



**FOREST RIVER INC.**

**PARK TRAILER FOUNDATION  
SYSTEM SPECIFICATIONS**

# **FOUNDATION SYSTEM**

## **GENERAL**

Park Trailers constructed by Forest River are designed to be supported by a “pier and beam” foundation. A park trailer constructed in this manner utilizes the steel undercarriage as an integral part of the foundation system. The weight of the Park Trailer is supported by the under carriage which is placed on a series of “columns” or “piers”. All Forest River Trailers are designed to be anchored to the ground to resist wind forces with frame ties when located in the standard wind zone and vertical tie-down straps used in conjunction with the frame ties when located in hurricane wind zone.

The pier and beam foundation system on which this Park Trailer is to be placed must be capable of sustaining the total weight of the Park Trailer, its contents, plus additional temporary loads caused by the wind or snow.

In various parts of the country, local governing agencies occasionally impose additional loading requirements, which may differ from the design conditions of your Park Trailer. It is the responsibility of the homeowner, dealer, and/or set-up personnel to assure that the actual construction and set-up meets all local requirements.

## **MOISTURE**

The area beneath and around the Park Model must be graded and sloped to avoid surface water accumulation. Should moisture be allowed to stand under the Park Trailer for long periods of time, the unavoidable result will be deterioration of the floor decking.

It is strongly recommended that a vapor barrier having a permeance rating of 1.0 or less be placed on the ground beneath the Park Trailer. To be fully effective, the edges of the vapor barrier material should be overlapped a minimum of 12 inches and be voided of holes. Failure to provide a vapor barrier could cause the flooring warranty to be nullified.

## **PIERS, FOOTINGS AND SOIL REQUIREMENTS**

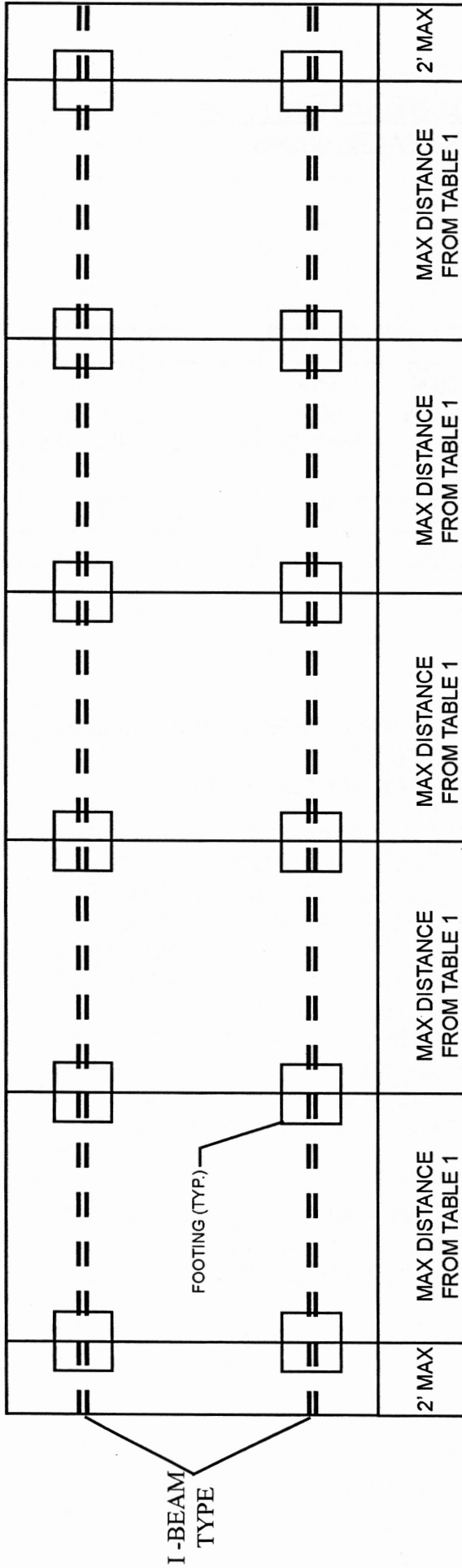
Typically, concrete blocks or screw jacks are used for piers. The piers selected should be labeled to indicate the maximum pier capacity or the supplier should certify the maximum capacity. In either case, the maximum pier capacity must not be exceeded. Normal pier height may not exceed 36 in. When site conditions require the home be supported at heights greater than 36 in. the foundation system must be designed by a registered professional engineer.

Footings and foundations, unless specifically designed otherwise, shall be constructed of masonry, reinforced concrete or pressure treated lumber. In geographical areas subject to severe freezes the bottom of foundations must extend below the frost line established by local records. Footings shall be so designed that the allowable bearing capacity of the soil is not exceeded. If structural plan concrete, masonry or timber footings are used, they shall rest on undisturbed or minimum ninety percent (90%) compacted soil of uniform density and thickness.

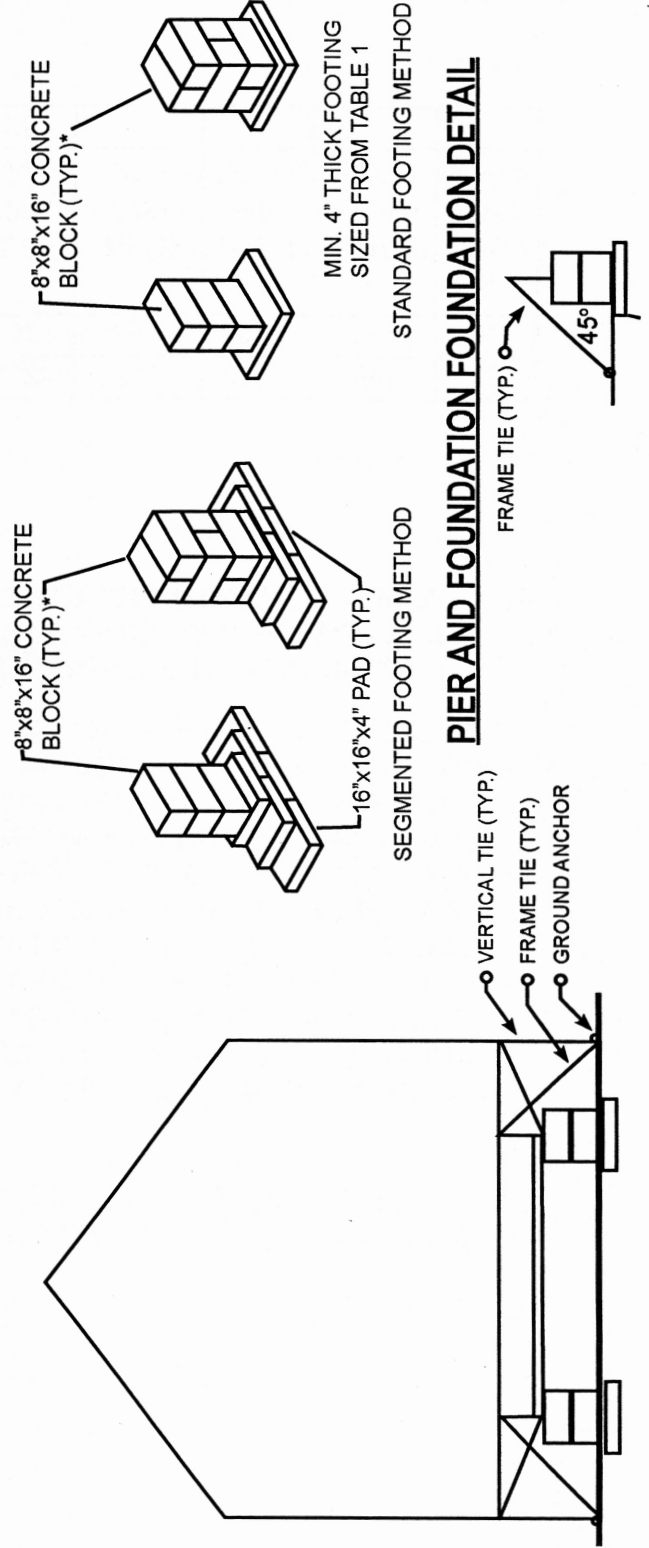
To determine the safe bearing capacity of soil, it shall be tested at the site location by loading an area not less than four (4) square feet to not less than twice the maximum bearing capacity desired for use. Such double load shall be sustained by the soil for a period of not less than forty-eight (48) hours with no additional settlement taking place, in order that such desired bearing capacity may be used.

Foundations should be built upon natural solid ground. Where solid ground does not occur at the foundation depth, such foundation shall be extended down to natural solid ground or piles should be used. Foundations built upon mechanically compacted earth or fill material are subject to the approval of local building officials to show evidence that the proposed loads will be adequately supported.

# TYPICAL PARK TRAILER INSTALLATION OF FOOTINGS AND PIERS



## PLAN VIEW

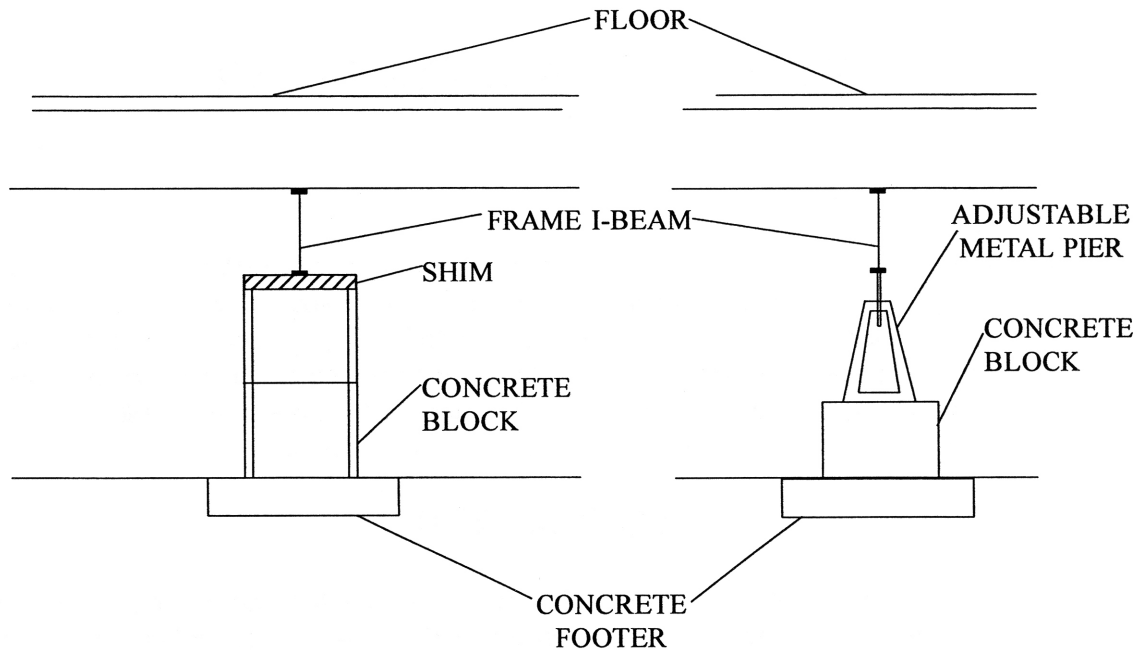


\* USE SINGLE OR ALTERNATELY STACKED DOUBLE CONCRETE BLOCKS WHEN SINGLE BLOCKS ARE USED. ORIENT THE 16" DIMENSION PERPENDICULAR TO THE I-BEAM

**REQUIRED SIZE OF SQUARE FOOTINGS FOR PIERS  
SPACED AT 10ft O.C. UNDER EACH I-BEAM**

				SOIL		BEARING		
ROOF LIVE LOAD (PSF)	HOME WIDTH INCHES	LOAD ON PIERS LBS.	1000 AREA SQ. FT.	PSF SIDE INCHES	2000 AREA SQ. FT.	PSF SIDE INCHES	3000 AREA SQ. FT.	PSF SIDE INCHES
20	140	4,667	4.67	25.92	2.33	18.33	1.56	14.97
30	140	5,250	5.25	27.50	2.63	19.44	1.75	14.97

- A. 16" x 16" MAXIMUM FOOTING REQUIRED FOR CONCRETE BLOCK PIERS.
- B. A 16" WIDE CONTINUOUS SLAB MAY BE USED.
- C. 4" MINIMUM THICKNESS IS REQUIRED FOR ALL FOOTINGS.



## **SUPPORT PIERS**

PIERS MAY BE CONCRETE BLOCKS WITH WOOD SHIMS OR AN ADJUSTABLE METAL PIER SIMILAR TO THAT SHOWN. THE BASE OF THE PIER MUST BE RELATIVELY WIDE WITH RESPECT TO THE HEIGHT WHEN SUPPORTING THE HOME. THE METAL PIER SHOULD BE HIGH ENOUGH SO THAT THE RISER WILL ONLY BE EXTENDED 2-3" WHEN IN PLACE. THIS MAY BE ACCOMPLISHED BY ADDING BLOCKING UNDER THE BASE TO ADJUST THE HEIGHT. THE PIER SHOULD HAVE A PAD (REDWOOD, TREATED LUMBER, OR CONCRETE) PLACED UNDER THE PIER BASE TO MINIMIZE SETTLING OR TIPPING. THESE PADS SHALL BE AT LEAST 12" x 12" OR LARGER IF THE SOIL IS PARTICULARLY SOFT OR UNSTABLE. RECOMMENDED MINIMUM PAD OR FOOTING SIZES ARE SHOWN ON PAGE 6.

RECOMMENDED PIER SPACING IS 2 FEET MAXIMUM FROM EITHER END AND NOT OVER 10 FEET CENTERS THEREAFTER. PIERS SHALL BE LOCATED UNDER THE MAIN I-BEAM.

## **IMPORTANT SET-UP INSTRUCTIONS**

The proper set-up of your new Park trailer is of the utmost importance and must be performed by experienced set-up men. Your dealer can assist you in locating experienced personnel, and their services should be used. The following instructions give the vital information to provide the required stability for your Park Trailer and must be followed regardless of who does the work. Failure to follow these instructions could result in serious problems, which would not be the responsibility of the manufacturer.

### **FOUNDATION**

One of the most important parts of a Park Trailer set-up is the foundation. In areas where the soil is subject to freezing and thawing, the foundation must be designed in compliance with local building rules; therefore, always check local building codes for footing depth, block size, etc.

Your dealer can also help in recommending the proper anchoring systems to be used and also assist you in obtaining qualified personnel to install your anchoring system in a professional method.

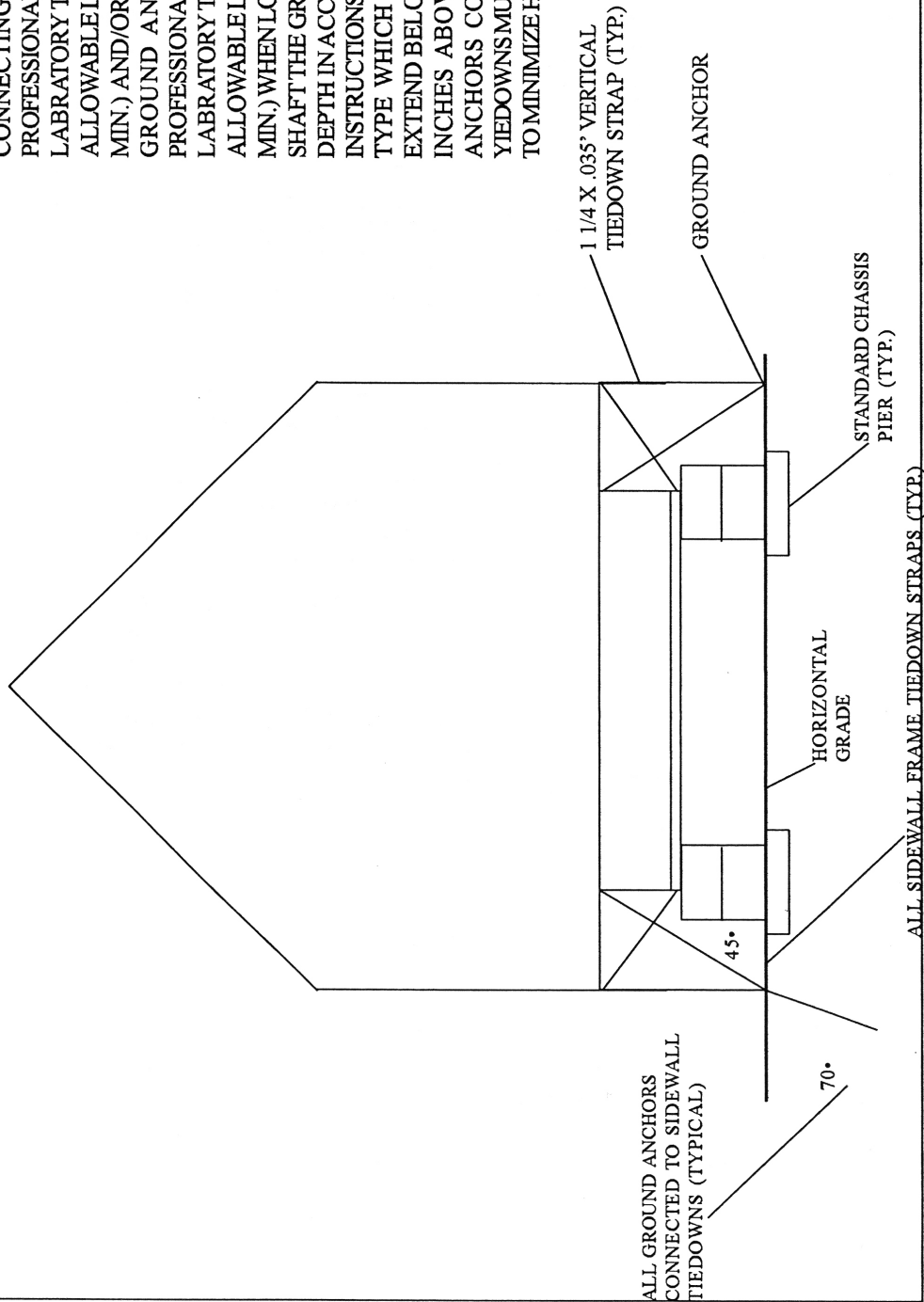
### **SITE PREPARATION**

All decayable materials, such as grass, roots, wood, etc., should be removed from under piers and/or footings.

The footing should extend below the "Frost Line" in climates where soil is subject to freezing and thawing movements.

# ON SITE-PARK TRAILER TIEDOWN INSTALLATION

ALL TIEDOWN STRAPS, SEALS, TIEDOWN ANCHORS AND CONNECTING HARDWARE MUST BE CERTIFIED BY A PROFESSIONAL ENGINEER OR A RECOGNIZED TESTING LABORATORY TO ADEQUATELY SUPPORT A 3150 POUND ALLOWABLE LOAD MIN. (ULTIMATE LOAD 4725 POUNDS MIN.) AND/OR TO COMPLY WITH ASTM D3953-91. ALL GROUND ANCHORS MUST BE CERTIFIED BY A PROFESSIONAL ENGINEER OR A RECOGNIZED TESTING LABORATORY TO ADEQUATELY SUPPORT A 4000 POUND ALLOWABLE LOAD MIN. (ULTIMATE LOAD 6000 POUNDS MIN.) WHEN LOADED BOTH PARALLEL WITH THE ANCHOR SHAFT AND PERPENDICULAR TO THE ANCHOR SHAFT. THE GROUND ANCHORS MUST BE IN THEIR FULL DEPTH IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS (eg APPROVED FOR INSTALLATION IN SOIL TYPE WHICH EXISTS AT THE SITE ETC.) AND MUST EXTEND BELOW THE FROST LINE AND BE AT LEAST 12 INCHES ABOVE THE WATER TABLE. ALL GROUND ANCHORS CONNECTED TO THE SIDEWALL FRAME TIEDOWNS MUST BE PROVIDED WITH STABILIZER PLATES TO MINIMIZE HORIZONTAL MOVEMENT.



ALL GROUND ANCHORS CONNECTED TO SIDEWALL TIEDOWNS (TYPICAL)

45°

70°

ALL SIDEWALL FRAME TIEDOWN STRAPS (TYP.)



# REQUIRED FOOTING SIZES FOR PIERS UNDER EACH I-BEAM

Table 1

					Soil Pressure (PSF)			
					1000	2000		
Max. Pier Spacing Feet	Roof Live Load (PSF)	Pier Load (pounds)	Footing Area (Sq.ft.)	Footing Size (in./side)	Footing Area (Sq.ft.)	Footing Size (in./side)	Footing Area (Sq.ft.)	Footing Size (in./side)
3	20	1,697	1.77	16.00	1.77	16.00	1.77	16.00
3	30	1,909	1.91	16.58	1.77	16.00	1.77	16.00
4	20	2,334	2.33	18.33	1.77	16.00	1.77	16.00
4	30	2,625	2.63	19.44	1.77	16.00	1.77	16.00
5	20	2,667	2.67	19.60	1.77	16.00	1.77	16.00
5	30	3,000	3.00	20.78	1.77	16.00	1.77	16.00
6	20	3,111	3.11	21.17	1.77	16.00	1.77	16.00
6	30	3,500	3.50	22.45	1.77	16.00	1.77	16.00
8	20	3,734	3.73	23.19	1.86	16.38	1.77	16.00
8	30	4,200	4.20	24.59	2.10	17.41	1.77	16.00
10	20	4,667	4.67	25.92	2.33	18.33	1.77	16.00
10	30	5,250	5.25	27.50	2.63	19.44	1.77	16.00

Note: 16" x 16" x 4" minimum footing for concrete piers

Segmented Footing Method

It is possible to create larger footing sizes using 16' x 16' x 4' minimum pads with the segmented footing method as shown in figure 1. To implement the method use the following example:

Required footing size (from Table 1) – 25.92"/sid

Area of footing – 672 sq. in.

Area of 16" x 16" pad – 256 sq. in.

Divide 672 by 256 for a result of 2.62

This indicates (3) 16" x 16" x 4" pads are required at the base of the footing. Orient the pads as indicated in Figure 1.

Figure 1

## **RECOMMENDED TOOLS FOR SET-UP**

- CLAW HAMMER
- 3-10 TON HYDRAULIC JACKS
- 12' STEP LADDER
- YANKEE SCREWDRIVER WITH STD. BLADE, PHILLIPS BIT, SQUARE BIT,  
AND ¼" HEX ATTACHMENTS
  - UTILITY KNIFE
  - WIRE STRIPPERS
  - 2-CRESCENT WRENCHES
  - 4" BRUSH (TO APPLY ROOF COAT)
- FOUNDATION SUPPORTS (SHIMS, ETC.)
  - MEASURING TAPE
  - 6' CARPENTER LEVEL
  - SHEET METAL SNIPS
  - HAND SAW

## **SINGLE WIDE SET-UP**

1. Position your Park Trailer in its desired final location.
  - a) Caution: Never get underneath the home while it is being jacked up.
  - b) Should the home fall a severe injury could result.
2. Roughly level the Park Trailer using the hitch jack at the front of the unit.
3. Starting with one side, place the first jack just forward of the front spring shackle under the main I-Beam and the second jack behind the axles.
4. Install piers on this side until you have at least one pier not over 2' from each end and not over 10' center to center thereafter.
5. Next, lift the opposite side of the main beam and "ROUGH" level by placing piers directly opposite those placed on the first side.
6. Complete the "ROUGH" leveling by adjusting supports as required.
7. Additional piers may be placed under floor joists located under heavy furniture or appliances.
8. Adjust the final height of the Park Trailer foundation support using a level inside from front to rear and side to side to obtain a "FINAL LEVEL" throughout the Park Trailer.
9. Connect all tie-down straps to ground anchors.
10. A recheck of level and piers should be made after approximately thirty days in case some settling occurs.
11. CAUTION: All utility connections shall be made by authorized service personnel who are familiar with local requirements.
12. There are times when the bottom board of your new Park Trailer may become torn or cut for various reasons. In such cases we recommend that such places be patched according to the manufacturer's instructions found loose in either the Park Trailer Owner's Manual or this book. (If no instructions can be found, a piece of 3/8" plywood should be installed above the bottom board. Place a patch over the hole and fasten with screws into the plywood).

## **FOREST RIVER, INC.**

### **FRAME TIES TO RESIST WIND FORCES** **11 TO 14 WIDE HOMES IN THE STANDARD WIND ZONE**

LENGTH OF HOME FLOOR	NUMBER OF FRAME TIES AT 45 DEG.	APPROXIMATE SPACING FEET	MAXIMUM DISTANCE TO FIRST TIE (FT)
30	3 EA. "I" BEAM	13*	2
32	3 EA. "I" BEAM	14*	2
34	3 EA. "I" BEAM	15*	2
36	3 EA. "I" BEAM	16*	2

FRAME TIES ARE TYPE 1, FINISH B, GRADE 1, STEEL STRAPPING 1-1/4 INCHES WIDE AND .035 INCH THICK, CONFORMING WITH FEDERAL SPECIFICATIONS ASTM 03953-91.

### **ADDITIONAL VERTICAL TIES TO RESIST OVERTURNING 11** **TO 14 WIDE HOMES IN THE HURRICANE WIND ZONE**

LENGTH OF HOME FLOOR	NUMBER OF FRAME TIES AT 45 DEG.	APPROXIMATE SPACING FEET	MAXIMUM DISTANCE TO FIRST TIE (FT)
30	3 EA.	13*	2
32	3 EA.	14*	2
34	3 EA.	15*	2
36	3 EA.	16*	2

VERTICAL TIES ARE TYPE 1, FINISH B, GRADE 1, STEEL STRAPPING 1-1/4 INCHES WIDE AND .035 INCH THICK, CONFORMING WITH FEDERAL SPECIFICATION ASTM D3953-91.

NOTE: VERTICAL TIES DO NOT REPLACE FRAME TIES, THEY ARE EXTRA TIE DOWN STRAPPING TO BE USED IN HURRICANE WIND ZONE.

\*Intermediate vertical ties shall be located as close to midway or equally spaced between the end vertical ties as possible.

NOTE: Vertical ties may be either steel brackets secured to sidewalls or over-the-roof steel tie down straps.

## **ANCHORING SYSTEM**

All Park Trailers should be securely anchored to resist the uplift and sliding forces created by strong winds. Most areas of the country (all state along the Atlantic and Gulf Coasts) require that the home be secured with ground anchors and tie-down straps. Your Park Trailer has been designed and constructed to withstand these wind loads when anchored with frame ties only when located in standard wind zone. The tie-down straps and ground anchors are not provided by the manufacturer as differing soil conditions require different anchoring systems. Several good systems are available through your dealer or installation contractor.

The strap to frame attachment details are shown in Illustration 10. Not less than 6 ground anchors must be provided. The strap to anchor connection and the anchor installation method must be in accordance with the anchor manufacturer's installation instruction.

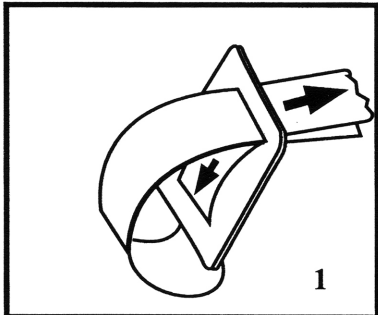
Park straps or vertical ties may have been installed on the Park Trailer. If so, it should be noted the park straps are provided to supplement and not replace the engineered anchoring system when located in hurricane wind zone. Under no circumstances should the diagonal anchoring straps be replaced by vertical park straps.

All tie-down straps shall be 1-1/4" x .034" Galvanized steel conforming to Federal Specifications ASTM D3653-91, Type 1, Class B, Grade 1 or an equivalent strap with an ultimate load capacity of 4725 lbs.

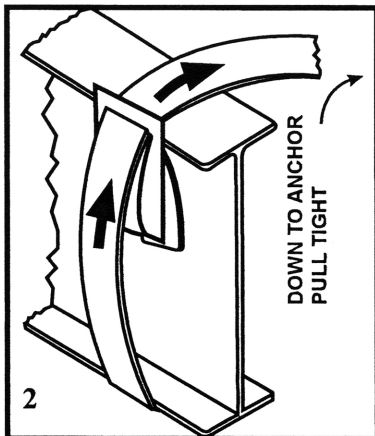
The following procedure should be used for installing the anchor system:

- 1) Thread straps through the buckle and around the I-Beam.
- 2) Install ground anchors per the anchor manufacturer's instructions. Each anchor must be positioned so the final strap angle will be within the limits shown in Illustration 10.
- 3) Attach the straps to the ground anchor-tensioning device as per the anchor manufacturer's instructions. It is recommended that all straps be tightened only enough to remove the slack. Then, after all straps are installed in this manner, retighten each strap.
- 4) The strap tension should be rechecked periodically until the pier settlement has stopped. The house must be releveled without first loosening the tie-down strap. After releveled, all straps must be retightened.

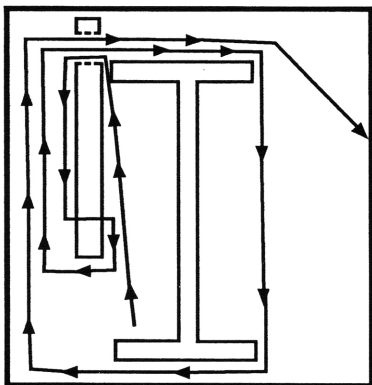
## Frame Tie Installation Instructions



1



2



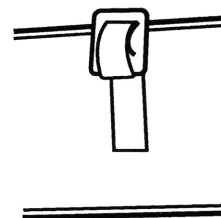
1. See step one in installation instructions.



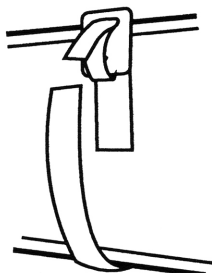
2. Insert strap in position through buckle.



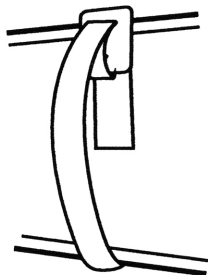
3. Strap should be through buckle in this configuration before installation on frame.



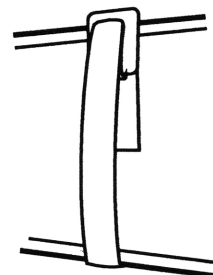
4. Strap should be pass over frame from inside, and buckle pulled into position as shown.



Strap should encircle frame and pass through buckle for the second time and over the frame



6. Strap is pulled tight from outside, or anchor side, of frame.



7. Inside of frame tie. properly installed.