

**REQUEST FOR PROPOSAL**  
**TO BUILD A BRUSH TRUCK**

**FOR**

**NORTH STONINGTON VOL. FIRE CO., INC.**  
**& TOWN OF NORTH STONINGTON**

40 MAIN STREET  
NORTH STONINGTON, CONNECTICUT 06359

**Contact for questions on**  
**Bid Requirements and Truck Specifications:**

Town of North Stonington  
Selectmen's Office  
40 Main Street  
North Stonington, Connecticut 06359  
[selectmen@northstoningtonct.gov](mailto:selectmen@northstoningtonct.gov)

## **INTRODUCTION:**

The North Stonington Volunteer Fire Company in conjunction with the Town of North Stonington shall receive sealed bids for the furnishing of one (1) Brush Truck custom built as specified until **February 23, 2017 at 12:00 noon.**

Specifications are available on the Town's website [www.northstoningtonct.gov](http://www.northstoningtonct.gov) under the RFP/RFQ tab. Bids will be accepted until February 23, 2017 at 12:00 Noon. Questions may be submitted to the Town in writing at [selectmen@northstoningtonct.gov](mailto:selectmen@northstoningtonct.gov) through February 9, 2017 at 12:00 Noon and all answers will be posted on the Town's website under the RFP/RFQ tab no later than February 13, 2017. It is the responsibility of the bidders to check the website for questions and answers.

Please read **ALL** directions and sections carefully in this specification for proposal. Bids must be clearly marked or stamped **"Proposal – Fire Company Brush Truck"** in a sealed envelope. Bids for this truck must be valid until May 23, 2017. The Town shall not be responsible for accidental opening or improper identification and shall immediately reject those bids. Bid opening will be at 40 Main Street, North Stonington, Connecticut in the New Town Hall Conference Room on February 23, 2017 at 1:00 PM.

The Town reserves the right to reject any or all bids and to accept the bid which they deem to be in their best interest and shall not necessarily be bound to accept the lowest bid. All bids shall be signed by an authorized official of the company that shall build the apparatus. Authority granted by the corporation's board of directors that the person signing the bid can commit the corporation to a lawful binding contract shall be furnished with the bid.

Bidders must have in operation a factory adequate for the production of the apparatus as specified herein. Bidders must state in their bids the time that shall be required to make delivery of the items they propose to furnish. This time must be stated in calendar days, not working days, and must not exceed 180 days.

The time limit shall be subject to adjustment after award due to delays caused by strikes, riots, acts of God, or other causes beyond the control of the contractor, including orders, limitations or restrictions by any governmental agency having jurisdiction over the subject matter of the contract.

## **GENERAL INSTRUCTIONS AND REQUIREMENTS:**

It is the intent of these specifications to cover the furnishing and delivery of a completed and soundly engineered fire apparatus as hereinafter specified. These specifications cover the requirements as to the type of construction and tests to which the apparatus must conform, together with certain details as to finish, equipment and appliances with which the successful bidder must conform.

Minor details of construction and materials where not otherwise specified are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all non-specified features.

The apparatus shall be built per our specifications. They shall have been building this type and model of apparatus for a minimum of ten (10) years.

The apparatus shall be weighed before delivery with a full tank of water, all equipment installed and the number of personnel that there are seats for. Apparatus shall not be accepted or paid for until this has been done.

Each bidder shall furnish satisfactory evidence of his ability to construct the apparatus as specified, and shall state the location of the factory where the apparatus is to be built. The manufacturer shall also show that he is in a position to render prompt service and to furnish replacement parts for apparatus.

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

To insure the purchaser of a source for service and parts over the anticipated 20-year life of the apparatus, apparatus manufacturer shall maintain a factory service, fabrication, painting, and testing facility within the State of Connecticut. The bidder shall indicate in his bid the name and location of factory service facility which complies with the above stated requirements.

### **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.

### **GENERAL CONSTRUCTION**

The apparatus is 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. Any deviation and/or change to this spec must be made in writing and agreed upon by both the Truck Committee and the Builder. Should a significant issue arise during the build of the apparatus, one that cannot be corrected via phone and/or email and which requires a visit to the Builder's facility, travel expenses shall be the responsibility of the Builder.

## **PERFORMANCE TESTS AND REQUIREMENTS**

A road test shall be conducted with the apparatus fully loaded and a continuous run of twenty (20) miles or more shall be made under all driving conditions. During this time, the apparatus shall show no loss of power or overheating. The transmission, drive shafts and axles shall run quietly and be free from abnormal noise or vibration throughout the operating range of the apparatus. The truck must be fully compliant with all NFPA 1901 standards at the time of manufacture. This will be true for all specifications throughout the entire bid.

## **FAILURE TO MEET TESTS**

In the event the apparatus fails to meet the test requirement of these specifications on the first trials, second trials may be made at the option of the bidder within thirty (30) days from the date of the first trials. Failure to comply with these requirements shall be cause for rejection.

Failure to comply with changes necessary to conform to any clause of the specifications within thirty (30) days shall also be cause for rejection of the apparatus. Permission to keep or store the unit in any building owned or occupied by the purchaser during the above specified time period with the permission of the builder shall not constitute acceptance.

## **EXCEPTIONS TO SPECIFICATIONS:**

The following specifications shall be strictly adhered to. Exceptions shall be allowed if they are equal to or superior to that specified, and provided that they are listed and fully explained on a separate page entitled "EXCEPTIONS TO SPECIFICATIONS". Each exception shall specifically reference the page and paragraph to which exception is being taken. PROPOSALS TAKING TOTAL EXCEPTION TO SPECIFICATIONS SHALL NOT BE ACCEPTABLE.

Apparatus shall be inspected upon delivery for compliance with specification. Deviations shall not be tolerated and shall be cause for rejection of apparatus unless such deviations were originally listed in the bidder's proposal and specifically indicated on the 'EXCEPTIONS' page.

Bids shall be rejected which substitute less substantial materials and/or methods of body construction than those specified. Since all manufacturers have the ability to purchase the materials described as well as to shear, fabricate and assemble body panels as specified, these areas are considered a strict requirement of the specifications.

Bid proposals must be submitted in the same sequence as specifications for ease of checking compliance to same.

## **DRAWINGS**

The Builder 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 of the Truck Build Committee.

### **PRE-CONSTRUCTION CONFERENCE**

A pre-construction conference shall be conducted at the Fire Department Headquarters, at which time all final designs and equipment mounting locations shall be approved, prior to any sheet metal being cut. All expenses for travel, meals and lodging shall be the responsibility of the successful bidder. Bidder shall indicate the intention to provide the required pre-construction conference in the proposal packet.

### **COMMERCIAL GENERAL LIABILITY INSURANCE**

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

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**

The Builder 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:	\$5,000,000
Each Occurrence:	\$5,000,000

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.

### **WARRANTY:**

The following warranty shall be furnished on the entire apparatus. Bidder shall warranty the apparatus manufactured by them to be free of defects in material and/or workmanship under normal use and service for a period of three (3) years from date of delivery to the original user. In addition, the body must be warranted for fifteen (15) years. In all cases the warranties shall be NON pro-rated for the life of the warranty term. All painted surfaces shall include a ten year warranty, also NON pro-rated.

This warranty shall be printed on a company form and shall be included with your bid. If any component manufacturer has a longer warranty, it shall be included at no additional cost to the department. A copy of the component manufacturer's warranty shall be included with the bid.

### **DELIVERY**

The Builder will have, from the date the contract is signed by a Representative of the Fire Company and/or Town, a maximum of (6) six months to complete and deliver the finished apparatus. The apparatus, to insure proper break in of all components while still under warranty, **shall be delivered under its own power**. A final inspection of the apparatus will be conducted by the Truck Committee at time of delivery. The Builder shall supply at time of delivery, complete operation and maintenance manuals covering the completed apparatus as delivered. Should a defect or any deviation from the specified specifications not already agreed upon be found, the apparatus will not be accepted and shall be returned to the Builder at the Builder's expense for correction. A qualified delivery engineer representing the Builder 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.

### **CHASSIS**

2017 – Ford F-550 XL chassis 19,500 MGWV  
2 Door Cab and Chassis  
4x4 Drive Train w/ Limited Slip axle  
Aerodynamic headlights  
Diesel Engine 6.7 Liter Power Stroke 300 H.P.  
6-Speed Electric OD Transmission  
Power Steering  
Power Brakes  
Vinyl bucket seats w/ flip down middle seat/console  
Oxford White  
Wheel Base 141"  
Power, heated 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  
Dual 78 AH Batteries  
Engine Block Heater  
Dual 178 AMP Alternators  
Maximum Front GAWR Package  
Air Conditioning  
Auxiliary Idle Kit  
Daytime Running Lights  
Fuel Tank Skid Plate  
Hi Idle Switch  
Roof clearance lights  
Factory Brake controller  
Snow plow front end weight upgrade

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. All modifications, equipment, maximum manpower, and carrying capacity of water must not exceed the manufacturers (Ford) maximum GVWR of 19,500 lbs.

#### **ALTERNATE**

**2016 Ford F550 4x4 XL 2-Door chassis may be substituted for a 2017 model if available. This substitutions specifications must be equivalent to the 2017 model year as specified above. All other specifications as indicated in this document shall also be required on a 2016 model year chassis (with exception of the chassis).**

**If the Builder wishes to present a bid to include a 2016 model year chassis, they shall submit that as a separate bid and it shall be marked, "2016 Chassis Option".**

#### **OVERALL DESIGN**

The body for the brush truck will be manufactured entirely of aluminum. The roll bars and aluminum diamond plate will also be aluminum. No exceptions will be allowed in regards to the aluminum material.

There will be a poly water tank with a lifetime warranty.

The three (3) compartments will be .125" diamond plate with ROM roll up doors.

The pump will be a Hale 30FS pump driven by a Deutz 65 hp (or equivalent) diesel engine unit piped to the chassis for fuel and 12 volt.

One (1) Class A hitch will be supplied at the rear body.

#### **MAXIMUM OVERALL HEIGHT**

The maximum overall height of the apparatus shall be "104.00".

#### **MAXIMUM OVERALL LENGTH**

The maximum overall length of the apparatus shall be "234.00"

#### **MAXIMUM OVERALL WIDTH**

The maximum overall width of the apparatus shall be "92.00"

## **FLAT DECK BODY**

The body will have a 6" x 4" x 3/8" aluminum angle perimeter and the front corners will have squared ends.

The sub-structure will be made of 2" x 4" x .250" aluminum 6061 rectangular tubing. Two main front to rear rails will be installed, made of 2" x 4" x .250" aluminum 6061 T6 rectangular box tubing.

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

The body will be 112" long and approximately 92" wide 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" diamond plate 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 diamond plate 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 light bar will be removable from either side.



Between the roll bar and deck compartments, an aluminum pegboard that slides out both sides of the deck will be installed. The board will lock from either side and slide in nylon channels. Black nylon netting will be installed for loose equipment retention.

Also, a 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 diamond plate, 1/8" thick, welded to the underside of the tube and will incorporate the hose bed on the inner side. The recessed area above the compartments can be used for long tool and forestry tool mounting.

### **SIDE STEPS**

A stainless steel tube step will be installed below each cab door.

### **UNDERBODY SKID PLATE**

Install one ¼" steel skid plate under the oil and transmission pan that bolts on at four spots for easy removal. Skid plate will be painted black.

### **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 19.5" diameter with matching hub and stud location and will be powder coated black.

### **TIRES (equivalent or better)**

A set of 4 Interco Irok 36x13.5/19.5 super single tires will be installed on the special rims. Brass valve stems will be required. The entire rim and tire will be balanced. Inflation pressure will be 100 psi. This is an upgrade package that will incorporate a Tuff Country 2.5" leveling kit with new shocks for the front axle and 2" lift blocks in the rear with new U-bolts and shocks.

Rear of the deck body mud flaps made of ¼" rubber will be installed.

### **WATER TANK (equivalent or better)**

The water tank skid will be supplied by Pro Poly or equivalent and will have a lifetime guarantee. The tank will be of rectangular design 48" wide x 60" length x 30" high and holds 300 gallons of water. The skid platform will be 46" 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 through 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.

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

### **PUMP (equivalent or better)**

A Hale 30FS pump driven by a Deutz four cylinder 65 hp @ 2600 diesel engine will be installed that will provide approximately 300 GPM at 150 PSI. The main inlet will be 3" NH and the main discharge will be 2" NPT.

The pump will be wired and piped to the Ford electric and fuel system. The exhaust will be piped to below the flat bed. A control console will be installed at the rear of the truck in the rear of the passenger side compartment with a swing door. Also it will be offset to the passenger side corner for plumbing functionality and pump panel layout. A louvered 3/16" aluminum plate swing-out door will be mounted on the side corner to provide proper cooling airflow and access.

The console will include:

- Tachometer
- Oil pressure and temperature gauge
- Volt meter
- Water gage
- Start / Stop
- Throttle
- Night Lite
- Water tank level indicator
- Primer control

A separate 12-volt alternator will be part of the pump and will provide 65 amps of output. The engine will be equipped with a 12-volt starter. A 12 volt electric oil less primer will be installed.

### **PIPING (equivalent or better)**

An Elkhart Brass 3" tank to pump valve will be installed with a remote pull control on the pump panel. A check valve will be installed between the valve and the tank with the check towards the tank.

The pump inlet will be an Elkhart Brass 2.5" valve with NST female 2.5" threads and 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 a pressure source or allow draft operation.

### **DISCHARGE MANIFOLD**

An all stainless steel 304 L 3.5" square manifold will be supplied. The manifold will have mounting legs made of ¼" 304 L – stainless steel as well as the two ends which will be ¼" 304 – L – also. The manifold will be TIG welded and tested to 400 PSI.

All of the discharge flanges will be stainless steel and welded to the rear surface. The nipples will be installed to allow sufficient room for the discharge valves. A drain valve will be installed in the bottom and piped via hose to below the frame rails.

The manifold will supply (2) two 1" outlets, one for the booster reel and one for the tank fill, two 1.5" discharges for (1) one cross lay and one direct rear outlet, and one 2 ½" direct rear outlet. All discharge valves will be Elkhart Brass with remote ¼ turn handles.

### **BOOSTER REELS (equivalent or better)**

A Hannay SBEF32-17-18 aluminum reel will be mounted to the top center front of body with deployment to the passenger side of the truck. The hose reel will be plumbed and will come with 200' of 1" Reeltex booster hose. Two electric rewind push buttons will be installed, one on either side of the body, at the front of the compartments. Two chrome roller assemblies will be installed on each outboard edge of the hose reel, consisting of a horizontal 2" roller and two vertical rollers, one front and one back for hose deployment. A crank backup assembly will be supplied also. A bracket to be installed on passenger side of body to secure nozzle in place.

A stainless steel roller assembly consisting of a horizontal 2" roller and two vertical rollers, one front and one back, will be installed on the outboard edge of both hose beds.

### **CROSSLAY**

A 10" wide by 84" long aluminum cross lay tray will be installed at the upper front of the body and will hold a minimum 200' of 1 ¾" hose. This will be pre-piped from discharge manifold.

### **HOSEBED AND SUCTION**

Two aluminum diamond plate storage trays will be installed on the deck compartments. The driver's side bed shall be capable of holding a minimum of 200' of 1 ¾". The passenger's side bed will hold 300 feet of 3" supply hose. Black nylon netting will secure the rear of the open beds.

Inboard of the two hose beds, dual suction holders for 2 lengths of 2.5" suction hose will be installed with storage areas to both sides.

### **PUMP PANEL (equivalent or better)**

A rear mount pump operator's panel will be provided. The panel will be constructed of aluminum and have a vinyl printed overlay showing in color where/what the pull controls actuate. The panel will contain the following:

- Five (5), 2.5" individual discharge gauges 0-400 psi
- Two (2) 4" Innovative Controls Master gauges
- One (1), Fire Research Tankvision water gauge
- Two (2), test ports
- One (1), panel light switch
- One (1), Foam Pro Control

The panel will be provided with an Amdor Luma Bar LED light strip that will be installed under a stainless steel light hood. A single rocker switch on the right side pump panel will activate the panel lights.

### **SLIDE OUT TOOL BOARD**

A sliding aluminum pegboard will be installed between the roll bar and water tank. The board will be locked in place for normal truck operation and then be capable of deployment

out either side of the truck to also lock in place open. The board will have room for department supplied long handled hand tools.

### **COMPARTMENTS**

Three compartments will be fabricated and installed on the flat bed. Two will be 48" long by 20" deep x 30" high on the driver's side. One will be approximately 62" long by 20" deep and 30" high on the passenger's side of the deck. Three ROM roll up doors shall be provided with a brushed finish. The walls and roof will be made of .125" bright dip aluminum diamond plate, compartments to be vented.

All compartments will have 'sweep out' style floors and LED lights mounted on both sides of each door and will have magnetic door switches to control the lights. All compartments will have dry-deck flooring and one adjustable aluminum shelf.

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

One (1) 110-volt 15-amp duplex GFI weather proof outlet is to be installed in the front drivers side compartment. This outlet will be wired to the Kussmaul on board charger to charge mounted hand lights.

### **UNDERBODY COMPARTMENTS**

Two all aluminum diamond plate compartments with "D" handle fold down door that measure 36" long by 18" deep and 18" high will be provided on the left and right sides of the truck in front of the rear tire and mounted beneath the bed.

The front of the box shall follow the contour of the bed and will be a mirror image of the passenger side underbody box and shall be vented.

A door switch will be wired to the "Door Open" warning light and audible alarm on the console for each compartment.

The compartments will have a LED Light installed in center of the compartments and controlled the same as the other compartments and also the placement of dri-deck flooring in said compartments.

### **REAR RECEIVER**

A 2" Class 3 receiver tube shall be attached underneath the center rear of the bed. A seven prong trailer plug will also be wired to the truck and installed under the hitch substructure, cover to be provided over the trailer plug.

There will also be four fold down steps, two each side installed on the rear of the truck with integrated LED lighting.

### **BACK UP ALARM**

There will be an electronic backup alarm that sounds when the truck is placed in reverse. The backup alarm will be heard over all engine noise to warn persons near or on the truck and shall emit a minimum of 97 decibels.

### **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.

### **CONSOLE**

An all-aluminum #3003 alloy custom 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/portable radio charger on the face. A Whelen 295HFSA6 siren control head or equivalent will be installed to operate all lights and sirens. A 100-watt siren speaker will be mounted under the deck of the front bumper.

A 12 volt, 350 electronic relay tied into the ignition circuit of the truck will be installed in the console to separate the OEM electrical from the Ford electrical system when the key is switched off.

### **LIGHTING (equivalent or better)**

**Roof light** – A Whelen 55" Edge® Ultra Freedom red LED light bar will be installed with clear lenses, with two take down lights in the front and two alley lights one on each side. Take down and alley lights will be capable of flashing and steady burn. All bulbs will be LED. Light bar to be fully populated to the front and rear corners populated to the rear.

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.

**Grill lights** – Two Whelen grill lights will be provided. The lights will be M4 Super LED series red, mounted on the truck grill area in chromed housings.

**Side lights** – Six Whelen ION super LED series red lights as shown in the drawing, two on either side of the front fenders and two installed on either side of the front/rear corners of the deck body as shown in the drawing. All D.O.T. mandated lighting will be installed.

**Under body lights** – Four 4" diameter LED lights (1) front (1) rear (1) driver's side and (1) passenger's side shall be installed and be controlled with a switch on the console.

**Rear lights** – A triple cluster Whelen 700 series brake –tail – directional lights will be mounted horizontally below the body. The lights will be mounted in their own box for protection and shall be **LED**.

Four Whelen M6 series red lights to be installed one in each rear corner of the compartments facing rearward.

A Whelen Traffic Advisor TAL65 shall be mounted horizontally and centered below the rear body.

**Scene Lights-** Two Whelen PCP2 series surface mount LED scene lights will be installed at the rear of the truck with its own separate switch in the cab. They will also be wired into the reverse lights.

Also two Whelen 12 volt LED PFP1 lights will be mounted on telescoping poles. One light will be mounted on each side of the front of the roll bar.

### **WINCH (equivalent or better)**

A 12 volt portable WARN Zeon 10-s Spydura Synthetic Rope Winch will be provided and be mounted in the front driver's side compartment on a stationary mount with fixed UMHW plastic slides.

Four Class 4 receiver tubes will be installed. One in the front and one in the rear bumper and one on each side under the bed. The receivers are for winch use with direct battery plug hook ups.

125 ft. of cable, 5/16" diameter aircraft cable with remote control will be supplied. A Warn winch accessory bag will be included.

#### **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, cover to be yellow.

#### **REFLECTIVE BAND**

A 5.00" white reflective stripe shall be provided along the sides of the cab extending along the sides of the body and will be extended onto the rear in red.

#### **REFLECTIVE STRIPE, CAB DOORS**

A reflective stripe shall be provided on the interior of each cab door. This stripe shall be a minimum of 96 in sq and shall meet the NFPA 1901 requirement.

#### **CHEVRON STRIPING, REAR**

There shall be alternating chevron striping located on the rear-facing vertical surface of the apparatus. Covered surfaces shall include the exterior rear wall, the rear roll-up door shall not be covered.

The colors shall be red and fluorescent yellow diamond grade.

Each stripe shall be 6.00" in width.

This shall meet the requirements of NFPA 1901, 2009 edition, which states that 50% of the rear surface shall be covered with chevron striping.

#### **REFLECTIVE LETTERING AND GRAPHICS**

Two (2) 22 CT Sign Gold decals shall be installed, one each side on the cab doors to match the existing fire district apparatus.