

6/74

# Mobile Home Installation Manual

For Mobile Homes  
Manufactured by Subsidiaries  
of Fleetwood Enterprises, Inc.



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## FORWARD

This Manual contains step-by-step instructions which are required for the correct installation of your mobile home. The testing of the various utility systems and the proper connection of these systems to the energy supply sources must be accomplished by an experienced installer. This Manual is provided with other owner's information so that as the owner you can assure that the procedures that are appropriate to your type of home are carefully followed.

BEFORE ATTEMPTING TO INSTALL THE MOBILE HOME, THESE INSTRUCTIONS MUST BE CAREFULLY READ, UNDERSTOOD AND FOLLOWED.

YOUR HOME IS DESIGNED TO BE TOWED BY A SPECIALLY EQUIPPED TRUCK/TRACTOR. IN THE EVENT THE HOME IS MOVED, SUPPORTED OR LIFTED WITH ANY EQUIPMENT OTHER THAN THAT SPECIALLY DESIGNED FOR THIS PURPOSE, THE WARRANTY WILL BE VOIDED.

ALWAYS CHECK WITH REGULATORY AGENCIES IN YOUR AREA FOR CODES OR REGULATIONS WHICH MAY AFFECT CERTAIN PROCEDURES IN THIS MANUAL.

The drawings and pictures contained in these instructions are intended to be representative of the product. Designs and specifications are subject to change without notice.

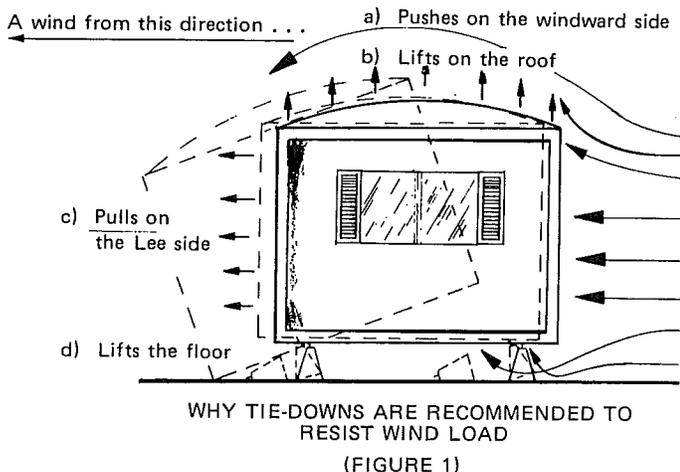
Should you have questions, or desire further clarification, please contact your dealer. If he is unable to provide the necessary information, contact the factory.

## I. GENERAL REQUIREMENTS

Homes manufactured by subsidiaries of Fleetwood Enterprises, Inc., are designed to be supported by individual supports, or piers, together with the number of tie downs appropriate for local conditions. These are collectively referred to below as a "foundation system". There are other methods of supporting mobile homes, however, Fleetwood does not express an opinion on them nor recommend their use in this manual.

The following items must be considered when discussing the mobile home foundation:

- A. The pier used must be strong enough to transmit the vertical load which includes the weight of the home, to the surface below it. See Appendix EXHIBIT 1 for vertical load requirements, Column A; also see CALCULATING LOADS ON FOUNDATION SUPPORTS (Appendix, EXHIBIT 7).
- B. The foundation system must resist side loads imposed by wind against the walls of the mobile home, as illustrated in Figure 1. Refer to Exhibit I, Column B, Appendix for specifications on each home and see the Load Zone Map of the United States (Appendix, Exhibit 2) for general weather zone information; individual codes governing mobile home installation in your area may have specific wind load design requirements (See Item F).



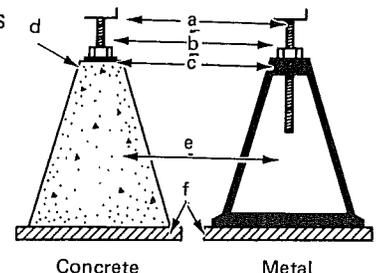
- C. In areas subject to high wind, the foundation system must also resist the lifting and over-turning force resulting from side winds as given in Exhibit I, Column C, Appendix. A method frequently used is to install ground anchors and tie-down straps in addition to the piers.
- D. Piers must be provided at all the locations called for in the instructions for each type of mobile home and the diagrams showing support requirements, in later sections of this manual.
- E. The base of each pier must have sufficient area to distribute loads evenly to the soil so there is a minimum of settling or shifting. See the requirements for Broad-Based Piers.
- F. The foundation system design must comply with building codes and regulations applicable to your area. Typically the foundation system must extend into the soil below the frost line.

## BROAD-BASED PIERS

A pier can be concrete blocks shimmed with wedges or an adjustable metal or concrete assembly similar to those shown in Figure 2. The adjustable piers shown are typical of commercial designs available in various heights and base widths. The base of the pier should be relatively wide with respect to the height when supporting the structure. For example, if a pier is 24 inches high, the base should be at least 10 inches wide. The pier should be high enough so that the riser (Figure 2, Item b) will be extended only 2 to 3 inches when in place. Blocking may be used under the base (Figure 2, Item f) to adjust height. If the pier is to rest directly on soil or gravel, a pad (redwood, cedar or concrete) should be placed under the pier base (Figure 2, Item f) to minimize settling or tipping. These pads should be at least 12 x 12 inches square, and larger if the soil is particularly soft or unstable. In unusually soft soil, paved runners or pads can be constructed under the foundation for better footing. Soil Loading Calculations are further explained in "METHODS OF CALCULATING FOUNDATION LOADS" (Appendix, Exhibit 7).

TYPICAL BROAD-BASED PIERS  
(FIGURE 2)

- a) Contact Pad
- b) Riser
- c) Adjustable Nut
- d) Washer (if required)
- e) Pier body or frame
- f) Wood or concrete soil pads



## TIE-DOWNS

Your mobile home has been designed with provisions for two types of metal tie-down straps to resist side and lift forces.

Tie-down clips have been installed at intervals along each outside chassis support member as a convenience for the attachment of mobile home tie-downs. If another approved method of attaching tie-downs to this member is used, ties must be attached by the tie-downs clips and close to the chassis cross-member. Tie-down straps must each have a working load capacity of at least 3200 pounds.

Ground anchors (not supplied) are used with both types of tie-down straps as shown in (Figures 3 and 4). Commercial designs such as those illustrated are available through your dealer or installation contractor. Acceptable anchors can be fabricated from concrete, steelrod or cable, pipe or other similar materials. Installed ground anchors must each have a working load capacity of at least 3200 pounds at 45 and 55 degrees from vertical. See Appendix EXHIBIT 1.

Although local sheltered conditions may permit installation of the mobile home without tie-downs, tie-downs as shown are the minimum necessary if the mobile home is to withstand 15 pounds per square foot or greater wind loads.

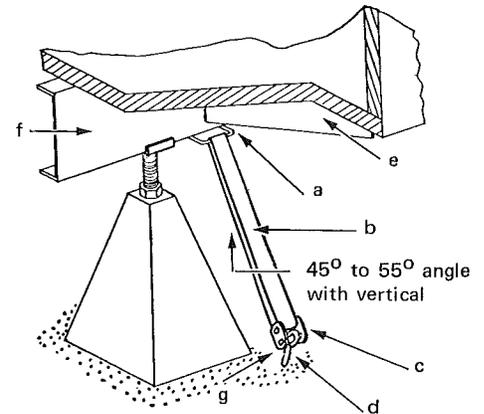
**CAUTION: BEFORE INSTALLING A FOUNDATION SYSTEM WITHOUT TIE-DOWNS, BE SURE THAT SUCH A DESIGN IS ADEQUATE FOR YOUR AREA AND IS PERMITTED BY THE APPLICABLE CODE.**

### Main Chassis Tie-Down (See Figure 3)

1. Place ground anchors (Figure 3) in line with each tie-down clip welded on the main rail far enough from the rail to draw the tie-down strap at an angle of 45 to 55 degrees with the vertical. Do not install the anchor head beyond the outer wall to avoid interference of the skirting installation.
2. Attach tension heads (Figure 3, Item c) to the ground anchor eyes.
3. Slip the tie-down straps through the slotted tension head adjustment bolt.
4. Tighten all tension head bolts until tie-down straps become taut.

**CAUTION: PERFORM THIS STEP AFTER THE HOME IS LEVEL. DO NOT PRETENSION TIE-DOWN STRAPS ON ONE SIDE OF THE MOBILE**

**HOME ONLY. IF STEP 4 IS NOT PERFORMED ALTERNATELY ON OPPOSITE SIDES, THE HOME MAY BE PULLED OFF THE SUPPORTS.**

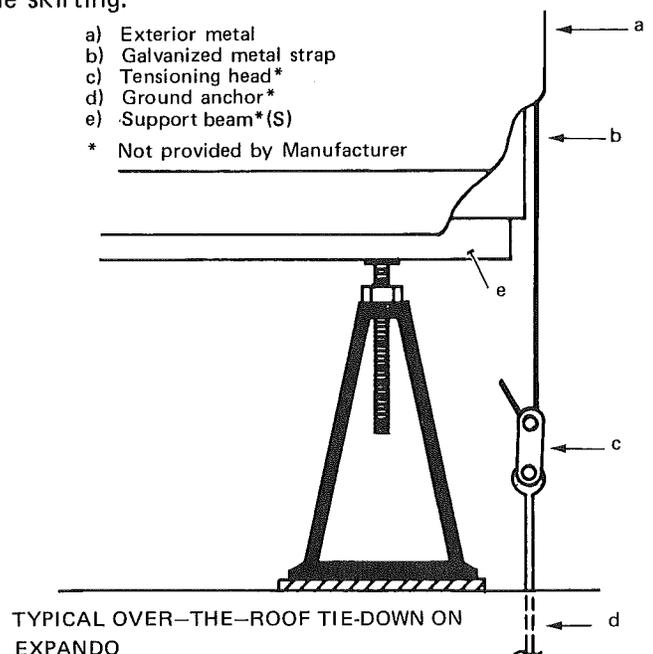


- a) U-Bar clips (welded to chassis)
  - b) Tie-Down strap material\*
  - c) Tension head\*
  - d) Ground anchor\*
  - e) Outrigger
  - f) Chassis member
  - g) Angle brace (if required)
- \* Not provided

TYPICAL CHASSIS TIE-DOWN  
(FIGURE 3)

### Over-The-Roof-Tie-Downs (Figure 4)

Over-the-roof-tie-downs, if provided, are metal straps installed by the factory. Each strap extends over the roof and down the wall (under the exterior metal) and is secured to ground anchors as shown in Figure 4. They are also used when required to secure Expando rooms or are placed in the main structure as a supplement to chassis tie-downs. To connect over-the-roof tie-downs, accomplish Steps 1 through 4 above for chassis tie-downs but position the ground anchors so that the straps are vertical between the structure wall and the ground. If skirting is to be installed, the anchor and strap can be inset to clear the skirting.



TYPICAL OVER-THE-ROOF TIE-DOWN ON EXPANDO

(FIGURE 4)

## RECAULKING

After the mobile home has been leveled and all exterior trim is installed, carefully inspect the exterior walls and roof, recaulking any voids resulting from the normal shocks and vibrations of moving or installation.

- Tighten and reseal any loose molding strips, rails, frames, seams or closures with special attention to those along the edge of the roof.

**NOTE: DO NOT OVERLOOK VOIDS OR CRACKS IN HIDDEN AREAS SUCH AS OVERHANGING EAVES OR OPENINGS WHICH MAY BE SUBJECT TO WIND-BLOWN RAIN.**

- Replace or tighten loose screws as required.
- Check caulked areas on the roof such as vents and seams. Reseal any area showing evidence of damage or cracked sealant.
- Prune low-hanging trees near the mobile home to remove branches which could scrape the walls or roof. Consider future growth as well as possible movement due to projected conditions of wind, ice or snow.

See the Mobile Home Owner's Manual for recommendations regarding minor recaulking as a part of regular maintenance.

If a roof coating is to be applied, choose a product that will not run or cause streaks on the sides of the home. Follow the manufacturer's instructions on application, including preparation of the surface. Special solvents may be required to clean certain types of metals or finishes, or for roofs which are badly oxidized. (Refer to the instructions on the container of the roof coating.)

**CAUTION: IF IT IS NECESSARY TO WALK ON THE ROOF, WALKBOARDS SHOULD BE USED TO DISTRIBUTE YOUR WEIGHT. IF REQUIRED TO STEP DIRECTLY ON THE ROOF STRUCTURE, WATCH YOUR STEP AND AVOID WALKING DIRECTLY ON SEAMS OR CAULKED AREAS.**

## CARPORTS AND AWNINGS

If an awning or carport is to be attached to your mobile home, observe the following practices:

1. Use the proper awning support railing (provided with the awning or available through your awning

supplier). If possible, choose an awning which is a free-standing design having columns to support the additional weight.

2. Follow the recommendations of the awning manufacturer and applicable building codes in installing the awning.
3. Always use fasteners of the proper size to attach mating parts snugly but without straining the mobile home. Make necessary attachments only to the upper wall or roof. Be sure there is solid material behind metal for a positive connection.
4. Caulk or seal all seams or openings resulting from exterior siding modifications. The best way is to place weather sealing tape or sealing compound under railing joints or fasteners during assembly and then seal the completed seam.

Remember that modifications which are improperly done may damage your new home or mar its appearance and could void your warranty.

## VAPOR BARRIER

It is recommended that a layer of polyethylene plastic, roofing or heavy felt be placed covering the ground below the home to form a water vapor barrier.

## REPAIRING THE BOTTOM CLOSURE MATERIAL

Fastened to the underside of the floor joists of your mobile home is a special covering designed to protect against rodents and moisture as well as isolate the floor cavity from unconditioned outside air. This covering was inspected before the home left the factory; it is important that any areas damaged during transportation or installation be resealed.

If the covering is asphalt-base or composition material, it should be repaired by applying a patch of the same (or similar) material over the damaged area. For best results, place beads of adhesive or sealant under all contact edges to assure an airtight seal. Press the patch firmly into place with your hand or other object and use fasteners (or tape) to hold it in place until the adhesive sets. Be sure no gaps exist which could permit air to enter. It is recommended that fasteners be a type designed to spread and hold in soft material; if these fasteners are not available, the patch may be cut large enough to span the floor joists so that the fasteners used to secure the patch will penetrate wood on at least two sides.

If the covering is a vinyl-coated material, use vinyl patching tape especially designed to repair tears or holes. Pull torn edges together; then cover as necessary with tape or apply a patch of the same material, taped around all four sides.

## II. UTILITY CONNECTION PROCEDURE

This procedure defines tests of the utility systems for Single Wide, Expando or Double Wide mobile homes prior to making final utility connections. Testing must be satisfactorily completed before utility service connections are made. See procedures applicable to Expando or Double-Wide installation for additional important instructions.

- ( ) 1. Using the gas test device and ounce gauge (see recommended set-up tools), check the gas system for leaks. First close all appliance controls and all appliance pilot light valves (see the appliance instructions included in the home or posted on the appliance).
- ( ) 2. Open the gas shut-off valves, if provided, on the supply lines to the appliance.
- ( ) 3. Attach the gas test device, with an ounce gauge, on the main gas inlet to the mobile home.
- ( ) 4. Carefully pressurize the system to five (5) to eight (8) ounces of pressure.

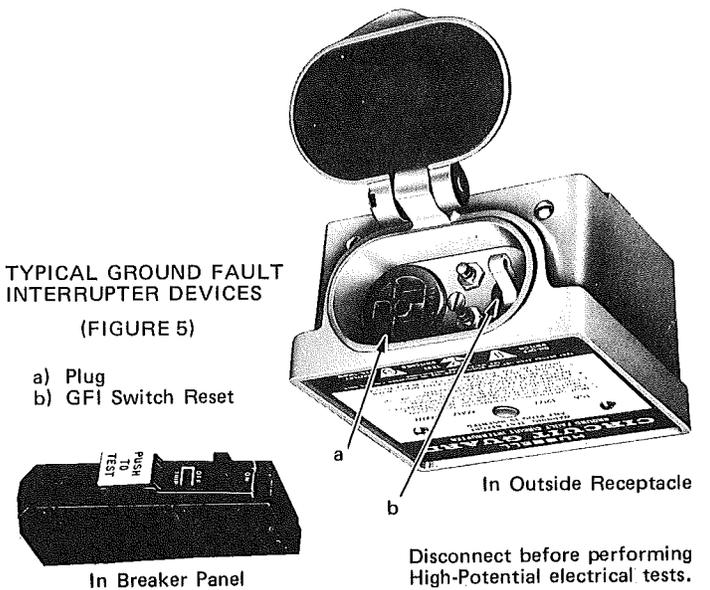
**CAUTION: DO NOT PRESSURIZE THE LINE IN EXCESS OF 8 OUNCES (MAXIMUM) TO AVOID POSSIBLE DAMAGE TO THE GAS VALVES AND REGULATORS.**

- ( ) 5. Verify that the pressure remains at the required level for ten (10) minutes without pressure loss (or as specified by applicable codes).
- ( ) 6. Using the electrical test equipment recommended (see Appendix), perform continuity, polarity and high potential tests of the mobile home electrical system. Specific test procedures will depend on the equipment manufacturer or the requirements in the local area; however, the high potential test should be performed at no more than 1080 volts for one second maximum or 900 volts for one minute.

**CAUTION: BEFORE PERFORMING HIGH-POTENTIAL ELECTRICAL TESTS , REMOVE LIGHT BULBS, TRANSFORMERS, FLUORESCENT LIGHT BALLASTS , SMOKE DETECTORS AND DISCONNECT ALL APPLIANCES. DIRECT WIRED APPLIANCES, SUCH AS THE FURNACE , AND DISHWASHER MUST BE DISCONNECTED. DISCONNECT ANY GROUND FAULT INTERRUPTER DEVICES IF INSTALLED (SEE FIGURE 5) AND REPLACE WITH REGULAR BREAKER OR REGULAR RECEPTACLES TO GIVE A VALID TEST.**

**ASSURE THAT ALL PERSONNEL ARE OUT OF THE MOBILE HOME AND POST WARNING SIGNS AND A SENTRY TO INSURE THAT NO ONE ENTERS OR TOUCHES THE HOME DURING THE TEST.**

TYPICAL GROUND FAULT INTERRUPTER DEVICES (FIGURE 5)



- ( ) 7. The water system test is made by attaching an air pump and guage (0 to 100 psi) at the water supply inlet and pressurizing the water system to 100 psi. Verify that the pressure remains for a period of 10 minutes without loss.
- ( ) 8. Test the drainage system, with the outlet capped. Fill the entire drain system up to the top of the toilet bowl (with lower fixtures plugged). Hold for a period of 15 minutes and inspect for leaks.
- ( ) 9. Connect the water inlet to the portable water supply at the site in accordance with applicable regulations.

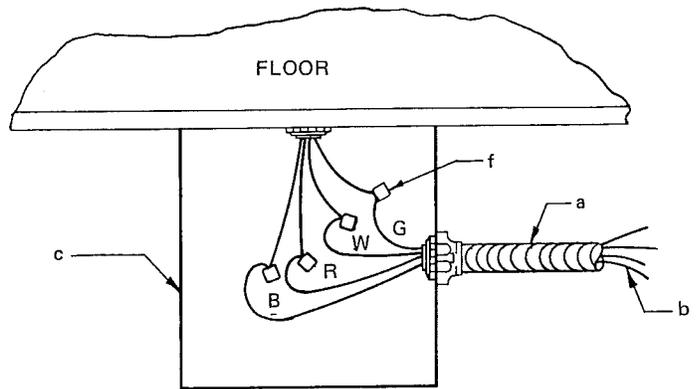
- ( ) 10. Connect the drain system to the site sewer inlet using a 3" rigid pipe. The pipe must slope at least 1/8" per foot toward the site inlet. Use approved 3" flexible connectors at both ends of the 3" drain line to connect to the mobile home outlet and the site inlet. Support the pipe every four feet. Flush the line with water and check for visible leaks.
- ( ) 11. Connect the NATURAL GAS supply to the mobile home gas inlet with the connector supplied, where applicable.

CAUTION: SPECIAL ORIFICES AND REGULATORS ARE REQUIRED WHEN LIQUID PETROLEUM GAS (LPG) IS USED. SEE INSTRUCTIONS WITH EACH GAS-BURNING APPLIANCE FOR MODIFICATION INSTRUCTIONS.

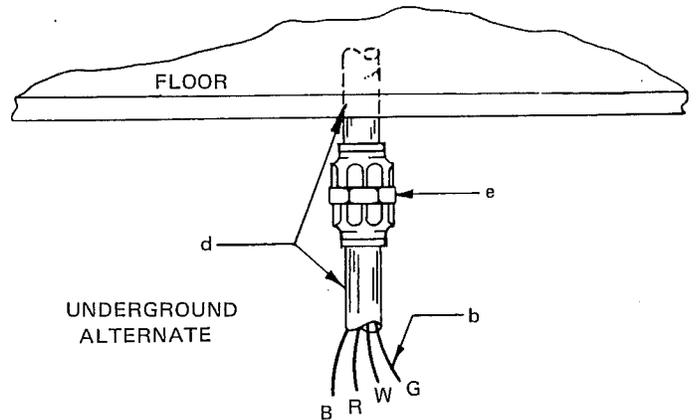
- ( ) 12. Connect electrical supply feeder to site electrical service and mobile home electrical system. Feeders larger than 50 amperes must be made using approved wiring methods. (See Figure 6.)

NOTE: SOME STATES REQUIRE THAT SUB-ASSEMBLIES FOR WIRED FEEDERS BE SUPPLIED WITH THE MOBILE HOME. THESE SUB-ASSEMBLIES, WHEN PROVIDED, INDICATE THE WIRING METHODS THAT MUST BE USED.

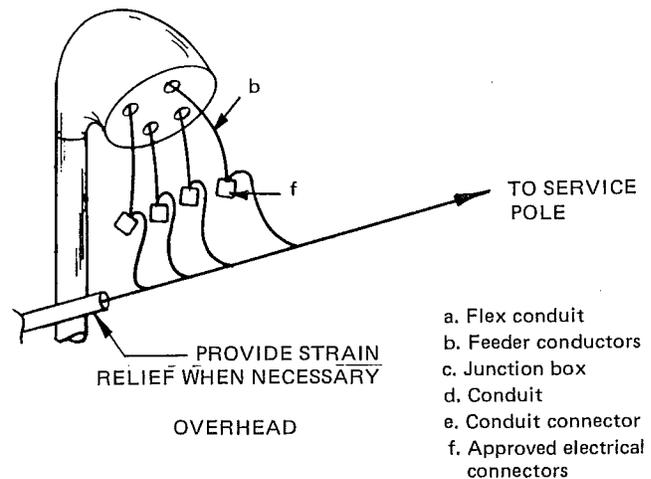
NOTE: ALL UTILITY CONNECTIONS MUST BE MADE BY QUALIFIED SERVICE PERSONNEL FAMILIAR WITH LOCAL REGULATIONS. SEE THE OWNER'S MANUAL FOR OTHER IMPORTANT INFORMATION CONCERNING UTILITY CONNECTIONS.



UNDERGROUND - (ALSO USE WHEN PROVIDING FOR AIR CONDITIONER CONDENSER CONNECTION)



UNDERGROUND ALTERNATE



TYPICAL SUPPLY FEEDER CONNECTIONS (FIGURE 6)

### III. SINGLE-WIDE INSTALLATION

The mobile home has been designed to meet the ANSI A119.1 Standard and other applicable standards. To maintain an effective warranty, it is important that installation be accomplished in accordance with the following instructions:

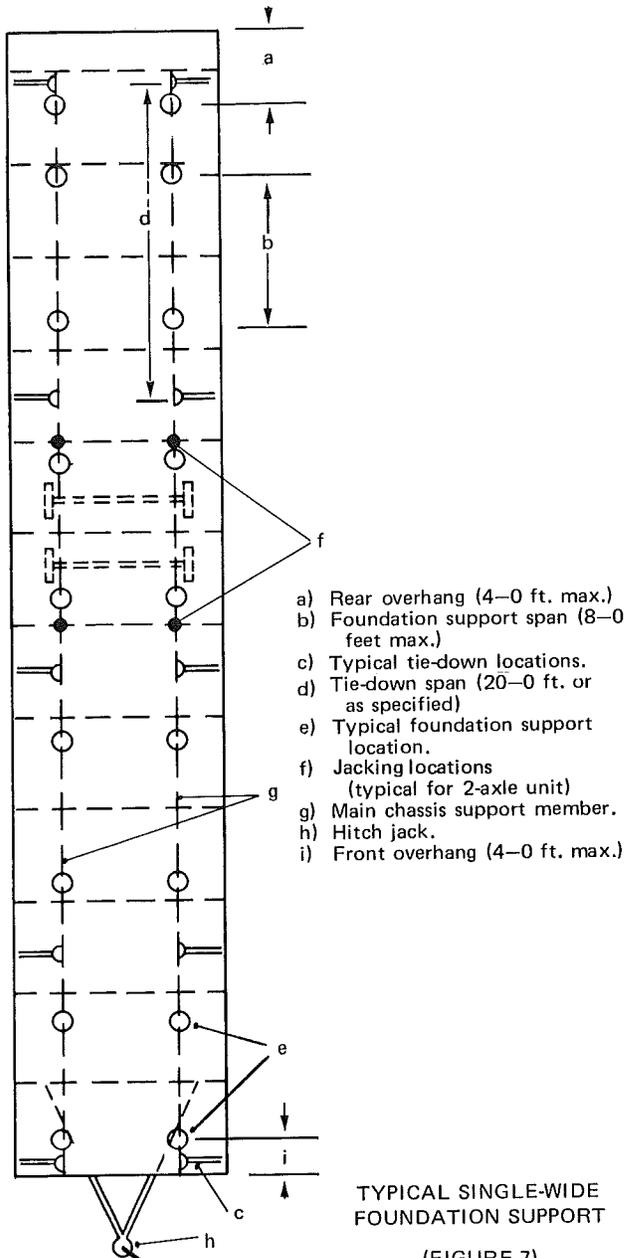
CREW SIZE: MINIMUM OF TWO EXPERIENCED MOBILE HOME INSTALLATION MEN.

THIS PROCEDURE IS PROVIDED AS A CHECK LIST;

CHECK (✓) EACH STEP AS IT IS COMPLETED.

CAUTION: TO AVOID ACCIDENTS, FOLLOW THE PROPER PROCEDURES AND USE THE PROPER TOOLS. SEE RECOMMENDED TOOL LIST (Appendix, Exhibit 4).

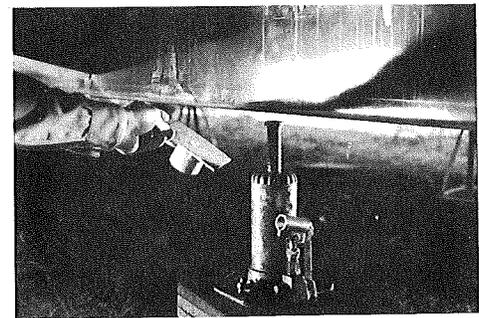
- ( ) 1. Determine the appropriate foundation system design for local site and wind exposure conditions as specified in Section I.
- ( ) 2. Estimate the general location of each pier and tie-down for the length of home, using the Foundation Support Diagram (Figure 7) and install any components which might be more difficult to place after the mobile home is in position. An example might be ground anchors which are to be installed at an angle.



- ( ) 3. Move the mobile home into the desired final position.

NOTE: IF THE RECOMMENDED VAPOR BARRIER IS PLACED ON THE GROUND BELOW THE HOME (SEE SECTION I), PLACEMENT OF THE MATERIAL MAY BE STARTED AT THIS TIME. FOR CONVENIENCE, THE MATERIAL CAN BE LEFT ROLLED UP WITH SECTIONS UNFOLDED AS NEEDED DURING SET UP TO FACILITATE PLACEMENT OF JACKS AND EQUIPMENT.

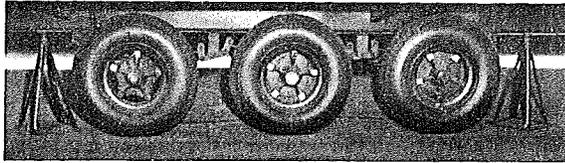
- ( ) 4. Using a 6-foot carpenter level along the frame or floor, raise or lower the hitch jack until the home is approximately level from front to rear. This is only a preliminary level and is not a final accurate positioning.
- ( ) 5. Place two lifting jacks fitted with the recommended reinforcing plates (Figure 8) under one chassis main beam.



Placing reinforcing plate before jacking chassis main beam.

(FIGURE 8)

- ( ) 6. Uniformly lift this side of the home USING BOTH JACKS and place piers under the main beam as illustrated in Figure 9. 2 and 3 axle units: The first pier next to the front spring shackle and another within 8 feet of the first, or immediately behind the rear shackle (Figure 9). 4-axle units: The first pier next to the front spring shackle, a second behind the rear spring shackle and a third (intermediate) pier between the middle pair of axles (at the spring shackle).



Placing first two foundation supports.

(FIGURE 9)

NOTE: IF THE MOBILE HOME IS TO BE INSTALLED WITH THE WHEELS REMOVED, REMOVE THEM AT THIS TIME AND POSITION THE CHASSIS AT THE DESIRED HEIGHT. THE WHEELS, WHEN REMOVED, CAN BE PLACED UNDER THE CHASSIS AS A SAFETY MEASURE TO CATCH THE MOBILE HOME IF THE JACK SHOULD SLIP.

- ( ) 7. Place a pier under the chassis no greater than 4 feet from the front wall (see Figure 5) and another pier under the rear beam within 4 feet of the rear wall. Adjust the pier height to keep the mobile home approximately level from front to back.
- ( ) 8. Move the lifting jacks to the opposite main beam and lift that side in the same manner. Place piers at the axles, the front and rear at points corresponding to those placed in Steps 6 and 7.
- ( ) 9. Adjust the pier heights to bring the floor to a preliminary level position from side to side and from front to rear, using the carpenter level.
- ( ) 10. Evenly space additional piers at intervals of 8 feet or less under the main beams as specified in Figure 7.
- ( ) 11. Adjust the final height of piers as required to obtain a final level of the floor. Using the carpenter's level, check front to rear and side to side at several points along the floor over the length of the home.

THIS COMPLETES THE LEVELING PROCEDURE. At this time, the floor should be level and the walls plumb. All doors and windows should operate freely without binding.

- ( ) 12. If applicable, connect tie-down straps from the attachment points on the chassis or attach over-the-roof straps to ground anchors in accordance with manufacturer's instructions.

NOTE: OBSERVE PROPER TENSIONING PROCEDURES (SEE SECTION I) TO AVOID DISTURBING THE LEVEL OR DAMAGING THE HOME OR FOUNDATION.

- ( ) 13. Remove any shipping blocks from appliances and replace fixtures, shelves or other loose items removed for shipping.
- ( ) 14. Check the plumbing, electrical and other systems and hook up all utilities; see Section II, Utility Connection Procedure.

#### IV. EXPANDO INSTALLATION

The mobile home and expando room have been designed to meet the ANSI A119.1 Standard and other applicable Standards when assembled as a unit. To maintain an effective warranty, it is important that installation be accomplished in accordance with the following instructions:

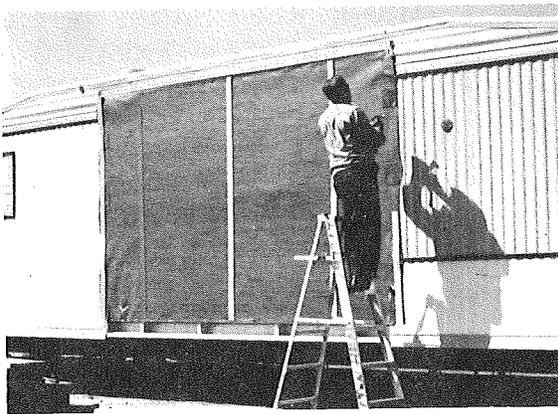
CREW SIZE: MINIMUM OF TWO EXPERIENCED MOBILE HOME INSTALLATION MEN. NEVER ATTEMPT TO INSTALL AN EXPANDO ROOM ALONE DUE TO THE WEIGHT OF THE FLOOR AND THE ROOM STRUCTURE

THIS PROCEDURE IS PROVIDED AS A CHECK LIST:

CHECK (✓) EACH STEP AS IT IS COMPLETED.

CAUTION: TO AVOID ACCIDENTS, FOLLOW THE PROPER PROCEDURES AND USE THE PROPER TOOLS. See recommended Tool List (Appendix, Exhibit 4).

- ( ) 1. Completely install the main unit on the selected site using the procedures described for the single-wide mobile home. Leave the expando floor in the shipping position (See Figure 9). Do not complete the expando room checks of the electrical system or any utility which is interconnected with the expando room at this time.



PREPARING TO LOWER EXPANDO FLOOR  
(FIGURE 10)

NOTE: COMPLY WITH PRECAUTIONARY WARNING TAGS ON THE FLOOR BEFORE REMOVING THE 6 x 6 INCH PLATES. (FIGURE 11)

**CAUTION**

**THIS EXPANDO FLOOR WEIGHS OVER 400 LBS. DO NOT REMOVE THESE PLATES UNTIL PROPER MEASURES HAVE BEEN TAKEN TO CONTROL THE LOWERING OF THE FLOOR**

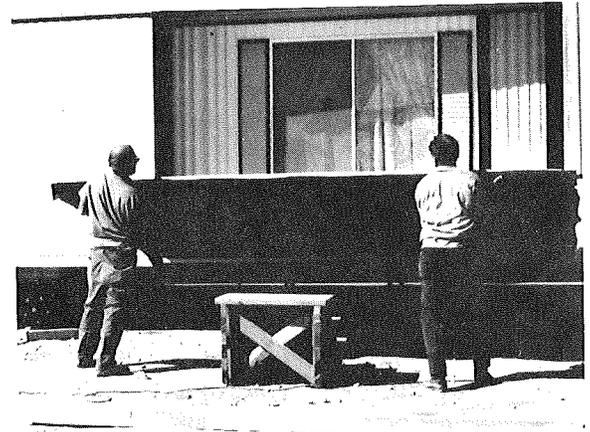
(FIGURE 11)

- ( ) 2. With the main unit level and secured, remove the waterproof covers provided to seal the expando opening during transit.
- ( ) 3. Place one or more temporary supports in a position to support the expando floor level when it is lowered to the horizontal position.
- ( ) 4. Remove the shipping blocks between the expando room and the main structure.

**CAUTION: DO NOT REMOVE ALL THE STEEL PLATES UNLESS AT LEAST ONE MAN IS HOLDING THE EXPANDO FLOOR IN THE VERTICAL OR SHIPPING POSITION. DO NOT ALLOW FLOOR TO BE LOWERED WITH FEWER THAN TWO MEN EXERCISING FULL CONTROL OF THE FLOOR.**

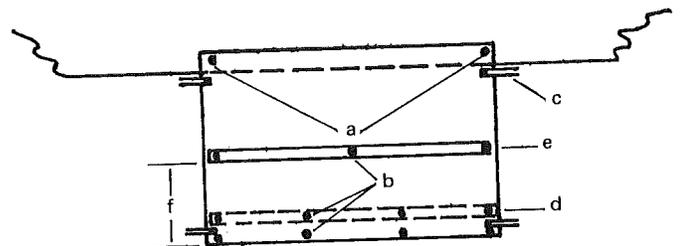
- ( ) 5. Remove the two upper 6 x 6 inch steel plates.

- ( ) 6. With at least one man holding the floor up a second man can remove the two lower steel plates, then return to help hold the expando floor.
- ( ) 7. Using at least two men, gradually lower the floor until it is approximately level (see Figure 12). TAKE CARE THAT THE FLOOR DOES NOT DROP SUDDENLY.



LOWERING THE EXPANDO FLOOR  
(FIGURE 12)

- ( ) 8. Position piers under the floor as shown in Figure 13. They are required at each corner of the Expando floor at the main unit (below the flat 2 x 4), at the mid span of the floor, and along the outer edge (Figure 13). A wood beam is always required between the center piers and the floor (Figure 13 and 15, Item d and e). Beams must be construction grade Douglas Fir (or equivalent). 4" x 4" by 11' 8" material is recommended although double 2 x 4's may be used if securely nailed and positioned on edge; shorter beams (6 foot or 4 foot lengths) can be used with a pier placed at each joint.

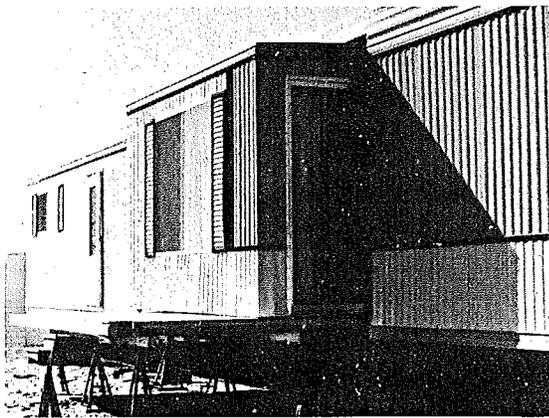


- a) Rim joist foundation support (Main Structure)
  - b) Foundation supports:
  - c) Tie-Downs
  - d) Optional support beam\* and alternate support positions
  - e) Mid-span support beam\*
  - f) Mid-span dimensions
- \* Not provided by Manufacturer.

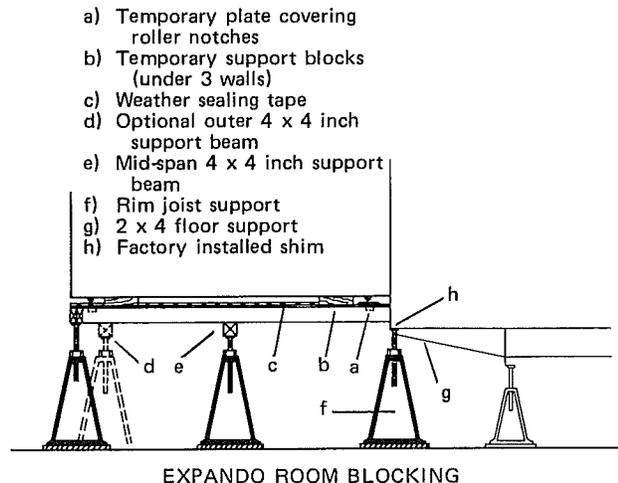
TYPICAL EXPANDO FOUNDATION SUPPORT DIAGRAM  
PLAN VIEW  
(FIGURE 13)

NOTE: IF SKIRTING IS TO BE INSTALLED UNDER THE ROOM, THE OUTER PIERS (FIGURE 15, ITEM d) MAY BE INSET TO PROVIDE CLEARANCE. PLACE A SECOND BEAM TO DISTRIBUTE THE LOAD ACROSS THE JOISTS.

- ( ) 9. Adjust the height of all piers until the floor is approximately level with the main unit floor. (The floor will be completely leveled after the expando room is in position.)
- ( ) 10. With the floor in position, remove all shipping braces from the expando room, located inside the main unit.
- ( ) 11. Temporarily bridge the two floor notches nearest the main unit (Figure 15, Item a) using two of the 6 x 6 inch steel plates removed previously. DO NOT BRIDGE OUTER FLOOR NOTCHES.
- ( ) 12. Carefully roll the expando room into position on the floor (Figure 14).



ROLLING THE EXPANDO ROOM INTO POSITION (FIGURE 14)



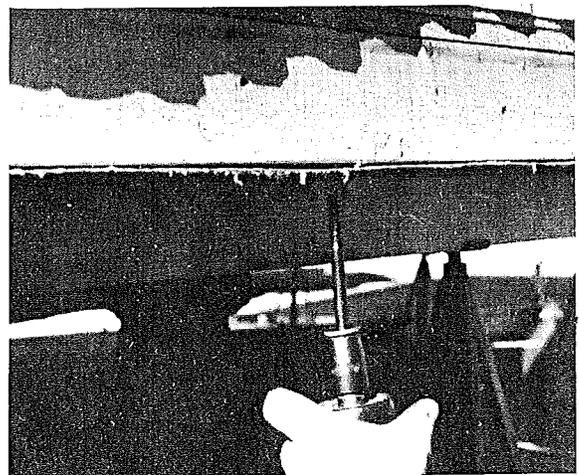
- a) Temporary plate covering roller notches
- b) Temporary support blocks (under 3 walls)
- c) Weather sealing tape
- d) Optional outer 4 x 4 inch support beam
- e) Mid-span 4 x 4 inch support beam
- f) Rim joist support
- g) 2 x 4 floor support
- h) Factory installed shim

EXPANDO ROOM BLOCKING

(FIGURE 15)

CAUTION: KEEP HANDS OUT OF THE SPACES BETWEEN EXPANDO OUTER WALL AND MAIN UNIT OPENING WHILE MOVING EXPANDO ROOM INTO PLACE. DO NOT ALLOW ROOM TO ROLL PAST THE OUTER EDGE OF THE FLOOR. IT COULD FALL OVER OR TIP OFF THE EDGE.

- ( ) 13. With the expando room positioned, lift one wall slightly using a pry bar and place 3/4 inch (minimum) blocks under the wall so that weather sealing tape can be placed between the outside edge of the wall and the floor. Repeat with the other walls until the expando room has been raised on all sides.
  - ( ) 14. Remove the 6 x 6 inch steel plates covering the roller notches. Install weather sealing tape (provided) between the floor and the sidewall plate, along the outside perimeter of the room.
- CAUTION: DURING THIS WALL LIFTING AND WEATHER PROOFING PROCEDURE, DO NOT PERMIT HANDS OR FINGERS TO ENTER THE SPACE BETWEEN THE BOTTOM OF THE WALL AND THE FLOOR.
- ( ) 15. Using the pry bar, raise the walls one by one, carefully remove blocking and lower the wall into position on the floor.
  - ( ) 16. Align the walls with the floor edges and with each inside wall of the main structure. Secure with lag screws through the holes predrilled under the perimeter of the floor at 16 inch centers (Figure 16). Use 3/8 x 6 inch lag screws with flat steel washers (provided). Tighten with a wrench. DO NOT HAMMER.

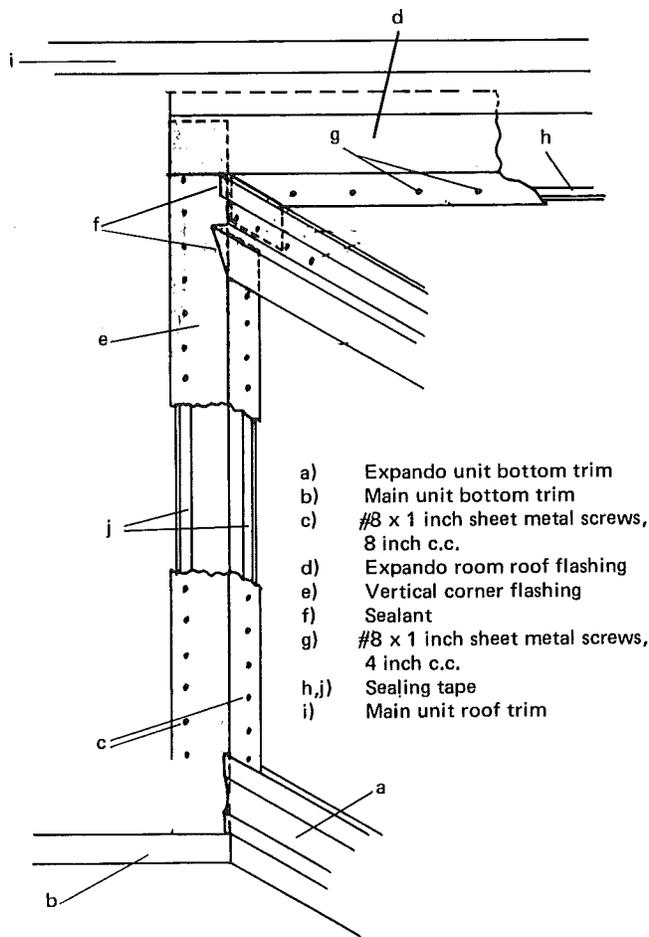


FASTENING THE EXPANDO ROOM TO THE FLOOR (FIGURE 16)

- ( ) 17. Square and flush the expando room wall framing in the opening, as well as leveling the floor, by adjusting the height of the outside floor corner foundation supports.
- ( ) 18. Install wood shims 16 inches (maximum) center to center between the expando roof beam and the main unit roof (Figure 19, Item a).
- ( ) 19. Install the bottom sheet metal trim (Figure 16, Item a) around the lower perimeter of the expando room. The top edge of the trim is slipped under the lower ledge of the vertical exterior metal siding. Secure along the bottom of the vertical siding with #8 x 1 inch sheet metal screws (provided). Note: follow spacing of screws used on main unit.
- ( ) 20. Fit a narrow strip of trim metal (provided) between the bottom trim (top edge) and the lower sill of the glass sliding doors, if required. (This may be omitted if the lower trim strip is wide enough to extend under the door frame .)
- ( ) 21. Install vertical metal flashing strip (provided) in each corner at the main unit. Be sure to use sealing tape (Figure 17, Item h, j). Use No. 8 x 1 inch sheet metal screws on 8 inch (maximum) centers (Figure 17, Item c). Leave sufficient length at the roof for one edge of the flashing (Figure 17, Item e), to extend under the roof flashing (Figure 17, Item d), to extend under the roof flashing. Cut the one edge short so the edge of the expando roof flashing (Figure 17, Item d) can extend over Figure 17, Item e.

- ( ) 22. Slip the upper edge of the expando roof flashing (Figure 17, Item d) under the trim of the main unit (Figure 17, Item i) and position lower edge against the expando roof. Use sealing tape (Figure 17, Item h) between the flashing and the roof metal at each end. Secure expando roof flashing with No. 8 x 1 inch sheet metal screws on 4 inch centers.

NOTE: DETAILS MAY VARY BECAUSE OF TRIM METAL DESIGN; OVERLAPPING PIECES SHOULD ALWAYS BE CUT AND INSTALLED TO PROVIDE PROPER WATER RUNOFF.



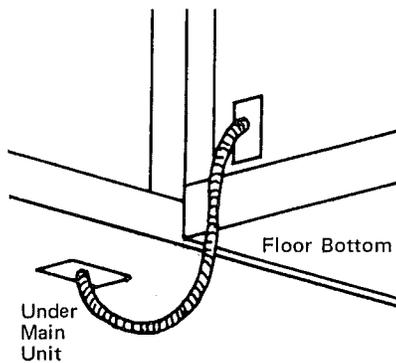
TYPICAL EXPANDO ROOM EXTERIOR DETAIL

(FIGURE 17)

- ( ) 23. Seal all flashing joints with roof coat and sealant.
- ( ) 24. After the roof seal has set for three (3) hours (minimum), a water leakage test is recommended by spraying water along the roof and side seams.
- ( ) 25. Attach tie-down straps (if installed) to ground anchors in accordance with Section I.
- ( ) 26. Connect the electrical wires from the expando room into the junction box under the main unit floor (Figure 18).

NOTE: SEE APPENDIX, EXHIBIT 6 FOR ELECTRICAL CONNECTIONS DETAILS.

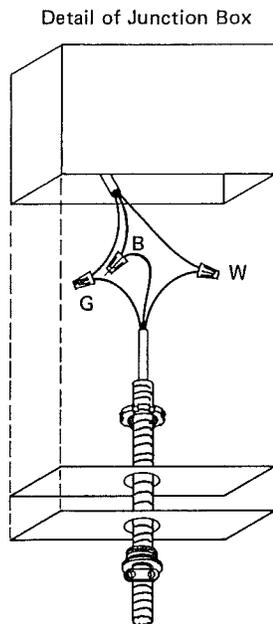
CAUTION: CIRCUIT BREAKER MUST BE TURNED OFF BEFORE ATTEMPTING TO CONNECT WIRES.



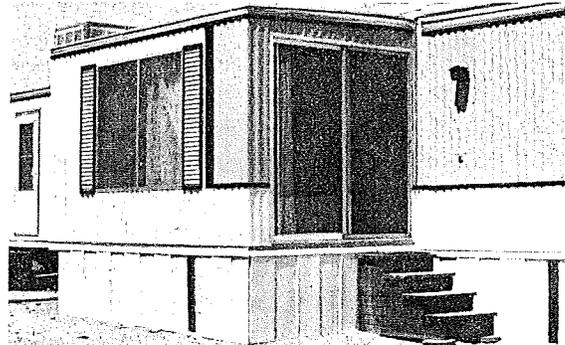
Color Code  
 B — Black  
 G — Green  
 W — White

TYPICAL EXPANDO ROOM ELECTRICAL CONNECTION

(FIGURE 18)

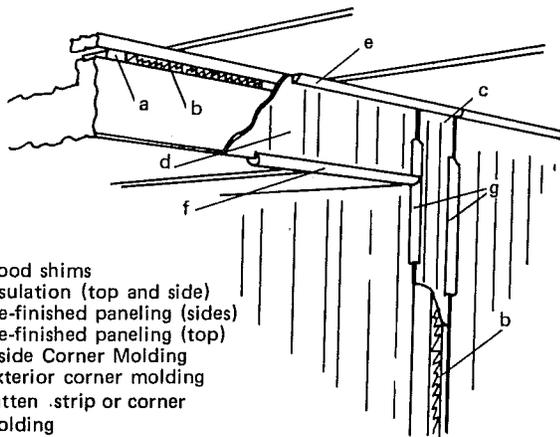


- ( ) 31. Install the metal galvanized strip (provided) over floor joint and fasten with 3d galvanized shingle nails.
- ( ) 32. Install carpet pad, carpet and molding if required.
- ( ) 33. Install wall base shoe molding as required.



(FIGURE 20)

- ( ) 27. Utility systems tests on the main unit can be performed at this time.
- ( ) 28. Install fiberglass insulation in the cavities between the main unit and the expando room walls and ceiling (Figure 19, Item b). Install insulation over any exposed metal surface in the support beam which might cause condensation on inside walls because of exposure to cold outside temperature.



TYPICAL EXPANDO ROOM INTERIOR DETAILING

(FIGURE 19)

## V. TYPICAL DOUBLE WIDE INSTALLATION

This mobile home has been designed to meet the ANSI A119.1 Standard and other applicable Standards when assembled as a unit. To maintain an effective warranty, it is important that the two sections be installed in accordance with the following instructions:

CREW SIZE: MINIMUM OF TWO EXPERIENCED INSTALLATION MEN.

THIS PROCEDURE IS PROVIDED AS A CHECK LIST;

CHECK (✓) EACH STEP AS IT IS COMPLETED.

CAUTION: TO AVOID ACCIDENTS, FOLLOW THE PROPER PROCEDURES AND USE THE PROPER TOOLS. See recommended Tool List (Appendix, Exhibit 4).

### FLOOR AND END WALL POSITIONING

- ( ) 1. Remove the waterproof plastic and all shipping braces from the open sides of each half.

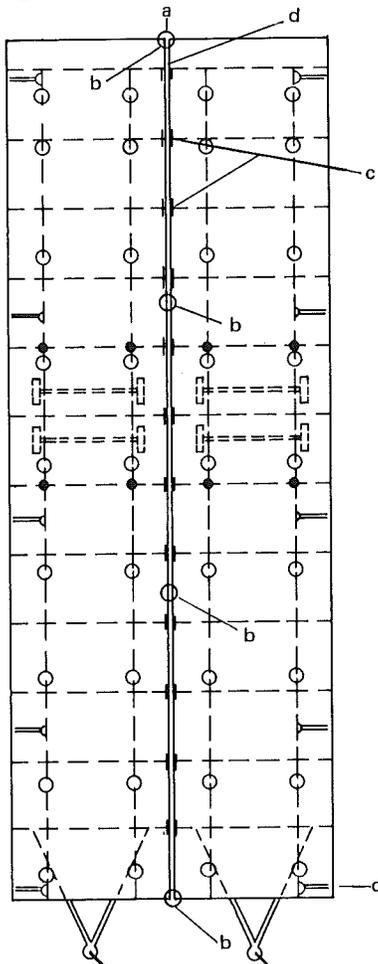
NOTE: BEFORE MOVING THE SECOND HALF INTO POSITION, IT MAY BE HELPFUL TO LEVEL THE GROUND WHERE THE INSIDE WHEELS (NEXT TO THE MARRIAGE LINE) WILL REST TO HELP IN SLIDING THE STRUCTURES

- ( ) 29. Cover the cavities around the expando room and all exposed unfinished lumber with prefinished plywood panels which are provided. Fasten with small finishing nails.
- ( ) 30. Cover top front edge of expando ceiling panel with molding (Figure 19, Item f). Fasten with small finishing nails.

TOGETHER. TWO SHEETS OF PLYWOOD OR STEEL (WITH A LITTLE GREASE OR SOAP FLAKES BETWEEN THEM) CAN BE PLACED UNDER THE WHEELS TO PERMIT EASIER SIDE MOVEMENT.

- ( ) 2. Determine the foundation design appropriate for local site and wind exposure conditions as specified in Section I.
- ( ) 3. Determine the general location of piers and tie-downs for the length of home, using the Foundations Support Diagram, Figure 21.

- a) Marriage line\*
  - b) Typical marriage line column supports
  - c) Typical outrigger brackets
  - d) Typical tie-down (outside only)
- \* Marriage line is where two halves are joined.  
(See FIGURE 7 for other details common to single-wide)



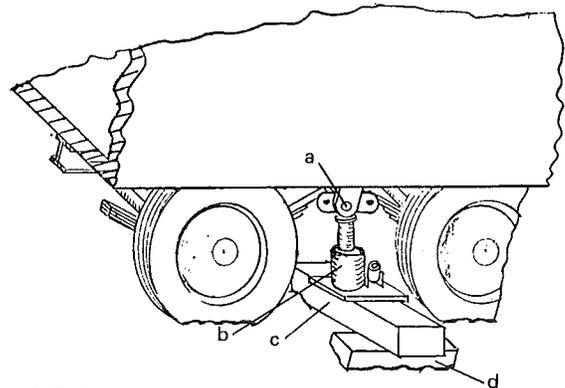
TYPICAL DOUBLE WIDE FOUNDATION SUPPORT DIAGRAM  
(FIGURE 21)

- ( ) 4. Position the first half to be placed (usually the U or Utility half containing the service connections) in the desired final position and level using the procedure for Single-Wide installation (Section III).

- ( ) 5. Install strips of carpet padding or fiberglass (provided) around the ceiling, end walls and floor marriage line of the first half. Do not place material where it could obstruct air ducts in the heating system supply or return air duct system. Be sure the duct connection seals are in place.

**CAUTION: SPECIAL CARE MUST BE TAKEN TO ASSURE THAT THIS MARRIAGE LINE JOINT IS TIGHT TO RESIST AIR INFILTRATION AND CONDENSATION.**

- ( ) 6. Move the second half into position within 6 inches and alongside the first half.
- ( ) 7. Draw the two floors together using jacks, set at an angle at or near the outside spring shackles, or winches (come-alongs) (Figure 22 and 23).



- a) Spring shackle
- b) Jack at an angle
- c) Heavy wood shim (dug in)
- d) Outer wood shim

SUGGESTED METHOD OF SIDE MOVEMENT  
USING THE JACK  
(FIGURE 22)

### END WALL ALIGNMENT

- ( ) 8. With the two halves together, but with no fasteners installed, check the alignment of the end walls, interior walls, roof and floor. Determine if the walls and/or the roof of either half must move backward or forward with respect to the floor. Any correction required can be accomplished during the leveling of the second half.

NOTE: THE JOINTS IN THE CEILING ARE ONE GOOD INDICATION OF ROOF POSITION; THE JOINTS SHOULD RUN STRAIGHT FROM ONE HALF TO THE OTHER WHEN THE HALVES ARE CORRECTLY POSITIONED. IF THE WALLS REQUIRE ONLY A SMALL CORRECTION, PROCEDURE A IS SUGGESTED; IN MORE DIFFICULT CASES, USE PROCEDURE B.

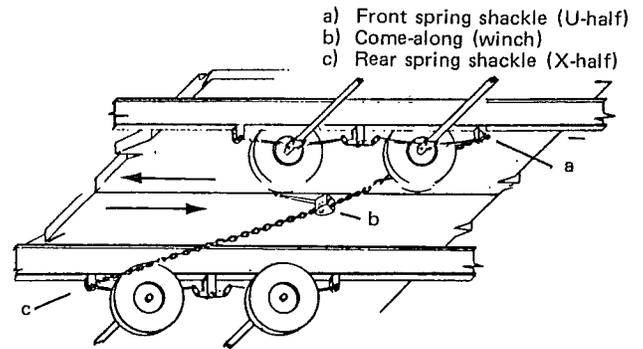
### ALIGNMENT PROCEDURE A

- ( ) 9. Position the second half to bring the floor seams flush, keeping the roof slightly apart and the end walls aligned at the floor. At this time, place piers only on the inside chassis beam.
- ( ) 10. Close the gap in the ceiling by raising the outside chassis beam using two hydraulic jacks placed ahead of and behind the wheels.
- ( ) 11. IF THE TOP MUST BE MOVED FORWARD . . . With the chassis support beams evenly supported, carefully raise the outside rear corner of the second half (and lower the outside front corner) with the hydraulic jacks. The roof should shift forward until the end walls come even at the top. When the walls and ceiling strips are even, raise the outside support chassis beam evenly to close the gap.
- ( ) 12. IF THE TOP MUST BE MOVED BACK . . . With the chassis support beams evenly supported, carefully raise the outside front corner of the second half (and lower the outside rear corner) with the hydraulic jacks. The roof should shift back until the end walls come even at the top. When the walls and ceiling strips are even, raise the outside chassis support beam evenly at the front and rear to close the gap.
- ( ) 13. Fasten the top of the ridge beam together (as described in Step 18). When the top and walls are aligned and fastened, proceed with leveling of the second half.

### (ALTERNATE) ALIGNMENT PROCEDURE B

- ( ) 14. Position the second half so that the floors are together with the ceiling seam flush and the end walls, interior walls and ceiling joints even at the top. Close the gap between the roofs by raising the outside chassis support beam.

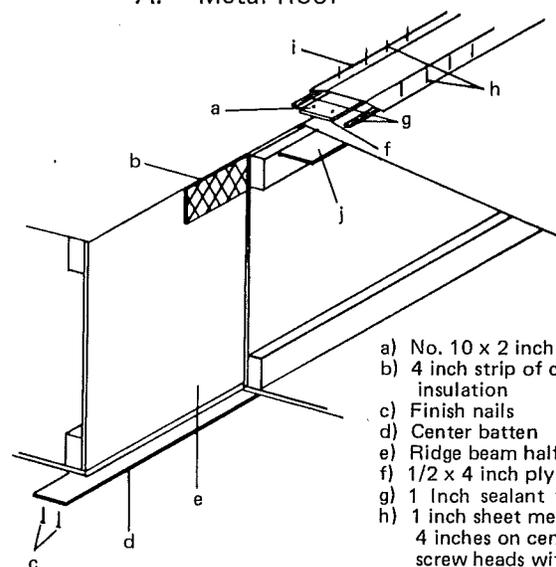
- ( ) 15. With the ceiling positioned and the ridge beam halves snug, fasten the top of the ridge beam together as described in Step 18.
- ( ) 16. With the roof securely fastened, attach a winch (come-along) between spring shackles of each half. Shift the floor and lower end of the walls into alignment by tightening the winch. (Figure 23).



ALIGNING THE FLOORS WITH A HAND WINCH  
(FIGURE 23)

- ( ) 17. When the floors and walls are even, insert bolts in brackets at the ends of the outriggers (See Figure 28). Install washers and nuts and tighten as required to hold the floors in position when the hand winch is released. With the top, walls and floor aligned and fastened at the marriage line, proceed with leveling of the second half.
- ( ) 18. To secure the roof together, follow the appropriate procedure outlined below:

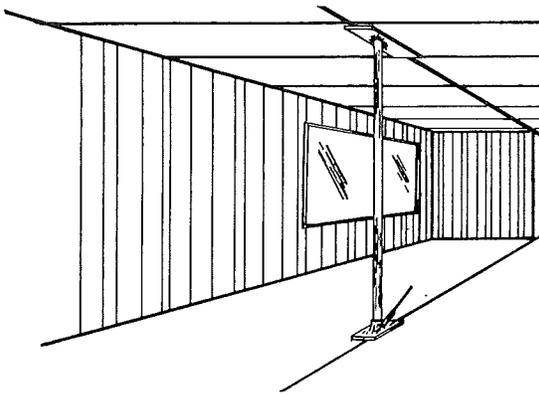
#### A. Metal Roof



- a) No. 10 x 2 inch wood screws
- b) 4 inch strip of carpet pad or insulation
- c) Finish nails
- d) Center batten
- e) Ridge beam half
- f) 1/2 x 4 inch plywood
- g) 1 inch sealant tape
- h) 1 inch sheet metal screws @ 4 inches on center - cover screw heads with roofing cement
- i) 8 inch galvanized metal cap
- j) 3 1/2 inch wide plywood continuous strip

TYPICAL RIDGE BEAM ATTACHMENT DETAILS  
(FIGURE 24)

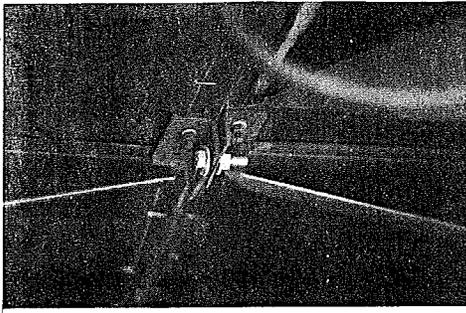




ALIGNING THE CEILING WITH JACK AND POST  
(FIGURE 27)

PLACE THE BASE OF THE JACK ACROSS THE FLOOR SEAM TO DISTRIBUTE THE LOAD TO BOTH HALVES. JACK AGAINST THE CEILING ONLY IN AREAS TO BE COVERED LATER WITH TRIM MOLDING.

- ( ) 19. Complete the closure of the floor seam by pulling the halves snug with bolts, washers and nuts in the floor brackets at each outrigger. (Figure 28). Be sure the floors are flush above each bracket before tightening.



OUTRIGGER  
(FIGURE 28)

- ( ) 20. Level the second half using the carpenter level (front to back and side to side) beginning at the wheels, then at the ends and finally at intermediate locations until the entire floor is level. Place all remaining piers at the locations specified in Figure 21.

NOTE: ADDITIONAL PIERS MUST BE PLACED UNDER EACH RIDGE BEAM COLUMN ALONG THE MARRIAGE LINE; THIS INCLUDES FIELD-INSTALLATION COLUMNS INSTALLED IN ACCORDANCE WITH THE FOLLOWING STEPS AS WELL AS FACTORY-INSTALLED COLUMNS.

- ( ) 21. Adjust tie-down straps and ground anchors (See Section I).

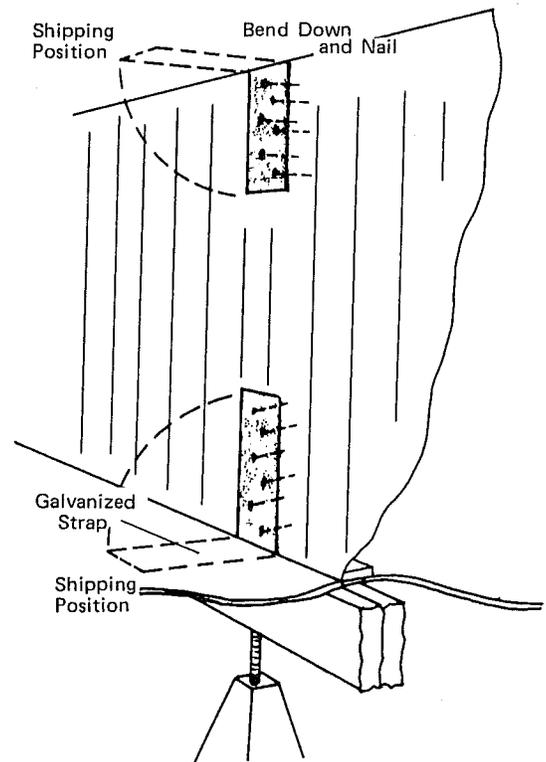
### FIELD INSTALLED SUPPORT COLUMNS

Support columns (provided) must be installed during set-up under certain sections of the main center roof beam. Each location where a column must be installed is marked on the wall or floor.

NOTE: IT IS IMPORTANT TO HAVE THE RIDGE BEAM PROPERLY ALIGNED AND SECURELY FASTENED TOGETHER AS SPECIFIED IN STEP 18 BEFORE ATTEMPTING TO SET COLUMNS.

Galvanized metal reinforcement straps installed by the factory at the floor and ceiling of the open half, must be attached to the wall before installing the columns.

- ( ) 22. Pull the loose ends of the exposed galvanized metal at the ceiling and the floor and nail flat against the wall in accordance with the nail schedule specified (See Figure 26). The nails must penetrate solid wood (the factory-installed portion of the column) inside the wall. If no solid wood is penetrated, check alignment of strap. Be sure the strap is vertical with no bumps or protruding edges which would prevent a close fit on the column.



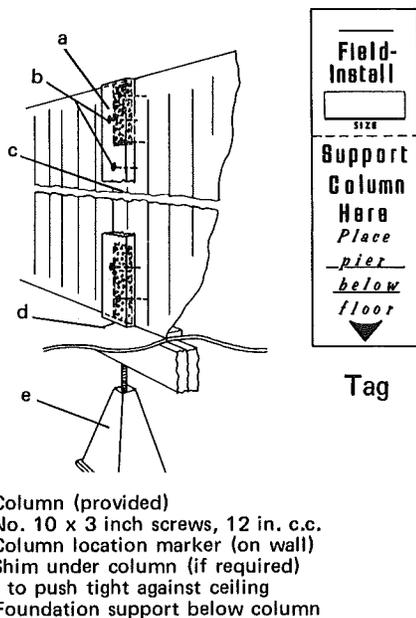
TYPICAL UPLIFT STRAP  
(FIGURE 29)

LOAD ZONE	STRAP SIZE	FIELD INSTALLED 6-d NAILS
MIDDLE OR NORTH	3" x 18"	6 REQUIRED
HURRICANE OR ALASKA	4" x 12"	10 REQUIRED

UPLIFT STRAP NAIL SCHEDULE

(FIGURE 30)

- ( ) 23. Select a column of the size specified on the tag at the locations and position as shown in Figure 31.

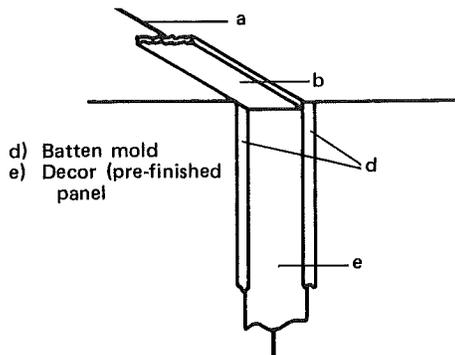
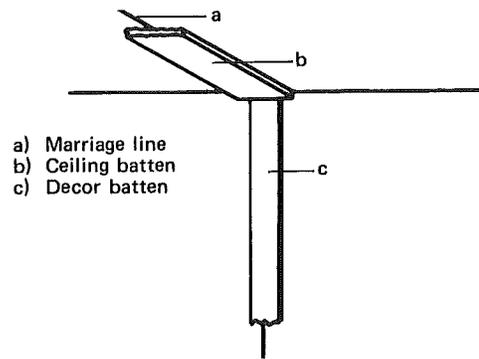


TYPICAL FIELD-INSTALLED COLUMN

(FIGURE 31)

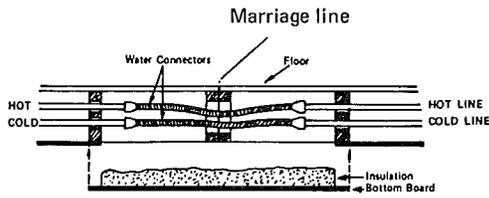
NOTE: IT IS VERY IMPORTANT THAT THE COLUMN FIT SNUGLY BETWEEN CEILING AND THE FLOOR. SHIM IF NECESSARY, BETWEEN THE COLUMN AND THE FLOOR.

- ( ) 24. Secure with No. 10 x 3 inch screws at 12 inch centers, staggered 1 inch from either edge (Figure 31).

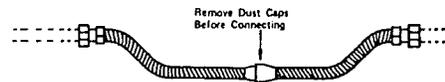


INTERIOR TRIM DETAIL (FIGURE 32)

- ( ) 25. Install the end cap (provided) over ends of the ridge beam, placing sealing tape between wood and cap. Use #8 x 1 inch sheet metal screws in the end of the ridge beam.
- ( ) 26. Install the galvanized metal cap along the length of the center ridge beam with sealing tape under each side and in each cross joint. Bend the cap at each cross joint to give the center a 1/2 inch crown (minimum) to assure that water will run off. Use scrap wood blocks under the metal in the center of the joint for support, if necessary. Secure with 1 inch sheet metal screws 3 to 4 inches center to center on each edge. Seal each cross joint and each exposed edge of the weather cap with roof coating.
- ( ) 27. Install the ceiling molding on the joints of the ceiling with 8d finishing nails.
- ( ) 28. Cover floor seam with metal strips (provided). Fasten with 3d galvanized nails.
- ( ) 29. Install carpet and carpet padding, base shoe molding and other moldings as required.
- ( ) 30. Connect the provided hot and cold water line crossover flex connectors under coach (shown in Figure 33), if applicable.

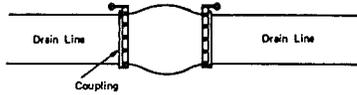


TYPICAL HOT AND COLD  
WATER CROSSOVER CONNECTION IN THE FLOOR  
(FIGURE 33)



TYPICAL GAS LINE  
CROSSOVER CONNECTION  
(FIGURE 37)

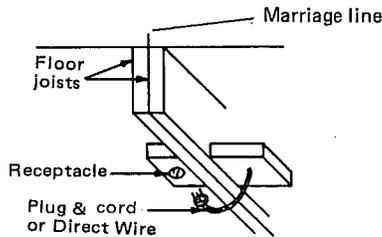
- ( ) 31. Hook up the waste line crossover with the provided coupling (shown in Figure 34), if applicable.



TYPICAL WASTE LINE  
CROSSOVER CONNECTION  
(FIGURE 34)

- ( ) 32. Connect or direct wire in the electrical crossover. If two electrical crossovers are required (shown in Figure 35), be sure to connect front to front, rear to rear as shown to maintain circuit continuity.

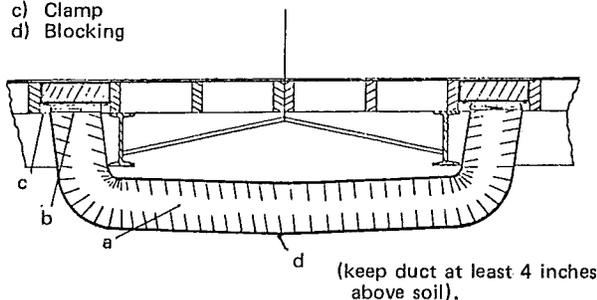
NOTE: SEE APPENDIX, EXHIBIT 6 FOR ELECTRICAL CONNECTIONS DETAILS.



TYPICAL DOUBLE-WIDE ELECTRICAL  
CROSSOVER CONNECTION  
(FIGURE 35)

- ( ) 33. Connect the flex heat duct crossover (shown in Figure 36), if applicable. DO NOT COMPRESS OR KINK DUCT.

- a) Flex duct (provided)
- b) Collar
- c) Clamp
- d) Blocking



TYPICAL FLEX HEAT DUCT  
CROSSOVER CONNECTION  
(FIGURE 36)

- ( ) 34. Connect the provided flex gas line connector (shown in Figure 37), if applicable.

- ( ) 35. Install the exterior flashing on the front and rear of the mobile home to complete the trim.

- ( ) 36. Check and hook up all utilities; see Section II, Utility Connection Procedure. During tests of electrical continuity, check polarity and continuity between the halves to verify that crossover connections are properly matched.

NOTE: EACH OF THESE SYSTEMS HAS ALREADY BEEN CAREFULLY TESTED; HOWEVER THIS IS A FINAL TEST AND MUST BE MADE TO ASSURE THAT NOTHING HAS BEEN AFFECTED BY TRANSPORTATION OR INSTALLATION.

- ( ) 37. Review applicable procedures for Recaulking and Carports and Awnings (Section I) to complete the installation.

NOTE: REFER TO THE MOBILE HOME OWNER'S MANUAL (RELEVELING AND MAINTENANCE) FOR PERIODIC PROCEDURES WHICH ARE RECOMMENDED AFTER INSTALLATION.

## VI. AIR CONDITIONING

Mobile homes designed for air conditioning are provided with feeder panels and main circuit breakers of sufficient size to carry the additional electrical loads imposed. Air conditioning branch circuit breaker and conductor sizes must be as specified in the air conditioning installation instructions. Conductor sizes and conduit sizes must conform to the National Electric Code Section 310-12 and -14 and Chapter 9, or to local code as applicable.

In states where a wired junction box to the outside of the home is provided for air conditioning connection, attachment to the conductors within the box must be made by approved methods.

NOTE: AIR CONDITIONING INSTALLATION MUST BE MADE BY QUALIFIED PERSONNEL FAMILIAR WITH LOCAL REGULATIONS.

# APPENDIX

## EXHIBIT I

### LOADS ON FOUNDATION SUPPORTS (Piers and Tie-Downs)

DESIGN SPECIFICATIONS			TYPE OF FORCE		
			DOWN A Vertical downward force resulting from weight of fully furnished mobile home on each foundation support when spaced 8' center to center.	SIDE FORCE B Horizontal wind force on each foundation support when spaced 8' center to center.	LIFT C Vertical uplift along sides of mobile home (resulting from wind) at each tie down strap when spaced 10' center to center.
DESIGN ZONE (See Maps)	ROOF LOAD AND WIND LOAD	MOBILE HOME WIDTH			
MIDDLE	20 PSF Roof 15 PSF Wind (Approximate 55 mph wind)	12'	3820	600	up 118 lbs.
		14'	4150	600	Downward
		24'	3820	300	"
		Expando Room	915	115	"
NORTH	30 PSF Roof 15 PSF Wind (Approximate 55 mph wind)	12'	4300	600	up 118
		14'	4680	600	Downward
		24'	4300	300	"
		Expando Room	1040	115	"
ALASKA	30 PSF Roof 20 PSF Wind (Approximate 64 mph wind)	12'	4300	800	up 425
		14'	4680	800	up 216
		24'	4300	400	Downward
		Expando Room	1040	153	"
HURRICANE	30 PSF Roof 25 PSF Wind (Approximate 72 mph wind)	12'	4300	1000	up 725
		14'	4680	1000	up 465
		24'	4300	500	Downward
		Expando Room	1040	192	"

## EXHIBIT 2

### LOAD ZONE MAP OF THE UNITED STATES

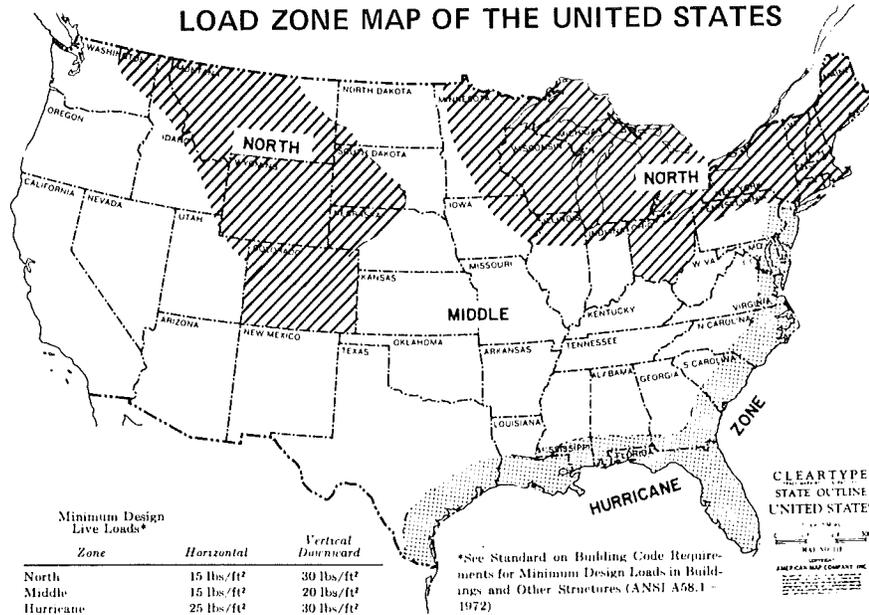
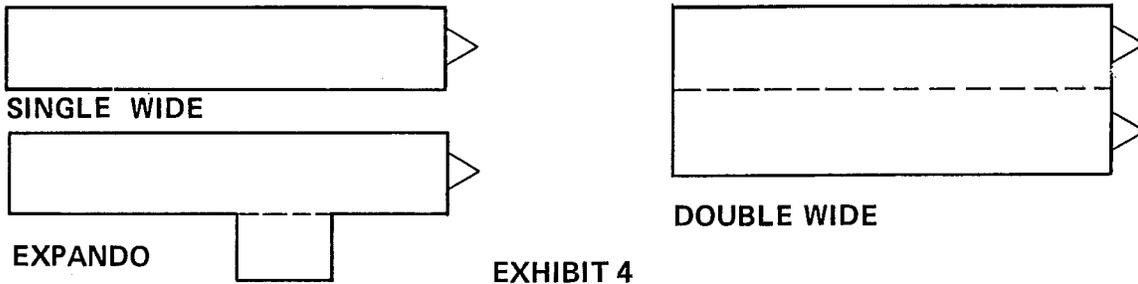


Figure B-2. Weather Zone Map of U.S.A.  
Hurricane Zone 100 miles inland along Gulf and Atlantic Coasts as indicated by dotted areas (including all of the State of Florida).

APPENDIX (Cont.)

EXHIBIT 3

KEY TO TERMS USED IN THE TEXT



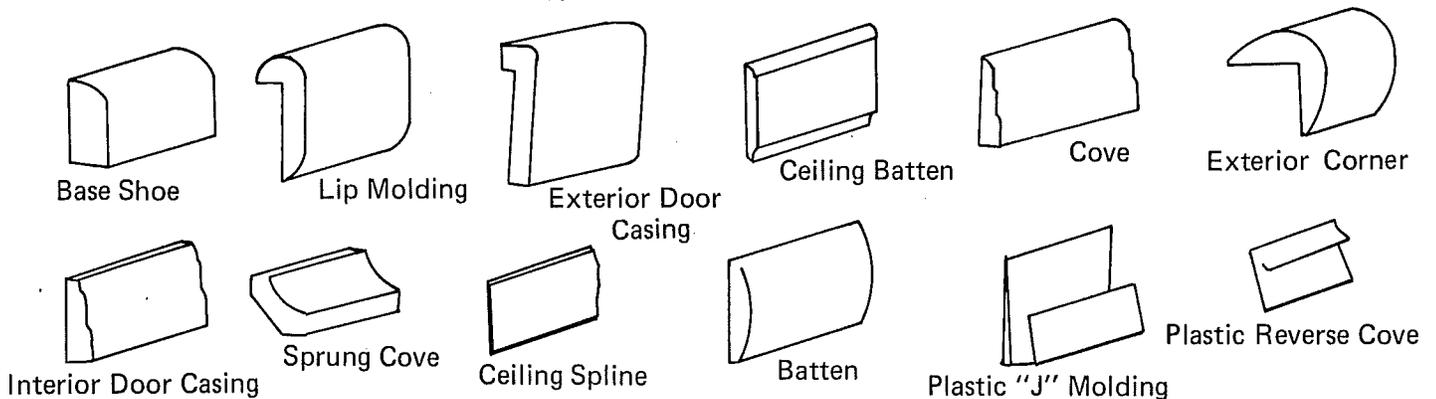
RECOMMENDED MINIMUM SET-UP TOOLS

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>Power screw gun for standard 1/4" Hex attachments.</li> <li>#2 Phillips bits, and 1/4" socket bits.</li> <li>#3 Phillips bits, and 1/4" socket bits.</li> <li>2--5 ton Hydraulic Jacks</li> <li>16 oz. Claw Hammer</li> <li>Drill Motor w/3/16", 1/4", 3/8", 1/2" drill bits.</li> <li>24" nail bar or carpenter (pry) bar.</li> <li>Molding Saw (Dovetail)</li> <li>Mitre Box</li> <li>16' Step Ladder</li> <li>8" Pliers</li> <li>20" Hand Saw 10 tooth.</li> <li>4" Awl</li> <li>10" Crescent Wrench</li> <li>2--Sheetmetal Snips (L.H. &amp; R.H.)</li> <li>Foundation Supports (Piers)</li> <li>50' Garden Hose (for water check)</li> <li>2 -- Jacking Reinforcing Plates 3/8"x3"x6"</li> <li>3" Brush (to apply roof coat)</li> <li>100' HD Extension Cord #12 wire w/Ground</li> <li>6' Carpenter Level</li> <li>3/32" nail set</li> </ul> | <ul style="list-style-type: none"> <li>8" Standard Blade Screwdriver</li> <li>8" Phillips Screwdriver</li> <li>16' Steel Measuring Tape</li> <li>Hand Winch (Come-Along)</li> <li>Straight Edge (carpet cutting)</li> <li>Carpet Stretcher</li> <li>Carpet-Heat Bond Seaming Tool (Roberts or equiv.)</li> <li>Carpet Heat Bond Tape</li> <li>Utility Knife (carpet cutting)</li> <li>Putty Stick Touch-up Kit</li> <li>Electrical--High Potential Tester 0 to 1100 volts AC (an example is Slaughter, A106/064-2.5 or equivalent)</li> <li>Continuity and polarity Tester -- Circuit and receptacle.</li> <li>Gas System--Leak Tester (air pump) 0 to 10 ounce with 3/4 and 1 inch female fittings.</li> <li>Water System--Leak Tester (air pressure) 0 to 100 psi, w/3/4" fittings.</li> </ul> |
|---|--|

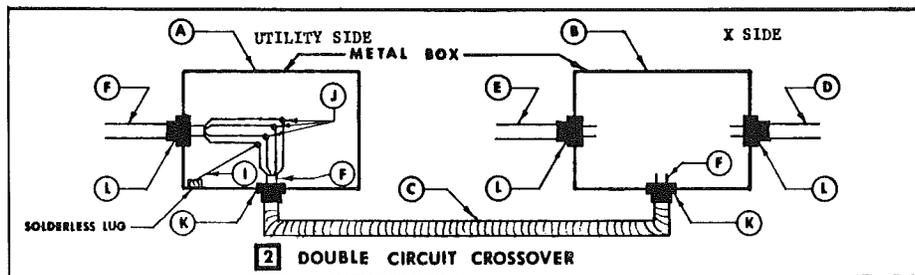
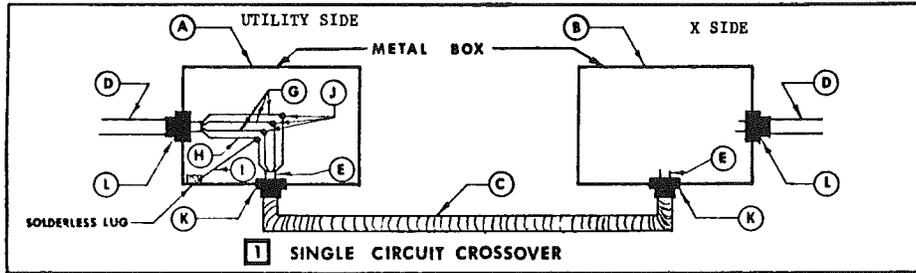
EXHIBIT 5

TYPICAL INTERIOR FINISH MATERIAL

Trim materials to be installed during installation are shipped with the home in the proper decor. Some of the common types which may be referenced in the text are shown.



**APPENDIX (Cont.)**  
**EXHIBIT 6**  
**TYPICAL ELECTRICAL CONNECTION DETAIL**



[1]	[2]	A MIN VOLUME	B MIN VOLUME	C FLEX CONDUIT	D ROMEX	E ROMEX	F ROMEX	G WIRE	H WIRE	I GROUND WIRE	J CONNECTOR	K TYPE CLAMP	L TYPE CLAMP	
15 AMP		13.50	13.50	1/2"	#14-2 CU w/GR	#14-2 CU w/GR				NOTE 3	WIRE NUT (9)	FLEX. CONN. w/INSUL. BUSH.	ROMEX	
	15 AMP	18.00	20.25	1/2"	#14-2 CU w/GR	#14-3 CU w/GR	#14-3 CU w/GR			NOTE 3	WIRE NUT (9)	FLEX. CONN. w/INSUL. BUSH.	ROMEX	
20 AMP		15.00	15.00	1/2"	#12-2 CU w/GR	#12-2 CU w/GR				NOTE 3	WIRE NUT (9)	FLEX. CONN. w/INSUL. BUSH.	ROMEX	
	20 AMP	20.00	22.50	1/2"	#12-2 CU w/GR	#12-2 CU w/GR	#12-3 CU w/GR			NOTE 3	WIRE NUT (9)	FLEX. CONN. w/INSUL. BUSH.	ROMEX	
	20/15 AMP	20.00	22.00	1/2"	#12-2 CU w/GR	#14-2 CU w/GR	#12-3 CU w/GR			NOTE 3	WIRE NUT (9)	FLEX. CONN. w/INSUL. BUSH.	ROMEX	
40 AMP		40.00	40.00	1 1/4"	#8-3 CU w/GR #6-3 AL w/GR	#8-3 CU w/GR #6-3 AL w/GR				6 BARE CU 6 BARE AL	WIRE NUT (10) (11)	FLEX. CONN. w/INSUL. BUSH.	ROMEX	
50 AMP		46.40	46.40	1 1/2"	#6-3 CU w/GR #4-3 AL w/GR	#6-3 CU w/GR #4-3 AL w/GR				6 BARE CU 6 BARE AL	WIRE NUT (11) (12)	FLEX. CONN. w/INSUL. BUSH.	ROMEX	
90 AMP		138.00	138.00	1 3/4"	#2-3 CU w/GR #1/0-3AL w/GR	#2-3 CU w/GR #1/0 AL w/GR				6 BARE CU 6 BARE AL	SPLICE (12) LUG	FLEX. CONN. w/INSUL. BUSH.	ROMEX	
90 AMP		138.00	138.00	1 3/4"	#2-3 CU w/GR #1/0-3AL w/GR	#2-3 CU w/GR #1/0 AL w/GR				2 THW CU 2 THW AL	6 BARE CU 6 BARE AL	SPLICE (12) RING	FLEX. CONN. w/INSUL. BUSH.	ROMEX
15 AMP Expando		13.50	13.50 Weather Proof	1/2" Tight Tight	#14-2 Cu W/GR	#14-2 CU W/GR				Note 3	Wire Nut (9)	liquid tight, Flex. Conn. w/Insul. Bush.	ROMEX	

**NOTES:**

1. Tables 4 & 5, chapter 9 of NEC 1971 used for calculating conduit sizes.
2. Common Ground on no. [2].
3. Ground directly from Romex to solderless lug.
4. All cables and conductors listed for not less than 60 degrees C unless otherwise specified.
5. All materials for crossovers supplied by Fleetwood Enterprises.
6. Crossover assembly, except X side of expando unit, mounted under mobile home and protected from moisture and physical damage.

- (7). Flexible connector on utility side can be standard fitting.
8. Maintain polarity by matching cond. color.
- (9). For 2 - no. 14, 2 - no. 12, use 3M yellow w/n or equivalent.
- (10). For 2 - no. 8, use 3M gray w/n or equivalent.
- (11). For 2 - no. 6, use 3M blue w/n or equivalent.
- (12). For 2 - no. 4, 2 - no. 8, 2 - 1/0 use Brundy connector KS 25 of equivalent.

## APPENDIX (Cont.)

### EXHIBIT 7

#### Calculating Foundation Loads

Soil-load calculations can be performed to determine the base area required at each foundation support to resist the vertical loads (see Broad-Based Piers, Section I). Base area is calculated by dividing the vertical loads (given in Table I, Column A) by a design factor (called Allowable Soil Bearing Stress) for the soil. This Allowable Soil Bearing Stress is the load, in pounds, that one square foot of the soil can safely carry and varies from several thousand pounds per square foot (in rock) down to a few hundred psf for soft soil. The applicable stress factor for your soil type may be available from the local agency responsible for establishing building codes, or may be determined by test. If tests are required, always use a qualified professional.

EXAMPLE: For a 12-wide home, to be installed in a North Zone (see the map, Section I):

- a. From Table I, North Zone, 12 wide; Column A, find vertical downward load of 4300 pounds.
- b. Determine Allowable Soil Bearing Stress of the soil at your site stable clay – 1500 #/square foot\*
- c. Divide:  $4300 \div 1500 = 2.8 + \text{sq/ft.}$  (Round off to 3 sq. ft.)\*\*

\*Usually an adequate value

\*\*Allowable Soil Bearing Stress values already contain a safety factor (See Section I)

- d. Choose any combination of dimensions which give required area:  
1'-7" (approximately) each side, 1½ ft. x 2 ft., 1 ft. x 3 ft. or as required.

The base dimension determined in this way may be used to establish the size of the soil pad (Figure 2f).

In addition to the vertical loads shown in Column A, Table I, the foundation supports may have to simultaneously resist side forces (Column B) and lift forces (Column C). The means to resist these forces are described in Section I.



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