

**CHASSIS REQUIREMENTS  
21 & 14 PASSENGER ACTIVITY BUS**

CHASSIS	1999 or newer
ENGINE:	Gasoline engine EFI V-8, 5.7 liter or equal Diesel engine 6.5 liter or equal to be offered
GVWR:	10,000 lbs. maximum
GENERATOR:	Minimum 105 AMP
FUEL TANK:	To be located between frame rails for safety. Fuel filter-plastic strainer in fuel tank, replaceable fiber element in fuel line or equal.
OIL FILTER:	Throw-away type
STEERING:	Integral steering
FRAME:	Integral body frame, heavy duty "C" frames with internal crossmembers or equivalent construction approved for school bus application use.
EXHAUST:	Aluminized, unitized muffler - tailpipe, converter equipped, single exhaust or equal.
DRIVER'S SEAT:	High back adjustable type or equal as supplied by chassis manufacturer.
COOLING:	Radiator and transmission oil cooler, heavy duty cooling.
AIR FILTER:	Chassis manufacturer's recommended standard for applicable use.
BATTERY:	12 volt negative ground system with minimum 600 CCA battery supplied maintenance free type.
BRAKES:	Power, self adjusting. Parking-cable to rear wheels, foot operated or equal
REAR AXLE RATIO:	Rated for highway speeds.
SUSPENSION:	Front - independent capacity. Axle rear - Hypoid drive, semi-floating type: Front springs - coil, capacity 4,100 lb. capacity or equal. Rear springs - Two stage, multi-leaf. Shock absorbers - front and rear. Front stabilizer bar.
TIRES:	Dual rear drive wheels, total six wheels to be all season steel belted radial B/W sized for GVW vehicle capacity. Unit furnished with wheels paint white (rims)
TRANSMISSION:	4 Speed Automatic
BACKUP WARNING ALARM:	Bus to include approved backup warning alarm installed.
FUEL/WATER SEPERATOR:	Diesel engine to have a fuel/water seperator installed, Racor or equal.

## **Body Specifications 21 & 14 Passenger Activity Bus**

### **BODY FLOOR**

**Loads** - The floor shall be designed to support all fixed and changeable loads. Fixed loads shall consist of all parts of the body supported by the floor system. Changeable loads are live loads determined on the basis of 125 pounds per passenger with three passengers per seat. The weights of the passengers and seats may be estimated at 70 pounds per square foot of floor area. To allow for vibration and shock, all loads shall be doubled.

(Openings should be made only when required such as a wheel housing.)

**Floor Sills** - All high strength steel floor joist are to be 16 gauge or heavier. All sills shall extend the full effective width of the floor without splicing so the floor will support the roof load imposed by the side posts.

There shall be a main joist sill at each post or bow-frame, except in the wheelhouse area. Maximum spacing of the joists shall be 36".

The bus bodies transverse and longitudinal frame members should allow stress to flow evenly throughout the bus body. The manufacturer should substantiate the strength integrity of any joint or gusset connection of these members to prove they are of equal or greater than a continuous constructed member.

**Stepwell** - A stepwell, having two steps, shall be built into the front assembly and completely enclosed with doors extending to bottom step. Each step shall be .05 aluminum and covered with ribbed rubber as per the 1995 National Standards.

Entrance step shall extend below skirt line to such depth as necessary to make the distance to the ground from the bottom of the step no less than 10" and no more than 14".

**Floor Covering** - The floor in under seat area, including wheel housings and driver's compartment, shall be covered with a smooth finish rubber, or an approved equal covering at least one-eighth inch thick. The aisle and entrance area shall be covered with a ribbed pattern rubber, or an approved equal covering at least three sixteenth inch thick. The adhesive for laminating the covering to the floor shall be a water resistant type of trowel or spray consistency. An approved rust proof molding strip shall be applied over all edges and joints of the covering. If the chassis is equipped with transmission cover, the cover shall be placed on top of floorboard and securely fastened and sealed. Transmission cover fasteners shall be of the hexagon head, cap screw type.

### **BODY FRAME**

**Framing** - Where posts or bow frames are not loaded in a plane of symmetry, they shall be braced so as to deflect without twisting. The minimum depth of member shall be at least 1½" and shall be 16 gauge or heavier. The maximum spacing shall be 30" on centers on all sections except one which shall be no greater than 40" on center.

The section modulus of the cross section shall be not less than 0.22" to the third power. NOTE: All bidders shall submit with their proposal complete detailed engineering drawings detailing the size and shape of a cross section of the post or bow frame along with detailed calculations verifying that the section meets requirements.

A roof bow shall be located at each post to form a bow frame or bow frames may be formed in one piece. When framing members are joined, the connections shall be such as to develop the full strength of the cross section of the two or more members joined. If side post members and bow frames are not one continuous piece, bidder shall submit with their proposal a detailed drawing of the joining connection. Roof bows shall not be buckled or distorted out of cross section during the process of bending to the curved shape. Each post shall be connected to a main floor joist, either directly through gussets or indirectly through the side rails.

**Roof Strainers** - Two or more roof strainers or longitudinal members equal in strength to roof bows shall be provided to space the roof bows and reinforce the flattest portion of the roof skin. These strainers may be installed between the roof bows or applied externally. They shall extend from the first full rafter and when combined with the rear emergency door post, are to function as longitudinal members extending from the first rafter to the rear floor body cross member. At all points of contact between strainers or longitudinal members and other structural material, attachment shall be made by means of welding, riveting or bolting. If strainers are applied internally, they shall be fastened to each roof bow so that the joint is equal in strength to the cross section of the weaker member. If strainers are applied externally, all joints must be lapped the full width of the roof bow and attached to each roof bow with four rivets or securely welded.

After the load, as called for in the static load test, has been removed, none of the following defects shall be evident:

Failure or separation at the joints where strainers are fastened to the roof bow.

Appreciable difference in deflection between adjacent strainers and roof bows.

Twisting, buckling or deformation of the strainer cross section or fastening.

**Side Strainer(s)** - There shall be one or more side strainers or longitudinal members to connect the vertical structural members and to provide impact and penetration resistance in the event of contact with other vehicles or objects.

The side strainer shall be installed in the area between the bottom of the window and the bottom of the window and the bottom of the seat frame and shall extend completely around the bus body, except for the door openings and body cowl panel.

The formed side strainer to be a minimum of 16-gauge metal, 3" wide before forming.

The side strainers are to be fastened to each vertical structural member, in any one, or a combination of the following methods as long as stress continuity of the member is maintained:

Installed between the vertical members.

Behind the panels but attached to the vertical members.

Outside of the external panels.

The fastening method employed shall be such that the strength of the strainer is fully utilized.

The side strainer or longitudinal member may be combined with a rub rail, or be in the form of an additional rub rail, so long as the separate conditions and physical requirements for the longitudinal rub rails are met.

**Rear Framing** - The emergency door posts shall extend from the floor sill to the window header and shall be 16-gauge or heavier. There shall be installed on each side of the emergency door posts an additional post equal in strength to the side posts which shall extend from the floor sill to the window sill.

**Skirt Reinforcement** - There shall be installed at the bottom of the outer paneling a continuous skirt stiffener equal in strength to a 1 inch by 1/8-inch angle. If body construction is of such a design that this type stiffener cannot be used, an additional rail shall be applied externally. Rail to be equal in strength and construction to the guard rails required in the Guard rail Section. This stiffener shall be supported by extending posts or bow-frames or by 16-gauge gussets.

**Window Framing** - A 16-gauge formed header or strainer (not a flat strip) with a depth of at least 1½" perpendicular to the side of the body or a 16-gauge formed header equal in strength to roof bows shall be used at the top of the windows.

## **EXTERIOR PANELS**

**Design** - Joints in roof panels should occur only at roof bows, roof strainers and window headers.

**Sheet Metal Skin** - All paneling above the top of the floor, except the cowl panel and wheel housing shall be of 20-gauge or heavier.

**Wheel Housing** - The wheel housing shall be attached to the floor in such a manner as to prevent any water or dust from entering the body. They shall be designed for easy removal of tires and shall be .050 thick metal or heavier.

## **GUARD RAILS**

**Number** - in addition to the side strainer or rub rail required in the above wheel housing section, there shall be applied to the outside of the body, three guard rails. These members to be corrugated so as to provide maximum stiffness and shall be .060 thick or heavier. Pressed-in guard rails will not meet these requirements. Guard rails shall be located at the following elevations: floor seat and window sill or an acceptable equivalent arrangement. The seat level and window level rails to begin at the entrance door post on the right side of the body and, except for the rear emergency door, extend around the rear of the body to left first full rafter. Where design problems cause difficulty in installing one of the above guard rails, the floor level rail may be extended in its place or an additional strainer installed.

Floor level guard rails to begin at the entrance door posts on the right side of the body and, except for the wheel house and gas filler area, to extend to the right rear body post, and to the left first full rafter and except for the wheel house are, to extend to the left rear body post, except where design does not permit installation. Splices, if any, to be located at post by lapping the full width of the supporting part of the posts. All guard rails to be cleaned, primed and rust proofed underneath before being installed on body. All guard rails to be attached in an approved manner. Sheet metal screws not acceptable except in locations where rivets cannot be used.

## **BODY TEST**

**General** - Throughout the construction of the body, there shall be evidence of good workmanship and engineering ability.

Vehicle shall be subject to a durability test of at least 3000 miles with at least a 10:1 multiplier over real world service.

Body shall meet Federal Motor Vehicle Safety Standard 220 and 221.

## **INTERIOR PANELS**

**Sheet Metal Lining** - The roof section of the body is to be entirely lined with 20-gauge perforated sheet metal. Lining panels to have a minimum of at least 2" unperforated steel for attaching to roof bows or an acceptable equivalent design. Panels must be designed and fastened to minimize vibration and to be installed for easy removal. Panels from window sill to seat rail to be 22-gauge texturized and embossed stainless, aluminized, or clear coated galvanized steel sheet, or texturized aluminum.

**Moldings** - At the junction of the interior paneling and the floor, there shall be installed a galvanized, aluminum or other corrosion resistant molding of approved design.

All interior lining shall be secured with sheet metal screws or rivets.

## **SEATING**

**Description** - Seats shall be forward facing and be spaced with the maximum knee room available within standard body lengths. All seats should be 15" deep. Width of seats may vary to accommodate the desired rated capacity. Seats are to be arranged in rows of two or staggered with a minimum 12" center aisle. The number of passengers on each seat shall be based on 13" rump room per passenger. All material used in the seat cushions and backs shall meet the requirements of Federal Motor Vehicle Safety Standards #302. All seats shall meet the requirements of Federal Motor Vehicle Safety Standards #222. Seats shall be spaced for maximum knee room. Last row seat width may vary to ensure maximum knee room.

**Seat Cushion Pad** - The top of the seat crown should be approximately 16" above the floor. The cushion material should be a minimum thickness of 3½" front and 2" rear, excluding plywood base. The cushion shall have a one-half thick mounting board and shall be secured to the seat frame to meet the cushion retention requirements of Federal Motor Vehicle Safety Standard #222. Seat pad is to be covered with an approved fire block type upholstery fabric.

**Seat Back Pad** - The seat back should have reinforcing material of ¼" thick three-ply plywood or equivalent between the front and rear padding, properly fastened to the seat frame. The back pad and cover shall meet requirements of Federal Motor Vehicle Safety Standards #302 and 222. The seat back is to be covered with an approved fire block type upholstery fabric.

**Upholstery Fabric** - The upholstery material used to cover all seat cushions and backs shall be approved and shall conform to requirements of Class 2, Federal Specifications CCC-C-700J, with the following exceptions:

The basic fabric shall be undyed, the hexane extraction requirement may be deleted and the minimum finished weight per square yard shall be 24 oz. With a polyester backing.

The breakdown of the material shall be as follows:

Mfg -----Athol Mfg. Co., or equal  
Brand -----Vinyl/Polyester  
Weight of Film-----21.5 oz./sq. yd.  
Backing -----100 Percent Polyester 2.5 oz./sq. yd.  
Finish Weight of material -----24 oz./sq. yd.

Material shall be fire block type and meet FMVS-302. All sewing on cushions and backs to be securely stitched with all seams to be lock stitched or double stitched in an approved manner with S-69 nylon thread or acceptable equal nylon thread. Seam ends should be back-stitched to prevent unraveling. Cushion and backs with welt cord to be of same material as upholstery properly stitched. The same grade of material and construction shall be used in all activity buses. Final color selection to be approved.

### **ASSIST RAIL AND CRASH BARRIER**

**Assist Rail** - Two safety assist handles or rails shall be provided at the front entrance, located on the left, securely mounted inside of body and should extend to bottom step to be within approximately 28" of ground. Assist handle should be made from 1" O.D. round stainless architectural tubing or 1" O.D. anodized aluminum

**Crash Barrier** - Crash barrier shall meet Federal Motor Vehicle Standard No. 222 and shall be constructed and covered as per seat backs with the approved seat cover material. Crash barrier material shall be fire block type.

### **ELECTRICAL SYSTEM**

**Wiring** - All wiring shall conform to the standards of the Society of Automotive Engineers. It shall be color and number coded, insulated and protected by covering of fibrous loom, or approved equal covering. All fuse/circuit breaker blocks shall have circuit identification decals.

Wiring should be in circuits as follows or as pre-approved: dome and stepwell lights, flasher lights and stop arm lights, emergency door buzzer, windshield wipers, heaters and defroster, and turn signal system. Body wiring to be enclosed in a removable metal cover extending from front to rear of body. All electrical connections between body and chassis should be made at the connection furnished on the chassis. Wires will not be spliced into existing chassis wiring.

**Relays** - There shall be provided two approved constant service, heavy-duty master relays which are to be actuated by the ignition switch and through which all electrical accessories except the turn signal units are to be wired. Wiring from the chassis to the relays and from the relays to the fuse block shall be number 10-gauge wire. One master relay to supply current for the dome lights, stepwell light, windshield wipers, emergency door buzzer and heater and defroster.

The other master relay to supply current for the flashing stoplights, top arm light and flashers.

**Interior Lighting** - Interior lights shall consist of at least four flush mounted ceiled lights and an adequately protected inside stepwell light. The stepwell light shall be activated when door is opened and engine switch is on.

**Clearance and Market Lights** - Combination clearance and market lights shall be installed as required and shall be Weldon 5000 series or approved equal. The lights are to have a base of non-rusting metal. The lens for the front lights to be amber in color and the lens for the rear lights shall be red in color. Lights are to be wired to operate from the headlight switch. Intermediate side marker light is to be the same as the front corner marker lights. All lights mounted on the sides of the body shall have a metal shield.

**Flasher Lights** - The body shall be equipped with four flasher stop lights. The lens shall be red in color and made from an acrylic resin and designed to give illumination throughout 180 degrees and be clearly visible for a minimum of 500 feet. Lens shall be at least 7" in diameter and the light assembly shall be of a flat black design. Bulb shall be a replaceable quartz halogen type. The ground wire shall be attached to a roof bow or strainer. Location of lights and direction of beam are to be approved.

The circuit shall be wired so that one front, one rear, and one stop arm light shall flash alternately with the other front, rear, and stop arm light. The switch to operate flasher lights is to be located in the control panel in the closest location to the driver seat and adjacent to the air door switch and will actuate the relay from the ignition switch (location to be approved). The flasher shall be all electronic (Weldon 7000 or approved equal).

**Flashing Stop Arm** - There shall be installed on the left outside of bus body an electric operated stop arm which has two flashing lights. The blade for stop arm shall be octagonal in shape and shall be at least 18" diameter across flats. Lens for lights shall be red in color, fastened in approved manner, and shall be at least 4" in diameter. Lights shall be double-faced and the "S T O P" shall be placed on the stop arm on both sides in white enclosed retroreflective high intensity or approved equal letters 6" high on a red enclosed retroreflective high intensity or approved equal background.

The stop arm to be operated by a 6" rubber diaphragm. Line to be metal or nylon with suitable fittings. Assembly shall be installed as recommended by the arm manufacturer.

**Directional Turn Signals** - There shall be installed on the rear of the body, in an approved location, two amber lens direction turn signal lights. These two lights shall have a 7" diameter lens. Rear directional turn signal lights shall be wired to hazard warning switch. Lens shall have a smooth exterior surface. In addition, a side directional light is to be installed on the body to work in conjunction with the turn signals. Location to be approved.

**Stop/Tail Lights** - Buses shall be equipped with four combination stop/tail lamps.  
(1) Two combination lamps at least 7 inches in diameter or if a shape other than round, a minimum of 38 inches of illuminated area shall be mounted on the rear of the bus just inside the turn signals. Lens material is to be acrylic plastic and the lamp shall comply with applicable SAE standard. These lamps are to be Weldon 1010 or approved equal.  
(2) Two combination lamps with a minimum diameter of 4 inches, or if a shape other than round, a minimum of 12 square inches of illuminated area shall be placed on the rear of the body between the belt line and the floor. The rear license plate lamp may be combined with the lower tail lamp. All lens material is to be acrylic plastic and the lamp shall comply with the applicable SAE standard. These two lower lamps are to be Signal-Stat #2103 or approved equal.

**Backup Lights** - The backup lights (2 required) shall have 4" diameter lens. Backup lights will be wired to switch on transmission.

**Backup Warning Alarm** - An automatic audible alarm shall be installed behind the rear axle and shall comply with the Society of Automotive Engineering Standard (SAE 994b). The alarm shall be activated when the transmission is placed in reverse gear only.

**Emergency Door Buzzer** - On the rear emergency door post at the emergency door lock there shall be installed a switch which is actuated by a maximum of  $\frac{1}{4}$ " travel of the lock bolt. The switch shall be covered and wired to an approved buzzer system which meets FMVSS 217 to warn the driver when the emergency door is not properly fastened.

**Accessory Power Point Hookup** - Panel location to be approved.

## **HEATING AND VENTILATING**

**Ventilation** - The body shall be equipped with an effective ventilation system which is capable of providing an adequate supply of fresh air and of properly ejecting foul air under all conditions of operations. This system shall be adequately weather and dust proof. Static type exhaust roof ventilator shall be used and installed in the front area of roof in an approved location.

## **INSULATION**

**Material and Location** - The inside of the skirting from the floor to its bottom edge shall be completely coated with an asphalt base undercoating material conforming to the Federal Specifications No. TT-C-520 (1) latest amendment or an approved equal. Underside of wheel housing shall be coated with same material. The space between the exterior and interior perforated roof panels shall be completely covered with a  $1\frac{1}{2}$ " thick layer of fiberglass or acceptable equivalent. Fiberglass screen to be placed between insulation and perforated roof panels or an acceptable equivalent facing.

## **DOORS**

**Service Door** - The service door shall be located at the front of the bus and on the driver's right. Service door manually operating, panic free, outward opening under control of driver and so designed as to prevent accidental opening. Door shall seal against a stationary rubber and bottom step edge. Service door shall be a double wall, metal, split type with a minimum of 2" safety gap sealed with an approved flexible material. It shall be securely hinged with approved piano type greasable hinges, or approved equal fastened to the adjoining member in an approved manner, and shall be provided with suitable weather stripping at top and bottom to prevent leaks. Doors shall extend to bottom step. Minimum horizontal clearance shall be 24". Minimum vertical clearance shall be 68". An approved exterior handle for operating outward opening doors is required. A suitable safety pad shall be installed on interior of door header. Front and rear entrance door leafs to be sealed where door shafts extend into body to prevent dust and contamination from entering door actuator area.

**Emergency Door** - An emergency door shall be located in the center of the rear of the body. It shall have a minimum horizontal clearance of 24" and a minimum vertical clearance of 48". Door shall be hinged on the right side with an approved type of hinge meeting FMVSS 217 requirements. It shall open outward and shall be designed to open from both inside and outside of bus. Door should be equipped with a metal or approved strap door stop which shall limit its opening to 120 degrees. A suitable safety pad shall be installed on interior of door header that will provide padding for vertical and horizontal surfaces. The words "Emergency Door" shall be lettered on or above door on inside. Rear emergency door and side emergency door (if required by FMVSS 217) must be equipped with a hold open device which complies with FMVSS 217.

The emergency door is to be equipped with a gear and rack fastening device or approved equal. Rack shall be 1¼" x 5 ½" x 3/8" steel and shall be designed for 1 ¼" of travel in locking. Rod for operating lock should be a minimum of 12" x 4 ¾" long with non detachable handles.

**Rearscope Lens** - all buses shall be equipped with a rear scope prismatic lens to be mounted on the rear emergency door upper glass area. Location to be approved. Material to be a solid acrylic reversing lens size 14" x 14".

**Safety Roof Vents** - All buses shall be equipped with one roof hatch type emergency exits located in the front ½ of the body. Location to be approved. The hatch must meet the following:

Shall comply with all requirements of FMVSS 217 for emergency exits.

Simple release handles shall be provided permitting operation as emergency exit(s), accessible inside and outside the vehicle. Units shall be installed with the hinge toward the front so as the front unit open to permit air to be taken in and rear unit opens to permit air to escape rearward for proper vent action.

All emergency exits shall be marked with instructions for proper use and all emergency exits must be outlined with reflective tape which meet FMVSS 217.

All hatches shall be equipped with a vent that can be opened without opening the roof hatch to provide ventilation. Vent to be adjustable to the front or rear of the bus.

Hinged roof escape hatch shall include an internal and external release mechanism, pop up fresh air ventilation feature, and a buzzer which alerts the driver when the hatch is open. (Specialty model 8800 or approved equal)

## **WINDOWS AND WINDSHIELD**

**Side Windows** - There shall be installed on each side of the body an adjustable split sash window between each framing post. Bottom sash shall be stationary and a minimum clear vertical opening of not less than 9" shall be provided by lowering top sash. Window shall be controlled by an approved finger touch type opener.

All pushout windows must be marked with reflective tape which complies with FMVSS 217 and be of the side hinged design.

The words "Emergency Exit" to be lettered on inside at top of windows. Glass for window shall be set in an approved galvanized steel channel or extruded aluminum with black finish and shall furnish ample protection from weather and must be guaranteed against leakage from rain. Window visors of approved design are to be provided for all side windows. All side passenger windows shall be tinted glass as per requirements Glass Section.

**Rear Door Windows** - There shall be installed in the rear door, two windows which are set solid in a suitable and waterproof manner. The upper window shall have a minimum glass area of 400 square inches and the bottom window shall have a glass area of approximately 350 square inches. Exact location of windows and quality of sashes is to be approved and tinted same as side passenger windows.

**Rear Windows** - There shall be installed at the rear of the body on each side of the emergency door, a window set solid in a suitable and waterproof manner. The size and location of the

window and quality of window sash is to be approved and tinted same as side passenger windows.

**Entrance Door Windows** - There shall be installed in each section of the entrance door two glasses. Size and location of glass to be approved.

## **GLASS**

**Quality** - All glass used in the body shall be of the "Safety Glass" type conforming to requirements of the American Safety Code for Safety Glazing Materials. All glass should be legibly and permanently marked.

**Window and Door Glass** - The glass used in the doors and windows shall be of the AS-2 quality meeting FMVSS 205.

Glass shall be high quality tinted safety glass meeting or exceeding the requirements of AS-3. Adhesive surface film will not be accepted.

Percentage of light transmission shall be as follows:

Side windows: 28% - 31% light transmission  
Driver's Window: 70% light transmission  
Rear Door Windows: 28% - 31% light transmission  
Rear Windows: 28% - 31% light transmission  
Entrance Door Windows: 70% light transmission  
Windshield: Same as Standard

## **REAR BUMPER**

**Size** - The rear bumper shall be of pressed steel channel at least .119 + or - .005 inch in thickness and 6" wide (high).

**Attachment of Bumper** - The bumper shall be attached to the chassis frame in such a manner as to be easily removed, and be so braced as to develop the full strength of the bumper section from rear or side impact, and shall be so attached as to prevent hitching of rides. Rear bumper shall extend beyond the rear most part of the body surface at least 1", measured at the floor line.

## **ACCESSORIES**

**Interior Mirror** - There shall be securely installed on the windshield header an approved adjustable rear view mirror so located as to give the driver a clear view of the entire interior of the bus and the road behind. Mirror to be distortion free glass at least 6" x 16" in size, shall have a metal frame and back and be rubber or vinyl mounted. Plastic washers to be installed between mirrors and mirror brackets to allow mirror adjustment to reduce mirror damage.

**Exterior Mirror System** - All buses purchased shall be equipped with a mirror system complying with 49 CFR part 471, FMVSS-111 as adopted by the National Highway Traffic Safety Administration.

**The Rear View Mirror System** - There shall be installed on each side in an approved location distortion free glass mirrors. Mirrors shall be mounted on both the left and right side of the bus in an anodized or etched aluminum frame. Mirrors shall be fully adjustable so as to give the driver a clear view of the rear wheels of the bus and be mounted in

accordance with FMVSS 111. The rear vision mirror system shall be capable of providing a view along the right and left sides of the vehicle which will provide the driver a view of the rear tires at ground level, and a minimum distance of 200 feet to the rear of the vehicle.

**The Crossover Mirror System** - There shall be installed on each front fender of the chassis one quadrispherical mirror. These mirrors shall be mounted to give the driver the best possible view of the front and sides of the bus. Mirrors, mounting brackets, or tripods to be approved. The crossview mirror system shall be capable of providing a view at ground level from the front bumper forward to where direct visibility is possible, the entire width of the vehicle, around the left and right front corners including front tires and service entrance door to a point where it overlaps with the rear vision mirror system. This mirror system shall also provide a view from the rear tire to at least 12 feet perpendicular from the side of the bus at the rear axle.

**License Holder** - One recessed license holder shall be located on the left rear of the body. Holder and its location to be approved.

**Name Plate** - There shall be installed on the inside of each body a manufacturer's name plate which can be easily read, on which shall be shown the name of the manufacturer, the serial number of body, seating capacity, and date built. Plate to be metal or equivalent durability *laminated* decal.

**First Aid Kit** - There shall be installed a Grade A first aid kit which shall contain the following contents:

4" bandage compress-----2 pkg.  
2" bandage compress-----2 pkg.  
1" adhesive compress (16 per pkg.)-----2 pkg.  
40" triangular with two safety pins-----2 pkg.  
Wire splint-----1 pkg.  
Plastic Gloves (1 pair med/1 pair large) -----2 sets

First aid kit to be secured in an approved location.

**Fire Extinguisher** - One 2 ½ pound dry chemical stored pressure type with pressure gauge meeting U.L., I.C.C. and U.S. Coast Guard requirements is required. Fire extinguisher shall have an all metal discharge head and valve (no plastic valves). The fire extinguisher is to be secured in an approved location. In addition, the fire extinguisher shall be stenciled as **PROPERTY OF NORTH CAROLINA PUBLIC SCHOOLS.**

**Body Fluid Clean Up Kit** - There shall be installed a body fluid clean up kit that complies with National Standards and contains the following contents:

1 ea. 2 oz. Pkg. T.I.L.S.C. powder, sanitizes-deodorizes-encapsulates  
1 - odor reducing mask  
1 pr - laytex gloves (large)  
2 - antiseptic wipes  
2 - paper crepe towels  
1 - scraper  
1 - plastic disposal bag w/scoop and tie

Body fluid clean up kit to be secured in an approved location.

**Reflectors** - There shall be installed on the bus body in approved locations two amber and four red reflectors. The lens are to be 3" in diameter and made from acrylic plastic with six reflecting angles. Frame (if used) is to be polished aluminum or zinc plated steel.

**Light Monitor System** - A Doran 16 light monitor system (or approved equal) shall be mounted above windshield inside the body, location to be approved.

**Warning Devices** - Each bus shall contain at least three reflective triangle road- warning devices that are enclosed in a storage box. These shall be mounted in an accessible location and must meet requirements in FMVSS 125.

## **MOUNTING**

**Chassis Preparation** - In preparing the chassis frame for body mounting, rivet heads shall not be removed except on the extreme rear cross member and then only when necessary to move rear cross member to conform to body length. If tail pipe brackets must be removed due to body obstructions, they shall be replaced with new ones of equal strength as supplied by the chassis manufacturer.

**Installation** - The body shall be securely attached to each chassis side rail. At rear end of the body on each chassis side rail there shall be installed a through bolt of not less than 7/16" in diameter. Bolts to be grade 5 with S.A.E. threads and lock washer. All attachments shall be made at main body sills,

Rubber and fiber inserts, equal to or thicker than chassis rivet heads, shall be securely attached to each body sill and installed at all points of contact between sills and chassis. At any point where body sill sits on a rivet head, the rubber and fiber insert shall deform so that floor will be smooth.

Mounting shall be sufficient to allow for compliance with FMVSS 301 Fuel Integrity Testing. Evidence of successful completion of this test must be provided.

## **METAL TREATMENT AND PAINTING**

**Metal Treatment** - All steel used in construction of bus body is to be mill applied, zinc coated, copper bearing steel, aluminum coated, or treated by an equivalent process before bus is constructed (included are such items as structural members, inside and outside panels, floor panels and floor sills; excluded are door handles, grab handles, stanchions, interior decorative parts, and other interior plated parts).

All structural members less than 12 gauge, wheelbase and stepwell are to be mill applied zinc coated steel or uncoated aluminum equal. All metal parts that will be painted shall be, in addition to above requirements, chemically cleaned, etched, zinc-phosphate coated, and zinc-chromate or epoxy-primed or conditioned by equivalent process. In providing for these requirements, particular attention shall be given to lapped surfaces, welded connections of structural members, cut edges, punched or drilled hole areas in sheet metal, closed or box sections unvented or undrained areas, and surfaces subjected to abrasion during vehicle operation.

As evidence that above requirements have been met, samples of materials and sections used on construction of bus body, when subjected to Chrysler Chipping Corrosion Testing LP-463PB-52-

01 Change A or equal testing system, shall be provided. There shall be no more than 3 mils (across the scribe as a total) of creep back, based on a three panel average. These panels are not to lose more than 10 percent of material by weight when subjected to the 1,000-hour salt spray test. This is provided for in latest revision of ASTM Designation: B117 that is the "Standard Method of Salt Spray (Fog) Testing."

**Paint** - All paint shall be lead free. Paint shall meet National Standards for color and should have a finished gloss rating of at least 85 at 60 degrees. The paint should be covered by a five year unlimited mileage warranty.

**Exterior** - The exterior of the complete bus body shall be painted with two coats of polyurethane as per Federal Standard No. 595a. The applied primer and polyurethane shall yield a dry film thickness of two to three mills. A 1 ½" black circle shall be painted around the flashing stop lights with an approved type polyurethane. Rear bumper shall be painted black.

**Interior** - The entire interior paneling of the bus except the sections of aluminized steel and/or clear coated shall be painted. All other interior items such as the heater, control panel, seat frames, chassis cowl and modesty panel may be painted a compatible color. One prime coat and two finish coats shall be required.

**Floor and Structural Metal** - The underside of the floor including the chassis metal fenders and cowl and all other exposed structural metal used in the body shall be painted with an approved black enamel or undercoated with the approved material.