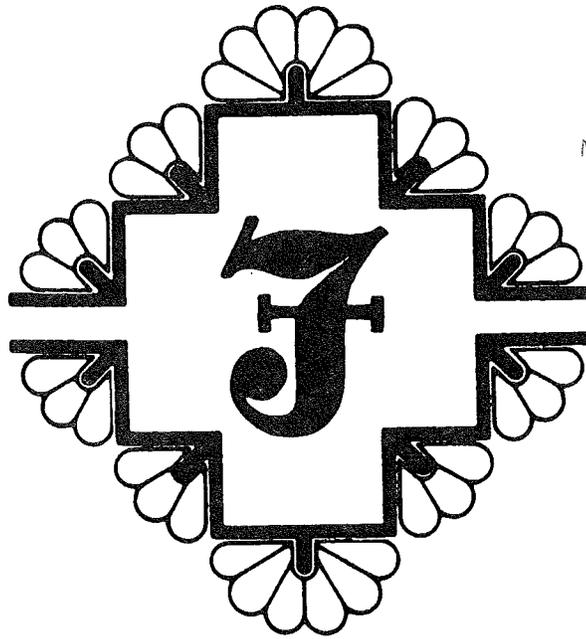


FRIENDSHIP HOMES OF MINNESOTA, INC.

P.O. BOX 191
MONTEVIDEO, MINNESOTA 56265

RECEIVED
DEPT OF ADMINISTRATION
BUILDING CODE DIVISION

NOV 23 1983



SINGLE UNIT SET-UP

SITE PREPARATION

Proper support for the mobile home must allow for soil conditions in the immediate area. Pier footings must be placed on firm undisturbed soil (not loose fill) or soil which has been compacted to at least 90 percent of its maximum relative density. Support piers may also be placed on concrete slabs designed for mobile home placement, as found in many mobile home parks.

Climatic conditions must also be taken into account. If footings are placed on a frost-susceptible soil such as clay or silt, heaving and/or settlement may occur. Therefore, in areas where temperatures go below freezing, it is important that the pier footings be located below the frost line. Consult with the building officials in your area to determine location of the frost line.

The mobile home site must be properly graded and sloped as to provide for a storm drainage run-off; in particular, the area beneath the home must be graded to prevent water accumulation.

NOTICE

IMPROPERLY VENTED SKIRTING WILL CAUSE MOISTURE TO ACCUMULATE BENEATH THE HOME. WHEN SKIRTING THE BOTTOM OF THE HOME, INSTALL AT LEAST 4 VENTS WITH A NET FREE AREA OF 150 SQUARE INCHES EACH, TWO ON EACH SIDE OF THE HOME. THIS WILL ALLOW CROSS VENTILATION AND DISSIPATE DAMAGING CONDENSATION.

PIER CONSTRUCTION AND PLACEMENT

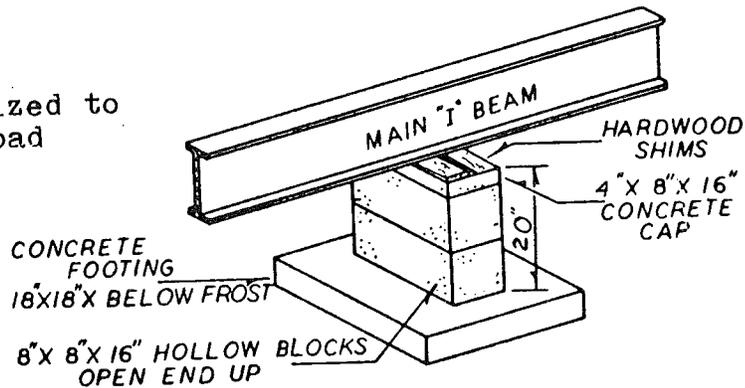
In accordance with the design loads specified in the Federal Mobile Home Construction & Safety Act for the regions indicated on the weather zone map (see data plate), required pier construction and spacing is based on design criteria as follows:

1. Allowable soil bearing pressure of 1,500 PFS.
2. Minimum strength of precast concrete footing of 2,000 PSI.
3. Maximum roof live load of 30 PSF.
4. Maximum floor live load of 40 PSF.

Maximum spacing of piers is 8' center to center. Where local soil conditions are such that the allowable bearing pressure of 1,500 PSF is not achieved, reduce the maximum spacing accordingly. In no case should the maximum of 8' be exceeded, except when piers must span a quad axle assembly.

Recommended height above grade of a single pier is 20" as indicated in Fig. 1. All piers over 30" in height must be double tiered with blocks interlocked and capped with a 4"x16"x16" solid concrete block. Piers should never exceed 36" in height unless designed by a registered, professional engineer or architect.

Note; Piers must be sized to support a 5,000 lb. load



ALL GRASS & ORGANIC MATERIAL MUST BE REMOVED: PLACE FOOTING ON STABLE SOIL (2500 P.S.F. MIN. BEARING)

FIG. 1

JACKING REMINDERS

1. Use only jacks with a minimum rating of 5 tons.
2. Use a steel plate (3/8"x3"x5") between jacks and steel I-beam to distribut the concentrated loads - see fig. 2.
3. Use firm support under the jack base to prevent tipping or settling of the jack.
4. Always follow the sequence of jacking outlined on the next page to avoid overstressing structural members.

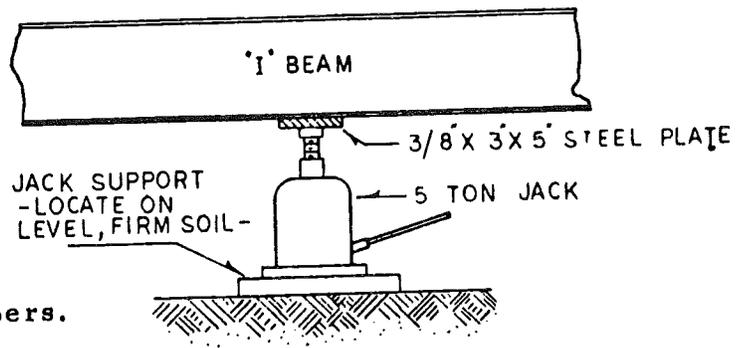


FIG. 2

BLOCKING PROCEDURE

1. After the home is located in its final position, level it by using the hitch jack.
2. Jack up one side of the home by placing one jack just forward of the front spring shackle and the other jack just behind the rear spring shackle. These two jacks must be operated simultaneously to raise the home. Install concrete footings and piers—one just ahead of the forward jack and another just behind the rear jack (taking care not to exceed the 8' maximum spacing).
NOTE: On homes with four axles, the piers must be positioned directly against the front and rear spring shackles. If the axle assembly has been spread, maintain a maximum 8' spacing.
3. Next, jack the main "I"-beam at the front and position a pier within 1'-0" of the end of "I"-beam. At the completion of this step, this side of the home should be approximately level.
4. Repeat steps 2 and 3 for the other side of the home. At the completion of this step the home should be roughly level from front to rear and from side to side.
5. Place the remaining pier supports under the main "I"-beam on each side taking care to maintain a maximum spacing of 8' between supports and to locate piers within 1'-0" of the front of the frame and 4'-6" maximum from the rear of the unit.
6. Level the home using a 6 foot carpenter's level or similar equipment. The height adjustment is obtained by shimming the "I"-beam (see Fig. 1). This leveling process is important for the appearance and essential for the proper operation of the doors, windows, and drainage system.
7. After 6 to 8 weeks, the home should be releveled to compensate for any pier settlement. Follow the procedure noted above in item 6.

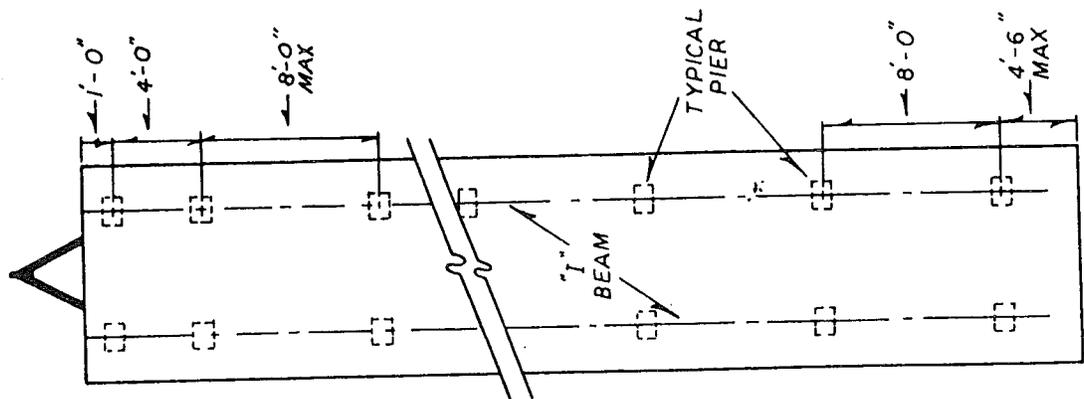


FIG. 3

UTILITY HOOKUP

Many local jurisdictions have special requirements for utility connections and on-site inspection of these connections. Consult with the proper authorities prior to making connection of utilities.

The drainage and water systems were tested for leaks prior to shipment from the factory. It is essential that they be rechecked for leaks, that may have been caused by road vibration during transit.

WATER SYSTEM

The water system in this mobile home has been designed for an inlet pressure of 80 psi. If this home is to be installed in an area where the water pressure exceeds 80 psi, a pressure reducing valve should be installed.

The water system may be connected to any safe, portable water source. The connection is via a single 3/4" inlet beneath the home. Where the inlet does not have a factory installed full flow water shut-off valve, one should be installed in the water supply line adjacent to the mobile home in an accessible location.

All exposed water piping subject to freezing should be protected with Frostex® II Heating Cable wrapped with fiberglass insulation (do not use vinyl foam insulation). The Frostex® II Heating Cable must be installed in accordance with its installation instructions. Standard mobile home heat tapes are not recommended.

While the initial cost of Frostex® II Heating Cable is somewhat higher than heat tape, you will find service costs for freeze ups due to a short avoidance will more than offset the few dollars involved. Further, we believe there exists substantial evidence that heat tape failures have caused many fires in both mobile and site built structures.

DRAINAGE SYSTEM - Single Bath

The drainage connection is made at the 3" main drain outlet. Care should be taken to slope and support the drain line from the home to site sewage system (1/4" per ft. slope).

DRAINAGE SYSTEM - 1-1/2, 1-3/4, and 2 Baths

The procedure for bringing all drain lines to a single point is as follows:

1. Remove caps on drain outlets and connect supplied parts together as shown by fig. 4 (Do not apply cement).
2. Check to be sure that the assembly has the proper 1/4" drop per foot.

3. Mark each joint to aid in reassembly. Start at outlet end of system and remove, cement, and reassemble each slip joint one at a time. Be sure to apply the cement on both male and female ends with a good even coating.
4. Using the 3/4" x .020 strapping, strap the drain line to the floor joists (4 feet apart). Use a 8 d coated sinker to secure strap in place.
5. Connect home drain to site sewage as for single bath previously discussed.
6. Check completed system for leaks before connecting to the sewer by capping the outlet and filling the entire drain line with water for 15 min.

ELECTRICAL

The electrical connection should be made only by qualified personnel. After the connection has been made, the following tests should be conducted using approved test equipment.

1. Continuity test of circuit conductors.
2. Polarity test.
3. Continuity test of electrical grounding system.

The feeder conductor size needed to connect your home and the junction box size is as follows:

1. 100 Amp Service
 - a. 3 ea. AWG NO3 feeders, 75°C, TWH insulation, and a NO8 ground, all copper
 - b. 10"x10"x4" junction box
2. 200 Amp Service
 - a. 3 ea AWG 3/0 feeders, 75°C, TWH insulation and a NO4 ground, all copper
 - b. 12"x12"x4" junction box

GAS SYSTEM

The gas piping supply system has been designed for an operating pressure not exceeding 14" water column (1/2 psi) and not less than 7" water column (1/4 psi).

The gas piping system was pressure tested for leaks prior to shipment; however, it is essential that the system be retested for leaks prior to use. (Many utility companies require this on-site test). The instructions printed on the tag near the gas inlet connection must be followed.

In some localities, utility companies and/or building inspectors may require additional tests as follows:

1. Isolate all appliances with appliance shut off valves. Pressure shall be measured with a mercury manometer or slope gage calibrated in increments of not greater than 1/10 pound.
2. Pressurize the system to 3 PSI and isolate the source of pressure from the gas piping.
3. Check the gage after 10 min.; there should be no drop in pressure.
4. Check the piping to appliances by pressurizing to at least 10 inches but not more than 14 inches of water column and applying a bubble solution to all joints.

CAUTION: Do not pressurize the system above the pressures stated above. The connection to the gas supply should be made by authorized representatives of the utility.

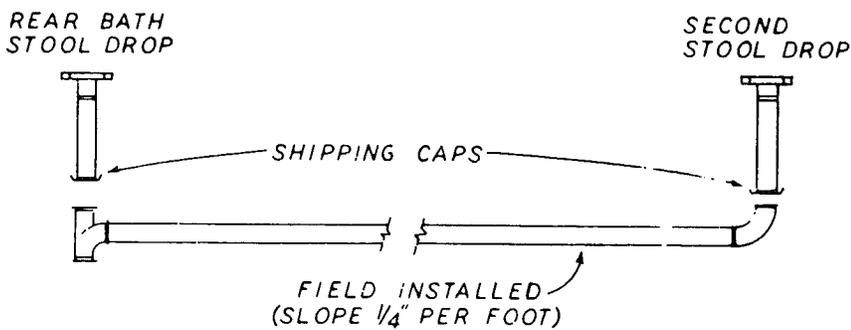


FIG. 4

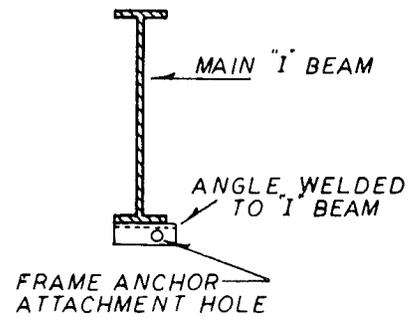


FIG. 5

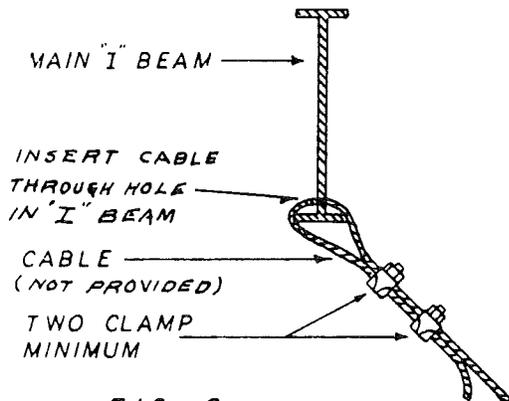


FIG. 6

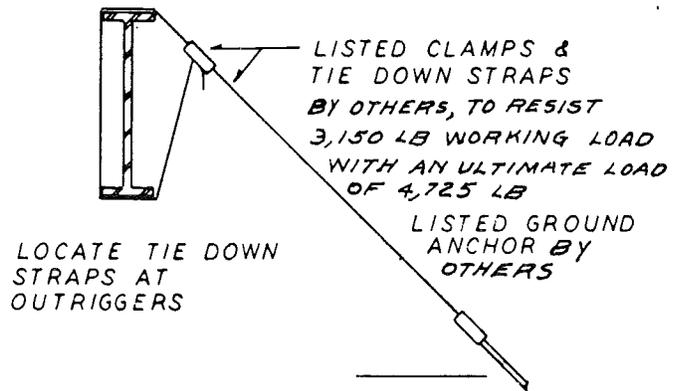
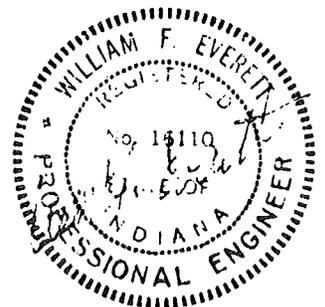


FIG. 7



TIE-DOWN INSTRUCTIONS

All mobile homes should be securely anchored to the ground to resist the sliding and overturning effects of high winds.

This mobile home was designed for the wind conditions specified on the data plate (located at the electrical panel).

ZONE 1 - Homes designated for Zone 1 are equipped with tie-down attachment provisions on the main "I"-beams (see figs. 5, 6, & 7).

NOTE: In the Tie-Down system it is important to use materials of proper design and of adequate quality. The material specifications contained herein should be considered as minimum requirements.

Materials not furnished with the home which will be necessary to complete the tie-down system must meet the strength requirements set forth below. Such materials would include:

1. Cable with a breaking strength of at least 4,750 lbs., e.g. galvanized aircraft cable at least 1/4" in diameter.
2. Galvanized connection devices such as turnbuckles, "I"-bolts, and cable clamps should be rated at 4,750 pounds minimum.
3. Ground Anchors must be capable of withstanding at least a 4,750 pound pull. Anchors must be installed as specified by the anchor manufacture.

The procedure for tying down the mobile home is as follows:

1. Position and install the ground anchors so that the final strap angle will be within the limits shown in figs. 8 & 9.
2. Connect the cables to the frame and ground anchors (see fig. 9).
3. Tighten the cables using the turnbuckles. Use caution to avoid over-tensioning the cables, which might pull the home off the piers. It is recommended that all cables be tightened only enough to remove the slack. Then, after all cables are installed and the slack removed, tension the cables.

4. The cable tension should be rechecked at frequent intervals until all pier settlement has stopped.
CAUTION: During the releveled process, do not jack the home against tight cables.

ZONE II - Homes designated for Zone II are equipped with Tie-Down attachments on the main "I"-beams in the same manner as for Zone I. See fig. 10 for spacing of ground anchors and tie-downs.

NOTE: Anchoring equipment exposed to weathering shall have a resistance to weather deterioration at least equivalent to that provided by a coating of zinc on steel of not less than 0.30 ounces per square foot of surface coated.

OVER THE ROOF TIES

NOTE: Over the roof ties are installed only as an optional item and should only be used as a supplement to the engineered tie down described earlier in this section. If an over the roof system is used, it is important that the home be resting on piers that extend below the local frost line.

The over-the-roof straps, if provided must be connected to ground anchors exactly as specified in the following procedure in order to achieve full effectiveness.

Materials not furnished with the home which will be necessary to properly connect the over-the-roof straps are:

1. Ground anchors capable of withstanding at least a 4,750 lb pull when installed in the soil at the site.
2. Strap end connection devices (see fig. 11).

THE HOME MUST BE IN ITS FINAL LEVEL POSITION WITH FRAME TIES INSTALLED BEFORE CONNECTING THE OVER-THE-ROOF STRAPS.

The procedure to follow in tying down the mobile home is as follows:

1. Position and install the ground anchors so that the strap will be vertical after attachment to the anchor; no angle is permitted (see fig. 12).

2. Insert the strap device connector yoke through the eye in the anchor and insert slotted bolt through yoke.
3. Place end of strap through slotted bolt and remove slack by turning bolt. Do not tension until both ends of strap are connected.
4. Tension and lock strap device connector in position; consult instructions furnished with connectors.
5. Be sure not to over tension the straps.

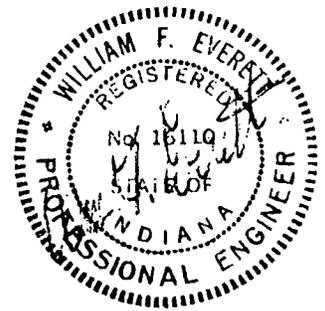
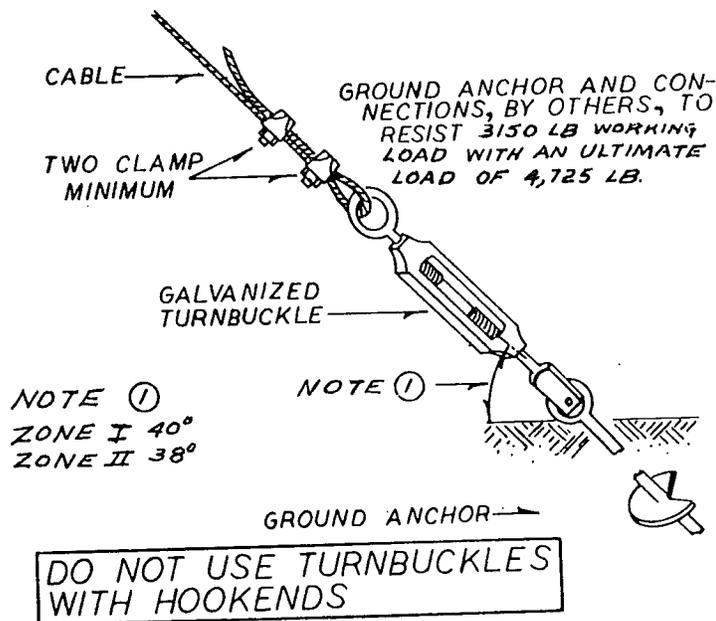


FIG. 8

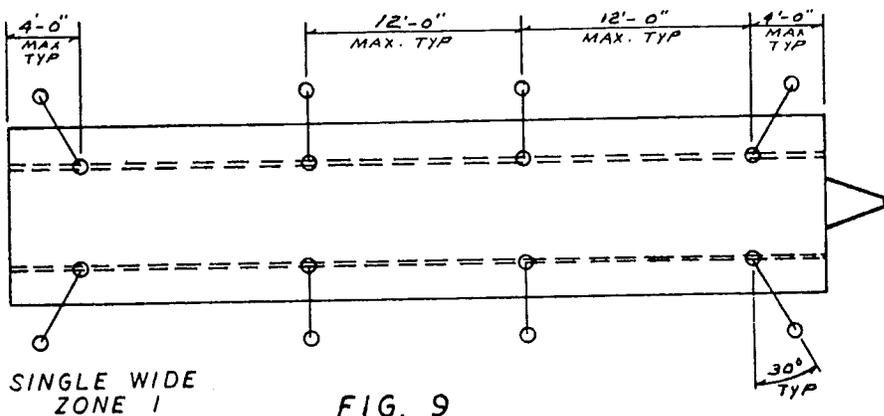
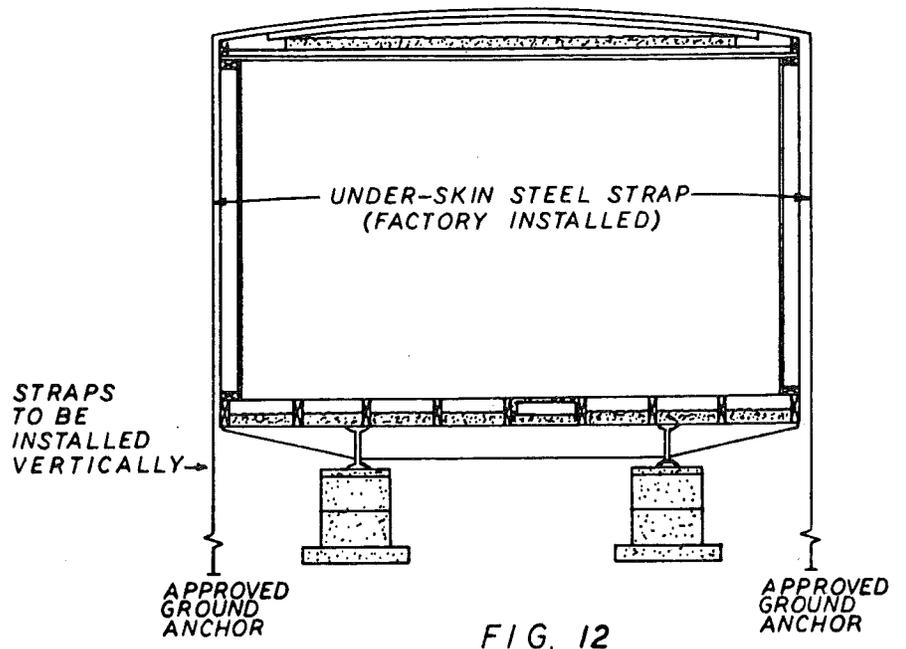
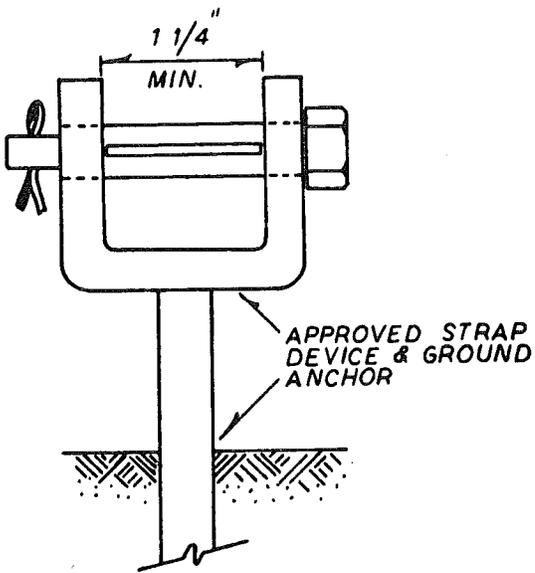
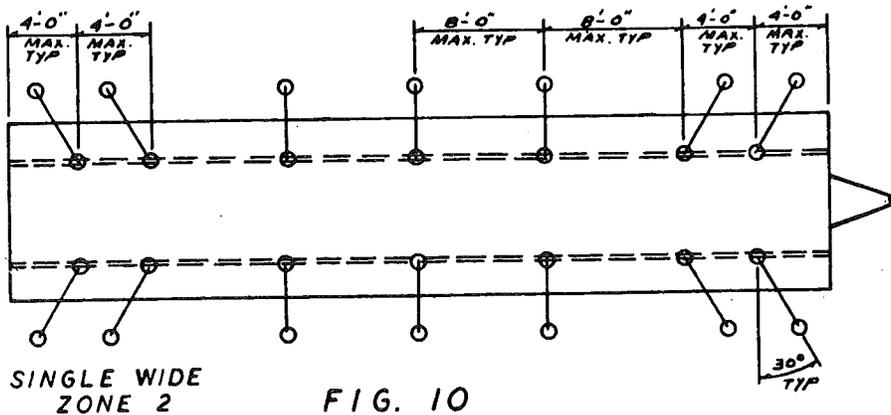


FIG. 9

Note; all tie down points must occur at outrigger locations.



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MISC.

Should you need to open the bottom board for any reason, use the following methods to patch the material.

1. For a small tear or cut, use any good heat duct tape along the tear. The tape should be 3 to 4 inches wide.
2. For a large hole or tear, use a patch of the same material or a material of equal strength large enough to be nailed to floor joists and taped as above along the edges. The nails should be 6d 6" on center.

INSTRUCTIONS FOR DRAINING WATER SYSTEM

1. Disconnect unit from water supply.
2. Connect 30 lbs. air pressure to main water inlet.
3. Open the faucets inside the home, one at a time, starting in the bath and working forward. This will blow the system dry. Do not overlook the stool and laundry area if plumbed.
4. Once system is dry, leave all faucets open, disconnect the air, and cap the inlet.
5. A mixture of antifreeze and water may be poured in each drain to prevent the trap from freezing. One and a half pints per drain will allow the trap to seal and not freeze. Three pints should be allowed for the stool.