

RIGHT SIDE DISCHARGES

There shall be two (2) 2-1/2" NST discharges on the right side of the pump compartment.

FRONT DISCHARGES

There shall be one (1) 1-1/2" NST horizontal discharge installed in the front hosewell of the apparatus.

There shall be a 1-1/2" IPT x 1-1/2" MNST 90 degree Mattydale swivel elbow attached to the discharge.

There shall be one (1) 2-1/2" NST front discharge located right side of front bumper.

~~REAR DISCHARGES~~

~~There shall be one (1) 2-1/2" NST discharge located at the rear of the apparatus. The discharge shall be located right.~~

LARGE DIAMETER DISCHARGE

There shall be one (1), 3-1/2" NST large diameter hose discharge located on the right side pump panel.

There shall be three (3) Southpark model A3736AC 3-1/2" female NST X 2-1/2" male NST chrome reducer/adapters with Southpark model HCC2808AC 2-1/2" NST chrome caps and chains supplied with the apparatus.

There shall be one (1), Snap-Tite model FSA50F35NST 5" Storz x 3-1/2" female NST adapter supplied with the apparatus.

There shall be one (1) Snap-Tite model FSB50 5" Storz blind cap and chain supplied with the apparatus.

WATERWAY DISCHARGE

There shall be one (1) 3-1/2" discharge valve plumbed to the aerial ladder waterway with 4" plumbing. The discharge shall be controlled from the pump operator's panel by means of a handwheel to assure smooth operation. Lights shall be supplied in the handwheel bezel to indicate the position of the valve.

CROSSLAY PRECONNECT HOSE BED

Crosslay preconnects shall have 90 degree elbow type swivel on discharge outlets. There shall be fiberglass Dura-Dek flooring installed under the crosslay hose beds for ventilation and drainage.

The divider(s) between the hosebed areas shall be fabricated of 3/16" aluminum. It shall be mounted in a channel on each end for adjustability.

There shall be two (2) 1-1/2" crosslays above the side mount control panel. The crosslays shall be plumbed with 2" full flow valves and 2" piping. Each crosslay hosebed shall have a minimum capacity of 200' of double jacketed 1-3/4" fire hose.

3" DEADLAYCROSSLAY

There shall be one (1) 3" DEADLAY above the side mounted operator's control panel. ~~The crosslay shall be plumbed with 2-1/2" pipe~~ and shall have a capacity of 150 feet of 2-1/2" double jacketed fire hose.

CROSSLAY ROLLERS

Three (3) stainless steel rollers shall be installed at each end of the crosslay hose bed to facilitate deployment of hose.

CROSSLAY HOSEBED COATING

The interior of the crosslays and the divider for the crosslays shall be coated with a black thermoplastic polyurethane coating. The coating shall be durable enough to withstand the abuse of flying hose couplings without chipping or cracking.

~~ALUMINUM CROSSLAY COVER~~

~~There shall be a bi-fold treadbrite aluminum cover installed on the crosslay hosebed. The cover shall not interfere with hose loading when in the open position.~~

FOAM EDUCTOR

The following foam eductor system shall be installed with all appropriate warning labels and testing per NFPA 1901, 1996 edition.

There shall be an Akron 3096 95 GPM foam eductor system plumbed to the front 1.5" front jump line.

The metering valve shall be located on the operator's control panel and be labeled with a stainless steel instruction plate. The metering valve shall have positive 1/4, 1/2, 1, 3 & 6 percent settings. A check valve shall be installed in the foam pick-up assembly to prevent back flow of water from diluting the foam concentrate.

POLYPROPYLENE FOAM TANK

There shall be one (1) 12 gallon polypropylene foam cell incorporated into the polypropylene water tank.

There shall be one (1) pressure/vacuum vent installed on the foam tank.

WATER TANK

The water tank shall have a capacity of ³⁸⁸400-U.S. gallons.

The UPF Poly-Tank IIE shall be constructed of 1/2" thick PT2E polypropylene sheet stock. This material shall be a non-corrosive stress relieved thermo-plastic, natural in color, and U.V. stabilized for maximum protection.

The booster tank shall be of a specific configuration and shall be so designed to be completely independent of the body and compartments. All joints and seams shall be nitrogen welded and tested for maximum strength and integrity. The top of the booster tank shall be fitted with removable lifting eyes designed with a 3 to 1 safety factor to facilitate easy removability.

The transverse swash partitions shall be manufactured of 3/8" PT2E polypropylene (natural in color) and extend from approximately 4" off the floor to just under the cover. The longitudinal swash partitions shall be constructed of 3/8" PT2E polypropylene (natural in color) and extend to the floor of the tank through the cover to allow for positive welding and maximum integrity. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions shall interlock with one another and be welded to each other as well as to the walls of the tank.

TANK VENT/FILL TOWER

The tank shall have a combination vent and manual fill tower marked "Water Fill." The fill tower shall be constructed of 1/2" PT2E polypropylene and shall be a minimum dimension of 8" x 8" outer perimeter. The tower shall be located in the left front corner of the tank. The tower shall have a 1/4" thick polypropylene screen and a PT2E polypropylene hinged-type cover. Inside the fill tower, approximately 4" down from the top, shall be fastened a combination vent overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I.D. of 4" designed to run through the tank, and shall be piped behind the rear wheels so as to maximize traction.

TANK COVER

The tank cover shall be constructed of 1/2" thick PT2E polypropylene, natural in color, and U.V. stabilized, to incorporate a multi three-piece locking design which allows for individual removal and inspection if necessary. The tank cover shall be recessed 3/8" from the top of the tank and shall be welded to both sides and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2" polypropylene dowels spaced a maximum of 30" apart. These dowels shall extend through the covers and shall assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall be drilled and tapped 1/2" x 13" to accommodate the lifting eyes.

TANK SUMP

There shall be one (1) sump in the bottom of the water tank. The sump shall be constructed of 1/2" polypropylene and shall be located in the left front quarter of the tank. On all tanks that require a front suction, a 3" schedule 40 polypropylene pipe shall be installed that

will incorporate a dip tube from the front of the tank to the sump location. The sump shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 2" above the sump to prevent air from being entrained in the water while pumping.

TANK FILL CONNECTION

All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and shall be capable of withstanding sustained fill rates of up to 1,000 GPM.

TANK MOUNTING

The UPF Poly-Tank IIE shall rest on the body cross members in conjunction with such additional cross members, spaced at a distance that would not allow for more than 530 square inches of unsupported area under the tank floor. In cases where overall height of the tank exceeds 40 inches, cross member spacing must be decreased to allow for not more than 400 square inches of unsupported area.

The tank must be isolated from the cross members through the use of hard rubber strips with, a minimum Rockwell Hardness of 60 durometer. Additionally, the tank must be supported around the entire perimeter and captured both front and rear as well as side to side to prevent the tank from shifting during vehicle operation.

A picture frame type cradle shall be utilized with a minimum of 2" x 2" x .250 mild steel angle. After fabrication the cradle shall be hot dip galvanized for maximum protection.

Although the tank shall be designed on a free floating suspension principle, it is required that the tank have adequate hold down restraints to minimize movement during vehicle operation.

Hose bed floors shall be so designed that the floor slat supports extend full width from side wall to side wall and are not permitted to drop off the edge of the tank or in any way come in contact with the individual covers where a puncture could occur. Hose floor loading must support up to 200 lbs per square foot and must be evenly distributed. The tank shall be completely removable without disturbing or dismantling the apparatus structure.

TANK WARRANTY

The tank shall have a lifetime warranty from UPF.

WATER TANK LEVEL GAUGE

An Innovative Controls model ICI-1400MW weather proof encapsulated (14) high intensity LED light indicator shall monitor the water tank level and shall be mounted on the pump panel. The tank sensing probe shall be of a chemical resistant PVC with stainless steel sensing port. The cover plate shall be aluminum subplate with outdoor exposure rated composite overlay. The indicator shall have a black background with blue graphics.

FOAM TANK LEVEL GAUGE

One (1) Innovative Controls level gauge with weather proof encapsulated (14) high intensity LED light indicator shall monitor the foam tank level and shall be mounted on the pump panel. The tank sensing probe shall be of a chemical resistant PVC with stainless steel sensing port. The cover plate shall be an aluminum subplate with outdoor exposure rated composite overlay. The indicator shall have a black background with red graphics.

TANK DRAIN VALVE

One (1) 1-1/2" tank drain valve shall be provided under the tank sump. The valve shall have a locking lever to prevent accidental draining of the tank.

TANK TO PUMP CHECK VALVE

There shall be a check valve between the pump suction and the booster tank valve. The check valve shall eliminate back flow into the water tank when the pump is connected to a pressurized source.

TANK TO PUMP VALVE

There shall be one (1) 3" full flow ball valve connected with a flexible hose from the tank to the suction side of the pump.

TANK TO PUMP VALVE

A 3-1/2" full flow ball valve shall be installed between the fire pump and the water tank. The valve shall be flanged to bolt directly to the pump and shall incorporate a chromium plated bronze ball. The ball shall be equipped with a hydraulically balanced floating seal assembly that will self-adjust to correct for wear. The remaining internal moving parts shall be stainless steel for years of dependable service.

TANK FILL VALVE

There shall be one (1) 1-1/2" full flow tank fill valve plumbed with 1-1/2" plumbing from the discharge side of the pump to the tank.

OPERATOR'S CONTROL PANEL

The side mount operator's control panel shall be on the left side of apparatus with all valves, valve control levers, and instruments neatly arranged for easy access and visibility from the operator's location.

VALVE CONTROLS

All valves shall be controlled by a quarter turn locking type push/pull control with direct linkages and universal yokes. Those valve controls which are not the rack and sector type shall have a dual rod guide

mechanism with follower to insure that all handles move straight in and out with no sideways or up and down travel to cause binding. Control rods shall be galvanized and have chrome guides through the panel.

The centerline of any valve control shall be no more than 72 inches vertically above the platform that serves as the pump operator's position.

COLOR CODED LABELS

Adhesive applied, color coded labels shall be installed at all instruments and controls.

PUMP PANEL CONSTRUCTION

The operator's control panel and the right side pump panel shall be fabricated from 1/8", 5052-H32, aluminum covered with a black thermoplastic polyurethane coating that is capable of withstanding the effects of extreme weather and temperature. The panels shall be removable for service.

PUMP PANEL LIGHTS

The pump operator's control panel and the right side pump panel shall each be illuminated by a minimum of four (4) lights. Each light assembly shall consist of a stainless steel or chrome plated base with a plastic or lexan lens to protect the lamp from the elements.

The pump panel lights shall become energized upon setting the parking brake so the gauge information provided may be consulted at any time the apparatus is parked.

A stainless steel shield shall be installed over the pump panel lights to further protect them from the elements and to act as a reflector for additional illumination.

INSTRUMENT PANEL

The instrument and gauge panel shall be hinged to swing down providing access for service.

RADIO COMPARTMENT

There shall be a radio/speaker compartment adjacent to pump operator's instrument panel. This compartment shall be constructed of cast aluminum with a polished trim ring.

A brushed finish cast aluminum door shall be attached to the compartment with spring loaded hinges. To protect the electronics that will be installed in the compartment, a hollow rubber gasket shall be installed in the door. The entire compartment shall be bolted to the apparatus body using four bolts that pass through the flange outside of the gasket and gasket sealing area.

INSTRUMENT PANEL

The master pump gauges shall be 4-1/2" diameter, liquid filled, -30-0-400 PSI compound gauges.

There shall be twelve (12) Class 1 individual pressure gauges. Each gauge shall be the liquid filled compound type reading 0-400 PSI and shall be a minimum of 2-1/2" in diameter. The gauges shall be adjacent to the discharge control handles.

The master pump gauges and individual pressure gauges shall have black faces with white numbers and lettering.

There shall be one (1) Class 1 flow meter, with the Totalizer function, installed in the aerial ladder waterway with readout at the pump operator's control panel. The unit shall be capable of showing either flow in gallons per minute or pressure in pounds per square inch.

All water carrying gauge lines shall be flexible polypropylene tubing. The tubing shall be routed in such manner as to prevent chaffing and wear yet allow for easy visual inspection.

There shall be one (1) superior quality vernier type hand throttle, with positive locking quick-center release to control the fuel supply to the engine. The hand throttle shall be located so that it can be easily controlled from the pump operators position with all gauges in full view.

The following shall be located at the pump operator's panel:

An electric tachometer, indicating the speed of engine driving the fire pump with integral pump hour meter.

Oil pressure and temperature gauges for the engine driving the fire pump.

Audible and visual warning for high engine temperature or low oil pressure.

Chassis engine voltmeter.

Operator instrument panel lights.

Pressure and vacuum test gauge adapter with 1/4" chrome plugs.

Pressure relief valve with indicating lights.

Pump shift indicating light.

Large "T" bar type pump cooling valve control.

Large "T" bar type engine cooling valve control.

Electric primer activating lever with indicating light.

Mechanical pump revolution adapter drive with cap to check revolutions of fire pump impeller.

Air horn button.

Innovative Controls water tank level indicator.

Chassis engine hour meter.

Transmission temperature gauge.

MC Products pump overheat warning system with buzzer.

Waterway Flow Meter

PUMP OPERATOR'S PLATFORM

A pull out platform shall be provided at the pump operator's control panel that can support a minimum of 500 pounds. The top surface of the platform shall be constructed of aluminum serrated bar grating for ease of maintenance and to provide a slip resistant surface for the operator. The platform shall be approximately 18" deep and 45" wide. The platform shall lock in both the retracted and the extended position.

BODY CONSTRUCTION/COMPARTMENTATION

The body shall have a five (5) year warranty.

All body compartments shall be fabricated of 1/8", 5052-H32, smooth aluminum plate. The complete body shall be fabricated using break and bend techniques to form strong yet flexible Uni-Body structures.

The main body and the pump compartment shall be fabricated as individual units. Both the body and pump compartment shall be fabricated using precision holding fixtures to ensure proper dimensions. All attachment points shall be heavily reinforced.

REAR WHEEL WELLS

The fenders shall be integral with the body sides and compartments. Fender wells shall be constructed with bolt-on removable full circular innerliners for ease of cleaning and maintenance. There shall be sufficient clearance to allow the use of tire chains with the apparatus fully loaded. The running boards and rear step shall have 3" channel edges and shall be fabricated from 1/8" aluminum plate.

REAR FENDERETTES

There shall be two (2) rear polished aluminum fenderettes, one on each side. The fenderettes shall be bolted to the apparatus body using nylon washers to space them slightly away from the body to reduce build-up of road grime. The fenderettes shall be constructed of .080 polished aluminum.

SWEEP-OUT CONSTRUCTION

All apparatus body compartments shall have sweep out type floors. All the compartments shall be made to the largest practical dimensions to provide maximum storage capacity.

COMPARTMENT DOOR CONSTRUCTION

The lap type compartment doors shall be of double panel construction. The outer panel shall be fabricated of .190, 5052-H32 aluminum and the inner panel of .125, 3003-H14 aluminum. There shall be a heavy duty automotive type extruded rubber molding installed on the overlap area of the doors to insure a weatherproof seal and prevent water from collecting in the door sills. All of the compartment doors shall have a polished stainless steel continuous hinge connected to both the body and the door with stainless steel bolts and nuts. The hinge pin shall be stainless steel with a minimum diameter of 1/4".

COMPARTMENT DOOR HANDLES

Compartment door handles shall be Hansen 79L stainless steel recessed type with bi-directional bent "D" type handles. There shall be an adjustable Eberhard 3-206U single point center latch with double catch furnished on all compartments.

COMPARTMENT DOOR HOLDERS

Cleveland type spring loaded door holders shall be furnished on all swing-out compartment doors to hold the door open or closed. The spring loaded door holder shall assist in closing the door automatically when the door is positioned over center.

Pressurized gas filled cylinders shall be furnished on all lift-up doors to raise and hold the door in the open position. The gas filled cylinders shall assist in closing the door automatically when the door is positioned over center.

On compartments having double doors, the secondary door shall have a latch mechanism to secure the door when the primary door is opened.

On full height doors, this mechanism shall consist of two slam type latches, one at the top and one at the bottom, connected together with a rubber covered chain. The secondary door shall be able to be opened at any point along it's height without personnel having to search for a latch.

Standard height doors shall have one latch at the top of the door for the secondary door which shall be easily opened by reaching into the upper portion of the compartment.

COMPARTMENT VENTING

Each body compartment shall be properly vented in a manner that will reduce the amount of dirt and water that may enter the compartment. Venting shall be directly to the atmosphere rather than into another compartment which would only spread moisture throughout the body rather than dissipate it.

COMPARTMENT LIGHTING

All compartments, including the pump compartment, shall be furnished with a light mounted on the ceiling of the compartment unless otherwise specified. Each compartment light shall be activated by an automatic door switch.

Lighting shall be installed in any compartment with 4 cubic feet of storage capacity or greater, or any compartment with a door opening of 144 square inches or more.

All compartments, utilizing a horizontally hinged swing-up door, shall have two (2) lights recessed into the door. These lights shall be activated by an automatic door switch.

MUDFLAPS

Four (4) mudflaps shall be installed, two at the front and two at the rear. The mudflaps shall be a minimum of 3/8" thick to prevent "sailing".

FOLDING STEPS

All steps shall have a surface area of at least 35 square inches and shall be able to withstand a load of at least 500 pounds. Steps shall be provided at any area that personnel may need to climb and shall be adequately lighted. Each folding step shall have two large open slots to prevent buildup of ice or mud and to provide a handhold when necessary.

BODY RUBRAILS

Bright dip anodized and polished aluminum rubrails measuring 1-1/2" x 3/8" shall be spaced 5/8" from the body using non-corrosive nylon spacers and secured by aluminum bolts. The ends shall be angled toward the body for safety and a pleasing appearance.

DRI-DEK COMPARTMENT FLOORING

All compartment floors that do not have permanently mounted equipment shall be protected with Dri-Dek flooring tiles. The tiles shall be black with yellow angled leading edges.

REAR TOW EYES

There shall be two (2) tow eyes at the rear of the apparatus. These tow eyes shall be attached directly to the torque box and shall be strong enough for towing of the apparatus.

COMPARTMENT SCUFF PLATES

Aluminum scuff plates shall be installed in the bottom sill area of all major equipment carrying compartments to reduce paint damage from equipment. The scuff plates shall be attached using a permanent bonding

double sided tape.

LEFT SIDE COMPARTMENTS

There shall be two (2) full height side compartments, one ahead of the rear wheels and one behind the rear stabilizer. The front compartment shall have double vertically hinged swing-out doors and the rear compartment shall have a single vertically hinged swing-out door.

There shall be two (2) high side compartments. The front compartment shall be larger than the rear compartment to increase the size of the hose bed ahead of the turntable. Each compartment shall have a horizontally hinged lift-up door.

RIGHT SIDE COMPARTMENTS

There shall be two (2) full height side compartments, one ahead of the rear wheels and one behind the rear stabilizer. The front compartment shall have double vertically hinged swing-out doors and the rear compartment shall have a single vertically hinged swing-out door.

There shall be two (2) high side compartments. The front compartment shall be larger than the rear compartment to increase the size of the hose bed ahead of the turntable. Each compartment shall have a horizontally hinged lift-up door.

REAR COMPARTMENT

There shall be a single compartment at the rear of the apparatus. This compartment shall have a single horizontally hinged lift-up door. The compartment shall extend in depth to the front of the torque box assembly and shall have a framework installed to hold the proper complement of ladders. A pneumatic device(s) shall be supplied to hold the door in the open position for access to the inside of the torque box.

The entire rear surface of the apparatus shall be covered with bright aluminum treadplate.

ADJUSTABLE SHELVES

There shall be eight (8) adjustable shelves constructed of heavy gauge aluminum sheet. The shelves shall be coated with a thermoplastic polyurethane coating. The shelf shall be fabricated in such a manner that liquids readily drain when spilled on them. The shelves shall be installed two in each of the following compartments:

front left
rear left
front right
rear right.

There shall be four (4) Strut channels in four (4) compartments containing adjustable shelves. The channels shall be located one pair in the front left compartment, one pair in the rear left compartment, one in the right front and one in the right rear compartments.

TILTING ROLL OUT EQUIPMENT TRAY

There shall be one (1) heavy duty 250lb capacity roll out equipment tray installed on the apparatus. The tray shall be constructed of aluminum and shall be coated with a thermoplastic polyurethane coating. The tray shall have a locking mechanism that will either secure it in the full out or full in position.

The tray shall be installed on a heavy duty frame constructed of 3/16" channel and 3/16" angle material. Four (4) sealed steel bearings shall be utilized for sliding the tray smoothly and evenly. The frame shall be attached to the body in a manner that will allow the height to be adjustable.

A stainless steel scuff plate shall be installed on the inside surface of the compartment door to prevent the tray from removing paint if deployed while the door is not fully open.

The tray shall be in the front left compartment.

TURNTABLE ACCESS STEPS

For access to the turntable, one set of steps shall be furnished at the rear of the apparatus. The access steps shall be located on the left side, just behind the compartmentation. The steps shall be constructed of aluminum grip-strut.

The bottom step shall be a drop-down type with a release mechanism located at a convenient height. The stepping surface shall be constructed of grip-strut material and the side beams shall be hot dip galvanized for maximum life. This step shall be connected to the door open warning circuit to warn the driver if left down.

The remaining steps shall have a maximum stepping height which shall not exceed 18", with the exception of the ground to the first step. Steps shall be illuminated for night time operation, actuated by parking brake. To aid in ascending and descending the access steps, handrails shall be provided on each side.

The right side turntable access steps shall be eliminated and shall install another compartment in place of the steps.

AIR BOTTLE COMPARTMENTS

There shall be four (4) single cylinder air bottle compartments constructed of the same material as the body and lined with rubber on the lower surface to protect the air bottle. The cylinders shall be located one in the front and one behind the rear wheel well area, right and left side.

Each single air bottle compartment shall have a Cast Products hinged door.

EHL HOSE BED


The hose bed shall be contained within the torque box for safety and convenience. A hose bed that requires schutes or climbing to reload shall not be acceptable.

The hose bed shall remain in the torque box for deployment but, during loading, the EHL shall extend backward then lower to an easy to reach height for aid in loading the LDH. The hose bed shall be thermoplastic coated and shall have stainless steel rollers at the end to aid in deployment.

The control shall be in the left out rigger box and shall be electric over hydraulic.


GROUND LADDERS

The ground ladders shall be stored adjacent to the torque box and shall be removable from the rear of the apparatus. The ladders shall be fully enclosed so road dirt and debris cannot foul or damage the ladders. The ladders shall rest in full length slides, lined with Nylon to aid in moving the ladders, and shall be arranged so they can be removed individually. The boxes must accommodate a NFPA Pamphlet 1901 (latest revision) ladder load. Ladders shall be provided by the apparatus manufacturer and shall comply with NFPA Pamphlet 1931. The following ladders shall be supplied with the apparatus at the time of delivery:

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- TWO (2), 10' folding attic ladder. Duo Safety 585A
 - Two (2), 14' roof ladders with hooks. Duo Safety 875A
 - One (1), 14' combination ladder. Duo Safety 35A
 - One (1), 24' two section extension ladder. Duo Safety 900A

PIKE POLES

Pike poles shall be stored in tubes, adjacent to the ladders. The following fiberglass handled pike poles shall be supplied with the apparatus at the time of delivery:

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- One (1), 6' pike poles
 - One (1), 8' pike poles
 - One (1), 12' pike poles
 - One (1), 4' pike poles w/ "D" handles

WALKWAYS AND OVERLAYS

The running boards and walkways shall be constructed of structural sheet metal that is integral with the body. They shall be overlaid with aluminum treadplate material to provide a slip resistant surface, resulting in a full 1/4" thickness for maximum strength.

Aluminum treadplate overlays shall be sprayed with a clear coat sealer on the back side that is pliable and resistant to scratches and chips to provide an insulating barrier between dissimilar metals when it is bolted to the body. After the apparatus is painted and the overlays are reinstalled, they shall be additionally sealed at the edges with a caulking compound that will stay pliable throughout the life of the apparatus.

Overlays shall be installed that are totally insulated from the overlay with nylon shoulder washers that extend into holes in the overlays. Nylon cap nuts shall be employed where bolt ends may damage equipment or cause injury. Treadplate overlays shall be provided in the following areas:

All walkways and running boards.

The entire rear surface of the body.

Outside front faces of the side compartments.

The top surface of all side compartments, bending over the outside edge to form a driprail.

HAND RAILS, GRAB RAILS, AND STEPS

Handrails shall be stainless steel tubing of not less than 1-1/4" in diameter, covered with ribbed rubber grips. All railing escutcheons and brackets shall be stainless steel or chrome, and bolted with stainless steel bolts. The lower bracket on all vertical handrails shall have a drain hole drilled in it at the lowest point. Hand rails shall be provided in the following areas:

One (1), handrail on each side of the turntable access steps.

Two (2) chrome folding steps on left front compartment.

Two (2) chrome folding steps on right front compartment.

TAIL LIGHTS, CLEARANCE LIGHTS

There shall Whelen 64 series tail lights and backup lights installed on the rear of the apparatus. Two (2) red brake tail lights, two (2) amber arrow turn lights, and two (2) back up lights shall be supplied. The lights shall be mounted in a cast aluminum housing, three on each side of the apparatus.

LED

MIDSHIP TURN SIGNALS

There shall be two (2) mid mounted turnlights installed on the rear wheel wells, one on each side of the apparatus.

CLEARANCE LIGHTS/REFLECTORS

Clearance lights and reflectors to comply with I.C.C. regulations shall be supplied.

ELECTRICAL HARNESSSES

Wiring harnesses shall be the automotive type, engineered specifically for the builder's apparatus, and shall meet the following criteria. Under no circumstances shall diodes, resistors, or fusible links be located within the wiring harness. All such components must be located

in an easy to access wiring junction box or the main circuit breaker area. All wire shall meet white book, baseline advanced design transit coach specification and Society of Automotive Engineers recommended practices. It shall be stranded copper wire core with cross linked polyethylene insulation complying with SAE specification J1128. Each wire shall be hot stamp function coded every three inches starting one inch from the end and continuing throughout the entire harness. In addition to function coding, each wire shall be number and color coded.

All terminals on the ends of the wiring harness shall be soldered unless a crimping tool or machine is used that gives an even and precise pressure for the terminal being used. All terminals shall be pull tested to insure their integrity.

A main electrical panel shall be located in a highly weather resistant compartment. The panel shall contain a board with permanent sockets for relays, diode blocks, and automatic reset circuit breakers. The board shall be screwed to the compartment and shall have permanent leads, each one routed to a predetermined pin of the correct main bulkhead connector. The bulkhead connectors shall be physically attached to the bottom of the box. The connectors shall be the advanced automotive type with a bolt in the center to mechanically attach the mating connector in a secure fashion. An "O" ring seal shall be an integral feature of the bulkhead connectors to eliminate the chance of water entering the connection and causing corrosion.

A minimum of ten (10), spare circuit breaker sockets shall be supplied. All sockets and equipment shall be clearly labeled.

Any circuit which draws 15 nominal amperes shall be switched through relays. Individual loads shall be wired to individual circuit breakers as much as possible. The circuit breakers shall be sized for the individual load rather than selecting a large circuit breaker and ganging loads on until amperage rating of the circuit breaker is reached.

The main electrical panel shall be fed by three harnesses, one for the cab, one from the pump compartment, and one main harness from the body. The main body harness shall be connected to two individual body harnesses, one for the left side and one for the right side of the body. Each harness shall be equipped with several spare wires from one end of the harness to the other. At any place where the harness or sub-harness pass through metal, heavy grommets shall be installed to protect it.

An "as built" electrical schematic for the apparatus shall be provided with the apparatus at the time of delivery.

12 VOLT SYSTEMS TEST

After completion of the unit, the 12 volt electrical system shall undergo a battery of tests as listed in NFPA Pamphlet 1901, 1996 edition. These tests shall include, but not be limited to; a reserve capacity test, alternator performance test at idle, alternator performance test at full load, and a low voltage alarm test. Certification of the results shall be supplied with the apparatus at the time of delivery.

PUMP/PUMP PANEL LIGHTS

There shall be lights supplied on the pump operator's panel, side discharge, and two (2) lights in the pump compartment. The pump panel lights shall be activated when the parking brake is engaged. The pump compartment work lights shall be activated by an automatic switch on the pump compartment access door.

WALKWAY LIGHTING

Lights shall be mounted in a manner that illuminates all walkways and steps for safe operation of the apparatus. These lights shall be activated by the parking brake.

GROUND LIGHTING

Lights shall be installed beneath the apparatus in areas where personnel may be expected to climb on and off of the apparatus. The lights shall illuminate the ground within 30" of the apparatus to provide visibility of any obstructions or hazards. These areas shall included, but not be limited to, cab doors, side running boards, and the rear step area.

REAR WORK LIGHTS

There shall be a switch on the rear of the apparatus to activate the backup lights when the parking brake is set. This switching circuit shall be deactivated when the parking brake is released.

BACK-UP ALARM

An electronic back-up alarm shall be installed and wired so as to alert personnel any time the transmission is shifted into reverse gear.

HAZARD WARNING CIRCUIT

The open compartment door circuitry shall be tied into the open passenger door warning light circuitry of the chassis to warn the driver of an unsafe condition. Also connected to this circuit shall be any other compartment door, device or other item which may pose a hazard or cause damage should the apparatus be moved. The hazard warning circuit shall only become energize when the chassis parking brake is released.

A warning sign shall be placed near the warning light that reads "Do Not Move Apparatus When Light Is On."

HOSE LOADING LIGHTS

Two (2) Collins FX-12 lights shall be mounted high at the rear of the apparatus to illuminate the hose loading area. The lights shall be fixed mount, 12 volt 750,000 candlepower spot, 6,000 candlepower flood light measuring 7" in diameter, drawing 7.8 amps spot, and 4.2 amps flood. This heavy duty light shall include spot and flood modes in a single unit.

STABILIZER WORK LIGHTS

A 4" Signal Stat model 3671 clear floodlight shall be provided at each stabilizer location to illuminate the surrounding area. The lights shall be activated by the aerial master switch.

TURNTABLE WORK LIGHTS

The turntable shall be lighted for night time operation with three (3) work lights activated by the aerial master switch.

ELECTRIC CORD REEL

There shall be one (1) Hannay electric rewind cord reel model ECR1616-17-18 installed on the apparatus with a push button labeled REEL REWIND installed for 12 volt rewinding of each cord reel. The reel shall be equipped with 200' of yellow STW Seoprene 105 degree Celsius 10/3 wire installed with a cable stop to prevent damage to cable fittings. Rollers shall be supplied to prevent damage to the electrical cable if pulled in any direction. The reel shall be located right rear. ?

CORD REEL JUNCTION BOX

There shall be one (1) Extenda-Lite model EJB-CS back lighted electrical junction box, equipped with four (4) electrical receptacles, two on each side. Each receptacle shall be equipped with a spring loaded snap cover. A cord reel shall be prewired to the cast aluminum junction box to supply power to the four receptacles. Extension cord shall be connected to the junction box through a heavy duty water resistant strain relief and flexible extender. Each side of the junction box shall be fitted with polypropylene faceplates which are back lighted so that plug orientation to the receptacles is quick and easy to align. The receptacles shall be

QUARTZ 110vt LIGHTING

There shall be 2-Fire Research Focus 110 vt telescoping quartz lights placed one each side of body just behind the pump panels.

There shall be 2- Fire Research Focus 110 vt. non-telescoping quartz lights placed to the rear of the body on each side.

7.5 KW DIESEL GENERATOR

There shall be an Onan 8.0HDKAQ, 7500 Watt, diesel powered, 120/240 Volt generator. The generator shall be located above the fire pump, toward the right side of the body.

The following features shall be supplied with the generator as an absolute minimum:

- 3-cycle, liquid cooled diesel engine
- Brush type AC alternator
- 4 point focalized mounting system

Cross flow radiator
Full flow lube oil filter
Vertically mounted fuel and oil filters
Replaceable element air cleaner
Remote mountable DC control box
4-position exhaust elbow
20 ampere battery charging DC alternator
Glow plugs
Electric fuel pump

The generator shall be installed in such a manner that all normal preventative maintenance can be easily accomplished. The oil drain shall be extended to an area where waste oil can be easily collected without spillage.

The generator shall be permanently mounted.

GENERATOR COVER

A treadplate cover shall be installed over the generator. The cover shall be designed in such a manner as to allow for easy access to the generator when performing routine maintenance. The cover shall also be designed in compliance with the generator manufacturer's air flow requirements.

The generator fuel line shall be connected to the main chassis tank.

The generator shall have an electric starter that is connected to the chassis batteries. The electric starter shall have a remote start switch located one on the left side officers area in the cab, one on the pump panel.

The generator electric starter shall have a quick disconnect battery plug installed.

GFI LOAD CENTER

The entire 110 volt electrical system shall be installed in strict compliance with NFPA Pamphlet 1901, latest edition. This shall include all testing, labeling, wiring methodology, and dimensional requirements. Certification of compliance shall accompany the apparatus at the time of delivery.

There shall be a GFI 110/220 volt load center incorporated into the 110/220 volt wiring system. The load center shall include two (2) 15 amp & two (2) 20 amp circuit breakers.

All 110/220 volt AC wiring shall be done in accordance with NFPA Pamphlet 1901-1991, as well as nationally accepted electrical codes.

There shall be four (4) additional 15 ampere GFI circuit breakers installed in the load center.

There shall be one (1) additional 20 ampere GFI circuit breaker installed in the load center.

110 VOLT TWIST LOCK, DUPLEX RECEPTACLES

There shall be four (4), duplex outlet boxes each containing two (2) NEMA L5-15, 110 Volt 15 ampere rating Twist Lock type receptacles wired to the generator. The receptacles shall spring loaded weather resistant covers and shall be located two each side of body, one front body, one rear body over the rear wheel well area.

UPPER ZONE A VISUAL WARNING

There shall be two (2) Code 3 model MX7100, 18" light bars installed on the chassis cab roof, one on each side. Each light bar shall be equipped with two (2), 50 watt halogen rotators. The lenses shall be red.

UPPER ZONE C VISUAL WARNING

There shall be two (2) Code3 model 550F rotating beacons installed high at the rear of the apparatus, one on each side. The light on the left (driver's side) shall be red and the light on the right (passenger's side) shall be amber.

TRAFFIC WARNING LIGHTS

There shall be a Whelen Brand traffice advisor #TA837 installed flush at the rear with controls in the cab area.

There shall be POWER ARC brand lighting provided for the body as follows:

- 2- PA-210 in upper zone c
- 2-PP-4 in upper zone c
- 2-PA-180 in lower zone c
- 2-PP-4 in midship zone

SAFETY BACK UP CAMERA

There shall be a Safety Vision Back Up Camera System installed on the apparatus with a heated lens in the rear of the body with the monitor placed in the cab area.

HEAD SET SYSTEM

There shall be an ⁶eight head David Clark Head set system installed, ~~six~~⁴ head sets in the cab, one at the pump panel and one at the turntable console.

STABILIZER COVER WARNING LIGHTS

One (1) 7" in diameter Weldon model 1010-7100 red flashing light shall be flush mounted in each stabilizer cover panel. These lights shall be activated by the aerial master switch.

STABILIZER ARM WARNING LIGHTS

One (1) 4" in diameter Signal Stat model 3802 double faced red flashing light shall be mounted below each stabilizer beam, facing front and rear. These warning lights shall be activated by the aerial master

switch.

PAINTING, LETTERING AND STRIPING

After the body and components have been fabricated and assembled they shall then be disassembled prior to painting so when the apparatus is completed there will be finish paint beneath the removable components. The apparatus body and components shall be metal finished as follows to provide a superior substrate for painting.

All aluminum sections of the body shall undergo a thorough cleaning process starting with a phosphoric acid rinse to begin the etching process. A phosphatizer shall then be applied to continue the etching process and deposit a protective film on the metal surface. The next step shall consist of a non-chromatic rinse to seal the protective film and rinse off excess solution.

After the cleaning process the body and it's components shall be primed with an epoxy primer and the seams shall be caulked.

All bright metal fittings, if unavailable in stainless steel, shall be heavily chrome plated. Iron fittings shall be copper underplated prior to chrome plating.

One (1) four ounce bottle of acrylic enamel touch-up paint shall be supplied.

The apparatus shall be painted with PPG Ditzler polyurethane enamel paint.

The apparatus shall be painted red.

The chassis shall be painted by the chassis manufacturer, not the body builder.

All aerial device components above the rotation point that are not chrome plate bright aluminum treadplate or stainless steel shall be painted. All areas to be painted shall be sanded to remove any metal flakes and smooth any rough surfaces. All surfaces to be painted shall be phosphatized to remove metal impurities, aid paint adhesion and inhibit rust. The components shall be prime painted with an epoxy primer and finish painted with a durable, high gloss polyurethane paint. The support structure and components below the rotation point shall be painted black.

The extending stabilizer beams, inner jack cylinder protective tubes, and stablizer pads shall be hot dip galvanized, no exceptions.

The aerial ladder shall be painted with white PPG Ditzler DBHS-2185 Durathane.

There shall be a 1/2" reflective stripe installed on the ladder egress. The color of the stripe shall be red.

The egress shall be painted red.

SIMULATED GOLD LEAF LETTERING

The lettering shall be simulated gold leaf adhesive backed letters outlined in black and hand shadowed.

SIMULATED GOLD LEAF STRIPING

There shall be simulated gold leaf adhesive backed striping, outlined in black, around all compartments.

REFLECTIVE STRIPING

There shall be a 10" Avery reflective stripe affixed to the perimeter of the apparatus body and chassis cab.

UNDERCOATING

The apparatus shall undergo a two (2) step undercoating process. The first step shall be a rubberized polyurethane base compound that is applied after the body has been primed. The materials used shall incorporate unused paint products to reduce the amount of waste released into the environment. This coat shall be applied to all hidden pockets and surfaces that will not be visible after completion.

As a final step, the entire underside of the body shall be coated with a bituminous based automotive type undercoating when the apparatus is completed. During this application, special care shall be taken to avoid spraying the product on air lines, cables, or other items that would cause normal maintenance to be hindered.

AERIAL LADDER SIGN LETTERING

The signs on the sides of the aerial ladder shall be lettered with 12" reflective letters. The color of the letters shall be as directed.

THERMOPLASTIC COATING

In the areas designated below, a two component spray-in-place thermoplastic polyurethane system shall be used for maximum protection of the body and equipment. The system shall utilize flexible 100% solids applied with high pressure impingement-mix polyurethane dispensing equipment.

The coating shall be a fast cure, textured surface, multi-purpose material designed for commercial and industrial applications. It shall exhibit excellent adhesion to the body and serve as a protective, abrasion resistant liner where applied.

The density of the material shall be a minimum of 70 PCF as measured using ASTM test method D-1622.

The taber abrasion resistance shall be a minimum of 0.03% per 1000 cycles as measured utilizing ASTM test method D-4060.

The minimum tensile strength as measured using ASTM D-2370 shall be 1540 pounds per square inch.

The coating shall be applied over a properly prepared surface with a highly textured finish in the following areas:

The thermoplastic coating shall be gray in color.

All compartment interiors (gray)

Pump panel surface (black)

Crosslay interior and divider(s) (black)

Equipment shelves as previously designated

Roll-out tray(s) as previously designated

WHEEL CHOCKS

Two (2) pairs of Zico #SAC-44 wheel chocks shall be provided with the apparatus. The chocks shall be mounted in Zico #SQCH-44-H mounting brackets in locations that are easily accessible.

ADDITIONAL HARDWARE

There shall be one (1) bag of stainless steel nuts, bolts, and washers supplied with the apparatus for mounting of equipment.

FUEL FILL

The fuel fill pocket shall be located in the left rear wheel well area. The fuel fill shall have a Cast Products aluminum door with bezel installed.

SPECIAL LABELS

A permanent plate shall be mounted in the driver's compartment specifying the quantity and type of the following fluids that may be used in the apparatus for normal maintenance. Where a fluid is not applicable to the unit, the plate shall be marked N/A to inform the service technician who may not be familiar with the apparatus.

1. Engine oil
2. Engine coolant
3. Transmission fluid
4. Pump transmission fluid
5. Pump primer fluid
6. Drive axle fluid
7. Air-conditioning refrigerant
8. Power steering fluid
9. Cab tilt mechanism fluid
10. Transfer case fluid
11. Equipment rack fluid
12. Air compressor system lubricant
13. Generator system lubricant

A permanent plate shall be affixed in the driver's area that states the maximum number of personnel allowed to ride on the apparatus at any time.

A sign shall be affixed in the chassis cab, in plain sight of the driver, that states the overall travel height of the apparatus.

On any gated inlet at the pump operator's position, a permanent label that states "Warning - serious injury or death could occur if inlet(s) is supplied by a pressurized source when the valve is closed."

All other appropriate labels to ensure safe operation of the apparatus shall be permanently affixed in conspicuous locations.

75 FOOT AERIAL LADDER SPECIFICATIONS

The aerial device shall have a (1) year warranty, parts and labor.

CONSTRUCTION STANDARDS

The aerial device shall be designed and tested with a safety factor of two to one (2:1) figured on the dead load of the ladder assembly with a live load of 500 pounds at the tip while flowing 1,250 GPM at 90 degrees to the side.

STABILITY TESTING

A one and one half to one (1.5:1) stability factor shall also be provided that is in compliance with the intent of the Occupational Safety and Health Administration (OSHA) and the American National Standards Institute (ANSI). These capabilities shall be established in an unsupported configuration. Since the device is rated while flowing water, stability testing must account for the distributed weight of water in a full waterway.

CONSTRUCTION

The aerial ladder shall be comprised of three sections and shall extend to a nominal height of 75' at 72 degrees, measured in a vertical plane from the top rung of the fly section (not including the egress) to the ground.

The ladder shall have the capability to support and be operational with a minimum of 500 pounds at the tip while flowing 1250 gallons per minute in the unsupported configuration based upon 360 degree rotation, up to full extension and from -6 degrees to +72 degrees.

The primary load support members of the ladder shall be constructed of certified 70,000 PSI yield strength (minimum) steel tubing. Each section shall be trussed diagonally, vertically, and horizontally using welded steel tubing. All critical points shall be reinforced for extra rigidity and to provide a high strength to weight ratio. All ladder rungs shall be round and welded to each section utilizing "K" bracing for torsional rigidity.

The inside dimensions of the ladder shall be as follows:

Base Section 34.000"

First Fly Section 27.750"
Last Fly Section 22.500"

The height of the handrails above the center line of the rungs shall be as follows:

Base Section 22.875"
First Fly Section 18.875"
Last Fly Section 15.375"

Each rung shall be covered with a secure, heavy duty, deep serrated rubber sheathing. The sheathing shall be easily replaceable if the rubber becomes worn.

BOLT-ON EGRESS

A bolt-on, removable egress shall be installed on the tip of the last fly section. When the ladder is at 0 degrees elevation, the rungs on the egress shall be on a plane of -11 degrees to provide a smooth transition onto the ladder when it is at a high angle.

TURNTABLE

The turntable shall be a minimum of 96" in diameter. It shall be covered with Morton Treadgrip Safedeck pattern decking to provide secure footing for the operator. The turntable shall be lighted for night time operation with three (3) work lights activated by the aerial master switch. Three one piece handrails 42" high, rubber coated, with large sweep corners shall be installed around the rear perimeter of the turntable for operator safety. A stainless steel safety chain with caribiner type ends shall be installed in the two gaps between the handrails. These chains shall be permanently attached at one end.

FOLDING STEPS

One (1) set of folding steps shall be installed at the tip of the ladder to provide solid footing for personnel while operating the elevated master stream device.

LADDER TRAVEL SUPPORT

A heavy duty ladder rest shall be provided for support of the ladder in the travel position. On the base section of the ladder, stainless steel scuff plates shall be installed where the ladder comes into contact with the ladder support. A marker shall be provided on the turntable to indicate when the ladder is aligned with the travel support and may be lowered into it. The ladder cradle shall be attached to the front stabilizer housing. The ladder rest shall be illuminated for night time operation.

ELEVATION SYSTEM

Two (2) double acting lift cylinders shall be utilized to provide smooth precise elevation from 6 degrees below horizontal to 72 degrees above horizontal. The lift cylinders shall have a 5" internal diameter (bore)

and a 2.5" cylinder rod. The lift cylinders shall be equipped with integral holding valves located on the cylinder to prevent the unit from falling should the charged lines be severed at any point within the hydraulic system.

The lowering of the ladder shall be controlled by a pressure limiting valve so as to limit the downward pull of the ladder when it is bedded. Both raising and lowering functions shall be influenced by flow compensation which shall maintain ladder tip speed within approximately 10% of design speed regardless of load, angle, or extension. Ladder tip speed shall be decelerated above 65 degrees reducing "tip-lash".

EXTENSION/RETRACTION SYSTEM

A full hydraulic powered extension and retraction system shall be provided utilizing two sets of siamese hydraulic cylinders and cables. Each set shall be capable of operating the ladder in the event of a failure of the other. The extension cylinders shall each have a 2.5" internal diameter (bore) and a 1.25" diameter rod. Extension and retraction shall be internally limited within the cylinders, eliminating excess strain on the cables, sheaves, and ladder structure. Each of the cylinder, cable, and sheave assemblies shall be completely independent of the other, so as to provide a safety factor wherein a failure of one assembly would not affect the function and operation of the other. The extension cylinders shall be equipped with counter balance valves to synchronize the cylinders for smoother operation and prevent the unit from retracting should the charged lines be severed at any point within the hydraulic system.

The reeling of cables shall be such as to provide synchronized, simultaneous movement of all sections from full retraction to full extension and back.

The extension/retraction cables shall be as follows:

Second Section .38" diameter with a 5760 pound test
Fly Section .31" diameter with a 3920 pound test

All swedge shackles ends shall have a certification test.

WEAR PADS/BEARING SURFACES

Nylon wear pads impregnated with molybdenum disulfide and high in molecular weight shall be used between the telescoping sections for maximum weight distribution, strength, and smoothness of operation. Stainless steel adjustment screws shall be provided on the wear pads to permit proper side tension.

LADDER SAFETY LIGHTS

There shall be ladder safety blue rung lights installed in the rails of the ladder with a protective guard and shall be staggered throughout each section to illuminate the climbing area and reduce glare on the climber thereby providing a ascent or descent for the climber.

RETRACTION SAFETY SYSTEM

An integral part of the extension/retraction system shall be a safety system to prevent injury to personnel on the end of the fly section while the ladder is being retracted. This system shall be designed in such a manner as to prevent retraction of the aerial device any time the folding steps at the end of the fly section are in overlap with the rungs of another section.

When the steps are in an overlap condition, retraction shall only be accomplished by an operator at the primary control station depressing and holding a momentary switch while the retraction control is operated.

ROTATION BEARING

A 42" diameter external tooth, swing circle bearing shall be used for the rotation system. The bearing shall have 108 sealed 1" ball bearings. The bearing shall provide 360 degrees continuous rotation. The turntable shall be bolted to the bearing using thirty (30) SAE grade 8, .62" diameter bolts. The turntable shall be bolted to the base support structure with thirty (30) grade 8, .62" diameter bolts. Welding on the bearing in any manner will not be acceptable. The turntable base and the torque box bearing plate surfaces that contact the bearing shall be machined to prevent loading the bearing when the attaching bolts are brought to full torque. Machining of the surfaces is to be done after all welding to assure no further distortion of the material. Shims will not be acceptable as they will reduce the surface contact area significantly thereby causing a concentration of forces at the shims.

ROTATION GEAR BOX

A hydraulically driven planetary gear box with a drive speed reducer shall be used to provide infinite and minute rotation control throughout the entire rotational travel. A spring applied, hydraulically released disc type swing brake shall be furnished to provide positive braking of the turntable assembly. Provisions shall be made for manual operation of the rotation system should complete loss of hydraulic power occur. The hydraulic system shall be equipped with pressure relief valves which shall limit the rotational torque to a non-destructive power.

ROTATION INTERLOCK SYSTEM

The aerial device shall be equipped with a rotation interlock system to prevent the ladder from rotating to any side where the stabilizers are not in a minimum acceptable configuration. The system shall monitor the stabilizers for extension distance. When a stabilizer is not extended enough to provide full tip load rating the locking system shall be automatically activated.

Once activated, the system shall prevent the aerial from being rotated more than three degrees past the centerline (fore or aft) toward the side of the apparatus where a stabilizer is deemed to be improperly deployed. Movement back toward the safe side of the apparatus shall remain unrestricted and shall require no override procedures.

An override system shall be supplied to allow the operator to rotate the aerial into the non-recommended side of the apparatus should a situation absolutely demand it. The control for the override shall be a single push button located inside the pedestal. Once the button is pushed the aerial shall be capable of rotating on the side where a stabilizer is not fully deployed. As long as the device is on the questionable side, an alarm shall sound continuously. Also, during override, any secondary controls other than those on the main pedestal shall be locked out and inoperable.

The override system shall be so designed that once the ladder is moved into a safe configuration the alarm shall quit sounding and any secondary controls reactivated.

TORQUE BOX

A "torsion box" subframe shall be installed on the chassis frame rails, integral with the outriggers. The torque box shall be constructed of .25" steel plate with the exception of the turntable area which shall be .375" steel plate. The torque box subframe assembly shall be capable of withstanding all torsional and horizontal loads when the unit is on the outriggers. The torque box shall be bolted in place to the chassis frame rails using eighteen (18) .62" SAE grade 8 bolts with nuts.

The torque box shall have a section modulus of 338 in³ and a resistance to bending of 12,169,966 pounds per square inch.

FRONT AND REAR STABILIZERS

Two (2) sets of stabilizers shall be installed for stability. The front set shall be non-extending and the rear set shall have a 16' and/or 18' spread. The front stabilizers shall be located ahead of the fire pump compartment, attached to the torque box, for maximum stability and to minimize the amount of loading transferred to the chassis frame. The rear stabilizers shall be located at the turntable area. The stabilizers shall be double box design with jack cylinders that have a 4" internal diameter (bore) and 2.5" diameter cylinder rod. The Jack cylinders shall be equipped with integral holding valves which shall hold the cylinder either in the stowed position or the working position should a charged line be severed at any point within the hydraulic system.

Vertical jack cylinder rods shall be fully enclosed by a telescoping inner box to protect the cylinder rods, seal glands and pistons against damage from knicks, abrasion, and chrome damage. The inner double box system shall be further designed to stabilize the column load imparted upon the cylinder rod, thereby also protecting against damage which may occur from lateral loading which may be caused by side slopes, shifting or sliding of the apparatus on icy or unstable surfaces, sudden sinking of one or more jack pads, or on scene collision while the aerial device is deployed.

The stabilizers shall be connected to the hazard warning light to warn the driver if they are not stowed when the chassis parking brake is released.

STABILIZER STROKE

The stroke of the stabilizer jack cylinders shall be a minimum of 22". The stabilizer pad shall be maintained at a stored height of approximately 12" to 15" (dependant on required ground clearance and angle of departure) resulting in a minimum ground penetration of 7" to 10" or greater.

MECHANICAL STABILIZER LOCKS

Each vertical jack cylinder shall be equipped with a mechanical pin lock to hold it in the working position. The locking system shall be incorporated with the protective tubing used to prevent damage to the jack cylinder rod. The inner and outer jack tubes shall be double thickness in the pinning area for additional strength.

Due to the fact that all makes and brands of holding valves inherently pass fluid and that any seal within the cylinder may develop a leak, mechanical stabilizer locks must be supplied in addition to holding valves, no exception.

HOT DIP GALVANIZING

The extending stabilizer beams, inner jack tubes, and stabilizer pads shall be hot dip galvanized for maximum protection, no exceptions.

STABILIZER EXTENSION SYSTEM

Extension of the horizontal rear beams shall be activated by dual extension cylinders which shall each have a 2" internal diameter (bore) and a 1.25" diameter cylinder rod. The extension cylinders shall be totally enclosed within the extension beams to prevent damage to the rod and hoses. The extension beams shall be 6.00" x 8.00" x .25" wall steel tubing with a .62" steel plate welded to the top and bottom of each beam.

Two (2) Nylatron wear pads shall be installed in each stabilizer extension system. One (1) pad shall be installed on the end of the upper surface of the extension beam, opposite the jack cylinder. The second pad shall be installed on the inside lower surface of the stationary tube at the end closest to the jack cylinder. The pads shall be installed in such a manner as to reduce friction for ease of operation and to reduce the amount of metal to metal contact.

STABILIZER CONTROLS

The stabilizer controls shall be located at the rear of the apparatus. Two (2) stations shall be installed, one on each side at the rear, arranged so that the operator has full view of the stabilizer being positioned. All stabilizer control functions shall be operated independently so that the vehicle may be set up in a restricted area or uneven terrain.

An electrically actuated diverter valve shall be provided in conjunction with the stabilizer controls as a safety device. The diverter valve shall allow the hydraulic fluid to flow either to the stabilizer circuit or the turntable and ladder circuit, but not both simultaneously.

A stabilizer deployment warning alarm, activated by the stabilizer mode, shall be provided at each stabilizer to warn personnel. The warning alarm shall deactivate only when all stabilizers are in the load supporting configuration, or when the diverter switch is no longer in the stabilizer mode.

AUXILIARY STABILIZER PADS

An auxiliary pad for additional load distribution on soft surfaces shall be supplied for each stabilizer. The pads shall be constructed of ultra-high molecular weight material that is a minimum of 1" thick with a minimum surface area of 528 square inches. The auxiliary pads shall be stored in locations that are readily accessible.

CRADLE INTERLOCK SYSTEM

A cradle interlock system shall be provided to prevent the lifting of the ladder from the nested position until the operator has positioned all of the stabilizers in a load supporting configuration. A switch shall be installed at the cradle to prevent operation of the stabilizers once the aerial has been elevated from the nested position.

There shall be a manual override switch that allows the ladder to be lifted from the cradle when the aerial is set up in the "Short-Jacked" configuration.

GROUND CONTROL STATION

A control station shall be located at the rear of the apparatus in an easily accessible area. The control panel shall be illuminated for night time operation. The following items shall be furnished at the control console, clearly identified and located for ease of operation and viewing:

- Individual stabilizer down indicator lights
- Aerial PTO engaged indicator light
- High idle switch with indicator light
- Emergency hydraulic pump control with indicator light
- Stabilizer/Aerial diverter control with indicator light
- Front to Rear Leveling Bubble
- Side to Side Leveling Bubble

A weather resistant compartment shall be furnished behind the control panel and shall contain the aerial circuit breakers, interlock components and control circuit distribution terminals.

HAND HELD REMOTE CONTROL

There shall be a remote control system installed on the apparatus.

The system shall operate the normal aerial operations functions and the monitor, nozzle functions.

The system shall consist of a radio remote control with a modulator/transmitter with receiver/decoder unit. The system shall operate on the 5rf channels in accordance with FCC subpartD-low power

communications devices part 15.117.

The control box shall contain three toggle switched for the aerial functions and three switches for the monitor nozzle functions. There shall be an on/off switch and an emergency off switch on the control box.

The control box shall contain a finger action trigger speed control on the bottom portion of the box which will control the variable speed of the respective functions.

The control shall have a storage holder mounted in the left front compartment closest to the pump panel.

TURNTABLE CONTROL CONSOLE

The turntable control console shall be located on the left hand side of the turntable, facing the ladder tip. The console shall be illuminated for night time operation and shall have a hinged weather cover.

Three (3) handles for the ladder hydraulic functions (elevation, rotation, and extension) shall be installed at the control console. They shall be capable of being operated independently or simultaneously. The speed of movement caused by moving any control shall be minimally affected when multiple controls are moved.

A systems engagement control shall be installed at the control pedestal. The control shall energize the hydraulic system for ladder function and provide flow of hydraulic fluid to the master valve bank. An automatic throttle switch shall be attached to the systems engagement control that advances the engine speed to a preset RPM when the engagement control is in the "RUN" position. In the "LOCK" position, the engine speed shall return to the normal idle RPM and the hydraulic system shall be de-energized.

The following items shall be furnished at the console, clearly identified and located for ease of operation and viewing:

- Elevation, Extension and Rotation Controls
- Off/On Morris Locking Type Lever to Deactivate Hydraulic System
- Fast Idle Switch Incorporated with Hydraulic System Lock
- Panel Light Mounted in Cover
- Rung Alignment Light
- Spot Light Switches
- Ladder Overload Warning Horn
- System Pressure Gauge
- LoadMinder
- Manual Override Warning Light
- Emergency Pump Unit Switch and Light
- Intercom with Controls
- Stabilizer Deployment Warning System
- Warning Signs

EXTENSION INDICATOR

There shall be numerals affixed to the handrail of the base section at appropriate intervals, indicating total aerial extension in 5 foot

increments. A band on the first fly section shall align with these marks at the appropriate extension distance.

ANGLE INDICATOR

There shall be a liquid filled angle indicator mounted on the base section of the aerial ladder. The indicator shall give accurate elevation in degrees from -20 to +80 degrees in relation to level.

POWER TAKE-OFF - HYDRAULIC PUMP

The apparatus shall be equipped with a power take-off (PTO) driven by the chassis transmission and actuated by an electric shift, located inside the cab. The PTO which drives the hydraulic pump shall meet all requirements for the aerial unit operations. The hydraulic system shall operate at a nominal 32 gallons per minute at pressures up to 1,950 PSI. An amber indicator light shall be installed on the cab instrument panel to notify the operator that the PTO is engaged.

10 MICRON PRESSURE FILTER

There shall be a 10 micron filter installed in the output line of the hydraulic system, after the hydraulic pump.

HYDRAULIC PUMP

The hydraulic system shall be supplied by a pressure compensated, load sensing, variable gallonage type pump. The pump shall provide adequate fluid volume to allow all ladder functions to operate simultaneously, without noticeable loss of speed. The pump shall supply oil only when the ladder is in motion, thereby preventing overheating of the hydraulic oil.

An interlock shall be provided that shall allow operation of the aerial device PTO shift only after the chassis spring brake has been set and the chassis transmission has either been placed in the neutral position or the drive position if the driveline has been disengaged from the rear axle.

HYDRAULIC SYSTEM

The tubing and hoses used in the hydraulic system shall have a high pressure rating, with the tubing having a minimum burst pressure of 9,600 to 17,400 PSI and the hoses being a minimum of 8,000 to 13,000.

The hydraulic oil tank shall have an approximate capacity of 44 gallons. A dipstick shall be provided to check the oil level. The oil fill shall be furnished with a cap that shall act as a ventilator provide clean fresh air into the oil tank and a 40 micron filter to provide positive protection from contaminants. A magnetic drain plug shall be provided in a low point of the oil tank. An easily accessible 10 micron replaceable oil filter shall be installed on the hydraulic oil tank. The hydraulic oil tank shall be furnished with two pick-up tubes, one tube being used for normal operation and the other for emergency operation. The emergency pick-up tube shall extend further down into the oil tank to

provide for some reserve oil in case a hydraulic line is broken.

The hydraulic system shall be protected from possible hydraulic pump malfunctions by a relief valve which shall route the excess oil into the oil tank when the pressure in the hydraulic system exceeds 3,500 PSI. The hydraulic control valves shall also be protected by being plumbed to a pressure relief valve to protect them from high pressure.

LOAD SENSING SYSTEM

There shall be a LoadMinder at the operator's pedestal that indicates the ladder load. The indicator shall provide the operator with continuous readout of the entire ladder load including, but not limited to, accumulated equipment, personnel, and ice relative to the maximum rated capacity at any angle and extension. The LoadMinder shall be designed in such a manner that the operator will not have to refer to an angle indicator, load chart, or be required to guess at the loads applied to the aerial device at any given time.

The LoadMinder shall be connected to a 100 dba alarm that shall sound when the ladder load is above the rated capacity. This alarm system shall also be connected to two (2) strobe lights on the end of the base section, one on each side, to provide further notice to the operator of an unsafe condition.

EMERGENCY PUMP

The apparatus shall be equipped with an emergency hydraulic pump that is electrically driven from the chassis battery system. The emergency pump shall be capable of providing adequate ladder functions to stow the unit in case of main hydraulic pump failure. Two (2) control switches shall be provided for the emergency pump, one installed at the outrigger control panel and the other installed at the turn table control console. The controls shall be spring loaded momentary switches. A red indicator light shall be mounted adjacent to each switch to indicate activation of the emergency pump.

HYDRAULIC SWIVEL

The aerial device shall be equipped with a hydraulic swivel which shall connect the hydraulic lines from the hydraulic pump and reservoir to the aerial control bank. The hydraulic swivel shall allow for 360 degrees of continuous rotation of the aerial device with no loss of speed or capacity in it's functions.

ELECTRICAL SWIVEL

The ladder shall be equipped with an electrical swivel to allow for 360 degrees of continuous rotation of the aerial while connecting all electrical circuits through the rotation point. A minimum of thirty two (32) collector rings shall be provided.

AERIAL MOUNTED 110 VOLT RECEPTACLE

There shall be one (1) NEMA L5-20, 110 Volt 20 Ampere rated receptacle

mounted on the end of the fly section. The receptacle shall be a Twist Lock Type with a spring loaded weather resistant cover and shall be wired through the electrical swivel.

REMOTE LADDER "CREEPER CONTROLS"

There shall be a remote ladder "creeper control" at the tip of the fly section. The control shall consist of three (3) spring loaded, triple pole double throw, return to center switches, one for each main ladder function. The creeper control shall allow the crew member on the tip of the ladder to operate these three functions within the speed limitations as set forth in NFPA Pamphlet 1901, latest revision.

A momentary switch shall be installed at the lower control station to activate the system. When in the normal position, the system shall be de-energized. When the switch is held in the on position, power shall be available to the person at the tip.

AERIAL MANUALS

Two (2) operation and maintenance manuals and two (2) wiring diagrams pertaining to the aerial device shall be provided with the apparatus at the time of delivery.

SPECIAL TOOLS

Special tools required for periodic maintenance of the aerial device shall be provided with the apparatus at the time of delivery. These tools shall include the following:

- One (1) 1/2" drive, torque wrench
- One (1) 1/2" drive, 15/16" socket
- One (1) set of allen wrenches, (5/64", 3/32", 1/8", 5/32", 3/16", 7/32", 1/4")
- One (1) combination 1/2" x 9/16" box end wrench
- One (1) manual rotation hand crank

TRAINING

A factory authorized delivery engineer shall instruct the fire department personnel in the safe operation and maintenance of the entire apparatus. The training shall last for a period of three (3), days.

INSPECTION CERTIFICATE

A third party inspection certificate for the aerial device shall be furnished upon delivery of the aerial device. The purpose of this inspection is to serve as a guide to achieve the following objectives:

- 1) Ensure high standards of design and manufacture
- 2) Ensure standards for testing and inspection
- 3) Ensure understanding of all parties respective responsibilities.

TWO-WAY AERIAL COMMUNICATION SYSTEM

An Atkinson communication system shall be furnished between the aerial tip and the turntable operator's position. The communication system shall be a two way system with the communication speaker at the tip requiring no operator attention to transmit or receive. The transmitting and receiving volume controls shall be located at the turntable operator's position.

WATER SYSTEM

There shall be a ten (10) year warranty covering the waterway between the waterway swivel and the monitor at the tip, including the waterway seals. The warranty shall be effective from the date of delivery and shall require no special maintenance at the scene of the fire or special procedures other than following the normal 10 hour preventative maintenance schedule.

A water way system shall be provided consisting of the following components and features.

A 4-1/2" outside diameter pipe connected to the water supply on one end and to a water swivel at the rotation point of the turntable. The water swivel shall allow the ladder to rotate 360 degrees continuously while flowing water.

A 4" inside diameter pipe waterway swivel shall be routed through the rotation point swivel up to the heel pin swivel. The heel pin swivel shall allow the water to flow to the waterway while elevating the aerial ladder from -6 degrees below to +72 degrees. The heel pivot pin shall not be integral with the water way swivel at any point. The design of the water way shall allow complete servicing of the waterway swivel without disturbing the heel pivot pin.

There shall be a 4" NST aerial waterway inlet installed on the rear of the apparatus. The inlet shall be as low as possible to reduce the amount of weight on the fire hose coupling. Inlets that are located in areas that would cause the hose to block access to equipment or stepping areas will not be acceptable.

The integral telescopic water system shall consist of a 4" outside diameter pipe in the base section, a 3.5" outside diameter pipe on the next section, and a 3" outside diameter pipe on the fly section.

"PINNABLE" WATERWAY

The waterway shall be the "pinnable" type in order to allow the uppermost fly section to be clear of obstructions when using the aerial device for rescue purposes. It shall be designed in such a manner as to allow the master stream device to be affixed to either the tip of the last fly or to the end of the next lower section.

This shall be accomplished by positioning a lever while the ladder is fully retracted. The lever shall be designed in such a manner that when it is in the forward position the monitor master stream device will be connected to the tip of the ladder and when it is toward the back the device will travel with the next lower ladder section.

The connection for remote nozzle controls and electricity to the unit shall be permanent. There shall be no reels that can foul or connectors that can be damaged, thereby preventing use of the unit.

WATERWAY RELIEF VALVE

A 3/4" safety relief valve shall be installed in the aerial plumbing after any valves to prevent damage to the waterway system.

WATERWAY MATERIAL

The telescopic water pipes shall be heavily galvanized steel pipe with the outside perimeter ground to a smooth finish and then chrome plated to reduce the chance of nicks, scratches, and abrasions that can easily occur with softer and more malleable aluminum tubes.

CAPABILITIES WHILE FLOWING WATER

Rotational torque shall be more than adequate to rotate the ladder into a full 1250 gallon per minute water stream directed at 90 degrees to the side while maintaining the 500 pound tip load at 0 degrees elevation. Flowing the rated 1250 gallons per minute shall in no way affect the rated load or impose any restrictions on operation.

ELEVATED MASTER STREAM APPLIANCE

An Akron Brass style 3578 remote controlled all electric single waterway monitor shall be installed at the end of the waterway. The monitor shall be equipped with two (2) 90 degree drive positioning motors, one each for vertical and horizontal movement. Each positioning control shall be equipped with a manual override. A compatible Akron electric remote nozzle shall be installed on the appliance.

The monitor shall be capable of vertical positioning from -135 degrees to 0 degrees and horizontal sweep of 90 degrees from side to side for a full 180 degree sweep. The rated tip load of the aerial device shall not be affected by the position of the nozzle throughout the entire range as listed above.

There shall be a Task Force Tips #TFT-M-ER-NN Nozzle in place of the Akron Nozzle on the ladder pipe.

AERIAL MASTER STREAM CONTROLS, 3 LOCATIONS

The aerial master stream device shall have three (3), separate control stations. One set at the pedestal on the turntable, one set at the tip of the ladder, and one set at the pump operator's position. Each set of controls shall have the ability to control the nozzle pattern, as well as the horizontal and vertical position of the device.

SPOTLIGHTS

Four (4) Collins FX-12, 750,000 candlepower spot, 6,000 candlepower flood, 12 volt combination spot/flood lights shall be furnished. Two (2)

lights shall be "tracking" lights, mounted on the base section of the ladder, one on each side. The other two lights shall be "tip lights", mounted on the tip of the ladder. All of the lights shall be mounted below the handrails so as not to increase the overall height of the unit. The lights shall be switched from the operator's control station at the base of the ladder in sets as well as individually by a switch on each light head.

MISCELLANEOUS

AERIAL MOUNTED AXE BRACKETS

There shall be one (1) set of mounting brackets on the fly section for one (1) axe.

The following axe shall be installed:

One (1) Pick Head axe.

AERIAL MOUNTED PIKE POLE BRACKETS

There shall be one (1) set of mounting brackets on the fly section for one (1) pike pole.

The following pike pole shall be installed:

One (1) ^{10'} pike pole.

HOUR METER

There shall be an hour meter installed in the chassis cab, connected to the hot shift PTO. The meter shall register the total hours of aerial use for scheduling periodic maintenance.

MEDICAL EQUIPMENT CABINET IN CHASSIS

There shall be a EMS Cabinet built along the rear wall of the chassis with a small roll up door and two interior shelves, this cabinet shall have storage on the right side exterior for a small water cooler with cup holder above and storage for a axe on the exterior right side. This compartment shall be made from aluminum plate and da sanded.

SPECIAL LABELS

Legible, permanent signs shall be installed in positions readily visible to the operator to provide operational directions, warnings, and cautions. The signs shall describe the function of each control and provide operating instructions.

Warning and caution signs shall indicate hazards inherent in the operation of the aerial device. These hazards shall include, but shall not be limited to:

Electrical hazards involved where the aerial device does not provide protection to the personnel from contact with, or near proximity to, an electrically