The following specifications were prepared for the

North Annville Fire Company, PA

Vengeant Apparatus is located at 702 W. Main St, Annville, PA, 17003, and operates under 30,000 square feet of production space including designated areas for Fabrication, Upfitting, Paint, and Graphics.

Vengeant Apparatus is known as a Second Stage Manufacturer (Body Builder). What this means is that Vengeant builds bodies on unfinished commercial chassis (Ford, Chevy, Dodge, International, Freightliner, Mack, Kenworth, etc.). Completed vehicles shall comply with Federal Motor Vehicle Safety Standards. (FMSSA)

Vengeant Apparatus is also a member of the
Fire Apparatus Manufacturer's Association (FAMA).

Bid Bonds and Performance Bonds are offered upon request of the purchaser. If required, performance bonds are supplied no longer than 60 days after receiving the signed contract for the vehicle.

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1 - Chassis Specification

- Kenworth T480, 6x4, Regular/Day cab, Tandem rear axles, DRW
  - Standard specs:
    - PACCAR PX-9 450EV diesel engine
    - Allison 3000 EVS 6-speed automatic transmission
    - CA: 155.5 in., OH 72 in.
    - Paint: **Race Red (FRD11:PQ)**
    - LH PTO Provision
    - Chrome package
    - Raised Roof
    - Air Ride drive and passenger bucket seats
    - Solid rear cab wall, no window
    - Air disc brakes
    - Exhaust braking system
    - Vertical passenger exhaust stack
    - 22½ in. Alcoa polished aluminum wheels, Dura-Bright finish
      - Front Tires: Continental HAC3 385/65R22.5 20PR
      - Rear Tires: Continental HDR2+ 11R22.5 14PR
    - 50 gal. polished aluminum fuel tank
    - GVWR: 56,000 lbs.
      - Front Axle: 16,000 lbs.
      - Combined Rear Axles: 40,000 lbs.
    - Red seat belts
    - Speed governed to 60-MPH
    - Back-up Alarm
    - Three (3) batteries
    - 320-amp Alternator

2 - Apparatus Body

2.1 - Apparatus Body Construction Overview

- The apparatus body is purpose built and designed to meet the unique needs and demands of the emergency services environment. The body shall be of self-standing rigid cage style construction consisting of the following:
  - 2 in. x 3 in. aluminum 6063 box tube inner frame
  - The exterior/interior walls shall be sheeted with aluminum 5052 alloy
- The body shall consist of four (4) individual exterior compartments. The body shall be mounted on the before mentioned chassis and shall come with a fifteen (15) year structural warranty.
- The body shall measure approximately 210 in. long x 100 in. wide x 112 in. high.

  - The upper body shall measure approximately 198 in. long x 74 in. wide x 66 in. high creating an open shelf area for the placement of ladders and dump tank storage
  - The lower body which incorporates (SS1), (SS2), (CS1), and (CS2) shall measure approximately 210 in. long x 100 in. wide x 46 in. high
- The body shall be mounted to the chassis with no chassis building be required or permitted.

2.2 - Rescue Side Structure

- The corners and sides shall be welded so as no bolts or rivets are required or permitted.
- Inner structural cage members shall be placed no more than 16 in. on center and welded to the inner structural connectors.
- Side, forward, and rear walls of the body, compartments, and door skin shall be aluminum 5052 alloy.

2.3 - Floor Structure

- The floor structure shall consist of 3 in. x 2 in. aluminum 6063 box tube spaced specifically for each body style as structurally required. Lateral tubing shall extend the full width of the body between compartment boxes.
- The floor tubes shall be welded to the side structure channels. The interior floor surface shall be covered with ⅛ in. or 3/16 in. aluminum 5052 alloy sheet, where applicable.

2.4 - Rear Step Construction

- The rear 12 in. step of the apparatus shall be constructed of embossed aluminum diamond plate (Tread plate) for minimum body maintenance. The stepping surface shall be recessed an additional 12 in. into the rear of the apparatus, inboard of compartments (SS2) and (CS2).
- The step shall be incorporated into the body module's cage construction using 2 in. x 3 in. x ¼ in. aluminum 6063 box tube for strength and integrity.
- The box tube shall be placed as to form a structural matrix to the chassis and keep the body in a complete modular form.

2.5 - Compartment Construction

- All exterior compartments shall be constructed of ⅛ in. or 3/16 in. aluminum 5052 alloy sheet, where applicable.
- All corners shall be welded.
- Each compartment shall be vented with a minimum 4 in. pre-cut vent. The vent cutout shall be the Vengeant Eagle.

- All compartment floors shall be of the “sweep out” style.
- Compartment skins shall be fully welded in place.
    - Drainage holes shall be installed in the event water finds its way into the compartments
- All interior of compartments shall be coated with Black PPC material for excellent durability.

3 - Body Mounting

- The body structure sills shall be constructed of 2 in. x 3 in. x ¼ in. aluminum box tube and shall run the full length of the body structure.
- The 2 in. x 3 in. x ¼ in. aluminum box tubes shall be welded to every lateral structural member on both sides.
- The chassis and body shall be separated with a 1 in. x 3 in. rubber sill.
- The body shall be capable of being removed from and transferred to a new chassis similarly sized to the old chassis.
- There shall be adequate space left between the cab and body allowing for common flexing.
- The body shall be attached to the chassis using a spring-loaded body mounting system. This system shall be designed to allow independent movement between the body frame and the chassis frame protecting the module from the stresses and twisting rendered by the flexing of the chassis frame. As such, the body frame shall not rest on the chassis frame at any point.
- The body shall be mounted as per the chassis manufacturer's guidelines.

4 - Vehicle, Body Appearance, & Accessories

4.1 - Roll Up Style Compartment Doors - AMDOR INC.

- Each side exterior compartment shall have a roll up aluminum door.
- The doors shall be constructed and installed within the guidelines of AMDOR INC.
- Each slat shall interlock to create a flexible joint. At the end of the slats there shall be plastic end shoes for easy sliding of the doors.
- The roll up track shall include a rubber seal.
- Roll up door
    - Curtains shall be **painted Ford PQ Red (FRD11:PQ)**
    - Trim and drip rail pieces shall be **NON-PAINTED/satin**
- Each door shall have a stainless steel drip pan installed.
- Each door shall have White LED Lighting on both sides of the opening to give ample lighting in the compartments.
    - Lights to turn on automatically when the door is opened.

- Each door will have an integrated magnetic sensor to detect if a door is open and will activate the “Door Ajar” light on the center console.
- These doors shall be installed on the compartments (SS1), (SS2), (CS1), and (CS2).

4.2 - Mud Flaps

- There shall be provided a set of heavy duty rear mud flaps with the Vengeant Eagle aluminum weights.
- The flaps shall be made of thick rubber material and shall be as wide as the wheel(s).
- The mud flaps shall be securely fastened using stainless steel fasteners.

4.3 - Fenders & Wheel Wells

- The wheel well shall be provided with full fender liners as to eliminate pockets that might trap and collect road dirt.
- Four (4) rear fenderettes shall be of stainless steel with a polished finish.

4.4 - Exterior Body Trim

- There shall be provided polished aluminum “C” channels, used as a rub rail, installed at the lowest edge of the apparatus body below compartments (SS1), (SS2), (CS1), and (CS2).

4.5 - Wheel Chocs

- There shall be two (2) Zico folding wheel chocs installed inboard of the bottom edge of compartments (SS1) and (SS2), one (1) ea. per side.
    - This will include a horizontal mounting bracket for storage when not in use

4.6 - Apparatus Body Painting

- The entire cab structure will be painted from the vehicle manufacturer, **Race Red (FRD11:PQ)**.
    - Any requested paint modifications will not include the following locations:
        - Underside of cab, engine compartment, underside of hood, and hood hinges will remain **factory color**
- The entire module shall be fully ground smooth and sanded to eliminate any visible welded deflections.
- Prior to applying the first coat of primer on the module, all removable hardware items such as doors, handles, hinges, grab rails, lights, etc. Shall be removed.

- The module shall be painted to match the cab's Factory **Race Red (FRD11:PQ)**.
  - Confirmation of color will be made at the pre-con meeting
- The priming and final coat application shall conform to the paint manufacturer's guidelines.
- The cab (if applicable) and the module shall be painted using 2 stage Sikkens Autocoat BT paint.

5 - Compartment Layout

5.1 - Streetside Compartment 1 (SS1)

- This compartment shall start on the driver's side front of the module and measures approximately 54 in. wide x 36 in. high x 26 in. deep.
- The chassis' three (3) batteries shall be installed on the floor, forward area, in this compartment. They shall be protected by a bolt-on vented removable cover, which will also allow access for battery service/maintenance.

5.2 - Streetside Compartment 2 (SS2)

- This compartment shall be located between the wheel well and the rear of the module and measures approximately 38 in. wide x 36 in. high x 26 in. deep.

5.3 - Curbside Compartment 1 (CS1)

- This compartment shall start on the passenger's side front of the module and measures approximately 54 in. wide x 36 in. high x 26 in. deep.

5.4 - Curbside Compartment 2 (CS2)

- This compartment shall be located between the wheel well and the rear of the module and measures approximately 38 in. wide x 36 in. high x 26 in. deep.

5.5 - Hose Bed

- The Hose Bed is open to the rear of the apparatus and measures approximately 195 in. long x 69 in. wide x 12 in. high.
  - One (1) adjustable Hose Bed, DA finish, divider shall be provided
  - Hose Bed will have a DA finish
- Black vinyl covers from D&S Covers, with hook and bungee mounting system, shall be provided for the following locations:
  - Crosslay on QMAX Pump
  - Hose Bed

6 - Compartment Accessories

6.1 - Adjustable Shelves (Optional Add-on)

- IF selected, the provided aluminum adjustable shelves shall be constructed of 3/16 in. aluminum and have a full 2 in. lip surround for durability and strength.
- Shelving mounting hardware shall be aluminum unistrut and locking jam nuts.
- Adjustable shelves will be DA finished.

6.2 - 120-VAC Outlets (Optional Add-on)

- IF selected, there shall be 120-VAC 20-amp outlets surface mounted into the compartment. It shall consist of a duplex receptacle in each compartment. Placement shall be determined at pre-con meeting.
    - The duplex outlets and covers shall be Black

6.3 - Compartment Floor/Shelf Matting (Optional Add-on)

- IF selected, there shall be Turtle Tile, or equivalent, floor tiles installed in compartments (SS1), (SS2), (CS1), and (CS2)
    - Compartment floor
    - Shelves and slide-out tray(s) (if applicable)
- Tiles shall be custom fitted to the individual area and shall assist in protecting the surface of the compartment from damage. It will also allow air flow/separation from standing water to the underside of anything laying on the matting.

6.4 - Compartment Lighting

- Compartments (SS1), (SS2), (CS1), and (CS2) shall all have dual track lighting, built into door tracking.

7 - Fire Pump & Fire Suppression

- QMAX XS Pump Assembly
    - The pump shall be of a size and design to mount on the rails of chassis, and have the capacity of 1500 gallons per minute (U.S. GPM), NFPA-1901 rated performance.
    - The entire pump shall be assembled and tested at the pump manufacturer's factory.
    - The pump shall be driven by a drive line from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable the pump to meet and exceed its rated performance.
    - The entire pump shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance spots as outlined by the latest NFPA Pamphlet No. 1901. Pump shall be free from objectionable pulsation and vibration.

- The pump body and related parts shall 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 shall be of high quality bronze or stainless steel. Pump utilizing castings made of lower tensile strength cast iron is not acceptable.
- Pump body shall be vertically split, on a single plane for easy removal of the entire impeller assembly including clearance rings.
- Pump shaft to be rigidly supported by two bearings for minimum deflection. The bearings shall be heavy-duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.
- The pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machines, hand-ground and individually balanced. The vanes of the impeller intake eye shall 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 shall be bronze, easily renewable without replacing the impeller or pump volute body.
- The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel. Pump shaft must be sealed with a double-lip oil seal to keep road dirt and water out of the gearbox.

- Gearbox
  - The pump gearbox shall be of sufficient size to withstand up to 16,000 lb/ft (7,257 kg/m) of drive through torque of the engine system. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.
  - The gearbox drive shafts shall be of heat-treated chrome nickel steel and at least 2¾ in. (6.99 cm) in diameter, on both the input and output drive shafts. The drive shaft shall withstand the full torque of the engine.
  - All drive and pump gears shall be manufactured of the highest quality electric furnace chrome nickel steel. All bores shall be ground to size, teeth integrated and hardened, to create an extremely accurate gear for long life, smooth, quiet running, and higher load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust **(There will be no exceptions)**.
  - The pump ratio shall 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 shall be a heat-treated, hard anodized aluminum power cylinder, with

stainless steel shaft. An in-cab control for rapid shift shall be provided that locks-in road or pump mode.

- All apparatus built with automatic transmissions shall be provided with three (3) green warning lights to indicate to the operator(s) when the pump has completed the shift from road to pump position. The warning lights will be located as stated: two (2) in the truck driving compartment and one (1) on the pump operator's panel adjacent to the throttle control. All lights shall have appropriate identification/instruction plates.

- Certification
  - The pump will perform and meet the following tests:
    - 100% of rated capacity @ 150 PSI net pump press
    - 100% of rated capacity @ 165 PSI net pumps press
    - 70% of rated capacity @ 200 PSI net pump press
    - 50% of rated capacity @ 250 PSI net pump press
  - Pump shall be tested at manufacturer under full NFPA suction conditions
  - One (1) pump performance label, in compliance with NFPA 1900, shall be provided upon completion of third party pump testing
- Pressure Governor Control
  - The SmartGov Advanced pressure governor platform has multiple controls in one display: Governor, foam, tank level indication, Master gauges, foam controls (when optioned), pump operational data (when optioned), live camera feeds (with optional cameras), and up to two (2) valve controls. Simplify pump operations with an intuitive, glove-friendly interface designed for reliability. It is Boost and Captium capable for future upgrades.
- Intake Pressure Relief
  - The pump module shall incorporate one (1) Akron Brass Intake Pressure Relief Valve integrated into the main pump intake plumbing. The relief valve shall be spring-loaded and designed for use on main pump intakes utilizing a 4-bolt flange connection. The valve shall feature field-adjustable pressure settings ranging from 50 PSI to 250 PSI and shall be constructed of brass for durability and corrosion resistance. The pressure relief valve shall be mounted on the curbside of the pump module in an accessible location to allow for convenient adjustment of pressure settings and routine service.
- Pump Module Body
  - The pump module body shall be a self-supported structure mounted independently from the body and chassis cab. The pump module shall be constructed entirely of extrusions and aluminum sheet. The framework

shall be formed from beveled aluminum alloy extrusions and shall be electrically seam welded at each joint using 5356 aluminum alloy welding wire. The main framework to be 3 in. x 3 in. x 1/32 in., or 3 in. x 1½ in. webbed ¼ in., 6063-T5 aluminum extrusion. The pump module design must allow normal frame deflection through isolation mounts without imposing stress on the pump module structure or side running boards. The pump module shall consist of a welded framework, properly braced to withstand chassis frame flexing. The pump module support shall be bolted to the frame rails of the chassis.

- Pump Panel - 34 in. wide - Brushed Stainless Steel
  - All gauges shall be the Class 1, 2½ in. gauges
  - Valve Controls shall be the Class 1 - Push-Pull, unless otherwise stated
  - SmartGov touchscreen Governor, with integrated Tank level gauge and Tank-to-Pump controller

7.2 - Plumbing

- Piping and Manifolds
  - All the plumbing and/or piping in the pump module shall be of 304 stainless steel or flexible piping for long life. All stainless steel castings shall be a minimum of schedule 40. All NPT pipe thread connections larger than ¾ in. connections shall be avoided in the construction of the plumbing system. The following valves shall have groove connection: Rear discharge, Tank Fill, all 2 in. and 2½ in. (5.08 and 6.35cm) pre-connect valves.
  - The flexible piping shall be black SBR synthetic rubber hose with 300 lbs. working and 1200 lbs. burst pressure for sizes 1½ in. through 4 in. Sizes ¾ in., 1 in., and 5 in. are rated at 250 lbs. working and 1000 lbs. burst pressure. All sizes are rated at 30 Hg. vacuum. Full flow couplings are precision machined from high tensile strength stainless steel. All female couplings are brass. ¾ in. and 1 in. Male and Victaulic couplings are brass.
- Primer - Hale ESP-12
  - The priming pump shall be a positive displacement, oil-less rotary vane electric motor driven pump conforming to NFPA-1901 rated performance requirements. The pump body shall be manufactured of heat-treated anodized aluminum for wear and corrosion resistance. The pump shall be capable of producing a minimum of 24 Hg. vacuum at 2,000 ft. above sea level. The electric motor shall be a 12-VDC totally enclosed unit. The priming pump shall not require lubrication. The priming pump shall operate by a push button switch mounted on the pump operator's panel.

The switch controls an air cylinder on the PVG control valve, which shall be located behind the panel and manufactured of bronze construction.

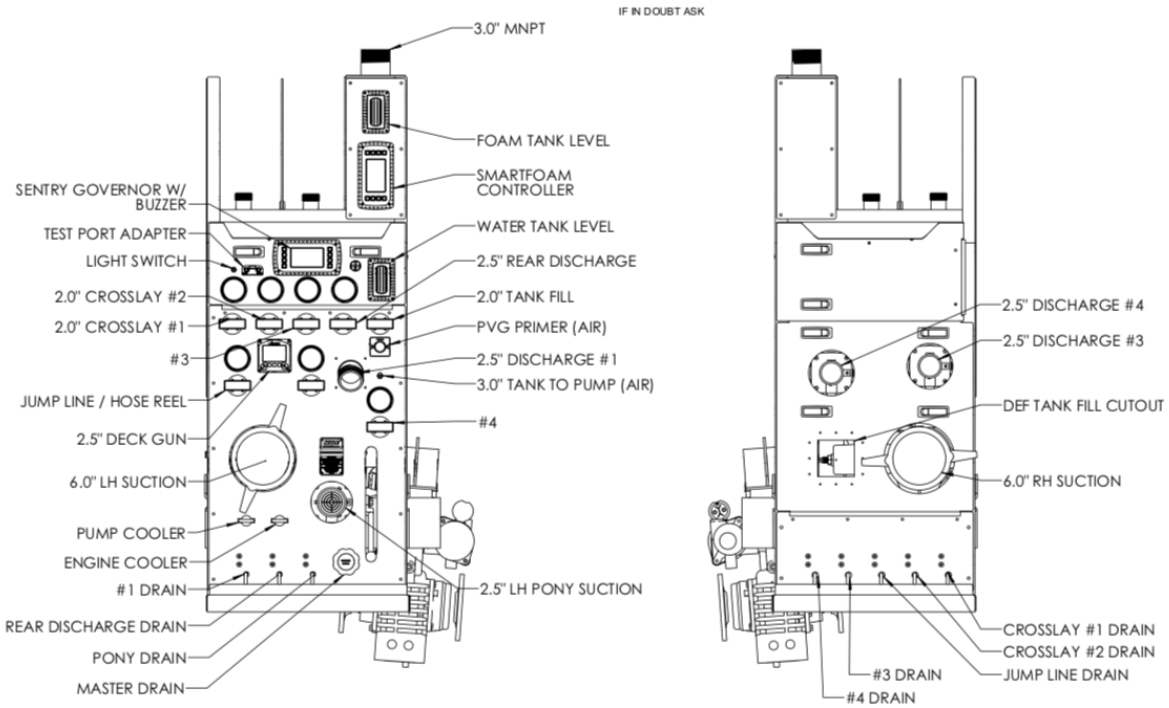
- Discharges
  - One (1) 2½ in. Streetside (Forward) discharge with an Akron Brass swing handle valve shall be located on the left side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2½ in. outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2½ in. NH-M threads.
  - One (1) 2½ in. Streetside (Rearward) discharge with an Akron Brass swing handle valve shall be located on the left side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2½ in. outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2½ in. NH-M threads.
  - One (1) 3 in. Curbside (Forward) discharge with an Electric Controlled Akron Brass valve shall be located on the right side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 4 in. outlet shall be equipped with an integral, stainless steel, straight flange terminating with 4 in. NH-M threads. Valve shall be of the slow-close design so as not to allow the valve to open or close in less than 3 seconds. The valve shall be controlled by an Akron Navigator Pro 9345 controller mounted on the pump panel. The 9345 control shall indicate valve position, pressure, and flow digitally.
  - One (1) 2½ in. Curbside (Rearward) discharge with an Akron Brass valve shall be located on the right side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2½ in. outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2½ in. NH-M threads.
  - Two (2) 2 in. crosslay discharges shall be installed on apparatus. Each section of the crosslay shall hold approximately 200 ft. of 1¾ in. double jacket fire hose. A 1½ in. mechanical swivel hose connector shall be used in each crosslay to provide access to the hose in either direction. Each crosslay shall have one (1) 2 in. quarter turn ball type valve and fixed pivot design to allow easy operation at all pump pressures.
  - One (1) 2½ in. crosslay discharge shall be installed on apparatus. Crosslay shall hold approximately 200 ft. of 1¾ in. double jacket fire

hose. A 2½ in. mechanical swivel hose connector shall be used in each crosslay to provide access to the hose in either direction. One (1) 2½ in. quarter turn ball type valve and fixed pivot design to allow easy operation at all pump pressures.

- One (1) 2½ in. Tank Fill discharge with an Akron Brass valve shall be plumbed into the water tank. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures.

- Intakes
  - Two (2) 6 in. Steamer inlets will be provided, one (1) on the Streetside and one (1) on the Curbside. Both inlets shall have long handle Chrome vented caps and screens.
    - Both 6 in. Steamer inlets shall be equipped with 2½ in. Class 1 intake relief valves
  - One (1) 2½ in. Streetside (Front) auxiliary intake, swing handle.
  - One (1) 2½ in. Curbside (Front) auxiliary intake, swing handle.
  - One (1) 4 in. valve between the tank and the pump, Tank-to-Pump. The Electric Controlled Akron Brass valve shall be plumbed into the water tank. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. Valve shall be of the slow-close design so as not to allow the valve to open or close in less than 3 seconds. The valve shall be controlled by the SmartGov system automatically. As the pump is placed into Pump Mode, the SmartGov will open the Tank-to-Pump valve.

**** Drawing For Reference Only****
Actual Unit Will Differ



Unless noted, all fittings shall be NH thread. All plumbing shall have caps.

7.3 - Water Tank

- The tank shall have an approximate capacity of 3,000 U.S. gallons and shall be constructed of polypropylene material. This material shall be a non-corrosive stress relieved thermoplastic and UV stabilized for maximum protection. Tank shell thickness may vary depending on the application and may range from ½ in. to 1 in. as required. Internal baffles are generally ⅜ in. in thickness.
- The tank will be covered by the manufacturer's Limited Lifetime warranty.

7.4 - Dump Chute

- There shall be one (1) A.H. Stock Mfg. 10 in. dump chute, stainless steel, on the rear of the apparatus. This shall be a swing style electric valve, with a manually 180° swiveling joint. The swivel chute will also be able to extend up to an additional 36 in. with a manually telescoping extension.

7.5 - Direct Tank Fills

- On the rear of the apparatus, outboard of the dump chute, there shall be two (2) Direct Tank fills, installed into the rearward face of the tank.
    - Two (2) 3 in. Rear Automatic Fill valves shall be terminated as 2½ in. NH-F with Cap/Chain

8 - 12-VDC Electrical System

- The electrical systems and associated equipment shall comply with all Federal Motor Vehicle Safety Standards, Federal Motor Carrier Safety Regulations, and shall also conform to all applicable SAE recommended standards and practices.
- The module body and accessory electrical equipment shall be served by circuits separate and distinct from the chassis circuits.
- All wiring shall be permanently color coded and marked to identify each wire.
- Wiring shall be routed in conduit or loom.
- All looms shall meet the SAE J-1128 GLX temperature rating of 257°F/125°C.
- Wiring shall be located and installed in such a manner that facilitates easy removal and servicing.

9 - Audible Warning Systems

9.1 - Siren & Lighting Control

- There shall be provided and installed a Whelen CenCom Core+ Amplifier Control module, Whelen Vehicle Safety Gateway (VSG), Whelen CenCom Core Control Head w/slider switch rotary knob siren.
    - Slider positions on light controller
        - Position 1: Rear and four (4) corner modules in lightbar
        - Position 2: Adds front Red warning
        - Position 3: Adds front White warning
            - When transmission is placed into PARK, all lighting should go to a Position 2 style flash pattern
    - Side perimeter & scene lights shall activate when adjacent cab door is opened
        - Rear Scene can be activated when transmission is placed in REVERSE
- Core+ brings intelligent automation and connected functionality directly into your vehicles for safer, more efficient operations. Core+ comes with a VSG and **five (5) years** of connected service, included at no additional equipment or subscription cost. Once your VSG is activated, your department will have access to:
    - GeoFence Controlled Technology
        - Adjust flash patterns and sirens at intersections
        - Receive in-cab alerts for hazardous roadways
        - Activate cruise lights in work zones, neighborhoods, and school areas
        - Trigger DVM tones for natural disasters or active emergencies
        - Reduce siren volume in school zones during school hours

        - Control warning equipment based on vehicle location
    - Over-The-Air Firmware and Configuration Updates
        - Simplify maintenance and reduce downtime with remote access to configuration and firmware updates
    - Device Lock
        - Prevent unauthorized changes by locking configuration and firmware updates on individual vehicles or your entire fleet

9.2 - Siren Speaker(s)

- There shall be provided one (1) Whelen SA315, 123dB, 100-watt electronic speaker mounted behind the grille with a siren speaker bracket.
- One (1) Federal Signal Q-Siren shall be recessed into the Right side of the OEM bumper.
    - To include one (1) foot switch for driver operations

10 - Apparatus Lighting

10.1 - DOT Lighting

- There shall be provided the proper number of LED style marker lights located on the apparatus body - Tecniq S34 RGBs/Clear lenses, with stainless steel trim rings.
    - Center rear markers will be located on the rear bumper
    - All of the module DOT lights will change to Blue when pump is engaged
- Reflectors, two (2) Amber and two (2) Red, shall be installed in accordance with DOT requirements on the sides, lower portion of the module.
- Stop/Tail/Turn/Back-up lights are mentioned below.
- One (1) License plate light, Chrome, shall be mounted on the rear of the apparatus to illuminate the installed license plate.

10.2 - Visual Warning Systems

- All of the following lighting shall be mounted to the vehicle per manufacturer specifications.
- The lighting shall be positioned to provide adequate coverage on all zones of the vehicle.

10.3 - Roof Mounted Lightbar

- One (1) 59 in. Whelen Liberty II DUO lightbar, Red/White LEDs w/Clear lens, includes full flood, Takedowns, and Alley lights. Cab mounted with permanent mount brackets, Stainless.
    - Rearward side of lightbar shall be UNPOPULATED
    - Lightbar shall auto dim in night time conditions

- White warning shall only flash on slider Position 3 and vehicle's transmission is in DRIVE
- White modules in lightbar will be activated for Front Scene and Side Scenes

10.4 - Front of Vehicle

- Two (2) Whelen M6 DUOs, Red/White LED/Clear lens, Chrome flanges.
  - Mounted to the grille of the vehicle
- White flash to be cut when the slider is in Position 3 and vehicle's transmission is placed into PARK.

10.5 - Side of Vehicle

- Two (2) Whelen M6 SOLOs, Red LED/Clear lens, Chrome flanges.
  - One (1) ea. shall be mounted on the truck chassis, front fender, just after the headlights, before the front wheel
- Two (2) Whelen 5G Series Super-LED Turn Light, Amber LED/lens, Chrome flanges.
  - One (1) ea. side, of the above lighting shall be mounted on the module's body, lower level, between the forward compartment and the forward rear axle
  - This light shall act as a midpoint Turn Signal indicator
- Two (2) Whelen M6 V-Series Combination Warning/Perimeter lights, Red LED/Clear lens, Chrome flanges.
  - One (1) ea. of the above lighting shall be mounted on the module's body per side, lower level, centered between the rear axles

10.6 - Rear of Vehicle

- Two (2) Whelen L31 Series LED Beacons, Red LED/lens, mounted on a shelf mounting bracket.
  - The above lights shall be mounted, one (1) ea. side, on the rear of the module's body, upper outer edge, under the Hose Bed.
- The following warning and DOT lighting shall be mounted in a Whelen 4-Head M6 taillight pods, Chrome. Placed one (1) ea. side of the rear of the module's body, lower portion. The lighting shall be placed as follows, top to bottom:
  - Two (2) Whelen M62BTT, Brake/Tail, Red LED/lens
  - Two (2) Whelen M62T, Turn arrow, Amber LED/lens
  - Two (2) Whelen M62BU, Back-Up light, White LED/lens
  - Two (2) Whelen M6RC, SOLO warning light, Red LED/Clear lens

10.7 - Scene & Underbody Lighting

- Scene Lighting

- Front of the Apparatus:
  - Front Scene lighting will be provided by the lightbar's White modules and the M6 DUOs on the grille
- Side of the Apparatus:
  - The lightbar's side White modules shall provide illumination
  - Side Scene lighting will also be provided by four (4) Whelen M9 EZ Scene lights, Chrome flange
    - One (1) ea. shall be mounted on the inward side of the M9 SOLOs
- Rear of the Apparatus:
  - Rear Scene lighting will also be provided by two (2) Whelen M9 EZ Scene lights, Chrome flange
    - One (1) ea. shall be mounted below the rear L31 beacons

- Underbody Lighting:
  - Twelve (12) Tecniq E10 White LED underbody lights w/stainless steel brackets
    - Two (2) shall be mounted in the front bumper area of the chassis
    - Two (2) shall be mounted, one (1) ea. side, inboard of the running board on the chassis
    - Two (2) shall be mounted, one (1) ea. side, under the pump module running board
    - Four (4) shall be mounted:
      - One (1) ea. under compartments (SS1), (SS2), (CS1), & (CS2)
    - Two (2) shall be mounted under the rear bumper
  - All the above lighting shall be activated automatically in PARK

11 - Reverse Safety Systems

11.1 - Back-Up Alarm

- There shall be provided an automatic back-up alarm that activates when the vehicle's transmission is placed in REVERSE.

11.2 - Back-Up Camera

- A Rosco back-up camera system, STSK8165, shall be installed.
  - 10 in. 1080P HD monitor to be in place of the rearview mirror
  - Camera screen to come on automatically in REVERSE

12 - Battery Charger

- There shall be provided a Kussmaul Chief Series SMART Charge 4012 system installed. Delivers up to 40-amps DC, up to three (3) separate banks of

batteries. Accommodates for accessory loads that are always active, Parasitic Load Compensation (PLC).
    - Included in the system shall be a Kussmaul 20-amp Super Auto Eject shoreline receptacle that shall provide 120-VAC service when active. One (1) remote control panel installed into the Left side of the center console.
    - Super Auto Eject OLED cover: Yellow
        - Location: TBD at pre-con meeting
- 120-VAC outlets shall be active on shoreline power, **ONLY**.

13 - Interior Configuration

13.1 - Console

- The console shall be constructed from 3/16 in. aluminum sheet powder-coated Caveman Black. There shall be a hinged lid to allow access to the fuses and wiring located within the center console. The lid shall swing up from Left to Right, allowing access from the driver's seat.
- The console shall extend from the dashboard area to just behind the front seats, standard length.
- All switches shall be lighted and properly identified. Additionally, there shall be one (1) Sync USB extension (if applicable), two (2) USB-C & one (1) USB-A charge ports, one (1) cigarette lighter outlet, one (1) lighting control head, one (1) location for a department provided mobile radio, one (1) magnetic mic clip, and two (2) built-in cup holders.
- "Door Ajar" light, Tecniq S34 Red marker light, will be affixed on the console to illuminate when activated.
    - "Door Ajar" shall also activate an audible alarm from the Core control head when a compartment door(s) is open and the transmission is in anything other than PARK
    - Red - Steady, compartment door open and transmission in PARK
    - Red - Fast flash, compartment door open and transmission in anything other than PARK
- Inside the center console shall act as the electrical compartment. The console will house the following:
    - One (1) Whelen CenCom Core Amplifier and fuse block(s)
    - One (1) Kussmaul Chief Series SMART Charger system
    - One (1) 12-VDC power lead hardwired thru ignition switching
    - One (1) 12-VDC power lead hardwired thru chassis batteries
    - One (1) ground lead hardwired to chassis frame and negative battery terminal

- Any additional items to be mounted, shall be reviewed at the pre-con meeting and added to a Change Order.

14 - Other Vehicle Accessories

- One (1) Hale ITL Remote Dash Indicator shall be installed onto the center console.
- Three (3) Whelen Strip-Lite™ Plus XL tank light, multi-color LEDs/Clear lens, Chrome flange.
    - Two (2) gauges shall be mounted, one (1) ea., on the side of the module's body, upper level, forward edge as high as possible
    - One (1) gauge shall be mounted on the rear of the module's body, Streetside, upper level, outer edge as high as possible
- Two (2) Harrington Flex-Lite Suction Hose - 6 in. x 10 ft. NH, Long Handle Female Swivel, one (1) shall be stored above the ladder storage brackets and one (1) on top of the Fol-Da-Tank, utilizing Zico Horizontal hard suction mounts (solid tray).
- The following Duo Safety ladders shall be stored on the Streetside open shelf area, utilizing two (2) CPI ladder brackets:
    - One (1) Series 900-A, 24 ft. 2-section aluminum extension ladder
    - One (1) Series 775-A, 14 ft. aluminum roof ladder
    - One (1) Series 585-A, 10 ft. aluminum folding attic ladder
- One (1) Zico hydraulic portable tank system, PTS-HA, to be mounted on the Curbside open shelf area.
    - The outer panel of this system shall be 3/16 in. aluminum sheet that shall be painted to match the body module
    - One (1) NFPA compliant flashing light kit, PTS-FLK, shall be provided as a visual alert when the system is out of the stored position
- One (1) Fol-Da-Tank 3,500 gal. capacity dump tank shall be housed in the hydraulic portable tank system.
    - 28 oz. Red vinyl liner and an unfinished aluminum frame
    - Grab handles that are placed on the floor of the liner to assist with pickup
    - One (1) vinyl drain sleeve
- Ten (10) illuminated fold down steps, Chrome, from Innovative Controls. These shall be mounted to the rear of the apparatus, allowing access to the Hose Bed.
    - Stepping distance shall NOT exceed 18 in. as referenced in NFPA 1900
- Three (3) non-lit grab rails, Chrome, will be mounted to assist in getting up to the Hose Bed.

- One (1) will measure 36 in. long, on the rear of the apparatus upper middle area, horizontally mounted below Hose Bed
- Two (2) will measure 30 in. long, on the rear of the apparatus upper outer edges, vertically mounted

- The following labeling (where applicable) shall be provided and installed in accordance with NFPA 1900 requirements:
  - One (1) Overhaul height, overall length, and GVWR
    - Driver's side sun visor, visible surface
  - One (1) Quantity of: Engine oil, engine coolant, chassis transmission fluid, pump transmission fluids (if applicable), front & rear tire cold pressure, and maximum tire speed rating
    - Driving compartment in an area where viewing is easily accessible
  - One (1) Chassis Occupancy Capacity, **FAMA14**
    - Area visible to the vehicle operator
  - Two (2) Seat Belt Usage, **FAMA07**
    - Area visible to each seat that is intended to occupied while the vehicle is in motion
  - Two (2) Helmet Usage, **FAMA15/43**
    - Area visible to each seat that is intended to occupied while the vehicle is in motion
  - One (1) Secured Items, **FAMA10**
    - Driving compartment in an area where viewing is easily seen
  - Three (3) Climbing Method Instructions, **FAMA23**
    - Two (2), one (1) ea. per side cab door entrance
    - One (1) rear Hose Bed access area
  - One (1) Fall Hazard, **FAMA24**
    - One (1) rear Hose Bed access area
  - One (1) Training warning notice, **FAMA25**
    - One (1) Streetside pump panel area

15 - Graphics

15.1 - Standard Graphics Package

- Vengeant's Standard Package will include:
  - Standard lettering with font title or Department provided patch/logo art **FILE** on front cab door, unit designation number on the A-Pillar or front fender
    - If font name is not provided, it is up to the discretion of the graphics team to find a similar font
    - If no similar font is available, additional cost will be incurred due to needing to recreate the font as close as possible

- Standard reflective stripe on the cab and the sides of module body
- Any alterations to redesign this package will incur further costs.
- **Graphics package to be finalized during pre-con meeting.**

15.2 - Rear Chevron Striping

- There shall be prismatic reflective striping, V98 material in single sheets, on the rear of the apparatus body.
- Exact layout and design of rear reflective chevron striping shall be determined during the pre-con meeting.

16 - Documentation & Inspections

16.1 - Tool Mounting (Time & Material)

- Tool mounting will be billed separately from the invoice of the apparatus. If tool mounting is requested, the locations shall be discussed and terms of this agreement shall be acknowledged at the pre-con meeting. Tool mounting timeline:
  - Customer has up to **15 business days** to add tools to be mounted at the normal rate once the apparatus enters the Up-fit process
  - From **15 business days to 30 business days** in the Up-fit process, Time & Material rates will be doubled
  - From **30 business days to delivery date**, Time & Material rates will be tripled and could have the potential to push delivery date back with no penalty to the manufacture/dealer

  If an estimated cost is requested, there shall be an **ESTIMATED** cost given. Any changes to the discussed tool mounting will result in an increased cost to the customer.

  Initials: _____

16.2 - OEM Parts

- Any and all OEM parts removed from the chassis during the manufacturing process of the apparatus, will be retained by Vengeant Apparatus.

  Initials: _____

16.3 - Pre-Construction Meeting

- There shall be a required pre-con meeting in the selected manner of the department before any construction can begin.
- At least one representative from 911 Rapid Response shall be in attendance.
- At this meeting, parties shall again go over the specifications to ensure that the apparatus is built to meet or exceed all requirements.

- After this meeting the representative of 911 Rapid Response shall present the department a copy of the written work order to be used in production.

16.4 - Detailed, Scaled Drawings

- After the pre-con meeting, there shall be provided a detailed set of scaled computer drawings to be used in the production process.
- ***Drawings and all other visual representations shall be used for reference purposes only. Any discrepancies will revert back to written approved specifications and/or Change Orders.***

16.5 - Pre-Delivery Inspection

- There shall be a pre-delivery inspection trip at the manufacturing facility:
  702 W Main St, Annville, PA 17003
- The inspection trip shall consist of up to four (4) members from the department who shall inspect the apparatus to ensure compliance to all specifications. ***(Airfare and lodging is NOT included in this specific spec)***
- All product provided documents shall be organized and presented to members, including drawings, diagrams and renderings.
- The truck shall be weighed before delivery.

17 - Warranties

- **General Outline:**
  - The warranty and remedies set forth below are exclusive and in lieu of all others, oral or written, expressed or implied. No reseller, agent or employee is authorized to make any modification, extension or addition to this warranty. Any alterations to installed equipment will void all labor and manufacturer warranties. Any alterations to wiring not by an authorized Vengeant Apparatus management or an otherwise directed associate will void any/all warranties. Vengeant Apparatus extends two (2) months for end-customers to advise of work needing to be changed, replaced, missing that did not meet the specifications of the outlined quote. After a two (2) months time frame, Vengeant Apparatus is not responsible or liable for these issues. Movement, placement, rewiring, alterations, modifications, or any other after-installation tampering will void warranties unless explicit written consent is obtained by an authorized Vengeant Apparatus Executive.

- **Limited Structure Module Warranty:**
  - Subject to the requirements, exclusions, and limitations stated below, the structure of your Vengeant Apparatus is warranted to the original

retail purchaser against defects in materials and workmanship by Vengeant LLC or 911 Rapid Response from normal use for a period of fifteen (15) years from the date of purchase. The structure is that portion of the module, which includes the mainframe, consisting of the bottom rails, cross members, side posts and exterior walls, interior walls, roof rails and bows, and the sub-frame.

- **Limited Wiring Warranty:**
  - Our wiring routing and quality of its installation related to rubbing or chafing is covered for the LIFE of the original owner. Wiring quality relating to its ohm (Ω) resistance is guaranteed for fifteen (15) years. The wiring should maintain operating voltage over its length. Any alterations to wiring NOT by an authorized Vengeant technician, will **VOID** any/all warranties relating to the areas it reflects.

- **Paint:**
  - Paint is covered for three (3) years from peeling and fading as long as no neglect or improper care occurred.

- **Graphics:**
  - Graphics is covered under one (1) year Bumper-to-Bumper warranty which covers the lifting and peeling of applied vinyl graphics to painted surfaces. The separation of vinyl from lamination is also covered.

- **Full Warranty:**
  - Commonly known as Bumper-to-Bumper in the automotive industry. The performed work and equipment by Vengeant Apparatus is guaranteed for one (1) year at no cost to the customer. Warranty repair work during this time shall fall within the guidelines within this document.

- **Vehicle Chassis Warranty:**
  - Per the manufacturer's warranty policy. Seek manufacture for their warranty terms and conditions.

- **Exclusions of Items Warranted by Other Manufacturers:**
  - Expressly excluded from the Limited Warranty are any claims related to items that are warranted by their manufacturer. These items include, but are not limited to: lights, audible devices, pre-manufactured roll up doors, rub rails, fenderettes, mounting solutions, storage devices, pump, motors, roll out trays, tires, rims, axles, and axle components

including, without implied limitation, tow in/tow out and camber on axle; brake components; springs and suspension components; and any other items purchased and installed by Vengeant Apparatus any claims related to these items must be presented to their manufacturer for adjustment or replacement.

- **Other Exclusions NOT Covered by this Warranty:**
  - This Limited Warranty covers only defects in original components which arise from normal use and does not apply if the vehicle has been subject to negligence, accident, abuse, misuse, improper loading or has been repaired or altered without the prior written consent of Vengeant Apparatus. Damages caused by failure to provide proper maintenance and repair, failure to care properly for the exterior and interior of the vehicle, scratches, dings and dents and product failure due to miss use per manufacturer guidelines, are not covered by this Limited Warranty.

- **Prior Written Consent Required for Warranty or Defective Parts:**
  - No reimbursement will be made to any dealer or owner for repairs made without the prior written consent of Vengeant Apparatus. Any defective part(s) must be sent by prepaid freight to Vengeant Apparatus in order to qualify for replacement or reimbursement under this Limited Warranty. In the event, a dealer is required to perform or have performed locally warranty work and shop rate no higher than the Vengeant Apparatus rate will be paid. All work and pricing must be agreed upon prior to any repairs.

18 - NFPA

- This apparatus meets NFPA 1900 classifications within its category.