activated with the engine running at idle speed. The engine temperature shall be stabilized at normal operating temperature. The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure.

#### **3. Alternator performance test at full load:**

The total continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed. The test duration shall be a minimum of two (2) hours. Activation of the load management system shall be permitted during this test. However, an alarm sounded by excessive battery discharge, as detected by the system required in the NFPA Standard, or a system voltage of less than 11.7 volts DC for a 12-volt nominal system, for more than 120 seconds, shall be considered a test failure.



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### **4. Low voltage alarm test:**

Following the completion of the above tests, the engine shall be shut off. The total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates. The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of less than 11.7 volts DC for a 12-volt nominal system shall be considered a test failure. The battery system shall then be able to restart the engine. Failure to restart the engine shall be considered a test failure.

### **NFPA Required Documentation**

The following documentation shall be provided on delivery of the apparatus:

- A. Documentation of the electrical system performance tests required above.
- B. A written load analysis, including:
  - a. The nameplate rating of the alternator.
  - b. The alternator rating under the conditions.
  - c. Each specified component load.
  - d. Individual intermittent loads.

### **Vehicle Data Recorder**

A vehicle data recorder system will be provided to comply with NFPA 1901, 2009 edition. The following data will be monitored:

- Vehicle speed MPH
- Acceleration (from speedometer) MPH/Sec.
- Deceleration (from speedometer) MPH/Sec.
- Engine speed RPM
- Engine throttle position % of full throttle
- ABS Event On/Off
- Seat occupied status Occupied Yes/No by position
- Seat belt status Buckled Yes/No by position
- Master Optical Warning Device Switch On/Off
- Time: 24 hour time
- Date: Year/Month/Day

### **Display**

The multiplex electrical system shall include a 7" color display.

**The display shall have the following features:**

- Bonded transmissive TFT LCD screen
- Diagonal measurement of no less than 7"

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- J1939 Communications protocol capable
- IP67 sealed front and rear
- Twelve (12) multi-function tactal buttons
- Home button
- Menu button

### **Display screens shall be configured to include the following:**

- Warning light switching
- Work and scene light switching
- Image from back-up camera
- Indicator for park brake
- Occupant detection indication
- Specific door ajar indication
- Clock
- Access to the multiplex system diagnostics

The display shall be located in the center cab console.

### **Occupant Detection System**

There will be a visual and audible warning system installed in the cab that indicates the occupant buckle status of all cab seating positions that are designed to be occupied during vehicle movement.

The audible warning will activate when the vehicle's park brake is released and a seat position is not in a valid state. A valid state is defined as a seat that is unoccupied and the seat belt is unbuckled, or one that has the seat belt buckled after the seat has been occupied.

The visual warning will consist of a graphical representation of each cab seat in the multiplex display screen that will continuously indicate the validity of each seat position.

The system will include a seat sensor and safety belt latch switch for each cab seating position, audible alarm and wiring harness.

### **Electrical Connection Protection**

The vehicle electrical system will be made more robust by the application of a corrosion inhibiting spray coating on all exposed electrical connections on the chassis and body. If equipped with an aerial device, the exposed connections on the aerial components will also be protected.

The coating will use nanotechnology to penetrate at the molecular level into uneven surfaces to create a protective water repellant film. The coating will protect electrical connections against the environmental conditions apparatus are commonly exposed to.



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### **Cab Control Console**

The control center console will be fabricated of minimum .125 inch smooth aluminum and will be installed between the driver and officer seat. The base of the console will be custom trim-fit to the chassis floor line and be securely fastened.

This area will serve as the main electrical distribution point for all chassis related functions and contain the majority of the hardware related to these functions.

### **12-Volt Charger Port**

A USB charger port will be installed in the top of the console. It will be provided with a tethered rubber cover. It will be wired directly to battery hot.

### **Battery Switch**

There will be a rotary style switch installed on the floor left of the driver's seat to disconnect major loads from the battery system as required by NFPA 1900.

### **Auto Fast Idle**

Engine will increase in RPM to a preset amount if the battery voltage drops below 11.7V and the pump is not engaged or transmission placed in drive gear.

### **Hazard Light in Cab**

There will be a LED "Door Open" indicator light provided and installed in the chassis cab. The light will be installed on the console and will activate when the parking brake is released and a compartment door or any additional specified accessible devices are not in the completely closed positions.

A warning placard will be installed in the apparatus cab near the light, stating "Do Not Move Apparatus When Light Is On."

### **Battery Charger**

A minimum 40-amp (12 volt) battery charger/conditioner will be provided and installed in the "best fit" location as determined by the apparatus manufacture.

### **Shoreline Receptacle w/ Auto Eject**

A Kussmaul "Super Auto-Eject" 120 volt 20 amp shoreline receptacle will be installed on the apparatus. It will automatically eject the plug when the starter button is depressed.

The electrical current will be interrupted before the plug is automatically ejected to prevent arcing. The plug for the receptacle will be shipped loose for installation on the shoreline cord.

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The shoreline connection will be installed under the driver's door step area at the lower step level and placed forward of the immediate stepping area where space allows.

The electrical inlet will be connected to the battery charger.

The shoreline inlet connection will include a yellow cover.

### **DOT Lighting**

There will be seven (7) lights located on the rear of the apparatus. Three (3) of the lights will be mounted on the rear of the apparatus center location, for use as identification lamps. Two (2) additional lights will be located on the rear outboard locations, one (1) each side as high as possible. Two (2) lights will be mounted in the rubrails on the sides facing the side at the rear corners, for use as clearance lamps.

### **Rear Tail Light Assembly**

There will be Whelen 600 series Super LED rear tail light assemblies provided and installed with the apparatus, one (1) each side at the rear.

The following will be installed in each taillight stack:

One (1) red brake/tail light with clear lenses

One (1) amber arrow turn signal light with clear lenses and populated arrow flash pattern

One (1) clear backup light

One (1) red warning light on the bottom of the stack

They will be mounted in PLAST4V chrome flanges provided for each tail light assembly.

### **Engine Compartment Light**

There will be one (1) 12 volt LED work light installed in the engine compartment on the firewall. The light will have an integrated on/off switch.

### **Cab Step Lights**

There will be a LED light installed underneath each of the apparatus cab steps meeting NFPA 1900 requirements. The lights will be positioned to provide illumination to the ground area or the lower step under the cab entry doors.

The lights will be activated by the opening of any cab door and work light switch in the cab console.



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### **Under Body Lights**

There will be one (1) perimeter light under each side of the pump house running boards and two (2) under the rear tailboard.

The perimeter lights will illuminate the area with the activation of the work light switch in the cab dash and with the parking brake applied.

### **LED Intermediate Turn Signal Lighting**

There will be two (2) amber intermediate turn signals and two (2) amber intermediate marker lights on the sides of the apparatus (one (1) each per side) between the front and rear axles.

The lights will be Weldon brand 9186-1500 series LED amber markers.

### **Intermediate Turn Signals**

The intermediate turn signals will flash with the turn indicators.

### **Compartment Lighting**

One (1) LED Strip light, Techiq E45, will be installed in each body compartment. The tube light will be centered vertically along the forward side of the door framing and at maximum length available to fit the opening.

The light in each compartment will be on a separate circuit, turning on only those lights that have open compartment doors.

### **LED Crosslay Flood Light**

There will be one (1) LED light with clear LED wide flood lamp rated at not less than 750 lumens installed on the top center of the cross compartment. It will be capable of illuminating the entire crosslay hose bed area.

It will be manually activated by the Work Light switch located on the cab console.

### **LED Hosebed Flood Light**

There will be an LED minimum 6:00 x 3.00 inch LED flood light with clear lens located at the front of the hosebed rated at not less than 1900 lumens capable of illuminating the entire hosebed area.

It will be manually activated by the Work Light switch located on the cab console.

## **GROUND LADDERS**

### **DUO-SAFETY ROOF LADDER**

A Duo-Safety 775-A, 14' roof ladder shall be provided. Folding steel roof hooks shall be attached to one end of the ladder with steel spikes on the other.

### **DUO-SAFETY EXTENSION LADDER**

A Duo-Safety 900-A, 24' 2-section extension ladder shall be provided.

### **DUO-SAFETY ATTIC LADDER**

Ladder - Duo-Safety 585-A 10' Attic ladder with shoes shall be provided.

## **EXTERIOR PAINT**

### **Paint Process/Manufacturer**

The specified E-ONE supplied components shall be painted with PPG Industries paint.

All applicable metal surfaces shall be mechanically etched by sanding disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once all imperfections on the exterior surfaces are removed and sanded smooth, body fillers shall be applied to the surfaces that require a critically aesthetic finish and sanded smooth.

The applicable surfaces shall then be coated with a high quality base primer that is designed to fill any minor surface defects, provide an adhesive bond between the primer and the paint and improve the color and gloss retention of the color. The finish to this procedure shall be sanding the surfaces to a smooth finish followed by sealing the seams with an automotive seam sealer. The minimum thickness of the primer coat after sanding shall be 2.50 mils with a maximum thickness of 5.00 mils.

The applicable surfaces shall then be painted the specific color(s) designated by the customer with an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on an emergency scene. The paint shall have a minimum thickness of 1.0 mils with a maximum of 4.0 mils, followed by a clear top coat with a minimum of 2.0 mils and a maximum of 4.0 mils. All applicable components shall then be baked to speed the curing process of the coatings.



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## **VM8 PAINT / GRAPHICS**

### **BODY COLOR**

The body side panels will be painted to match the primary cab color.

### **STRIPING**

#### **CAB AND BODY STRIPE**

A single Scotchlite stripe, up to 6 inches in width shall be installed on the cab and body . The stripe shall have a hockey style, Z or S style or any other customer specific design style.

The stripe shall be NFPA compliant and the size, color and location shall be as specified by the customer.

#### **CAB AND BODY STRIPE [Qty: 2]**

An additional Scotchlite stripe, up to 3 inches in width shall be installed on the cab and body.

The stripe shall be NFPA compliant and the design, size, color and location shall be as specified by the customer.

#### **REAR CHEVRON STRIPE**

Individual chevron style Scotchlite striping shall be provided on the rear of the apparatus. The stripes shall consist of 6" red/lemon yellow alternating stripes in an "A" pattern. The striping shall be located full width on rear of body each side of B1. Colors shall be Red/Lemon yellow. Does not include B1 Door.

## **GRAPHICS**

### **Graphics Drawing**

A graphics drawing shall be provided for the apparatus. The drawing shall include striping, lettering and logos meeting NFPA guidelines. The drawing shall be presented for review and approval by the end user prior to application of the graphics.

## **WARRANTY / STANDARD & EXTENDED**

### **General 1 Year Warranty**

Purchaser shall receive a General One (1) Year or 24,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0001. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

### **Body Structural (Aluminum) Warranty**

Purchaser shall receive a Body Structure (Aluminum) Fifteen (15) Years or 100,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0503. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

### **Electrical Warranty**

Purchaser shall receive an Electrical One (1) Year or 18,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0201. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

### **Paint and Finish (FRP Panels) Warranty**

Purchaser shall receive a Paint and Finish (Exterior FRP Panels) Twelve (12) Years limited warranty in accordance with, and subject to, warranty certificate RFW0722. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

## **SUPPORT, DELIVERY, INSPECTIONS AND MANUALS**

### **Electronic Manuals**

Two (2) copies of all operator, service, and parts manuals **MUST** be supplied at the time of delivery in digital format -NO EXCEPTIONS! The electronic manuals shall include the following information:

- Operating Instructions, descriptions, specifications, and ratings of the cab, chassis, body, aerial (if applicable), installed components, and auxiliary systems.
- Warnings and cautions pertaining to the operation and maintenance of the fire apparatus and firefighting systems.
- Charts, tables, checklists, and illustrations relating to lubrication, cleaning, troubleshooting, diagnostics, and inspections.
- Instructions regarding the frequency and procedure for recommended maintenance.



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- Maintenance instructions for the repair and replacement of installed components.
- Parts listing with descriptions and illustrations for identification.
- Warranty descriptions and coverage.

The electronic document shall incorporate a navigation page with electronic links to the operator's manual, service manual, parts manual, and warranty information, as well as instructions on how to use the manual. Each copy shall include a table of contents with links to the specified documents or illustrations.

The electronic document must be formatted in such a manner as to allow not only the printing of the entire manual, but to also the cutting, pasting, or copying of individual documents to other electronic media, such as electronic mail, memos, and the like.

A find feature shall be included to allow for searches by text or by part number.

These electronic manuals shall be accessible from any computer operating system capable of supporting portable document format (PDF). Permanent copies of all pertinent data shall be kept file at both the local dealership and at the manufacturer's location.

NOTE: Engine overhaul, engine parts, transmission overhaul, and transmission parts manuals are not included.

## Specification

### FREIGHTLINER

Freightliner M2 106 Conventional

Minimum GVWR: 2-door - 39,000 lbs.

191 W/B Side Mount - 221 WB Top Mount

#### ENGINE

Cummins L9 - 360EV HP @2200 RPM; 1150 lb/ft @ 1200 RPM

Maximum 68 MPH road speed limit (per NFPA 1901)

Side of hood air intake with NFPA compliant ember screen and fire retardant Donaldson or equal air cleaner.

Minimum 320 amp alternator

Minimum 2000CCA, 370RC batteries with threaded studs under left side cab

Positive load disconnect with cab mounted control switch mounted outboard of driver's seat

Turbocharged 18.7 cfm air compressor with internal safety valve and mechanical governor

Exhaust brake integral with variable geometry turbo and ON/OFF dash switch. Must automatically activate apparatus stop lamps.

Right side outboard under step mounted horizontal aftertreatment system with horizontal tailpipe exiting forward of right rear wheels

Engine aftertreatment device, automatic over the road active regeneration and dash mounted single regeneration request/inhibit switch

Diesel exhaust fluid tank - 6 gallon under left cab aft of fuel tank

Horton Drivemaster Advantage ON/OFF fan drive, automatic control

1100 square inch aluminum radiator

Electric grid air intake warmer

#### TRANSMISSION

Allison 3000 EVS automatic

PTO provision for Chelsea 280 series PTO (2)

Vocation package 198 for fire vehicle applications

Magnetic drain plugs



Push-button electronic shift control - dash mounted

Water-to-oil cooler in radiator tank

Synthetic fluid

#### **FRONT AXLE**

2-door cab models - 14,700 lb. Set-back with drop .

16.5X5Q+ cast spider heavy duty cam front brakes, double anchor, fabricated shoes

Fire and Emergency Severe Service, non-asbestos front lining.

Cast iron front brake drums

Front oil seals

Vented oil front hub caps with window, center and side plugs

Automatic slack adjusters with stainless steel clevis pins

Power steering

2-quart see-through power steering reservoir

14,600 lb. taperleaf suspension

Maintenance-free rubber bushings

Shock absorbers

#### **REAR AXLE**

27,000 lb. T-Series fire vehicle service single

5.13 rear axle ratio

Iron carrier with standard axle housing

Extended lube main driveline with half-round yoke

16.6X7 P cast spider cam rear brakes, double anchor, cast shoes

Fire and Emergency Severe Service non-asbestos rear brake linings

Brake cams and chambers on forward side of drive axle

Rear oil seals

Longstroke 1-drive axle spring parking chambers

Automatic slack adjusters

27,000 lbs. flat leaf spring rear suspension with radius rod for Fire/Emergency service

Fore/Aft control rods

#### **BRAKE SYSTEM**

WABCO 4S/4M ABS

Air system pressure protection and 85 psi pressure protection for air horns

Relay valve with 5-8 psi crack pressure

WABCO System Saver HP with integral air governor and heater

Auto Drain valve – wet tank

#### **WHEELBASE**

2-door Side Mount models – Turning radius is considered critical for this apparatus, therefore the maximum wheelbase shall not exceed 191 inches

2-door Top Mount models – Turning radius is considered critical for this apparatus, therefore the maximum wheelbase shall not exceed 212 inches

#### **FUEL TANK & SYSTEM**

Minimum 50 gallons/189 liter rectangular polished aluminum mounted beneath left front cab door.

Bright aluminum treadplate trim package will be installed beneath the cab doors above the secondary step and the bottom of the cab and the first and secondary step.

Cab steps shall be polished stainless steel

Fuel/water separator with water in fuel sensor

High temperature reinforced nylon fuel line

Fuel cooler

#### **TIRES & WHEELS**

Front: Michelin or equal XZE 12R22.5 16 ply radial

Rear: Michelin or equal XDN2 12R22.5 16 ply radial

22.5x8.25 10-hub piloted steel disc (6)



## HUBS

Conmet Preset Plus premium iron

- Alum.

## CAB EXTERIOR

2-door cab models - 106 inch BBC flat roof aluminum conventional cab

Air cab mounting

Cab roof reinforcements for roof mounted lightbar

Safety yellow left and right interior grab handles and exterior non-slip grab handles

Chromed grille

Chromed air intake grille with ember screen

Fiberglass tilting hood

Dual 25 inch round Stuttertone hood mounted air horns (one left and one right) with shields. -

Left and right air horn foot switches with momentary dash switch for horn button

Door locks and ignition switch keyed alike

Ext. front -

Dual West Coast mirrors; bright finish; heated; left and right remote adjustment 8 inch bright finish convex mounted under primary mirrors; right side down view mirror

Aftertreatment system on right side with polished diamond plate cover

200 watt Siren Speaker

Electric horn warning system for park brake when not set with door open and all ignition key positions

Tinted windshield and door glass

Manual door window regulators

Three-piece 14 inch chromed steel bumper with collapsible ends

Front tow hooks - frame mounted (2)

## CAB INTERIOR

Molded inner door panels

Opal gray vinyl interior

Black mats with single insulation

Heater, defroster and air conditioner with standard HVAC ducts and controls with recirculation switch

Premium cab insulation

Door activated dome/red map lights, forward left and right and (if 4-door) rear left, right and center.

Manual cab door locks

Seats:

- Driver: High back air suspension driver seat with NFPA 1901 compliant seat sensor
- Officer: High back air suspension officer seat with NFPA 1901 compliant seat sensor

Black Cordura Plus cloth seat covers

NFPA compliant high visibility orange seatbelts

All seating positions shall have a seat sensor that advises the driver through a visual display on the dash within the driver zone of seatbelt status for all positions in the apparatus. The sensors shall be connected directly to the VDR (vehicle data recorder (VDR) integrated into the dash. Connection for downloading recorded data shall be through the J1939 port.

Adjustable tilt and telescoping steering column with 4-spoke 18 inch steering wheel

Driver and officer side interior sunvisors

#### **INSTRUMENTS & CONTROLS**

Engine remote interface with park brake interlock

Low air pressure indicator light and audible alarm

2 inch primary and secondary air pressure gauges

Engine compartment mounted air restriction indicator with graduations and warning light in dash

Woodgrain driver and center instrument panel

Electronic cruise control with switches in left switch panel

Ignition switch with non-removable key

Heavy duty onboard diagnostics interface connector located below left dash

2 inch fuel gauge

Engine remote interface for remote throttle

Engine remote interface connector in engine compartment

Engine coolant temperature gauge

Engine oil pressure gauge

2 inch transmission temperature gauge

Engine and trip hour meters integral within driver display

Power and ground wiring provision in overhead console

Electronic MPH speedometer with secondary KPH scale without odometer

Vehicle speed sensor

Electronic 3000 rpm tachometer

Digital voltage display integral in driver display

Electric windshield wiper motor and display

Alternating flashing headlamp system with fire apparatus controlled engagement

Parking brake system with dash valve control auto/neutral and warning indicator

Self-cancelling turn signal switch with dimmer, washer/wiper and hazard in handle

#### **AIR OUTLET**

A 1/4" male plug air hose inlet shall be connected to the air reservoir tank. A 1/4" inline check valve will be installed in the line. Air hose connection will provide the capability of filling the air brake system with air from an outside source. It will be located beneath the driver's cab door above the fuel tank.

#### **CAB DOOR RETRO-REFLECTIVE STRIPING**

Chevron style retro-reflective striping shall be added to the inside of the cab doors in accordance to NFPA requirements. It shall cover not less than 96 sq.in of each door meeting MFPA 1901.

#### **TIRE PRESSURE MONITORING SYSTEM**

There shall be a RealWheels LED AirGuard Set and Go, six (6) wheel stabilizer kit, for 2.00 inch round holes and LED indicators proper air pressure in the tire.

The inner tire on the rear dual axle shall have an extension provided that will pass through the outside rim and attach to the stabilizer providing an unobstructed view for inspection of the inner tire air pressure.

The indicators shall be installed by the department after the unit has been fully equipped and the tires set to the manufactures recommended pressure rating. The indicators will calibrate to that initial air pressure setting upon installation and will intermittently flash when the tire pressure is reduced by 5 to 10 psi from its original calibrated pressure.

Specification	
PLUMBING SYSTEM - QMAX XS 1500 GPM	
MIDSHIP PUMP	