

RALLY

B.R.A.T.®

BRUSH RAPID ATTACK TRUCK

INTENT OF SPECIFICATIONS

It shall be the intent of these specifications to cover the furnishing and delivery of a completed apparatus equipped as hereinafter specified. These specifications cover only the general requirements as to the type of construction and test to which the apparatus shall conform, together with certain details as to finish, equipment and appliances with which the successful bidder shall conform. Minor details of construction and materials, which are not otherwise specified, are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features. Loose equipment shall be provided only as stated in the following pages.

DRAWINGS

Firematic shall supply CAD designed drawings of the vehicle as proposed. Views shall include both side front and rear. **Drawings are to be included with bid.** *Failure to supply actual drawings as per the following specifications with the bid shall be cause for rejection of bid.* Shop sketches, or hand-drafted renderings are not acceptable. Drawing shall show full pump panel detail.

No Manufacturing or shearing shall take place until the drawings have been signed off at the pre construction conference. Any final design alterations shall be at the discretion off the Board of Fire Commissioners.

QUALITY AND WORKMANSHIP

The design of the apparatus shall embody the latest approved automotive engineering practices. The workmanship shall be of the highest quality in its respective field. Special consideration shall be given to the following points: Accessibility of the various units, which require periodic maintenance, ease of operation (including both pumping and driving) and symmetrical proportions. Construction shall be rugged and ample safety factors shall be provided to carry the loads specified and to meet both on and off road requirements and speed conditions as set forth under "Performance Tests and Requirements". Welding shall not be employed in the assembly of the apparatus in a manner that shall prevent the ready removal of any component part for service or repair.

DELIVERY

Apparatus, to insure proper break in of all components while still under warranty, **shall be delivered under its own power** - rail or truck freight shall not be acceptable. A qualified delivery engineer representing the contractor shall deliver the apparatus and remain for a sufficient length of time to instruct personnel in the proper operation, care and maintenance of the equipment delivered.

INFORMATION REQUIRED

Firematic shall supply at time of delivery, complete operation and maintenance manuals covering the completed apparatus as delivered. A permanent plate shall be mounted in the driver's compartment which specifies the quantity and type of fluids required including engine oil, engine coolant, transmission, pump transmission lubrication, pump primer and drive axle.

GENERAL CONSTRUCTION

The apparatus shall be designed with due consideration to distribution of load between the front and rear axles. Weight balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association.

COMMERCIAL GENERAL LIABILITY INSURANCE

Firematic shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of commercial general liability insurance:

General Aggregate	\$2,000,000
Products/Completed Operations Aggregate	\$1,000,000
Personal and Advertising Injury	\$1,000,000
Each Occurrence	\$1,000,000

Coverage shall be written on a Commercial General Liability form. The policy shall be written on an occurrence form and shall include Contractual Liability coverage. The policy shall include owner as an additional insured as their interest may appear.

The required limits can be provided by one or more policies provided all other insurance requirements are met.

Coverage shall be provided by a carrier(s) rated "Excellent" by A.M. Bests.

UMBRELLA/EXCESS LIABILITY INSURANCE

Firematic shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of umbrella liability insurance:

Aggregate:	\$4,000,000
Each Occurrence:	\$4,000,000

The policy shall be written on an occurrence basis and at a minimum provide the same coverage's as Bidder's General Liability, Automobile Liability and Employer's Liability policies. Owner shall be included as an additional insured on the General Liability and Automobile Liability policies as their interest may appear. The required limits can be provided by one or more policies provided all other insurance requirements are met.

Bidder agrees to furnish owner with a current Certificate of Insurance with the coverage listed above. The certificate shall be made out to the purchaser and be an original, no photocopies shall be accepted. The Certificate of Insurance shall provide that owner be given 30 days advance notice of cancellation, nonrenewable or material change in coverage.

MAXIMUM OVERALL HEIGHT

The maximum overall height of the apparatus shall be 96.00”.

MAXIMUM OVERALL LENGTH

The maximum overall length of the apparatus shall be 270.00”

WARRANTY

The manufacturer shall warranty each piece of new fire or rescue apparatus to be free from defects in materials or workmanship under normal use and service. The manufacturer's obligation under this warranty is limited to repairing or replacing, as the company may elect, any parts thereof which are returned to them, with transportation costs prepaid and as to which examination is disclose to the company's satisfaction to have been defective. The part, or parts, shall be returned to the manufacturer not later than **one (1) year** from delivery of the apparatus. Such defective part, or parts, shall be repaired or replaced free of charge and without charge for installation to the original purchaser.

15-YEAR BODY WARRANTY

The body and subframe assembly shall be warranted against defects in material and workmanship for a period of fifteen (15) years from the date of delivery.

This warranty shall not apply:

- 1) To normal maintenance and adjustments.
- 2) To any vehicle which has been repaired or altered outside of the factory in any way so that, in the manufacturer's judgment, it would affect the stability. Also it shall not apply to any vehicle, which has been subject to misuse, neglect, or accident, or to any vehicle, which shall operate at any speed, exceeding the factory rated speed, or loaded beyond the factory rated load capacity.
- 3) To commercial chassis and associated equipment furnished with the chassis, signaling devices, generators, batteries, or other trade accessories in which they are usually warranted separately by their respective manufacturers.

This warranty is in lieu of all other warranties, expressed or implied, all others representations to the original purchaser and all other obligations or liabilities, including liability for incidental or consequential damages on the part of the company. The manufacturer neither assumes or authorizes any other person to give or assume any other warranty or liability on the company's behalf, unless made or assumed in writing by the company.

CHASSIS

2017 – Ford F-350 chassis 14,000 MGWV
2 Door SuperCab and Chassis
4 x 4 Drive Train
5-Speed Electric OD Transmission
Power Steering
Power Brakes
Vinyl bucket seats
F1 – Red Paint
Wheel Base 167.90”
Power Windows and Mirrors
4-Wheel ABS Brakes
Driver and Passenger Air Bags
Power windows and locks
Front and Rear Tow Hooks
Radio ETR AM/FM Stereo with Clock
Gas Engine 6.2 Liter V-8 365 H.P.
Single 78 AH Battery
Engine Block Heater
Single 157 AMP Alternator
Maximum Front GAWR Package
Air Conditioning
Auxiliary Idle Kit
Daytime Running Lights
Fuel Tank Skid Plate
Hi Idle Switch
Roof clearance lights

All modifications, equipment, maximum manpower, and carrying capacity of water must not exceed the manufacturers (Ford) maximum GVWR of 14,000 lbs.

OVERALL DESIGN

The body for the brush truck will be manufactured entirely of aluminum. The roll bars and aluminum diamondette will also be aluminum. No exceptions will be allowed in regards to the aluminum material. The body will be 112” overall length and the overall width shall not be less than or exceed the overall width of the factory Ford rear axle, including the hubs, which is approximately 92”.

There will be a Pro Poly water tank with a lifetime warranty.

The four (4) compartments will be .125” diamond plate with diamond plate lift up doors.

The pump will be a Hale HPX200- B18 pump driven by a Briggs and Stratton 18 hp gasoline engine unit plumbed to the chassis fuel tank.

The one (1) booster reel will be all aluminum construction by Hannay. One (1) #SBEF 30-23-24RT.

One (1) Class A hitch will be supplied at the rear body. The entire body assembly will be manufactured from aluminum.

FLAT DECK BODY

The body will have a 6" x 4" x 3/8" aluminum angle perimeter and the front corners will have tapered ends. The taper should be angles of 55 and 35 degrees from front inboard to outboard respectively.

The sub-structure will be made of 2" x 4" x .125" 6061 aluminum box tubing. Two main front to rear rails will be installed, made of 2" x 4" x .188" aluminum 6061 T6 rectangular box tubing.

The floor will be 3/16" brite dip polished aluminum and the entire flat bed will be stitch welded.

The body will be 112" long and approximately 92" wide as stated in above paragraph and secured to the truck chassis with 2-5/8" U-bolts, two 3/8" aluminum plates welded to the rails and bolted to the truck frame rails midway along the body and two steel 1/2" plates at the rear which will be bolted to both the body rails and frame rails.

There will be a 1/2" x 3" die cut #70 durometer rubber isolation plate installed between the body and truck frame rails. A rear apron made with 5086 aluminum tubing with a .145" wall and .125" diamondplate will be installed to house the brake and turn signal lighting. The tubing will be bent on a movable Mandrel hydraulic bender with a 6.5" bend radius to reduce stress and provide a wrinkle free and continuous wall thickness.

The diamondplate will cut to the shape of the apron and stitch welded to the front side of the tubing. The entire apron will bolt on to the underside rear corners of the bed with stainless 3/8" button head cap screws.

ROLL BAR AND BODY PROTECTION

The roll bar will be made of 1 1/2" 5086 aluminum tubing with a .145" wall. It will be crossed braced with the same tubing. The roll bar will be braced into the compartments and be mounted to the front of the deck by welded on 1/4" aluminum bases and 3/8" s/s bolts.

A brush guard made of 1 1/4" aluminum tubing will be installed to protect the light bar. The brush guard shall be attached to the front of the roll bar. It shall provide adequate clearance between guard and the cab roof. The guard shall have a minimum four 1.25" tube protectors with a 1.25" bottom rail.

The roll bar and protection cage has been engineered to give rollover protection to the cab. The lightbar will be removable from either side.

A 12" transverse space will be left between the roll bar and water tank. An aluminum toolboard will be centered front to back in the space and slide on a top and bottom nylon track out of both sides of the area.

Black nylon netting will be installed on both sides for tool retention.

Also, an 1 ½" 5086 aluminum tube will run the full length of the upper compartments on both sides of the body. The front part will be welded to the rear of the roll bar and track down the upper outboard length of the hose beds and bolt onto the rear of the deck. This bar is to both protect the hose beds and facilitate booster hose deployment on both sides of the truck off and on the booster reel.

An inner bulkhead will be made from diamondplate, 1/8" thick, welded to the underside of the tube and will incorporate the hosebed on the inner side. The recessed area above the compartments can be used for long tool and forestry tool mounting.

FRONT GRILL AND BRUSH GUARD

A Warn Trans4mer steel grill guard powder coated black will be installed on the front of the truck. A 2" receiver tube will also be installed.

TUBE SIDE STEPS

Commercial 4" steel tube, powder coated black steps will be installed on the chassis under the doors.

SUPER SINGLE WHEEL CONVERSION

The apparatus will be delivered with special steel wheels to allow single rear wheels and new front wheels. The wheel offsets will be adjusted for aligning the front and rear truck width to within 1/8".

The wheels will be 17" diameter with matching hub and stud location. They will be powder coated a satin black color.

TIRES

A set of four (4) Goodyear Wrangler MT/R with Kevlar 37x12.50R17LT with a 37" diameter and 3525 lbs load rating will be installed on the special rims. Brass valve stems will be required. The entire rim and tire will be balanced. The rims will be powder coated to match the Ford paint. Inflation pressure will be 50 psi.

Rear and front of the deck body mudflaps made of ¼" rubber will be installed.

WATER TANK

The water tank skid will be supplied by Pro Poly and will have a lifetime guarantee. The tank will be of rectangular design 48" wide x 60" length x 22" high and holds 225 gallons of water. The skid platform will be 48" wide x 30" long. The tank will have a bucket fill hinged door located at the forward portion of the tank. The water tank will have a 4" overflow thru the floor of the tank and will be part of the top fill box assembly.

A tank to pump line will be provided via a 3" NPT bushing. The bushing will be installed at the rear of the tank on the driver's side one inch from the floor and eight inches in from the left side.

A tank refill line will be provided in the center of the rear wall 18" from the floor, the bushing will be 1 ½" NPT. A 2" wide clear poly strip will be installed on the passenger side for water level sighting.

An 10 gallon foam cell will be mounted on the drivers's side rear corner. It will have a lockable 10" x 10" square bucket fill door and two ½" NPT ports out the rear.

The tank will have two booster reel mounting strips built into the top of the tank for a single booster reel. A strip of ¼" #70 durometer rubber will be installed in between the tank and flat bed.

PUMP

A Hale HPX200 – B18 Stainless Steel Pro Kit will be installed.

PUMP ENGINE

The engine shall be a 4 cycle gasoline Briggs and Stratton 18BHP, overhead valve, air cooled design. Engine rating shall be 18 BHP at 3600 rpm.

A 12-volt electric system shall be provided with electric starter and a 20 amp alternator. Recoil backup engine starting shall be provided. The engine shall be equipped with a residential muffler with USDA approved spark arrestor.

PUMP PERFORMANCE

The pump/engine shall perform to the standards of ISO 9 and NFPA 1906 medium pressure pump rating.

Typical pump performance from 5 foot draft at sea level shall be: 60 GPM @ 150 PSI, 150 GPM @ 100 PSI and 245 @ 10 PSI.

PUMP

The pump body shall be made of alloy aluminum castings coupled together with a stainless steel band clamp with an O-ring seal which allows quick pump volute removal for servicing. The pump end shall be factory hydrostatically tested to 250 PSI for 10 minutes. The impeller shall be bronze. The renewable clearance rings shall be made of anodic plated bronze to inhibit galvanic corrosion.

The impeller shall be 8.75inches in diameter and designed with a sleeve back end to prevent water from coming in contact with the engine shaft. The pump shaft seal shall be an automatically adjusting, maintenance free, mechanical type. The pump body shall be equipped with a petcock drain valve.

PIPING

A 3" tank to pump line will be installed with a ¼ turn valve located at the tank. A check valve will be installed between the valve and the pump with the check towards the tank.

A 2.5" inlet valve with 2.5" NST female swivel threads will be installed at the rear of the body and piped to a 3" tee at the inlet to the pump. This line will allow positive water to the pump from another apparatus.

BALL VALVES

The valves shall be cast of 316 stainless steel including the ball with full flow capability. The valve shall be warranted for a period of 10 years on all stainless steel components against defects in design and manufacturing processes. The wear items such as the seats, seals, and "O" rings shall have a warranty of two years on replacement parts only.

PIPING AND MANIFOLDS

All the piping and pump body attached manifolding shall be stainless steel. The complete piping system shall be designed to direct mount all 1" (2.54 cm) or larger ball valves onto the pump body or stainless steel manifolds attached directly to the pump body.

There will be two 1" valves, one for tank fill and one for the booster reel. There will also be two 1 ½" valves, one direct discharge off the rear of the manifold and one for a rear preconnect.

TANK FILL

There shall be a 1" (2.54 cm) pump to tank fill stainless steel valve.

TANK TO PUMP

The tank to pump valve shall be 3" inline, installed between the water tank and the pump. The valve shall be a quarter turn ball type, fixed pivot design and be constructed of stainless steel. The tank to pump 3" (7.62 cm) valve shall have a hose barb connection.

GATED SUCTION CONNECTION

The Gated Suction valve shall be 2.5" inline, with a 2.5" NST female coupling. The valve shall be a quarter turn ball type, fixed pivot design and be constructed of stainless steel. The tank to pump 2.5" (6.35 cm) valve shall have a hose barb connection

WIRING HARNESS

The Class 1 electrical wiring harness shall be constructed using GXL wire per SAE J1128. Terminals shall meet the minimum pull test as required by the manufacturers pull test and crimp measurement data. All splices shall be manufactured using the ultra sonic splice process. Harness shall be 100% connected to a Dynalab® circuit tester to insure continuity and correct assembly.

BOOSTER REEL

One Hannay #SBEF30-23-24 RT booster reel will be mounted on top of the tank. It will come with 200 feet of 1" yellow lightweight booster hose.

FOAM SYSTEM

A Scotty 4071 "Around the pump" Class A foam eductor system will be installed. Two 3/4" stainless steel female ports will be installed, one on the suction side of the pump manifold and the other on the discharge side of the pump manifold. All discharges will be foam capable when system is run.

CROSSLAY

A crosslay tray that will hold a minimum of 150 ft of 1 3/4" hose will be installed at the top front of the body, above the tool board. An 1.5" brass swivel will be installed thru the back wall and plumbed to the pump outlet. This will all the hose to be deployed to either side of the vehicle.

REAR HOSEBEDS

Two 10.5" by 10" H X 96" long diamond aluminum hose troughs will be mounted above the driver's and passenger's side compartments from front to back and be open from the rear. One tray will accommodate a minimum of 200' of 1 3/4" hose and the other a minimum of 100' of 2.5" deadlay hose. Both will have a black net gate at the rear to prevent the hose from sliding out while the truck is in motion.

COMPARTMENTS

Provide two compartments 48" long by 18" deep x 24" high, side by side on the driver's side of the deck. The walls and roof will be made of .125" brite dip aluminum diamondette. The doors will be made of 1/8" aluminum diamond plate and will flip up with a gas assisted piston on each side.

Provide two compartments 48" long by 18" deep x 24" high, side by side on the passengers side of the deck. The walls and roof will be made of .125" brite dip aluminum diamondette. The doors will be made of 1/8" aluminum diamond plate and will flip up with a gas assisted piston on each side.

Both compartments will have 'sweep out' style floors and LED lights mounted on the ceiling in the center of each door and will have magnetic door switches to control the lights. An adjustable shelf will be provided for each compartment.

A door switch will be wired to the "Door Open" warning light on the dash for each compartment.

REAR HITCH AND FOLD DOWN STEP

A steel 2" receiver hitch will be installed on the rear of the truck. There shall be a complete steel substructure designed to provide a departure angle of more than 20 degrees.

The structure shall also be designed to accommodate the weight ratings associated with a class three hitch. The hitch shall be centered under the rear step bumper. There shall be two rear step weldments provided, to allow the use of the winch snatch block.

Also one NFPA conforming flip down step above the hitch shall be included.

ELECTRICAL

All 12-volt electrical equipment installed by the apparatus manufacturer shall conform to modern automotive practices. All wiring shall be high temperature crosslink type. Wiring shall be run, in loom or conduit, where exposed and have grommets where wire passes through sheet metal. Automatic reset circuit breakers shall be provided which

conform to SAE Standards. Wiring shall be color, function and number coded. Function and number codes shall be continuously imprinted on all wiring harness conductors at 2.00" intervals. Exterior exposed wire connectors shall be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids. Electrical wiring and equipment shall be installed utilizing the following guidelines:

(1) All holes made in the roof shall be caulked with silicon. Rope caulk is not acceptable. Large fender washers, liberally caulked, shall be used when fastening equipment to the underside of the cab roof.

(2) Any electrical component that is installed in an exposed area shall be mounted in a manner that shall not allow moisture to accumulate in it. Exposed area shall be defined as any location outside of the cab or body.

(3) Electrical components designed to be removed for maintenance shall not be fastened with nuts and bolts. Metal screws shall be used in mounting these devices. Also a coil of wire shall be provided behind the appliance to allow them to be pulled away from mounting area for inspection and service work.

(4) Corrosion preventative compound shall be applied to all terminal plugs located outside of the cab or body. All non-waterproof connections shall require this compound in the plug to prevent corrosion and for easy separation (of the plug).

(5) All lights that have their sockets in a weather exposed area shall have corrosion preventative compound added to the socket terminal area.

(6) All electrical terminals in exposed areas shall have ECK™ corrosion preventative applied completely over the metal portion of the terminal. All emergency light switches shall be mounted on a separate panel installed in the cab. A master warning light switch and individual switches shall be provided to allow preselection of emergency lights. The light switches shall be "rocker" type with an internal indicator light to show when switch is energized. All switches shall be properly identified and mounted in a removable panel for ease in servicing.

Identification of the switches shall be done by either printing or etching on the switch panel. The switches and identification shall be illuminated.

All lights and reflectors, required to comply with Federal Motor Vehicle Safety Standard #108, shall be furnished. Rear identification lights shall be recessed mounted for protection.

BACK UP ALARM

There will be an electronic beeper that sounds when the truck is placed in reverse. The beeper will be heard over all engine noise to warn persons near or on the truck.

CONSOLE

An all Aluminum #3003 alloy console will be manufactured and powder coated black. The console will be mounted between the two front bucket seats and hold the siren

control and department supplied radios on the face. A Whelen 295HFS6 siren control head will be installed to operate all lights and sirens. A 100 watt siren speaker will be mounted under the deck of the front bumper.

LIGHTING

Roof light – A Whelen Freedom IV led light bar will be installed with red and clear lenses with two take down lights in the front and two alley lights one on each side. A brush guard made of 1 1/4" aluminum tubing will be installed to protect the lite bar.

The brush guard shall be attached to the front of the roll bar. It shall provide adequate clearance between guard and the cab roof. The guard shall have a minimum four 1.25" tube protectors with a 1.25" bottom rail. All bulbs will be LED.

Grill lights – Whelen grill lights will be provided. The lights will be a Whelen ION series red led, mounted on the truck grill area in chrome housings.

Side lights - Four Whelen ION series red led lights, two on either side of the front fenders and two inset on either side of the front and rear outside corners of the deck body will be installed. All D.O.T. mandated lighting will be installed.

Rear lights – A triple cluster rectangular brake –tail – directional lights will be mounted horizontally below the body. The lights will be mounted in their own al box for protection.

Two Whelen M6 series led warning lights, one red and one amber will be installed at the two rear corners of the compartments facing rearward.

Scene lights – Two Whelen M6 scene lights will be installed facing out on the upper middle of the side protection bulkheads.

Also two Whelen M6 scene lights will be installed under the M6 warning lights on the rear of the compartments and will be wired to come on when vehicle is put in reverse.

SHORE LINE

One (1) 110 volt Kussmaul on board charger with auto eject receptacle shall be installed on the left rear door post behind the rear most door.

STRIPING

A 5" white scotchlite stripe with 1" over and under scotchlite will be installed on the door of the truck on each side with a red scotchlite stripe on the perimeter of the flatbed.

REAR CHEVRON STRIPING

There shall be alternating chevron striping located on the rear facing vertical surface of the apparatus. Covered surfaces shall include the rear body perimeter beam and body apron.

Each stripe shall be 6.00" in width. The colors shall be Solid Red Diamond Grade and Solid Yellow Diamond Grade.