

**MULTIPLE SECTION  
MANUFACTURED HOME  
INSTALLATION MANUAL**



NOTICE

TO INSTALLERS AND SITE PREPARATION CONTRACTORS

NONCOMPLIANCE WITH THESE INSTALLATION INSTRUCTIONS MAY MAKE YOU LIABLE TO THE HOME OWNER OR OCCUPANTS FOR DAMAGE OR INJURY RESULTING FROM YOUR OMISSIONS OR INCORRECT OR DEFECTIVE WORK. ACCORDINGLY, CARE SHOULD BE EXERCISED IN CONFORMING TO THE REQUIREMENTS HEREIN.

NOTICE

IMPROPERLY VENTED SKIRTING WILL CAUSE MOISTURE TO ACCUMULATE BENEATH THE HOME. WHEN SKIRTING THE BOTTOM OF THE HOME, VENTILATORS MUST BE INSTALLED. THE MINIMUM VENT AREA SHALL BE 1 SQUARE FOOT FOR EVERY 150 SQUARE FEET OF AREA UNDER THE HOME. EACH VENTILATOR MUST HAVE A MINIMUM OF 60 SQUARE INCHES OF NET FREE AREA. THE VENTILATORS MUST BE EQUALLY SPACED ALONG EACH SIDE OF THE HOME WITH ONE VENTILATOR BEING PLACED WITHIN 4 FEET OF EACH END OF THE HOME.

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### CHAPTER 7 FINAL INSPECTION

## INTRODUCTION

This home was designed and constructed to meet or exceed the requirements of the National Manufactured Home Construction and Safety Standards which were in effect on the date of manufacture. This standard sets forth minimal requirements for the design, construction, electrical system, plumbing systems, heating system and thermal protection for manufactured homes designed to be used as single family dwellings.

These instructions are intended to instruct and assist already qualified personnel in the proper installation of your manufactured home. It is not intended to enable someone unfamiliar with manufactured homes to perform the installation. The installer should guarantee his work in writing for a reasonable time and should agree to realign the home in approximately 60 days from the time of initial installation.

A properly maintained installation will, under normal conditions, prevent the home from settling and avoid the possibility of incurring expensive repair bills. If your home is not set and maintained in proper alignment as it was designed, or if it is not set on a completely firm and proper foundation system as described in this instruction, certain portions of your home will undergo undue and unnatural structural strain. Such structural strain could lead to problems later. Typically, these problems appear in the form of the buckling, loosening or separating of wall coverings, exterior siding, floors and their covering, ceilings, metal roof membranes and miscellaneous fixed original fixtures and cabinets of the home. Other problems relating to installation include the leaking of doors, windows, roofs, ceilings, and exterior walls due to the loss of the weather seals in these areas, as well as the loss of proper operation of windows and doors and their locking devices.

Applicable local or state laws may have greater or more stringent requirements than outlined in this manual, which must be complied with to obtain or regain the right to occupy the home. Therefore, we recommend that you consult with regulatory agencies in your area for codes which may require license and/or permits.

It is of the utmost importance that the electrical feeder connection to your home be installed in accordance with the instructions in this manual and in the diagram located at the electrical distribution panel with the home. **IT IS**

## INSTALLATION NOTES

# FOUNDATION SYSTEM

## FOUNDATION SYSTEM

### 1-1 Site Preparation

1-1.1 Your home has been designed with an integral floor system, which must be supported by individual supports or piers. These supports are as important to the correct and proper installation of your home as is the foundation for a multi-story commercial building. Any shortcoming in the support of your home will manifest itself in the form of settling, which was discussed in the introduction to these instructions.

1-1.2 The home manufacturer is not liable for damages or defects in installation or those caused by improper installation or in delivery by other than manufacturer's drivers; nor by acts of God or by damage. They are also not liable for defects caused by use of home as a moving van for weights exceeding the original delivery weight, or those caused by improper foundation, pad, piers, or lack of proper alignment.

1-1.3 All manufactured home installations shall comply with the requirements of these instructions or the requirements of local zoning ordinances and conditional use permits established by local authorities pertaining to any health and/or safety codes, whichever is more stringent.

compacted to at least 95 percent of its maximum relative density. This is necessary to prevent the soil from settling and damaging the foundation or allowing it to settle.

1-2.2 Climatic conditions must also be taken into consideration when installing the foundation. The bottom of the footing on which the pier is to be placed must be located below the local frost line. If you elect to locate your footings above the local frost line, your foundation will be susceptible to the heaving and resultant-settling action caused by frost. The symptoms of heaving are the same as for settling and can cause damage to your home. Consult with the building officials in your area to determine the maximum depth of the local frost line prior to installing your footings.

1-2.3 It is also very important that the house be properly skirted to conserve energy and provide added comfort. The skirting must be installed in a manner, which prevents it from collecting the water from rainfall, melting snow and ice, which cascades down the sides of the home. The area beneath the home must be ventilated. The minimum vent area shall be 1 square foot of net free area (area of opening in grillwork) for every 150 square feet of area under the

## FOUNDATION SYSTEM (continued)

Step 3: Multiply the required area (SQ. FT.) by 144 to determine the required net free area in SQ. inches EX:  $10.06 \times 144 = 1448.6$  SQ. IN.

Step 4: Determine the net free area in SQ. inches of the ventilators you wish to use. This information is stamped into or molded on to each ventilators (i.e. 35.5 SQ. IN., 45 SQ. IN. and etc.).

Step 5: Divide the net free area of the ventilator (SQ. IN.) into the total area required (SQ. IN.) to determine the number of ventilators required for the home's foundation. Ex:  $1448.6 / 35.5 = 40.8 = 41$  ventilators required.

Typical Number Required for the Example

Vent Area	30	35	40	45	50	55
No. REQ.	49	41	37	33	29	27
Vent Area	60	65	70	75	80	85
No. REQ.	25	23	21	20	19	17

**1-2.5** Install an equal number of ventilators along each side of the home. One ventilator should be within 4 feet of each end of the home with the remainder

8-inch depth to extend below the local frost depth, pre-cast footings are not recommended. The concrete must have a minimum 28-day compression strength of not less than 2,000 pounds per square inch. The footings must be flat on the top surface to allow for the proper bearing of the single or double stack concrete block piers. Footings, which have rounded top surfaces or are too small in size to allow the entire block pier to bear on them, are unacceptable. The maximum allowable slope on the top surface of the footings, in any direction, will be 1/8 of an inch per 12 inches of footing size. In all cases the footings must extend below the maximum local frost line. Consult with your local building officials to determine the maximum depth of the local frost line prior to installing your footings. The stability of your home is dependent on the quality of the footing/pier system and the properly installed ground anchors addressed later in this instruction. You may refer to Figure 1-7 for an example of the wide variance of average frost depths throughout the United States.

### CAUTION

**IF THE FOOTINGS ARE NOT PLACED BELOW THE MAXIMUM LOCAL FROST LINE AND**

## FOUNDATION SYSTEM (continued)

larger than 4 feet in width in a manner to support the concentrated loads, which occur at the sides of these openings and at the sides of exterior doorways when required by the door manufacturer. Construction of these footings will be the same as the footings placed under the main steel I-beams of the unit.

### 1-4 Piers

**1-4.1** All piers used to support your home must have the capacity to carry the vertical load of the home itself, its contents, and temporary roof loads such as snow, ice, or rain; separately or in any combination to the footings below.

**1-4.2** The piers shown in Figures 1-8 through 1-12 are made of concrete blocks and are a nominal 8 inches by 8 inches by 16 inches conforming to ASTM C-90. With the open cells vertical, stacked true, and plumbed with a maximum horizontal block offset of 1/2 inch from the top to the bottom of the pier.

**1-4.3** Single stacked block piers (Figures 1-8 and 1-9) must be installed with the 16-inch dimension perpendicular to the main I-beam of the frame. The piers must be covered with a nominal 2-inch by 8 inch

**1-4.7** Once the allowable soil bearing pressure has been determined, it will be necessary to determine the roof load design zone for your home and site location by referring to the Structural Design Basis Certificate, Design Roof Load Zone Map, posted in your home.

**1-4.8** The maximum allowable spacing between the piers is 8 feet on centers. You will need to determine whether you want to use only I-beam blocking or a combination of I-beam and perimeter blocking. (The use of perimeter blocking does not eliminate the need for support of side wall openings in excess of 4 feet in width or at exterior doorways where required by the door manufacturer.) The choice is up to you.

**1-4.9** Select the chart which applies to the width of your home and the roof load rating (20 PSF, 30 PSF, 40 PSF, or 60 PSF) and determine the footing size required for the soil bearing capacity of your site based on pier spacing and location. The greater the soil bearing capacity, the smaller the footing required. Footings may be square or round as you prefer but must have a minimum bearing area as called for in the chart and must fully support the pier placed upon it.

## FOUNDATION SYSTEM (continued)

The concrete must have a minimum 28-day compression strength of not less than 3,000 pounds per square inch with a slump of 4. It must be noted that such a pad floats on the earth's surface and is susceptible to frost heave and settling. Spring and fall re-alignment may be needed.

**1-5.3** The support and anchoring systems described and illustrated in this manual have been designed by a registered professional engineer or architect as required by the Manufactured Home Construction and Safety Standards. Should you find that these designs are not in keeping with your wishes or special site conditions, and you decide to have these systems designed by a registered professional engineer or architect, you must make certain that the design meets the requirements of the above named standard and that the site work is inspected by the engineer or architect to ensure compliance with the design.

**1-5.4** A proprietary foundation and/or anchoring system may be used to support the home for gravity loads (i.e. roof, wall, and floor including safety factors) and anchor the home against wind loads (including uplift and up lift including safety factors)

### **1-6 Proper Alignment**

**1-6.1** A manufactured home is cambered and reverse cambered along the I-beam as part of the engineering for the stress of transportation. Likewise, it is cambered from side to side for transportation stresses and live load as well as dead load stresses. Consequently, siding and flooring and rooflines will have variations, due to camber lines, which are normal. The home should be blocked and shimmed on the foundation to follow natural camber and reverse camber lines as the home is received from the factory.

**1-6.2** There are many accepted methods of aligning homes; however, the method used in this manual will utilize a "liquid level." A liquid level is simply a plastic reservoir holding a colored liquid with approximately 80 feet of clear plastic tube attached. This device operates on the principle that water seeks its own level. See Figure 1-20.

### **1-7 Support Locations**

**1-7.1** The support system described and illustrated in this manual allows for each I-beam on

## FOUNDATION SYSTEM (continued)

perimeter of the home was not designed to withstand the point loading of such contact.

**1-8.1** The site must be properly prepared as instructed earlier in this manual prior to positioning your home. All concrete work must be completed, all ground anchoring devices must be installed, and all service facilities for water, gas, electrical, and drain connections must be complete.

**1-8.2** If any trenching must be accomplished for long run drain lines it should be performed at this time. Any other items, which could be difficult to install after the home is positioned, should be placed in their proper locations at this time.

**1-8.3** Select the first section of the home to be set and move it into position on the prepared site.

### **1-9 Hinged Roof Deployment**

**1-9.1** Should your home have a hinged roof it will need to be raised and assembled prior to blocking the home in its final resting position through the following procedure (See Figure 1-21, 1-22 & 1-23).

**1-10.1** Use only jacks which are in good working condition having a rating of 12 tons or more.

**1-10.2** To distribute the concentrated loads created by the jacks, a steel plate or pad should be placed between the jacks and the steel I-beam, C-channel, or tube. See Figure 1-24.

**1-10.3** Use a solid support under the jack base to keep the jack from settling or tipping. Excessive or non-uniform jacking during the installation process can cause the home to be racked or twisted. This could result in serious structural damage to the home, thus voiding your warranty.

**1-10.4** Always follow the sequence outlined below to avoid overstressing structural members when jacking the home into position.

### **WARNING**

**HOMES WEIGH MANY TONS. SUPPORT BLOCKING SHOULD BE USED TO SAFEGUARD WORKERS AND THE STRUCTURE DURING ALL INSTALLATION PROCEDURES. NEVER ALLOW ANYONE UNDER THE HOME UNLESS BLOCKING**

## FOUNDATION SYSTEM (continued)

### SYSTEM AND THEREFORE IS INHERENTLY DANGEROUS

**1-11.1** If a full concrete pad has not been installed at the site, concrete footings should have been installed as described earlier in this manual corresponding to the spacing called for in the tables.

**Reminder**, all exterior side wall openings greater than 4 feet wide must be supported with piers. These supports are in addition to any perimeter blocking you may have elected to use. Additionally, the exterior door manufacturer may require that the side of the doorframe be blocked.

**1-11.2** Raise the hitch of the unit approximately 2 inches higher than its final position with a heavy-duty hydraulic jack. Adequate blocking should then be placed under the hitch assembly to prevent its falling to the ground if the jack assembly should fail.

**1-11.3** Place a 12-ton jack under each main frame member just ahead of the front spring hangers and to the rear of the rear spring hangers (See Figure 1-25). These jacks must be operated simultaneously to raise the home until it is approximately 2 inches higher than its final position. Make certain to use jacking plates to

escaping when the end of the hose is lowered below the level of the fluid in the reservoir.

**1-11.8** By placing the end of the plastic tube at the first pier, raising the end of the tube above the bottom of the steel frame, and opening the valve will indicate its position in relation to the chosen resting height. The top of the pier is then shimmed to match the level of the liquid in the tube. Remember that tapered hardwood shims must be added from each side of the frame member so that the frame is not resting on an incline. (See Figures 1-27 through 1-31). When this operation is complete, each succeeding pier is installed in the same manner. This operation will be much simpler if the top surface of all the concrete footings have the same elevation.

**1-11.9** The safety support placed in the A-frame area should now be removed along with any supports, which were placed in the axle area when the wheels may have been removed.

**1-11.10** The jacks are then lowered together allowing the frame to rest on the tapered hardwood shims on top of the concrete block piers.

## FOUNDATION SYSTEM (continued)

through the ridge beam. If the crossover duct system requires the use of a connection seal, make certain that it is in place prior to joining the sections.

### NOTE

**THE JOINT FORMED BY THE CONNECTION OF THE SECTIONS MUST BE TIGHT TO LIMIT ANY AIR INFILTRATION. SPECIAL CARE MUST BE TAKEN TO ASSURE THAT THIS CONNECTION IS CORRECT. THE MAXIMUM ALLOWABLE GAP BETWEEN THE HOME SECTIONS AT ANY POINT IS ONE HALF OF AN INCH. THE GAP SHOULD BE MADE TO BE TIGHT BY ADDING CONTINUOUS SHIMS.**

**1-11.14** Position the next home section alongside the first so that the section ends are even at the floor line.

**1-11.15** Whether the floors are several inches apart or several feet, it is recommended that a roller system be used to complete the positioning of the second section. The roller system consists of dollies, which utilize rollers and are so constructed that hydraulic jacks can be positioned on the rollers and under the

length of the home. Any holes cut in the bottom covering must be repaired as described later on in this instruction.

**1-11.18** Additional floor sections should be positioned and aligned with the other floor sections as described above. The additional floor sections must be fastened as described above.

**1-11.19** Inside the home, the ceiling panels and the endwalls on each section must align with each other. If the sections are not in proper alignment, they may be adjusted by shifting the house. This is done by raising the corner of an endwall that needs to go in at the top. This will cause the ceiling on the opposite side to move forward as illustrated in Figure 1-34. When the endwalls become flush, fasten them together at the front and back end of the house using No. 8" x 3" screws, 16 inches on center, driven from alternate sides at a 30 degree angle to the wall. A fastener must be within 6 inches of both the top and bottom plate of the endwall. Once the endwalls are secured, make sure the roofs are aligned and that the ceilings line-up. If they are still off, shift the section a little more to bring the roofs and ceilings into alignment.

## FOUNDATION SYSTEM (continued)

**1-11.22** In those cases where the connection is made through the roof system, such as the mating gables, drive No. 8 x 3 inch flat head screws at a 60 to 90 degree angle so they penetrate the truss on each side of the joint. Two screws must be installed at each connection, one from either side, 24 inches on centers for wind zone I and 18 inches on centers for wind zone II. Remember, the fasteners are used to keep the sections together and must **NOT** be used as a way to pull the roof sections together.

**1-11.23** The electrical and water supply systems cross connection can now be made. The electrical connections have been identified and numbered. Any holes cut in the bottom-board must be repaired. Refer to the Utility Systems section of this manual for the procedures to be followed when making the cross connections.

**1-11.24** The alignment of the home can be fine tuned by driving the tapered hardwood shims between the frame and the piers to even out any low areas caused by the compressive weight of the home on the piers.

ground anchoring system can be installed. The purpose of the ground anchoring system is to provide resistance to counter the lateral and uplift forces of the wind which can move the unanchored home off its supporting system causing structural damage. Multiple story homes and homes with increased roof slopes may have reduced anchor spacings.

### CAUTION

**IF THE ANCHORING SYSTEM IS NOT PROPERLY INSTALLED, THE INTEGRAL FLOOR SYSTEM OF THE HOME COULD ACTUALLY BE DAMAGED OR THE ALIGNMENT OF THE HOME CHANGED. FOLLOW THE EQUIPMENT MANUFACTURERS RECOMMENDATIONS.**

**1-12.2** Ground anchor straps or cables should be alternately tensioned on opposite sides of the home to avoid the problems mentioned above.

### **1-13 Pre-Anchoring Inspection**

**1-13.1** At this time all furniture, carpet, fixtures, or other loose items should be installed. All shipping brackets and other items should be installed on appliances

## FOUNDATION SYSTEM (continued)

carpeting, insulation, wiring, sinks, tubs, toilets, weather-stripping and miscellaneous fixed original fixtures of the home;

**1-14.3** Leaking windows, doors, roofs, ceilings, walls, floors, seams, and junctions generally caused from rain, snow, or moisture.

**1-14.4** Improper closing, binding, and sagging of windows, cabinets, and interior and exterior doors; and

**1-14.5** Malfunctioning of plumbing, water outlets, lighting fixtures and electric heating and air conditioning systems.

### **1-15 Porches and Decks**

**1-15.1** Certain porch and deck framework must be supported along its outer perimeter and at the vertical columns along the porch. These supports are to be of the same construction as the piers described earlier in this instruction and must be located as shown on the supplement inserted into the back of this manual.

**1-15.2** A hinged porch installed on the end of a

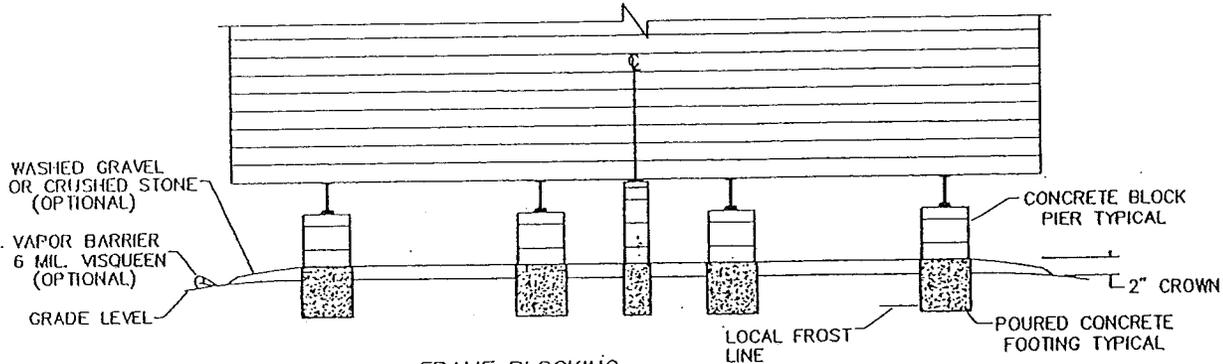
this manual or as footings and column posts as described on the individual home foundation plans and detail drawings.

**1-16.2** Due to the random nature of fireplace placement and masonry application the location of such installations cannot be predetermined on each home produced. Additional supports should be added to each I-beam of the home frame which intersects the front enclosure wall and where the wall meets the mating line or exterior wall of the home.

### **1-17 Curtain Walls**

**1-17.1** The support system for the home consists of a series of concrete footings and piers, or similar alternate construction, as described in this manual. Where the area beneath the home is to be enclosed with a curtain wall of wood, poured concrete, concrete block, brick, or other material construction, which would be capable of supporting some part of the weight of the home, the wall must be supported by a properly sized footing, which has been located below the local frost line. Should the footing be placed above the frost line, your home could become misaligned and damaged by unseen forces.

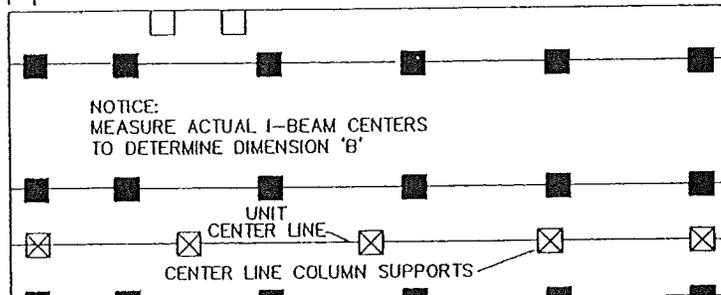
FIGURE 1-1



FRAME BLOCKING

NOTE: PERIMETER BLOCKING IS REQUIRED AT ALL EXTERIOR OPENINGS EXCEEDING 4'-0" IN WIDTH. (PATIO DOORS, LARGE WINDOWS, ETC.)

1'-6" MAX. TYP. | 8'-0" O.C. MAX. TYP. | 1'-6" MAX. TYP.



NOTICE: MEASURE ACTUAL I-BEAM CENTERS TO DETERMINE DIMENSION 'B'

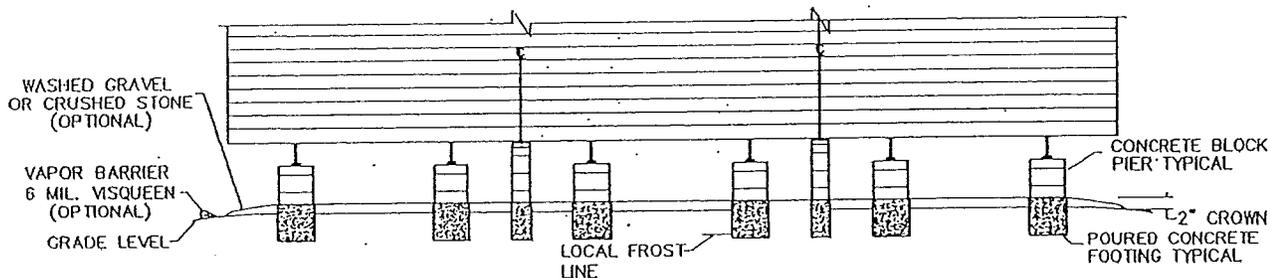
DIM. 'A'

DIM. 'B'

DIM. 'A' REFER TO CHARTS 1-1, 1-2, 1-3, 1-4, & 1-6  
 DIM. 'A' FOR FOOTINGS, SOIL TYPES AND DIMENSIONS

FIGURE 1-2

FIGURE 1-4



FRAME BLOCKING

NOTE: PERIMETER BLOCKING IS REQUIRED AT ALL EXTERIOR OPENINGS EXCEEDING 4'-0" IN WIDTH. (PATIO DOORS, LARGE WINDOWS, ETC.)

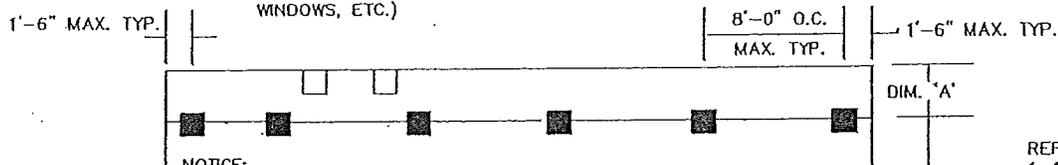
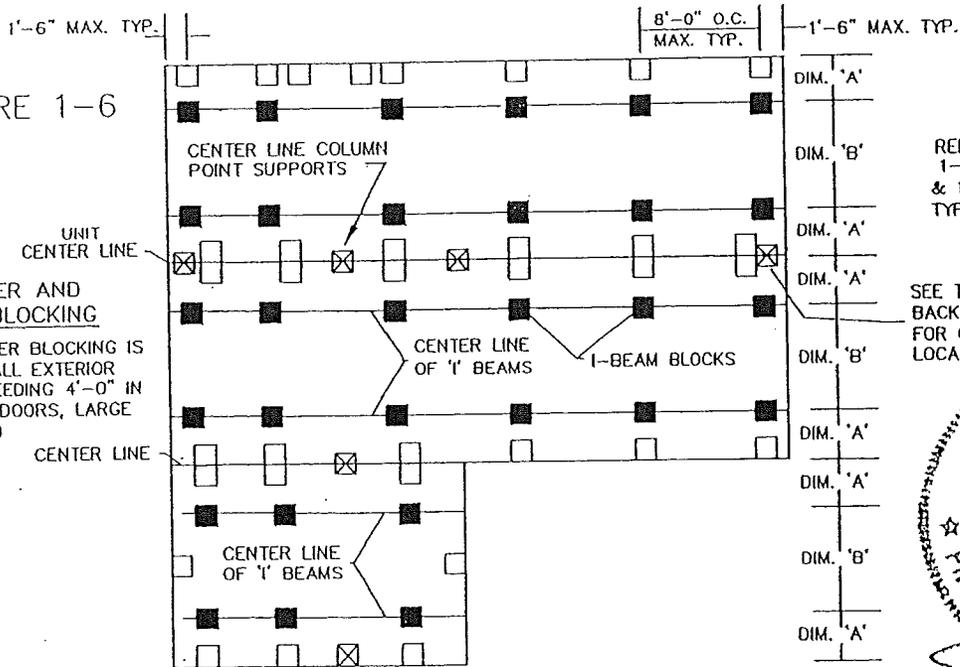


FIGURE 1-5

REFER TO CHARTS

FIGURE 1-6



**PERIMETER AND FRAME BLOCKING**

NOTE: PERIMETER BLOCKING IS REQUIRED AT ALL EXTERIOR OPENINGS EXCEEDING 4'-0" IN WIDTH. (PATIO DOORS, LARGE WINDOWS, ETC.)

REFER TO CHARTS  
1-1, 1-2a, 1-3a, 1-4a, 1-5a  
& 1-6a FOR FOOTINGS, SOIL  
TYPES AND DIMENSIONS

SEE THE DRAWING IN THE  
BACK OF THIS MANUAL  
FOR COLUMN SUPPORT  
LOCATIONS

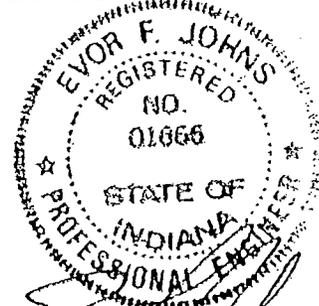


CHART 1-1

		82 1/2" I-BEAM		99 1/2" I-BEAM	
--	--	----------------	--	----------------	--

CHART 1-2a

PIER & PAD SCHEDULE DOUBLEWIDE 20 POUND LIVE LOAD WITH PERIMETER BLOCKING												
SOIL CAP.	LEGEND	PIER LOC.	23 FEET WOE 8'-0" O.C.		24 FEET WOE 8'-0" O.C.		26 FEET WOE 8'-0" O.C.		27/28 FEET WOE 8'-0" O.C.		32 FEET WOE 8'-0" O.C.	
			REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)	REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)	REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)	REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)	REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)
1000	■	FRAME	1813	300	1863	308	1988	329	2063	342	2388	395
	□	PERIMETER	2028	336	2138	354	2413	400	2578	427	2839	470
1500	■	FRAME	1813	191	1863	197	1988	210	2063	218	2388	252
	□	PERIMETER	2028	214	2138	226	2413	255	2578	272	2839	300
2000	■	FRAME	1813	140	1863	144	1988	154	2063	160	2388	185
	□	PERIMETER	2028	157	2138	165	2413	187	2578	199	2839	220
2500	■	FRAME	1813	111	1863	114	1988	121	2063	126	2388	146
	□	PERIMETER	2028	124	2138	131	2413	147	2578	157	2839	173
3000	■	FRAME	1813	91	1863	94	1988	100	2063	104	2388	120
	□	PERIMETER	2028	102	2138	108	2413	122	2578	130	2839	143

CHART 1-3

PIER & PAD SCHEDULE DOUBLEWIDE 30 POUND LIVE LOAD WITH NO PERIMETER BLOCKING												
SOIL CAP.	LEGEND	PIER LOC.	23 FEET WOE 8'-0" O.C.		24 FEET WOE 8'-0" O.C.		26 FEET WOE 8'-0" O.C.		27/28 FEET WOE 8'-0" O.C.		32 FEET WOE 8'-0" O.C.	
			REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)	REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)	REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)	REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)	REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)
1000	■	FRAME	4770	790	4950	820	5400	894	5670	939	6330	1048
1500	■	FRAME	4770	504	4950	523	5400	570	5670	599	6330	668
2000	■	FRAME	4770	369	4950	383	5400	418	5670	439	6330	490

CHART 1-4

PIER & PAD SCHEDULE												DOUBLEWIDE 40 POUND LIVE LOAD WITH NO PERIMETER BLOCKING											
SOIL CAP.	LEGEND	PIER LOC.	23 FEET WIDE 8'-0" O.C.		24 FEET WIDE 8'-0" O.C.		26 FEET WIDE 8'-0" O.C.		27/28 FEET WIDE 8'-0" O.C.		32 FEET WIDE 8'-0" O.C.												
			REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)	REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)	REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)	REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)	REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)											
1000	■	FRAME	5300	878	5500	911	6000	994	6300	1043	7033	1165											
1500	■	FRAME	5300	560	5500	581	6000	634	6300	665	7033	743											
2000	■	FRAME	5300	410	5500	426	6000	464	6300	488	7033	544											
2500	■	FRAME	5300	324	5500	336	6000	366	6300	385	7033	429											
3000	■	FRAME	5300	267	5500	277	6000	302	6300	318	7033	354											

CHART 1-4a

PIER & PAD SCHEDULE												DOUBLEWIDE 40 POUND LIVE LOAD WITH PERIMETER BLOCKING											
SOIL CAP.	LEGEND	PIER LOC.	23 FEET WIDE 8'-0" O.C.		24 FEET WIDE 8'-0" O.C.		26 FEET WIDE 8'-0" O.C.		27/28 FEET WIDE 8'-0" O.C.		32 FEET WIDE 8'-0" O.C.												
			REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)	REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)	REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)	REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)	REQ'D. PIER CAPACITY (LBS.)	REQ'D. FOOTING (SQ. IN.)											
1000	■	FRAME	1813	300	1863	308	1988	329	2063	342	2388	395											
	□	PERIMETER	3088	511	3238	536	3613	598	3838	635	4246	703											
1500	■	FRAME	1813	191	1863	197	1988	210	2063	218	2388	252											
	□	PERIMETER	3088	326	3238	342	3613	381	3838	405	4246	448											
	□	FRANC	1813	140	1863	144	1988	154	2063	160	2388	185											

CHART 1-6

SOIL TYPE (2)	ALLOWABLE PRESSURE (3) (POUNDS PER SQUARE FOOT)
ROCK, HARD PAN	4,000 AND UP
SANDY GRAVEL AND GRAVEL	2,000
SAND, SILTY SAND, CLAYEY SAND, SILTY CLAY, CLAYEY SILT	1,500
CLAY, SANDY CLAY SILTY CLAY, CLAYEY SILT	1,000
UNCOMMITTED FILL	SEE NOTE (4)
PEAT, ORGANIC CLAYS	SEE NOTE (4)

NOTES:

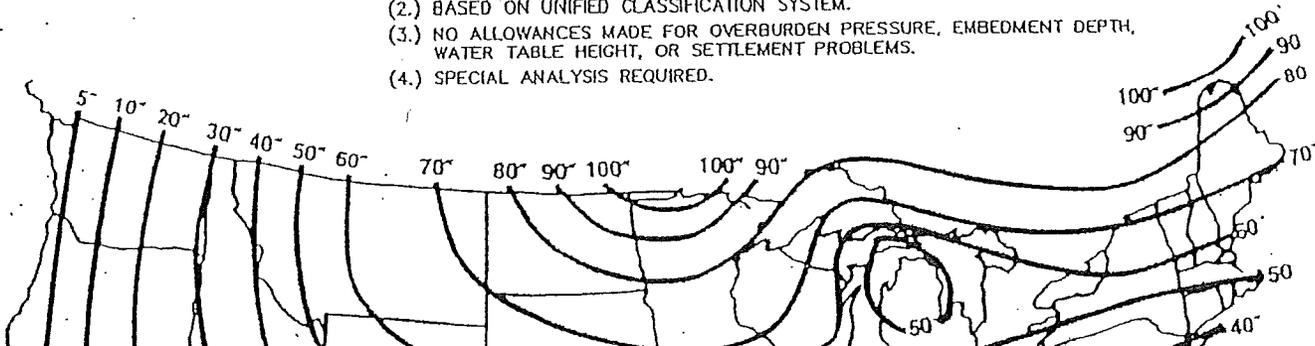
(1.) TO BE USED ONLY WHEN NONE OF THE FOLLOWING IS AVAILABLE:

- a. SOILS INVESTIGATION & ANALYSIS OF SITE.
- b. COMPLIANCE WITH LOCAL BUILDING CODES.
- c. COMPLETENT OPINION BY LOCAL ENGINEER OR BUILDING OFFICIAL.

(2.) BASED ON UNIFIED CLASSIFICATION SYSTEM.

(3.) NO ALLOWANCES MADE FOR OVERBURDEN PRESSURE, EMBEDMENT DEPTH,  
WATER TABLE HEIGHT, OR SETTLEMENT PROBLEMS.

(4.) SPECIAL ANALYSIS REQUIRED.

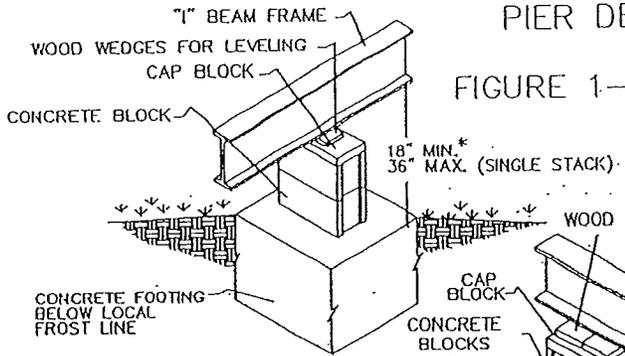


CENTER LINE FOOTING SIZE  
FOOTING SIZE  
(MINIMUM REQUIRED SIZE IN INCHES)

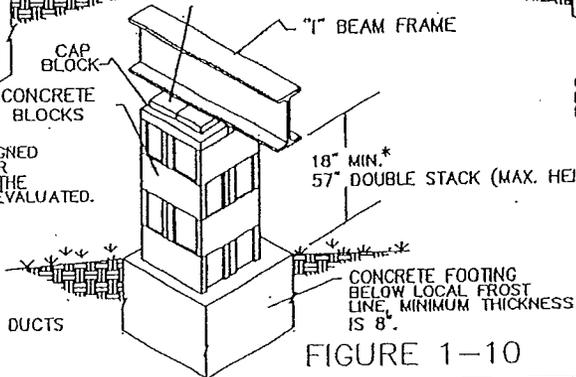
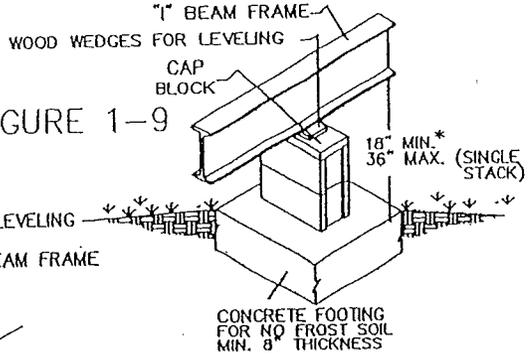
PIER CAPACITY POUNDS	SOIL CAPACITY				
	1000 PSF	1500 PSF	2000 PSF	2500 PSF	3000 PSF
600	16X16X6	16X16X6	16X16X6	16X16X6	16X16X6
800	16X16X6	16X16X6	16X16X6	16X16X6	16X16X6
1000	16X16X6	16X16X6	16X16X6	16X16X6	16X16X6
1500	16X16X6	16X16X6	16X16X6	16X16X6	16X16X6
2000	18x18x6	16X16X6	16X16X6	16X16X6	16X16X6
2500	20x20x6	16X16X6	16X16X6	16X16X6	16X16X6
3000	22x22x6	18x18x6	16X16X6	16X16X6	16X16X6
3500	24x24x6	19x19x6	17x17x6	16X16X6	16X16X6
4000	25x25x6	20x20x6	18x18x6	16X16X6	16X16X6
4500	27x27x8	22x22x6	19x19x6	17x17x6	16X16X6
5000	29x29x8	23x23x6	20x20x6	18x18x6	16X16X6
5500	30x30x8	24x24x8	21x21x6	18x18x6	17x17x6
6000	31x31x8	25x25x8	22x22x8	19x19x6	18x18x6
6500	33x33x10	26x26x8	23x23x8	20x20x6	18x18x6
7000	34x34x10	27x27x8	23x23x8	21x21x8	19x19x6

## PIER DETAILS

### FIGURE 1-8



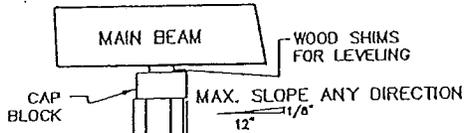
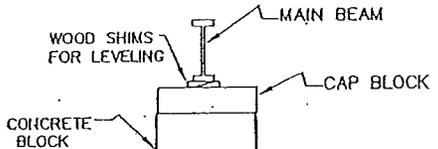
### FIGURE 1-9



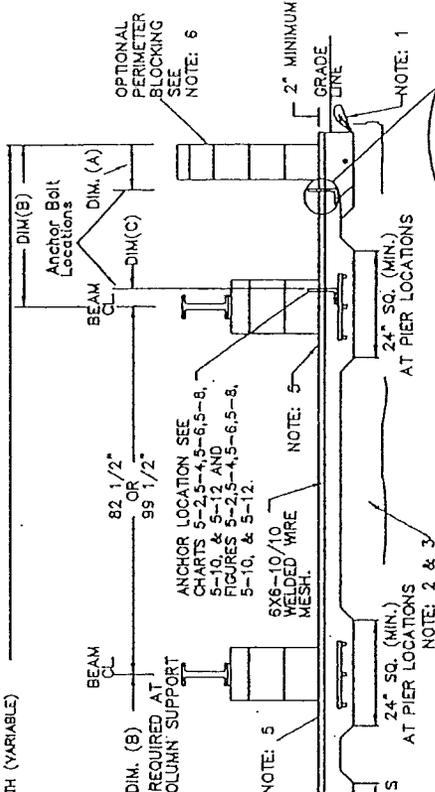
### FIGURE 1-10

- \* PIERS OF GREATER HEIGHT MUST BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER OR ARCHITECT. WHEN PIERS EXCEED 57' THE ANCHORING SYSTEM WILL NEED TO BE REEVALUATED.
- \* CENTERLINE PIERS MAY EXTEND ABOVE 57' ONLY TO MEET THE FLOOR TO SUPPORT THE COLUMN. PIERS ABOVE 57' MUST BE MORTARED.
- \* 18" MINIMUM RECOMMENDED FOR THE PROPER INSTALLATION OF EXTERIOR HVAC DUCTS AND ACCESS FOR SERVICING THE HOME.

## PIER OFFSET DETAILS



N UNITS  
 DIM. (B) (VARIABLE)

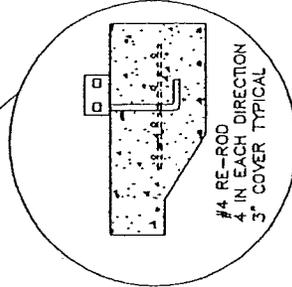


CONCRETE TO BE 3000 P.S.I.  
 MINIMUM WITH SLUMP OF 4.

PERIMETER BLOCKING AROUND  
 THE ENTIRE UNIT IS OPTIONAL,  
 YET IS REQUIRED AT ALL  
 EXTERIOR SIDEWALL OPENINGS  
 EXCEEDING 4'-0" IN WIDTH.  
 (PATIO DOORS, LARGE WINDOWS,  
 ETC.)

IN LOCATIONS SUSCEPTIBLE TO  
 FROST HEAVE, PERIODIC  
 REALIGNMENT WILL BE REQUIRED.

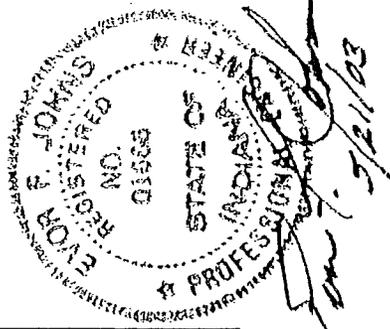
PAD MUST BE SLOPED FROM THE  
 CENTERS OUTWARD EACH DIRECTION  
 A MAXIMUM OF 1/8 INCH PER FOOT



ANCHOR LOCATION SEE  
 CHARTS 5-1, 5-3, 5-5, 5-7,  
 5-9, 5-11, 5-13 & 5-14,  
 AND FIGS. 5-1, 5-3, 5-5-7,  
 5-9, 5-11, 5-13 & 5-14.

"A"	DIMENSION "B"	DIMENSION "B"	DIMENSION "C"
82 1/2"	1-BEAM	99 1/2" (1-BEAM	
26 1/4"	(27 1/4")	17 3/4" (18 3/4")	2"
29 1/4"	(30 1/4")	20 3/4" (21 3/4")	2"
36 3/4"	(37 3/4")	28 1/4" (29 1/4")	2"
	(39 3/4")		2"
	(41 1/4")	(31 1/4")	2"
	(49 3/4")	32 3/4" (33 3/4")	2"
		42 1/4" (43 1/4")	2"

WEATHERING, SIDING, EAVE OVERHANG OR MATING  
 1/8 OF AN INCH DUE TO SITE INSTALLED WEATHER SEALS.  
 HAVING 6" EXTERIOR WALLS.  
 FINISHING ON EXTERIOR WALLS.



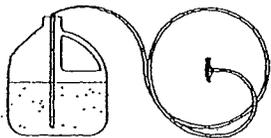
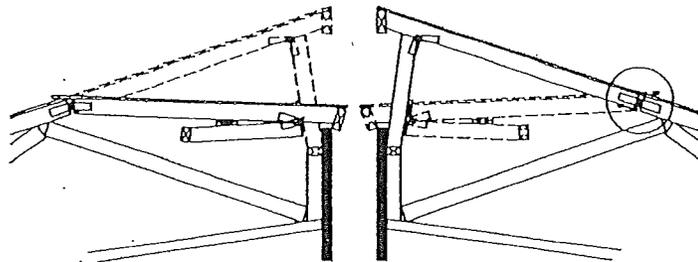
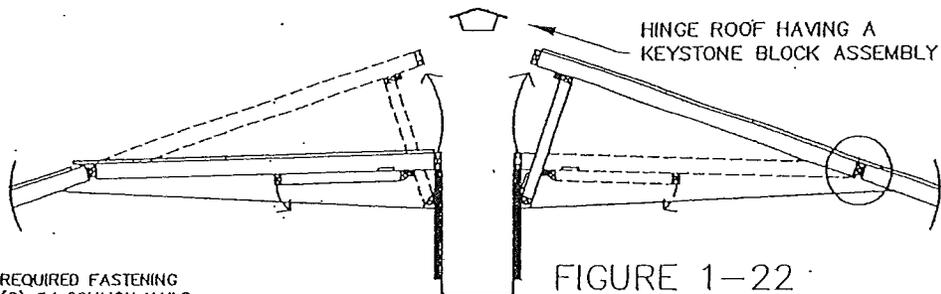


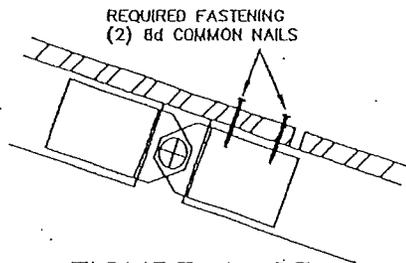
FIGURE 1-20



HINGE ROOF HAVING  
FULL RIDGE CONNECTION  
FIGURE 1-21



HINGE ROOF HAVING A  
KEYSTONE BLOCK ASSEMBLY  
FIGURE 1-22



REQUIRED FASTENING  
(2) 8d COMMON NAILS

FIGURE 1-23

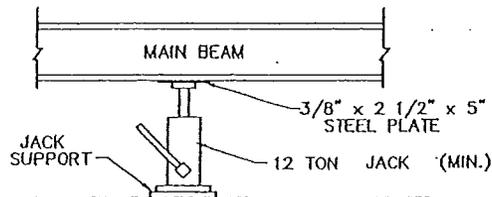


FIGURE 1-24

CORRECT  
SHIM  
PLACEMENT

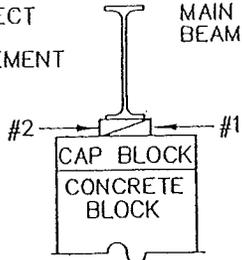


FIG. 1-27

GENERAL

1. INCORRECT INSTALLATION OF SHIMS MAY CAUSE THE OBJECT BEING SHIMMED TO BEND, CREATING A ROTATION IN THE FLANGE.
2. TO PROPERLY INSTALL THE SHIMS PLACE THE SHIMS AS SHOWN IN ORDER OF SEQUENCE.

CORRECT  
SHIM  
PLACEMENT

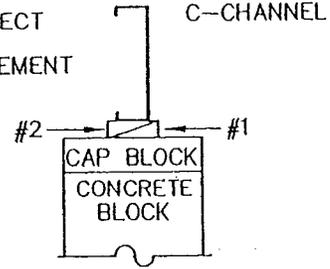


FIG. 1-28

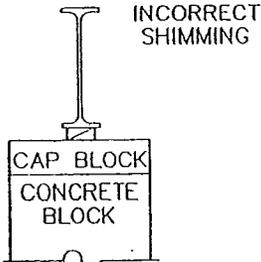


FIG. 1-29

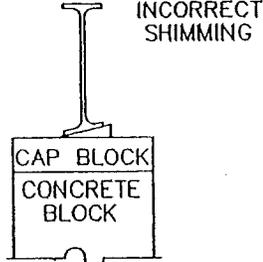


FIG. 1-30

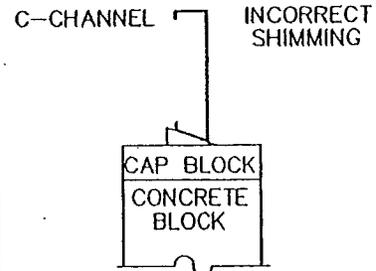
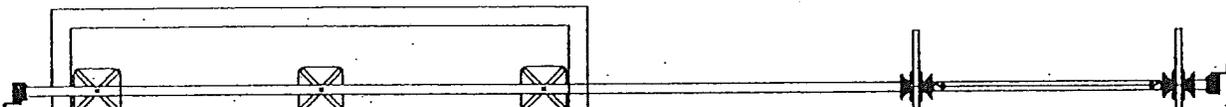
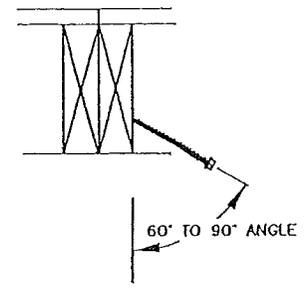
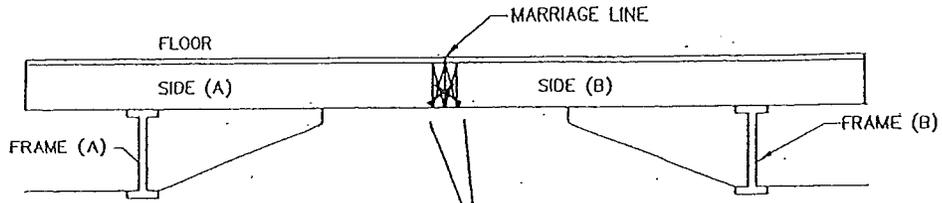


FIG. 1-31

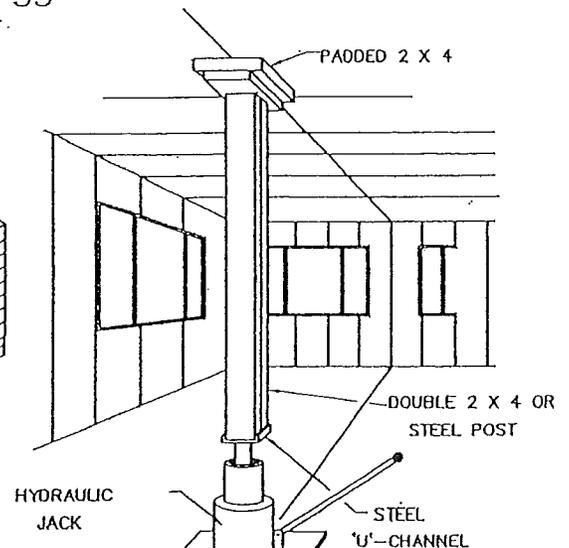
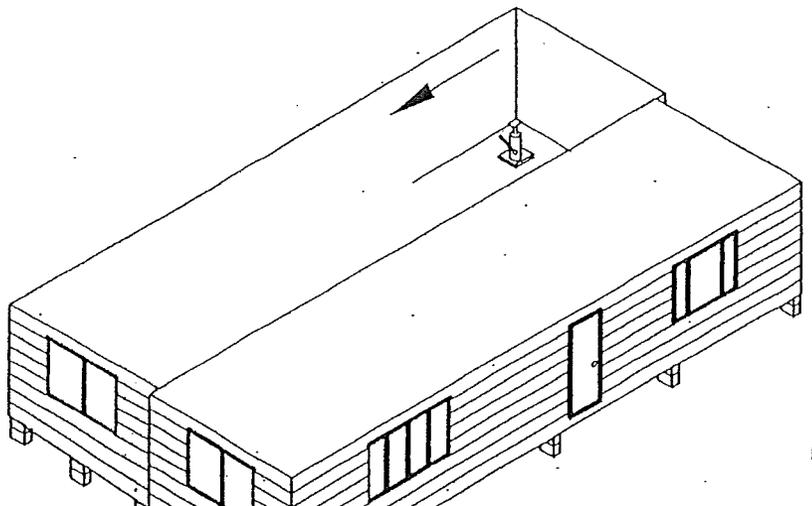


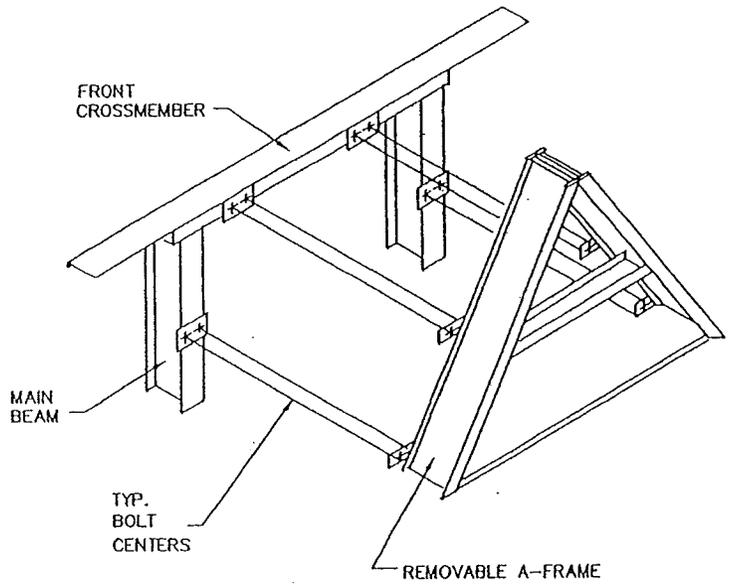


NOTE:  
TWO ADDITIONAL LAGS SHOULD BE  
ADDED AT EACH END OF THE FLOORS  
SO THAT THERE ARE 3 LAGS, 4" O.C.

3/8" X 3 1/2" OR 5" LAG SCREWS  
2'-0" O.C. ALTERNATING  
FROM SIDE TO SIDE.

FIGURE 1-33





(NOTE: AS VIEWED FROM UNDERNEATH THE HOME.)

## INSTALLATION NOTES

**EXTERIOR & INTERIOR  
CLOSURE**

## EXTERIOR AND INTERIOR CLOSURE

### 2-1 GENERAL

**2-1.1** Once the home has been set in place and properly supported, aligned to allow for proper operation of doors, windows, etc., and all utility cross connections have been completed, the exterior closure process can begin. Through this process the exterior coverings are completed providing a high degree of weather and vermin resistance. Any gaps, which remain along the mating surfaces of the home, must be filled and sealed before the coverings are applied. Failure to seal these spaces will result in air infiltration and higher energy usage.

### 2-2 ROOF CLOSURE

**2-2.1** Carefully fold down the hinged eave, as it applies, and fasten it to the exterior wall as shown in Figure 2-1. Where the eave is a ship loose assembly install it as shown in Figure 2-2. Where the home has a hinged roof (the roof should already be raised) the ridge assembly will need to be installed along the ridgeline as shown in Figure 2-4.

**2-2.2** Once the roof deck has been completed additional underlayment and shingles must be

**2-2.5** Install the top courses of shingles up to the gap and install the ridge vent over the shingles making sure to center the vent along the ridge line of the home (see Figure 2-5). The vent material must extend at least 12 inches past the opening on each end. Once the vent installation is complete, the shingle cap must be installed over the vent material. Follow the manufacture's printed instructions packaged with the vent material.

**2-2.6** In certain areas of the roof the shingles may have been secured with nail on strips to protect the shingles from the affects of transportation. These strips must be removed and the holes created by the fasteners filled with asphalt roof cement.

### 2-3 TRUSS WALL SUPPORT FOR ROOF SLOPES GREATER THAN 4/12

**2-3.1** After the hinged roof has been raised and set in place, insert the gable truss wall support framing into the opening in the truss as shown in Figure 2-4. Slide the side supports outward until they tighten against the truss framing or outlookers and fasten in place using (2) #8X3" screws to fasten the top of the

## EXTERIOR AND INTERIOR CLOSURE (Continued)

thermal systems of your home as well as guarding against the entrance of rodents.

**2-4.2** Should the bottom board become damaged in transit to your home site or by tearing or cutting during the installation of your home, or at any other time, it can be repaired by using a patch of like or equal material held in place by high tack spray adhesive.

**2-4.3** To repair a hole or tear in the bottomboard, cut a piece of like or equal material that is 4 inches larger than the widest point of the hole or tear. Spray both the patch and the area around the hole or tear with a high tack spray adhesive. Let the spray "air" for a short time as directed by the spray manufacturer and then apply the patch over the affected area so that there is a 2-inch overlap at any edge. Smooth the patch firmly in place to insure full contact.

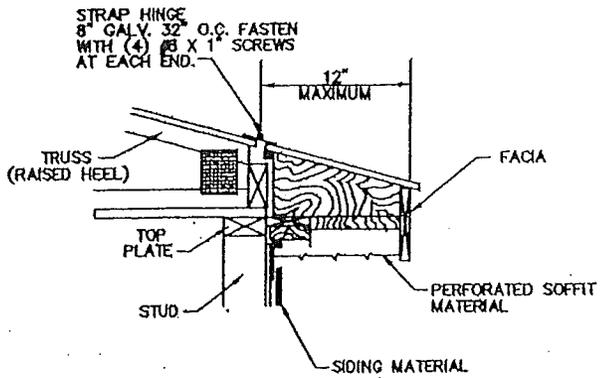
**2-4.4** To repair or tighten the fit around a pipe penetration in the bottomboard, cut a piece of like or equal material approximately 6 inches wider than the pipe in all directions. Cut a hole in the center of the patch that exactly matches the size of the pipe. If the patch will not slip over the pipe, cut a slit in the patch

dealer. These materials match the decor of the home and can be easily identified by matching the molding and/or paneling with the materials installed by the manufacturer.

**2-6.2** Figure 2-6 illustrates the various shapes of moldings provided with the home and their typical installation locations. Before installing moldings along the mating line of the exterior walls and ceilings, make certain that all the gaps are tightly filled with insulation or caulking material.

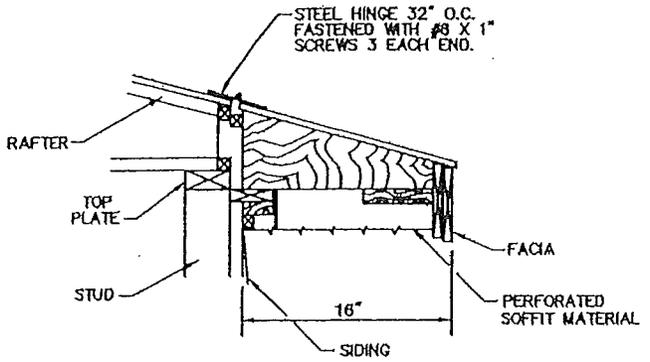
**2-6.3** Moldings may be stapled or nailed in place. Cover the staple and nail holes with color coordinated putty (not supplied by the manufacturer).

**2-6.4** Before extending the carpet and pad across the center line of the home, make certain that the floors are even and that any gaps have been tightly filled with insulation or other caulking material.



TYP. 12" HINGED EAVE.

WIND ZONE 1



TYP. 16" HINGED EAVE.

WIND ZONE 1

FIGURE 2-1

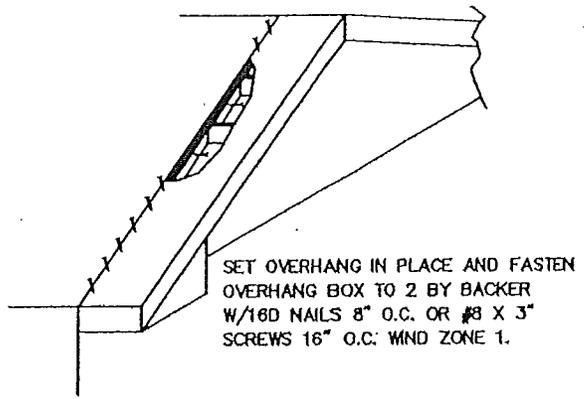


FIGURE 2-2

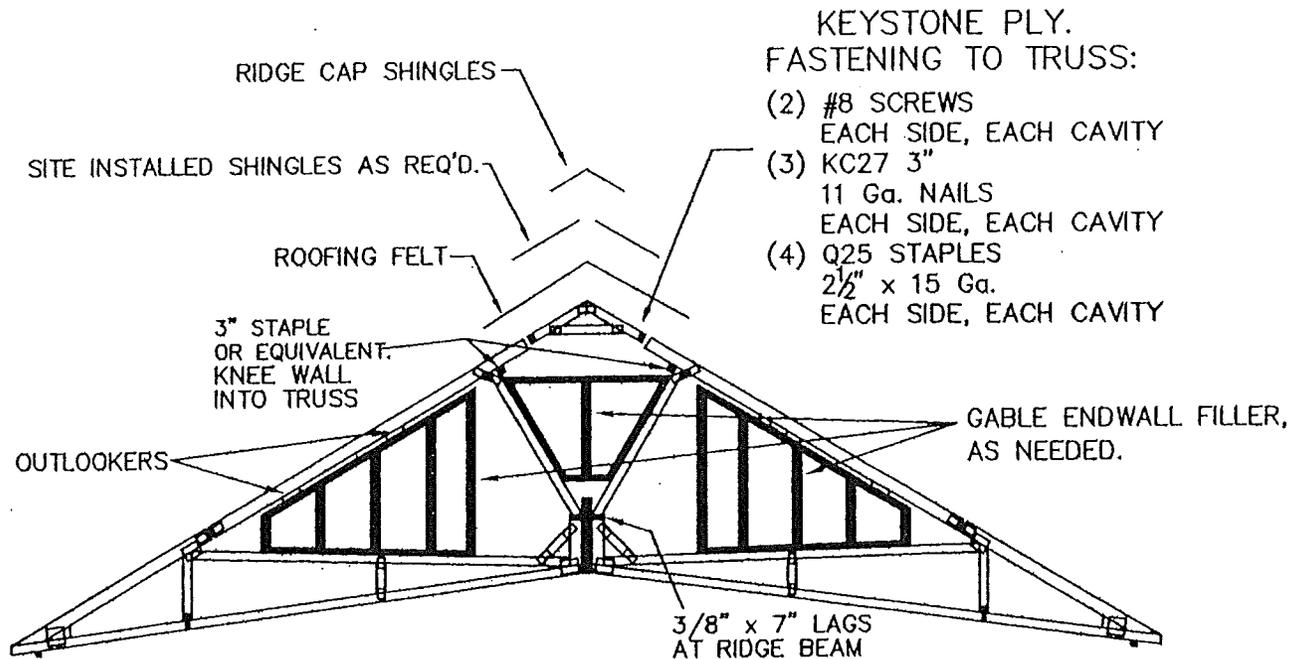


FIGURE 2-4

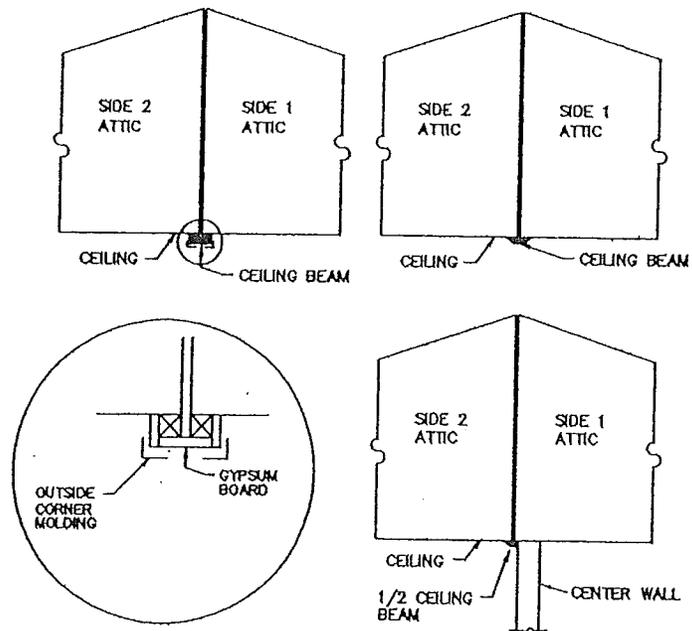
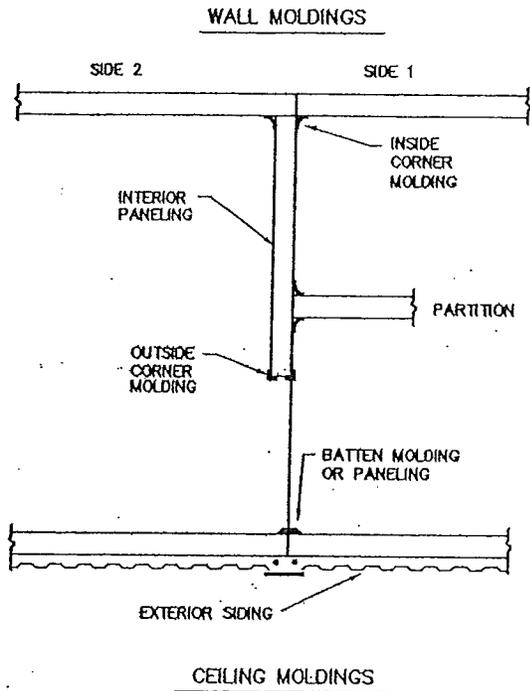


FIGURE 2-6

# UTILITY SYSTEMS

## UTILITY SYSTEMS

### **3-1 General**

**3-1.1** Before leaving the manufacturing facility, the gas, water, and drain line systems of your home were tested for tightness. In addition, the electrical system has been thoroughly tested. However, prior to connecting these systems to their supply, another test should be conducted to ensure that these systems are functioning properly and all fuel gas system piping should be examined for damage, which may have occurred in transit or on the dealer's lot.

**3-1.2** All connections and testing of these systems must be made by an experienced installer. It is nevertheless highly recommended that you make personal inspections, particularly of any exposed water or drain line connections for leaks, inside the home and underneath the home, and that you confirm that the electrical system has been properly grounded through the 4-wire feeder as described in the Electrical Systems section of this instruction.

**3-1.3** It must be possible to gain access to all utility connections through removable sections of the skirting or through access doors.

cause the water heater to drain, exposing the heating elements of electric water heaters causing them to fail.

**3-2.4** When the home sections are brought together, the water line crossover connections will need to be completed. To gain access to the water piping, simply remove the access panels located under the home (see figure 3-2) and fold the insulation back, exposing the water lines. Connect the piping, through the prepared opening in the perimeter rail, by screwing the fittings together, hot to hot and cold to cold. Red colored pipe or red text on the piping identifies the hot. When the connection has been completed, test the system for leakage (see paragraph 3-3). Once you are certain the connections do not leak, unfold the insulation and extend it through the crossover opening, making certain that the area between the piping and the bottom board is fully insulated to prevent the cold temperatures from reaching the piping. Complete the installation process by reinstalling the access panels, making certain they are tightly in place.

**3-2.5** All water heaters have an approved, fully automatic valve designed to provide temperature and pressure relief. These valves are provided with a

## UTILITY SYSTEMS (continued)

**3-2.6** If your home is equipped with an uninsulated or vented (to allow for combustion air for a gas water heater) exterior water heater door, the exposed water lines within the water heater compartment must be insulated.

### CAUTION

**DO NOT BLOCK OR SEAL THE COMBUSTION AIR VENTS IN THE WATER HEATER DOOR.**

### 3-3 Procedure for Testing the Water System

**3-3.1** Testing the water distribution system can be performed by subjecting this system to a hydrostatic pressure of 100 pounds per square inch for 15 minutes without loss of pressure.

### CAUTION

**IF AIR ONLY IS TO BE USED IN TESTING THE WATER SUPPLY SYSTEM, THE WATER HEATER SHOULD BE ISOLATED FROM THE TEST.**

- 1.) Turn off water heater.
- 2.) Turn off water supply.
- 3.) Open all faucets throughout home.
- 4.) Disconnect water supply inlet.
- 5.) Open water heater drain valve, after attaching a hose to the valve so the water drains outside the home.
- 6.) Let water supply system and water heater drain completely.
- 7.) Flush toilets and drain water tanks completely.
- 8.) Close all water faucets with the exception of one.
- 9.) Connect 30 pounds per square inch air supply to water inlet connection.
- 10.) With the air supply on the system, open one faucet at a time throughout the home.

## UTILITY SYSTEMS (continued)

**3-5.2** When connecting the drains into one outlet or routing the unit drain to the site drain, the system must be properly assembled, sloped, and supported. It is recommended that all the piping be cut and pre-assembled to make certain of fit prior to final assembly. A slope of 1/4 inch per foot of drain length is required for the drain system. However, where it is impractical due to the structural features or arrangement of the home, a slope of not less than 1/8 inch per foot is allowable providing there is a full-size clean out installed at the upper end. This reduced slope applies only to the piping, which brings the unit drain to the building site drain.

**3-5.3** The drainage system must be properly supported to ensure proper slope and to eliminate any damage to the system or the possibility of a low spot developing which could cause the waste to back up. The supports must be located a maximum of 48 inches on center. Straps used to support the drain from the floor of the home must be at least 3/4 inches in width, .020 inches in thickness, and must be made to resist corrosion. Other approved hangers and supports may also be used in accordance with their listings (See Figures 3-3, 3-4 & 3-5, and any instructions which may have been supplemented into the rear of this manual)

listed electric heat tapes where insulation alone is inadequate.

### CAUTION

**ONLY HEAT TAPES LISTED FOR USE WITH MANUFACTURED HOMES MAY BE USED. THEY MUST BE LISTED FOR USE WITH THE TYPE OF MATERIAL USED IN THE DRAINAGE SYSTEM AND MUST BE INSTALLED IN ACCORDANCE WITH THEIR INSTALLATION INSTRUCTIONS. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN AN ELECTRICAL HAZARD OR SHORT CIRCUIT, WHICH COULD CAUSE A FIRE.**

### **3-6 Gas System Connection and Testing**

**3-6.1** The gas piping system in this home is designed for a pressure not exceeding 14 inches water column (1/2 psi) and not less than 10 inches water column (3/8 psi).

**3-6.2** On sectional homes, which incorporate gas appliances in more than one section, the gas crossover line will be provided between the home sections. This crossover line will be located below the

## UTILITY SYSTEMS (continued)

**3-6.5** The gas piping system must be tested **two ways:**

**3-6.6** Piping only - all appliances isolated.

**3-6.7** Entire system - with appliances.

1) Piping only test:

- a) Isolate all appliances from the system by closing all appliance shut-off valves.
- b) Pressure must be measured with a mercury manometer or slope gauge calibrated in increments of not more than 1/10 pound.
- c) Pressurize the system to 3 pounds per square inch.
- d) Isolate the pressure source from the system.
- e) The gauge must stand 10 minutes without a pressure drop.
- f) Release pressure and open all appliance shut-off valves.

2) Entire system test:

**3-6.9** Gas appliance vents (flues) shall be visually inspected to ensure that they have been connected to the appliance and roof jacks are installed and have not come loose due to transit vibrations. Any portions of a gas vent that was not assembled due to shipping height restrictions must be installed and inspected.

**3-6.10** The gas connection to the gas supply should be made by an authorized representative of the gas company (See Figure 3-7).

### **3-7 Oil Piping Connection and Testing**

**3-7.1** Homes that are equipped with oil burning furnaces must have the oil supply piping installed on site. Piping is not supplied by this company.

**3-7.2** The furnace manufacturer's instructions must be consulted for proper pipe sizing and installation procedures.

**3-7.3** In addition, unless the home is installed in a park with a centralized oil distribution system, an oil storage tank of suitable capacity must be installed outside the home in a location accessible for service

## UTILITY SYSTEMS (continued)

**3-7.7** An accessible and approved manually operated shut-off valve must be installed at the oil tank outlet. Additionally, it is recommended that a suitable filter be installed in the fuel line near the tank to help trap dirt and water.

### NOTE

**ALL OIL STORAGE TANK AND OIL PIPING INSTALLATIONS MUST MEET ALL APPLICABLE LOCAL REGULATIONS AND SHOULD BE MADE ONLY BY EXPERIENCED, QUALIFIED PERSONNEL.**

**3-7.8** Before setting the system in operation, the tank installation and supply piping must be checked for leakage. The tank must be filled to capacity with the fuel to be burned and all joints in the system checked visually for leakage.

### **3-8 Crossover Duct**

**3-8.1** On multi-section homes, the flow of conditioned air from one section to the other(s) is accomplished by a crossover ducting system. For homes having a main duct in each floor section, the

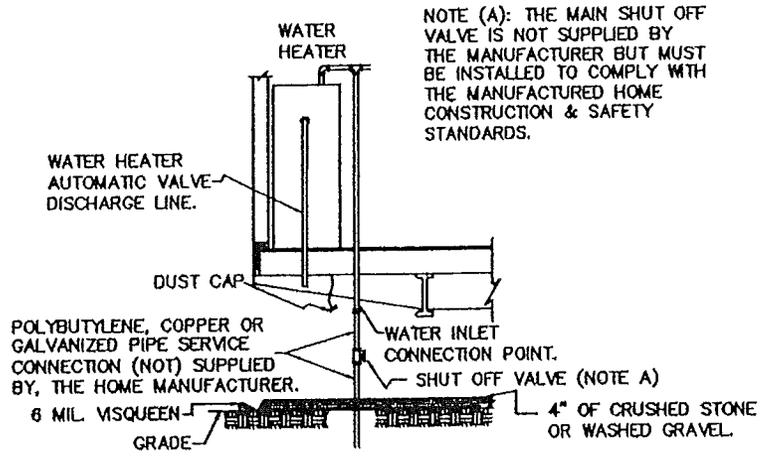
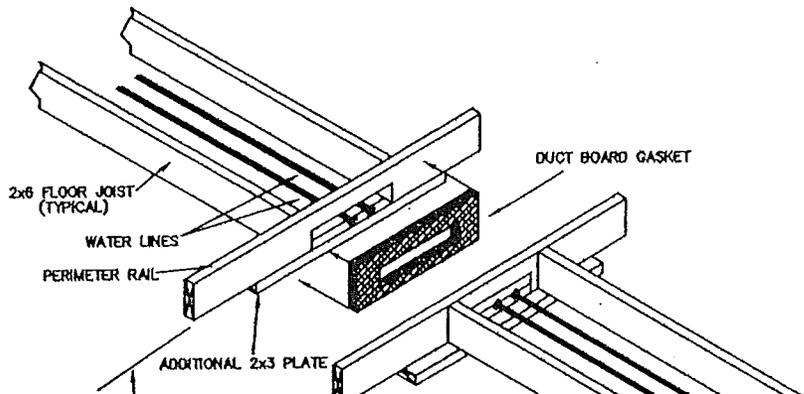


FIGURE 3-1



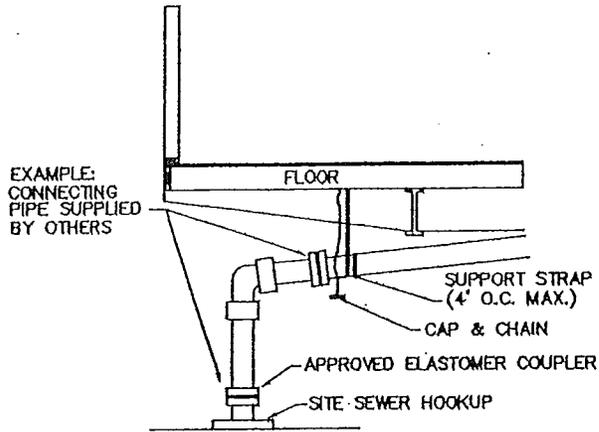


FIGURE 3-4

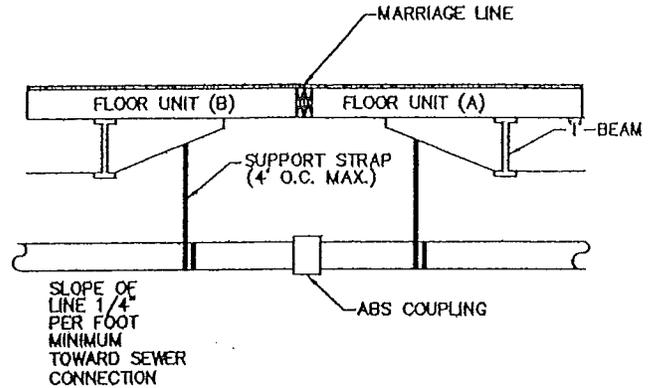
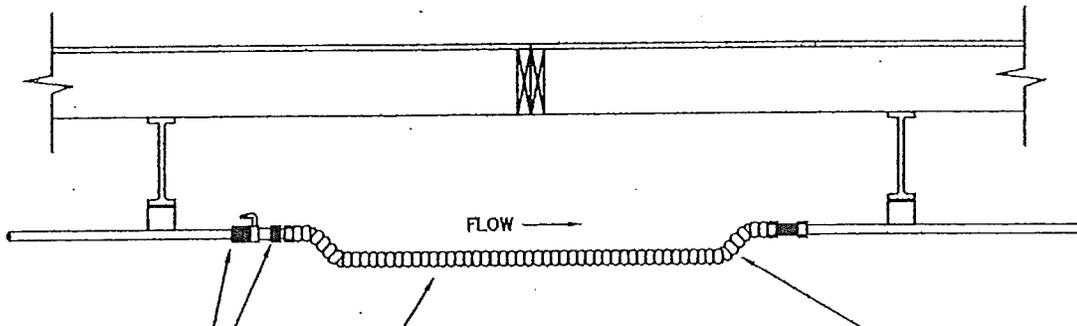


FIGURE 3-5



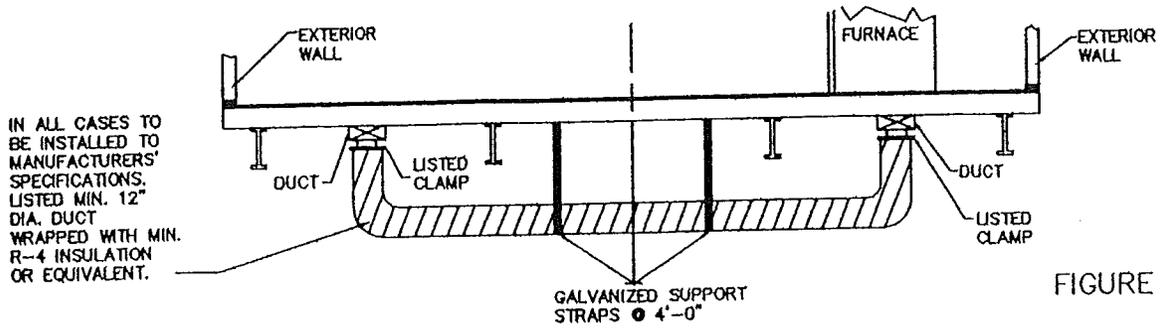


FIGURE 3-8

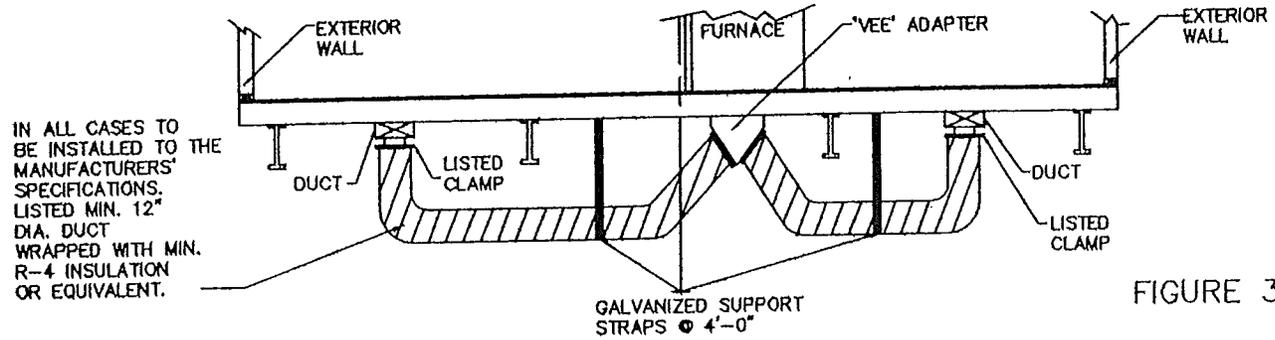
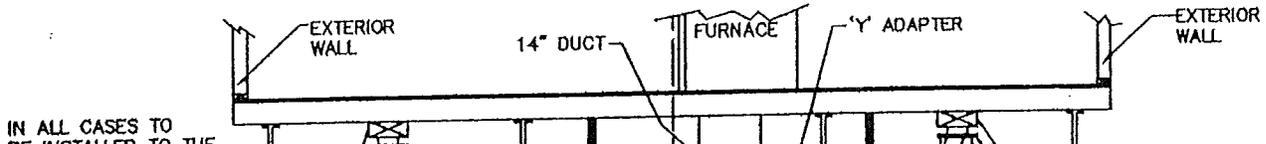


FIGURE 3-9



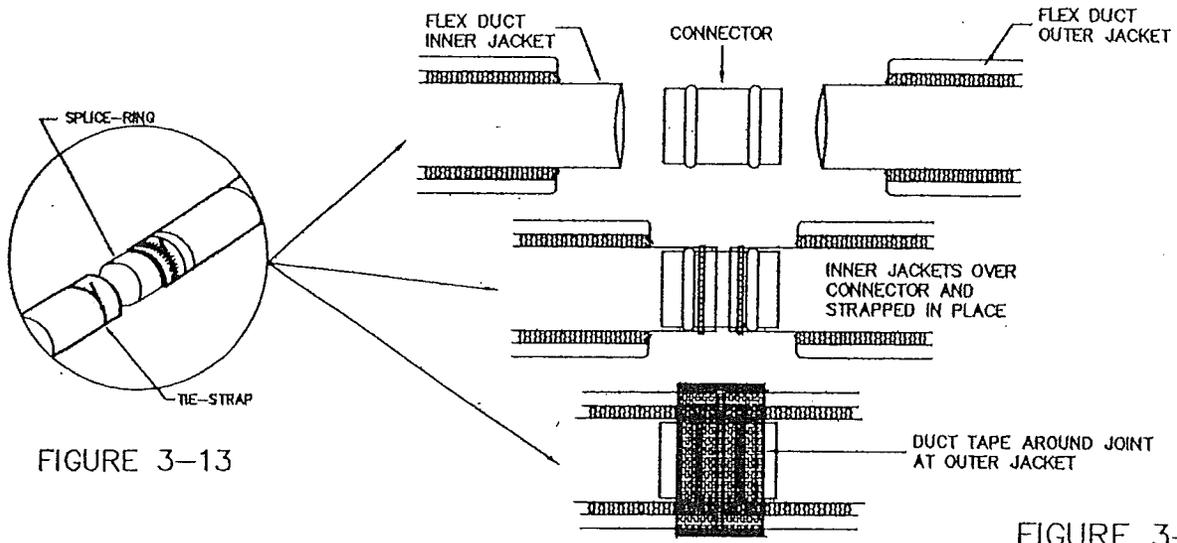


FIGURE 3-13

FIGURE 3-14

# **ELECTRIC SYSTEMS**

## ELECTRIC SYSTEM

### 4-1 Electric System

**4-1.1** Your home is designed to be connected to an electrical supply source rated at 120/240 Volts, 3-pole, 4-wire, 60-Hertz having an insulated neutral. In making the feeder connections to this power source, it is extremely important that conductors of the correct size, insulation type, and material be used. If the conductors are incorrectly sized, the ampacity for that conductor may be exceeded resulting in a voltage drop within your home or an overheating of the conductor which will cause the circuit breaker to trip protecting the system from a short circuit.

**4-1.2** Ampacity is the safe current carrying capacity of a conductor expressed in amperes. The greater the amperes flowing, the greater the heat build-up within the conductor. If the amperage is allowed to become too great, the conductor may become so hot that it will damage the insulation. Should the insulation be damaged severely enough that the individual conductors come into contact with one another, a short circuit will result which could cause a fire. To avoid the possibility of a voltage drop or short circuit caused by improper conductor sizing, refer to Chart 4-1 for proper conductor sizing.

**4-1.5** The neutral bus bar(s) may be located on both sides of the circuit breakers or be combined on either side and hold(s) only the white insulated conductors.

**4-1.6** The grounding conductor of the entrance feeder connects the grounding bus bar to an electrical ground at the disconnect box (See Figure 4-1 & 4-2). For this reason you must have a 3-pole, 4-wire feeder.

### **NOTICE**

**THE MANUFACTURED HOME CONSTRUCTION AND SAFETY STANDARDS AND THE NATIONAL ELECTRICAL CODE PROHIBIT CONNECTING THE GROUNDING BAR AND THE NEUTRAL BAR TOGETHER IN THE DISTRIBUTION PANEL. THE GROUND AND THE NEUTRAL ARE INSULATED FROM ONE ANOTHER. IT IS EXTREMELY IMPORTANT THAT THE GROUNDING CONDUCTOR AND THE NEUTRAL CONDUCTOR FROM THE DISTRIBUTION PANEL IN THE HOME BE CONNECTED TOGETHER AT THE DISCONNECT BOX LOCATED OUTSIDE OF THE HOME (SEE FIGURES 4-1 & 4-2). FOR THIS REASON, ALL FOUR OF THE FEEDER**

## ELECTRIC SYSTEMS (Continued)

**4-1.8** The main distribution panelboard within the home has been sized for the electrical equipment and/or branch circuits that were installed during the manufacturing process as original equipment. Branch circuits for electrical equipment added to the home in the aftermarket such as air conditioning units, heat pumps and water pumps, as well as for ancillary structures such as porches, garages, workshops, barns, etc. must originate at a power source outside the home.

### **WARNING**

**DO NOT INSTALL LAMPS (LIGHT BULBS) IN THE LIGHTING FIXTURES THAT EXCEED THE MAXIMUM WATTAGE LIMIT POSTED ON OR NEAR THE LIGHT FIXTURE. OVER LAMPING CAN CAUSE AN ELECTRICAL SHOCK OR FIRE HAZARD.**

### **CAUTION**

**IF YOUR HOME IS EQUIPPED WITH AN ELECTRIC WATER HEATER, DO NOT TURN ON THE CIRCUIT BREAKER IN THE DISTRIBUTION PANEL UNTIL AFTER THE WATER HEATER HAS BEEN FILLED**

This connection is made at the rear of the home sections at the outrigger location. See Figure 4-3.

### **4-3 Multi-Section Electrical Crossovers**

**4-3.1** Electrical crossovers for multi-section homes are located along the center line between the sections. These crossover locations can be distinguished by a number of tags and a locator drawing posted in the home. See Figures 4-4, 4-5 & 4-6 for typical crossover wiring and alternate crossover methods which may be encountered.

**4-3.2** Most crossover connections are made with listed crossover connectors that do not require junction boxes (see figure 4-7). 240-Volt crossover connections are generally made in junction boxes along the centerline and above the bottom board.

### **4-4 Test Procedure for Electrical System**

**4-4.1** The electrical system should be tested to make certain there is no reversed polarity, open grounds, or short circuits in the system. Such tests should be performed after the home has been completely set up and assembled, all metal structural

## ELECTRIC SYSTEMS (Continued)

- a) Check all appliances and vent fans. By touching the metal body of the flashlight to the appliance or fan and having the alligator clamp connected to a convenient ground, the light should come on if the appliance or fan is properly grounded.
- b) Using the same procedure, check the bonding between the following:
- i) Metal register boot and convenient ground (only with metal ducts),
  - ii) Steel frame and metal roof,
  - iii) Steel frame and metal exterior skin,
  - iv) Steel frame and metal gas piping,
  - v) Metal fireplace and convenient ground,
  - vi) Water heater and convenient ground,
  - vii) Furnace and convenient ground,
  - viii) Steel frame and metal EMT raceway to distribution panel where applicable.
- tester does light, it is an indication of an electrical short.
- 2) Should an electrical short to ground be indicated, the short must be isolated and corrected before connecting the power to the home from the source.
- 4-4.5** After the home is connected to 120/240VAC service, make the following checks:
- 1) Using a polarity checker, such as a Trinetics Ground Monitor GM-20 or equivalent, plug into each AC receptacle in the home noting an indication of reversed polarity, open grounds, or shorts. Any reverse polarity, open grounds, or shorts, which are located, must be investigated and repaired.
  - 2) Using a ground fault tester such as a Unitest GFI Circuit Tester or equivalent, check each ground fault circuit breaker or receptacle outlet for proper operation. Any ground fault breaker or receptacle outlet, which does not operate properly, should be replaced.
  - 3) Install light bulbs and/or fluorescent tubes in all fixtures and check for proper operation by turning

## ELECTRIC SYSTEMS (Continued)

green light is not on, check that the unit is properly wired and the circuit breaker is on.

2.) Check that the red LED flashes approximately once a minute. If not, replace the battery.

3.) Depress and hold the test button for 3 seconds. A loud pulsating alarm should sound.

4.) Test each alarm separately in the system.

5.) Determine that the initiating alarm triggers other alarms in the system.

6.) Should a smoke alarm not sound, confirm that it is properly connected to the branch circuit and that the circuit has power. If it still fails to sound, it must be replaced and its replacement tested.

### 4-6 Basement Smoke Alarm Installation Instruction

**4-6.1** Units, which have been designed with a basement access, require the installation of a smoke alarm at the time it is set on its permanent foundation.

4.) Examine the battery installation in the back of the smoke alarm making certain it is correct. Test the alarm as indicated below.

5.) Plug the power connector into the back of the smoke alarm, near the battery location.

6.) Attach the smoke alarm to the mounting bracket and twist-lock it in place as indicated.

7.) Test the smoke alarm as indicated below.

A) Before Installation:

1) Connect battery. Ensure that the battery is correctly installed.

2) Check that the red LED operating light flashes approximately once a minute. If not, replace the battery.

3) Depress and hold test button for 3 seconds minimum. A loud pulsating alarm sounds, indicating that the alarm is working properly. In addition, the red LED flashes quickly during the alarm.

## NOTICE

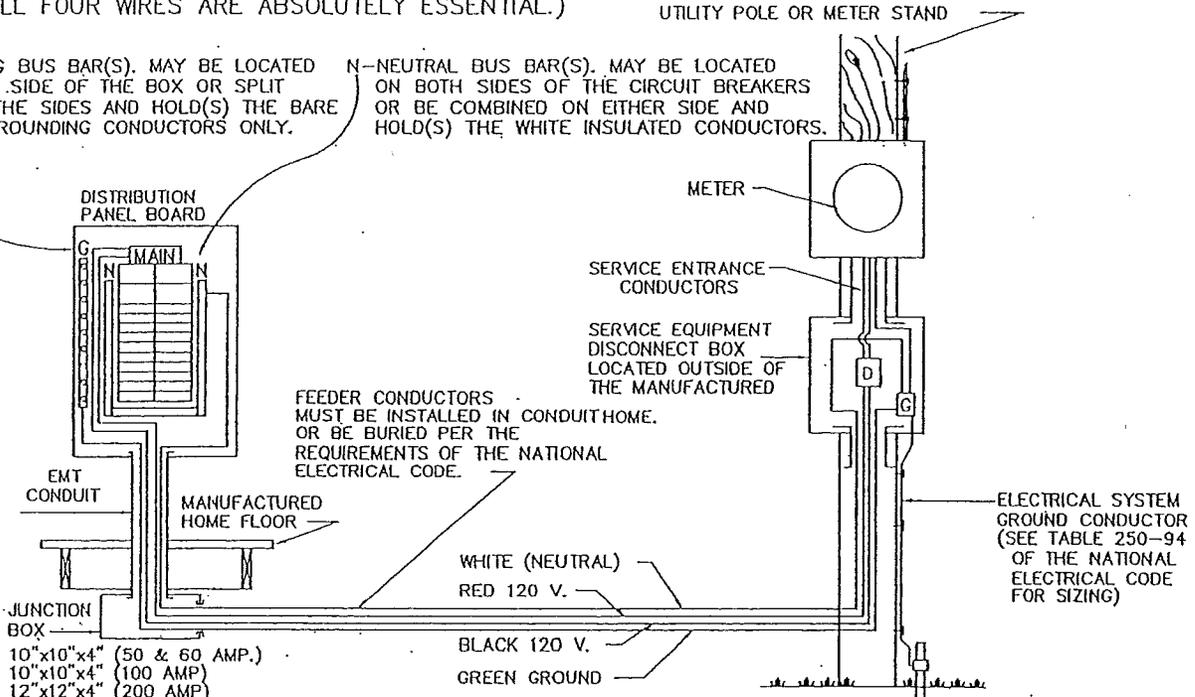
METHOD OF WIRING & GROUNDING  
THIS MANUFACTURED HOME

NOTE: ALL WIRES FROM THE PANEL BOX TO THE DISCONNECT MUST  
BE INSULATED, INCLUDING THE GROUND WIRE.

(ALL FOUR WIRES ARE ABSOLUTELY ESSENTIAL.)

G-GROUNDING BUS BAR(S). MAY BE LOCATED  
ON EITHER SIDE OF THE BOX OR SPLIT  
BETWEEN THE SIDES AND HOLD(S) THE BARE  
COPPER GROUNDING CONDUCTORS ONLY.

N-NEUTRAL BUS BAR(S). MAY BE LOCATED  
ON BOTH SIDES OF THE CIRCUIT BREAKERS  
OR BE COMBINED ON EITHER SIDE AND  
HOLD(S) THE WHITE INSULATED CONDUCTORS.



## NOTICE

METHOD OF INSTALLING SERVICE EQUIPMENT, WIRING  
AND GROUNDING FOR THIS MANUFACTURED HOME.

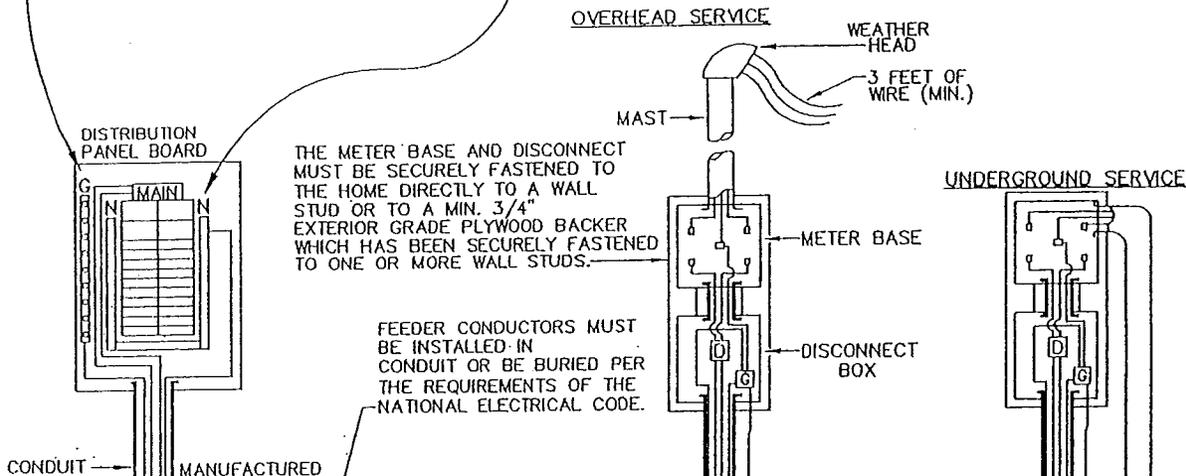
NOTE: ALL WIRES FROM THE PANEL BOX TO THE DISCONNECT MUST  
BE INSULATED, INCLUDING THE GROUND WIRE.

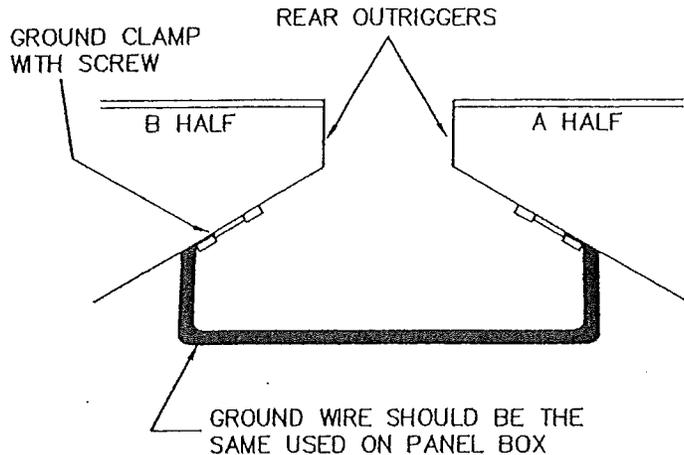
THE NEUTRAL IS INSULATED FROM  
THE GROUND IN THE PANELBOARD.

(ALL FOUR WIRES ARE ABSOLUTELY ESSENTIAL.)

G—GROUNDING BUS BAR(S). MAY BE LOCATED  
ON EITHER SIDE OF THE BOX OR SPLIT  
BETWEEN THE SIDES AND HOLD(S) THE BARE  
COPPER GROUNDING CONDUCTORS ONLY.

N—NEUTRAL BUS BAR(S). MAY BE LOCATED  
ON BOTH SIDES OF THE CIRCUIT BREAKERS  
OR BE COMBINED ON EITHER SIDE AND  
HOLD(S) THE WHITE INSULATED CONDUCTORS.





ADDITIONAL CONNECTORS WILL BE NEEDED FOR ADDITIONAL FLOOR SECTIONS

FIGURE 4-3

ENDWALL CROSSOVER DETAIL

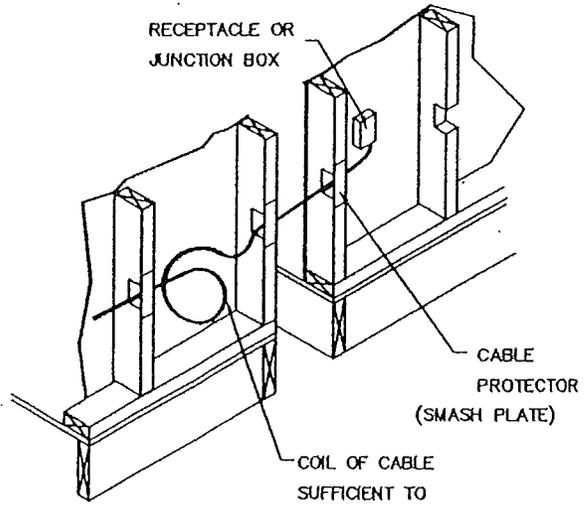
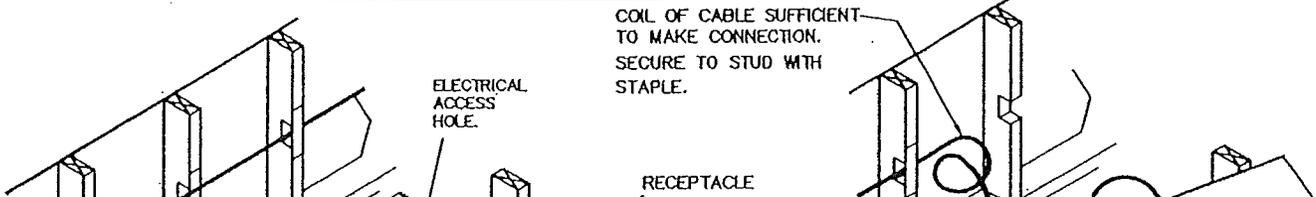
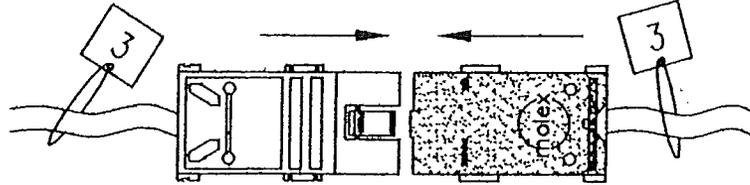


FIGURE 4-4

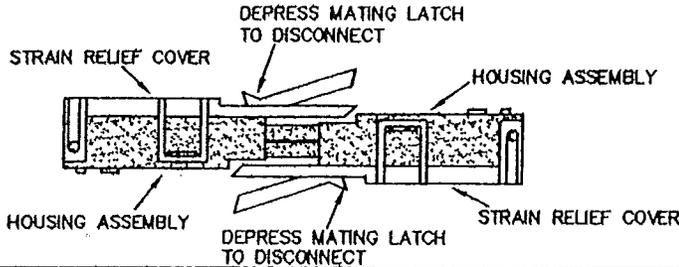
INTERIOR WALL CROSSOVER DETAIL



## CONNECTING AND DISCONNECTING SELF-CONTAINED POWER CONNECTOR

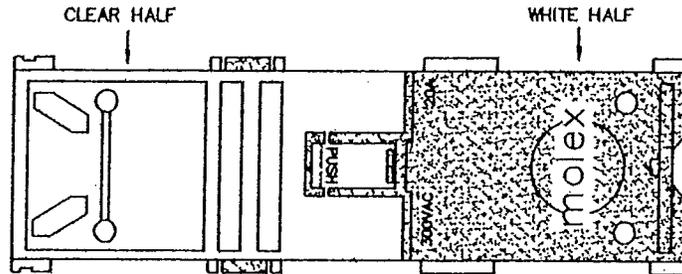


TO CONNECT ELECTRICAL POWER FROM ONE SECTION OF THE HOME TO THE OTHER(S), LOCATE THE CROSSOVER POINTS, IDENTIFY WHICH CONDUCTORS GO TOGETHER (SEE NUMBERED TAG), AND PUSH THE CONNECTORS TOGETHER, FULLY, UNTIL THEY LATCH IN PLACE.



TO CONNECT, MATE THE CONNECTORS AND SLIDE THEM TOGETHER UNTIL MATING LATCHES LOCK.

TO RELEASE THE CONNECTOR SYSTEM, DEPRESS BOTH MATING LATCHES AT THE SAME TIME AND PULL THE CONNECTORS APART.



HOT WIRE

FIGURE 4-7

## INSTALLATION NOTES

# **GROUND ANCHORING SYSTEM**

## GROUND ANCHORING SYSTEM

### 5-1 General

5-1.1 All homes, whether manufactured or site constructed, must be securely fastened to the ground to resist the sliding and overturning effects of high winds.

5-1.2 This section will provide the information needed to properly install an anchoring system, which will provide the resistance to lateral movement (sliding) and overturning (uplift) as follows:

**Zone I:** A horizontal wind load of not less than 15 pounds per square foot and a net uplift of not less than -9 pounds per square foot increased by a factor of safety of 1.5.

**Zone II:** A horizontal wind load of not less than 39 pounds per square foot and a net uplift of not less than -27 pounds per square foot increased by a factor of safety of 1.5

**Zone III:** Not applicable

5-1.3 Your home was designed for the

5-2.2 Anchoring equipment means straps, cable, turnbuckles, and chains, including tensioning devices, which are used with ties to secure a manufactured home to ground anchors.

5-2.3 Anchoring equipment should be certified by a registered professional engineer or architect to resist these specified forces in accordance with testing procedures in ASTM Standard Specification D3953-91, Standard Specification for Strapping, Flat Steel and Seals.

5-2.4 Ground anchor strapping used in conjunction with the anchoring system must be equivalent of Type 1, Class B, Grade 1 steel strapping, 1 1/4 inches wide and 0.035 inches thick. The strapping must also comply with the requirements stated in item number 3 above.

5-2.5 Ground anchors should be certified by a registered professional engineer, architect or nationally recognized testing laboratory as to their resistance, based on the

## GROUND ANCHORING SYSTEM (continued)

company and may be obtained through your independent manufactured home dealer.

### **5-3 Installation Instructions - Frame Anchoring Procedure**

**5-3.1** As noted earlier in this instruction, the ground anchors must be installed prior to locating the home on the site in its final resting position. The exact location of the anchor heads is as follows:

**5-3.2** When diagonal ties are used, the anchor head will be 10 inches in from the edge of the floor for homes having 4 inch exterior walls and 12 inches in from the edge of the floor for homes having 6 inch exterior walls. This will allow the anchor head to be inside an 8-inch block wall. When vertical ties are used, the anchor head will be 2 inches outboard of the I-beam centerline. See Figures 5-1 through 5-14. Note: Anchor spacing decreases as roof pitch increases.

**5-3.3** The ground anchor should be installed at the same angle as the diagonal tie

Structural Design Basis Certificate, Design Wind Zone Map), vertical or diagonal system, width of unit, height of pier and slope of roof. Refer to Figure 5-22 for additional floor sections.

**5-3.7** Vertical and/or diagonal ties can be connected to the frame I-beams by wrapping, clipping or bolting. Where the ties are wrapped the strapping must be protected from the edges of the I-beam by crimping another layer of strapping to the top and bottom hangers of the I-beam before making the wrap. Make certain to wrap only at the protected areas. (See Figures 5-18, 5-19, 5-20 and 5-21).

**5-3.8** Tighten the straps using the tensioning device provided with the ground anchors. Following the tensioning specifications provided by the anchor equipment manufacture carefully. Use caution to avoid overtensioning of the straps, which might pull the home off the piers. It is recommended that all straps be tightened only enough to remove the slack. Then, after

## GROUND ANCHORING SYSTEM (continued)

Refer to Charts 5-15 through 5-18 for spacing.

### 5-5 Column Uplift Anchoring

5-5.1 When it is necessary to anchor a centerline column due to wind uplift loading, the anchor strap will have been installed on the home at the time of manufacture. The strap will need to be connected to a ground anchor as shown in figure 5-23, 5-24 and 5-25.

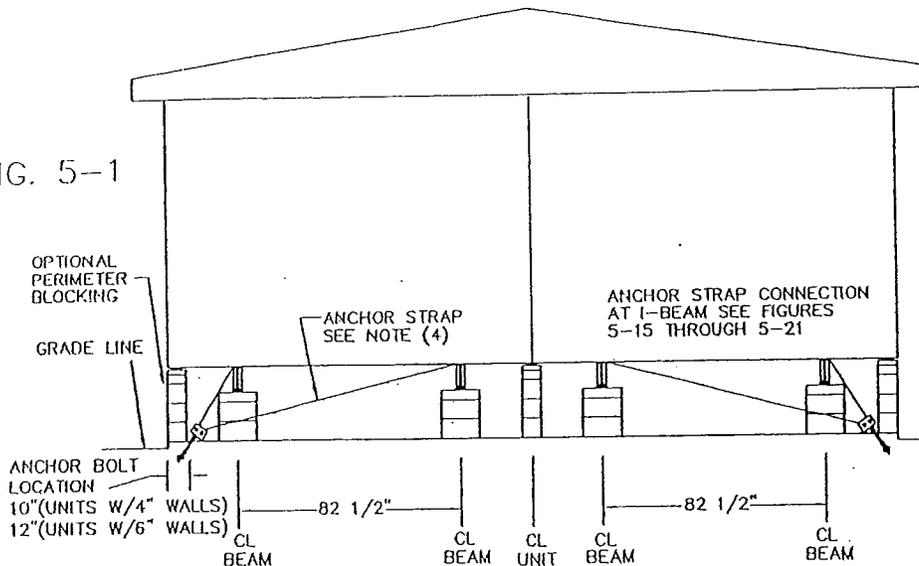
### CAUTION

**DURING ANY REALIGNING PROCESS, DO NOT JACK THE HOME AGAINST TIGHTENED GROUND TIES.**

### 5-6 Alternate Procedures

5-6.1 Should your home be placed on a full concrete slab as shown in Figure 1-19, the ground anchors may be replaced with anchor bolts imbedded in the concrete slab as shown. The location of the anchor bolt in

FIG. 5-1



MAXIMUM ANCHOR SPACING (DIAGONAL) 82 1/2" I-BEAM CENTERS  
 ROOF SLOPE LESS THAN 4.36/12 (20°) ONLY

CHART 5-1

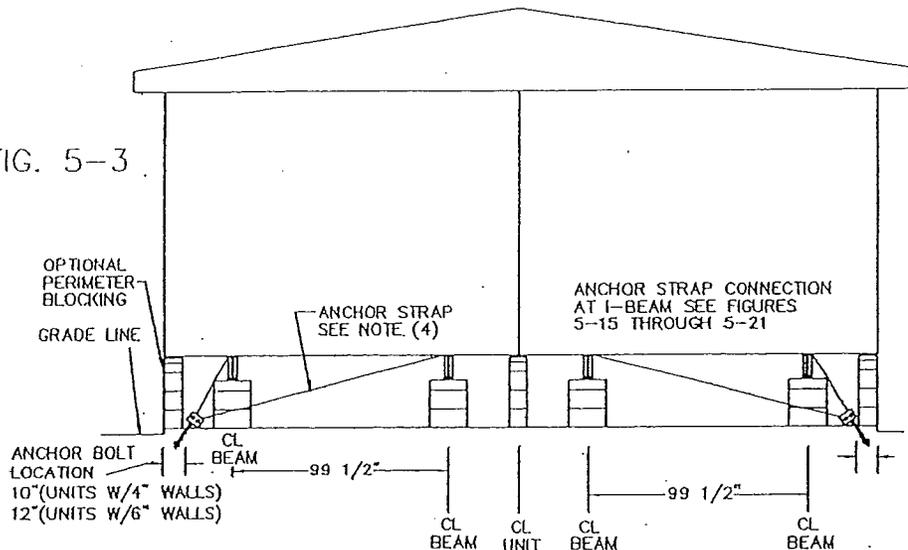
MAXIMUM PIER HEIGHT	23' WIDE UNITS		24' WIDE UNITS		26' WIDE UNITS		27'/28' WIDE UNITS		32' WIDE UNITS	
	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2
25 1/2"	21 ft.	12 ft.	22 ft.	12 ft.	24 ft.	14 ft.	25 ft.	14 ft.	27 ft.	12 ft.
33 1/2"	20 ft.	11 ft.	20 ft.	12 ft.	23 ft.	13 ft.	24 ft.	13 ft.	26 ft.	14 ft.
41 1/2"	19 ft.	10 ft.	19 ft.	11 ft.	21 ft.	12 ft.	22 ft.	13 ft.	24 ft.	14 ft.
49 1/2"	17 ft.	10 ft.	18 ft.	10 ft.	20 ft.	11 ft.	21 ft.	12 ft.	23 ft.	13 ft.
57 1/2"	17 ft.	9 ft.	17 ft.	10 ft.	19 ft.	11 ft.	20 ft.	11 ft.	22 ft.	12 ft.

GENERAL NOTES

1. THE ANCHOR MUST BE MINUTE MAN OR EQUAL. ANCHOR AND ANCHOR HEAD MUST HAVE AN ULTIMATE STRENGTH EQUAL TO OR GREATER THAN 5202 LBS. FOR 23 & 24 WIDE, 6033 LBS. FOR 26, 27 & 28 WIDE AND 5925 LBS. FOR 32 WIDE.
2. ANCHOR BOLTS (REGARDLESS OF ZONING) MUST START NO FURTHER THAN 2'-0" FROM EACH END OF HOME.
3. IF ANCHOR IS INSERTED VERTICALLY A CONCRETE COLLAR OR STABILIZING DEVICE MUST BE USED AT THE GROUND LINE. SEE FIG. 5-15 AND 5-16.
4. EACH OF THE STRAPS AND CONNECTIONS TO THE I-BEAM MUST HAVE AN ULTIMATE STRENGTH OF 4725 LBS. SEE FIG. 5-15 AND 5-16.
5. REFER TO CHART 5-1 FOR ZONE 1 AND ZONE 2 MAXIMUM STRAP SPACING FOR THIS ANCHORING SYSTEM.



FIG. 5-3



MAXIMUM ANCHOR SPACING (DIAGONAL) 99 1/2" I-BEAM CENTERS  
 ROOF SLOPE LESS THAN 4.36/12 (20°) ONLY

CHART 5-3

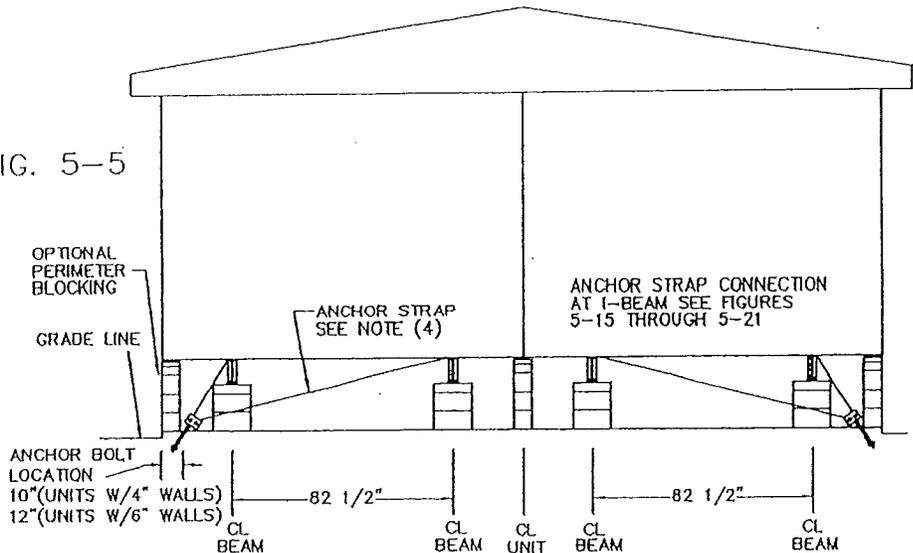
MAXIMUM PIER HEIGHT	23' WIDE UNITS		24' WIDE UNITS		26' WIDE UNITS		27'/28' WIDE UNITS		32' WIDE UNITS	
	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2
25 1/2"	18 ft.	10 ft.	19 ft.	11 ft.	22 ft.	13 ft.	23 ft.	13 ft.	26 ft.	13 ft.
33 1/2"	17 ft.	10 ft.	18 ft.	10 ft.	21 ft.	12 ft.	22 ft.	12 ft.	24 ft.	14 ft.
41 1/2"	16 ft.	9 ft.	17 ft.	10 ft.	20 ft.	11 ft.	21 ft.	12 ft.	23 ft.	13 ft.
49 1/2"	16 ft.	9 ft.	16 ft.	9 ft.	19 ft.	11 ft.	19 ft.	11 ft.	22 ft.	12 ft.
57 1/2"	15 ft.	8 ft.	15 ft.	9 ft.	18 ft.	10 ft.	19 ft.	10 ft.	21 ft.	12 ft.

GENERAL NOTES

1. THE ANCHOR MUST BE MINUTE MAN OR EQUAL ANCHOR AND ANCHOR HEAD MUST HAVE AN ULTIMATE STRENGTH EQUAL TO OR GREATER THAN 5318 LBS. FOR 23, 24, AND 26 WIDE, 5549 LBS. FOR 27 and 28 WIDE AND 5827 LBS. FOR 32 WIDE.
2. ANCHOR BOLTS (REGARDLESS OF ZONING) MUST START NO FURTHER THAN 2'-0" FROM EACH END OF HOME.
3. IF ANCHOR IS INSERTED VERTICALLY A CONCRETE COLLAR OR STABILIZING DEVICE MUST BE USED AT THE GROUND LINE. SEE FIG. 5-15 AND 5-16.
4. EACH OF THE STRAPS AND CONNECTIONS TO THE I-BEAM MUST HAVE AN ULTIMATE STRENGTH OF 4725 LBS. SEE FIG. 5-15 AND 5-16.
5. REFER TO CHART 5-3 FOR ZONE 1 AND ZONE 2 MAXIMUM STRAP SPACING FOR THIS ANCHORING SYSTEM.



FIG. 5-5



MAXIMUM ANCHOR SPACING (DIAGONAL) 82 1/2" I-BEAM CENTERS  
ROOF SLOPE 5/12 ONLY

CHART 5-5

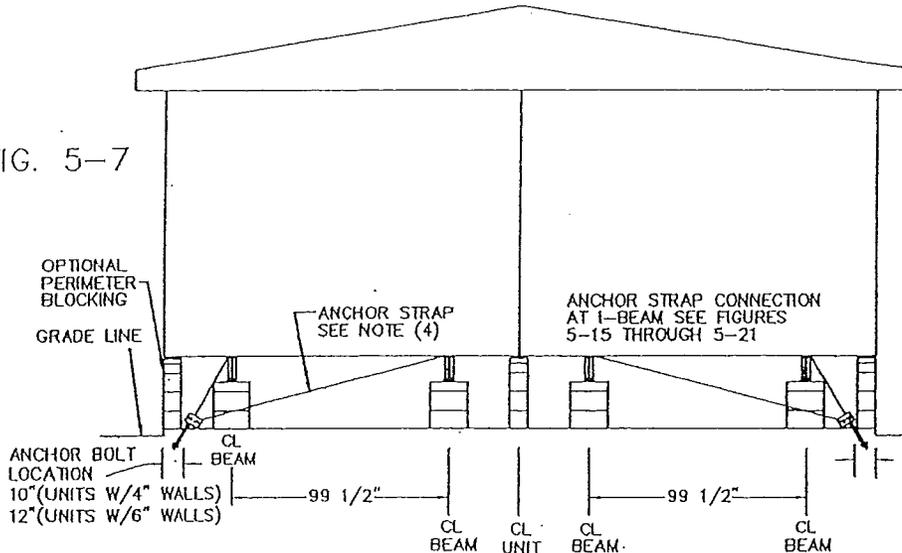
MAXIMUM PIER HEIGHT	24' WDE UNITS		26' WDE UNITS		27'/28' WDE UNITS		32' WDE UNITS	
	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2
25 1/2"	12 ft.	7 ft.	12 ft.	7 ft.	12 ft.	7 ft.	11 ft.	6 ft.
33 1/2"	12 ft.	7 ft.	11 ft.	6 ft.	11 ft.	6 ft.	10 ft.	6 ft.
41 1/2"	11 ft.	6 ft.	10 ft.	6 ft.	10 ft.	6 ft.	10 ft.	5 ft.
49 1/2"	10 ft.	6 ft.	10 ft.	5 ft.	10 ft.	5 ft.	9 ft.	5 ft.
57 1/2"	10 ft.	5 ft.	9 ft.	5 ft.	9 ft.	5 ft.	9 ft.	5 ft.

GENERAL NOTES

1. THE ANCHOR MUST BE MINUTE MAN OR EQUAL. ANCHOR AND ANCHOR HEAD MUST HAVE AN ULTIMATE STRENGTH EQUAL TO OR GREATER THAN 5202 LBS. FOR 23 & 24 WDE, 6033 LBS. FOR 26, 27 & 28 WDE AND 5925 LBS. FOR 32 WDE.
2. ANCHOR BOLTS (REGARDLESS OF ZONING) MUST START NO FURTHER THAN 2'-0" FROM EACH END OF HOME.
3. IF ANCHOR IS INSERTED VERTICALLY A CONCRETE COLLAR OR STABILIZING DEVICE MUST BE USED AT THE GROUND LINE. SEE FIG. 5-15 AND 5-16.
4. EACH OF THE STRAPS AND CONNECTIONS TO THE I-BEAM MUST HAVE AN ULTIMATE STRENGTH OF 4725 LBS. SEE FIG. 5-15 AND 5-16.
5. REFER TO CHART 5-5 FOR ZONE 1 AND ZONE 2 MAXIMUM STRAP SPACING FOR THIS ANCHORING SYSTEM.



FIG. 5-7



MAXIMUM ANCHOR SPACING (DIAGONAL) 99 1/2" I-BEAM CENTERS  
 ROOF SLOPE 5/12 ONLY

CHART 5-7

MAXIMUM PIER HEIGHT.	24' WDE UNITS		26' WDE UNITS		27' / 28' WDE UNITS		32' WDE UNITS	
	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2
25 1/2"	13 ft.	7 ft.	12 ft.	7 ft.	12 ft.	7 ft.	11 ft.	6 ft.
33 1/2"	12 ft.	7 ft.	11 ft.	6 ft.	11 ft.	6 ft.	11 ft.	6 ft.
41 1/2"	11 ft.	6 ft.	11 ft.	6 ft.	11 ft.	6 ft.	10 ft.	5 ft.
49 1/2"	11 ft.	6 ft.	10 ft.	6 ft.	10 ft.	6 ft.	10 ft.	5 ft.
57 1/2"	10 ft.	6 ft.	10 ft.	5 ft.	10 ft.	5 ft.	9 ft.	5 ft.

GENERAL NOTES

1. THE ANCHOR MUST BE MINUTE MAN OR EQUAL ANCHOR AND ANCHOR HEAD MUST HAVE AN ULTIMATE STRENGTH EQUAL TO OR GREATER THAN 5318 LBS. FOR 23, 24, AND 26 WDE, 5549 LBS. FOR 27 AND 28 WDE AND 5827 LBS. FOR 32 WDE.
2. ANCHOR BOLTS (REGARDLESS OF ZONING) MUST START NO FURTHER THAN 2'-0" FROM EACH END OF HOME.
3. IF ANCHOR IS INSERTED VERTICALLY A CONCRETE COLLAR OR STABILIZING DEVICE MUST BE USED AT THE GROUND LINE. SEE FIG. 5-15 AND 5-16.
4. EACH OF THE STRAPS AND CONNECTIONS TO THE I-BEAM MUST HAVE AN ULTIMATE STRENGTH OF 4725 LBS. SEE FIG. 5-15 AND 5-16.
5. REFER TO CHART 5-7 FOR ZONE 1 AND ZONE 2 MAXIMUM STRAP SPACING FOR THIS ANCHORING SYSTEM.

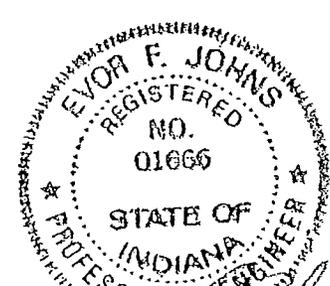
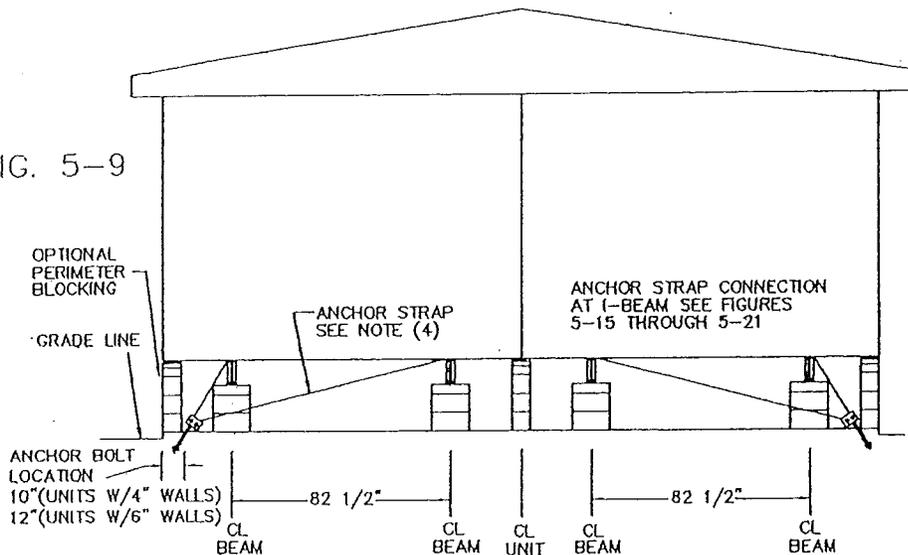


FIG. 5-9



MAXIMUM ANCHOR SPACING (DIAGONAL) 82 1/2" I-BEAM CENTERS  
 ROOF SLOPE 7/12 ONLY

CHART 5-9

MAXIMUM PIER HEIGHT	24' WDE UNITS		26' WDE UNITS		27' / 28' WDE UNITS		32' WDE UNITS	
	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2
25 1/2"	9 ft.	5 ft.	9 ft.	5 ft.	9 ft.	5 ft.	8 ft.	4 ft.
33 1/2"	9 ft.	5 ft.	8 ft.	4 ft.	8 ft.	4 ft.	8 ft.	4 ft.
41 1/2"	8 ft.	4 ft.	8 ft.	4 ft.	8 ft.	4 ft.	8 ft.	4 ft.
49 1/2"	7 ft.	4 ft.	8 ft.	4 ft.	8 ft.	4 ft.	7 ft.	4 ft.
57 1/2"	7 ft.	3 ft.	7 ft.	4 ft.	7 ft.	4 ft.	7 ft.	4 ft.

GENERAL NOTES

1. THE ANCHOR MUST BE MINUTE MAN OR EQUAL. ANCHOR AND ANCHOR HEAD MUST HAVE AN ULTIMATE STRENGTH EQUAL TO OR GREATER THAN 3202 LBS. FOR 23 & 24 WDE, 6033 LBS. FOR 26, 27 & 28 WDE AND 5925 LBS. FOR 32 WDE.
2. ANCHOR BOLTS (REGARDLESS OF ZONING) MUST START NO FURTHER THAN 2'-0" FROM EACH END OF HOME.
3. IF ANCHOR IS INSERTED VERTICALLY A CONCRETE COLLAR OR STABILIZING DEVICE MUST BE USED AT THE GROUND LINE. SEE FIG. 5-15 AND 5-16.
4. EACH OF THE STRAPS AND CONNECTIONS TO THE I-BEAM MUST HAVE AN ULTIMATE STRENGTH OF 4725 LBS. SEE FIG. 5-15 AND 5-16.
5. REFER TO CHART 5-8 FOR ZONE 1 AND ZONE 2 MAXIMUM STRAP SPACING FOR THIS ANCHORING SYSTEM.

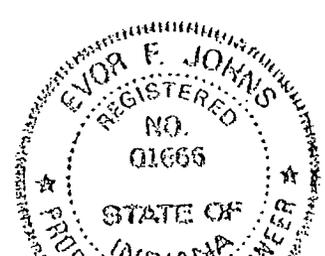
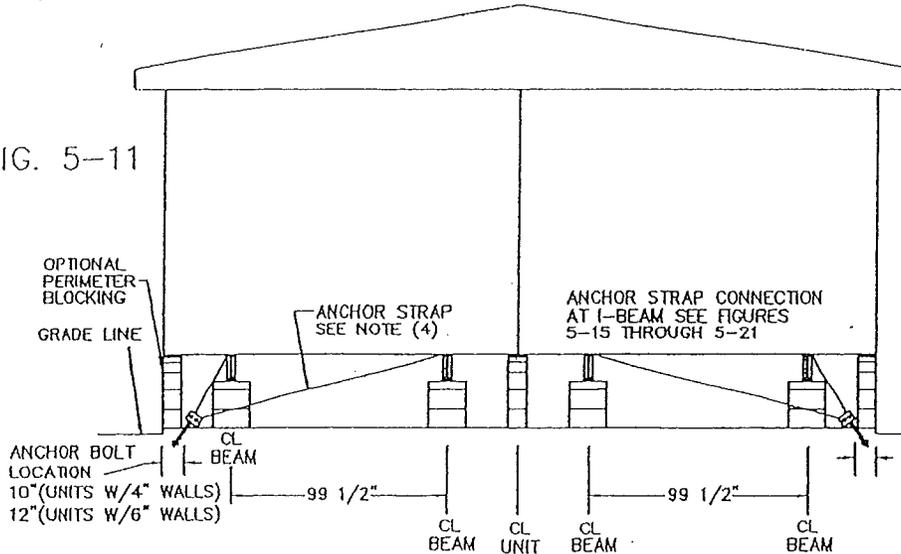


FIG. 5-11



MAXIMUM ANCHOR SPACING (DIAGONAL) 99 1/2" I-BEAM CENTERS  
ROOF SLOPE 7/12 ONLY

CHART 5-11

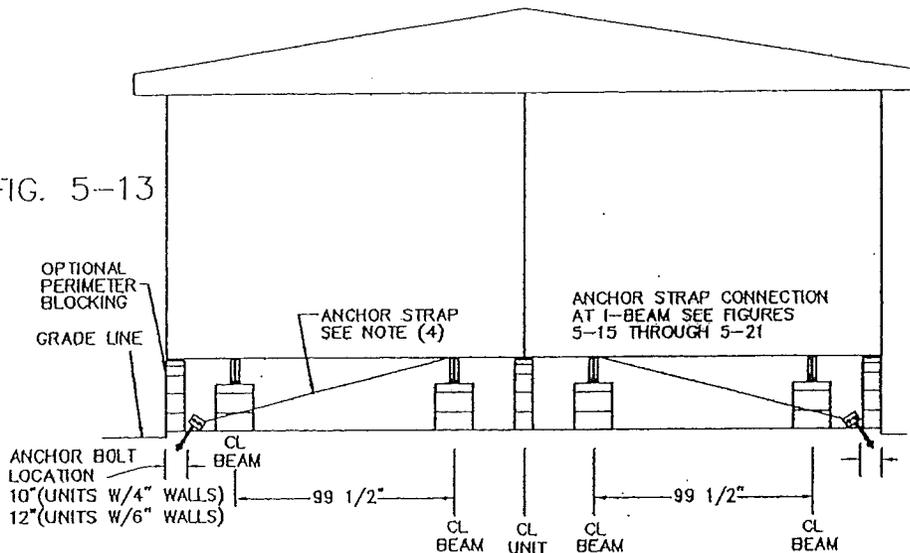
MAXIMUM PIER HEIGHT	24' WIDE UNITS		26' WIDE UNITS		27'/28' WIDE UNITS		32' WIDE UNITS	
ZONE 1 & 2	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2	ZONE # 1	ZONE # 2
25 1/2"	9 ft.	5 ft.	9 ft.	5 ft.	9 ft.	5 ft.	8 ft.	4 ft.
33 1/2"	9 ft.	5 ft.	8 ft.	4 ft.	8 ft.	4 ft.	8 ft.	4 ft.
41 1/2"	8 ft.	4 ft.	8 ft.	4 ft.	8 ft.	4 ft.	8 ft.	4 ft.
49 1/2"	8 ft.	4 ft.	8 ft.	4 ft.	8 ft.	4 ft.	8 ft.	4 ft.
57 1/2"	7 ft.	4 ft.	8 ft.	4 ft.	8 ft.	4 ft.	7 ft.	4 ft.

GENERAL NOTES

1. THE ANCHOR MUST BE MINUTE MAN OR EQUAL. ANCHOR AND ANCHOR HEAD MUST HAVE AN ULTIMATE STRENGTH EQUAL TO OR GREATER THAN 5318 LBS. FOR 23, 24, AND 26 WIDE, 5549 LBS. FOR 27 & 28 WIDE AND 5827 LBS. FOR 32 WIDE.
2. ANCHOR BOLTS (REGARDLESS OF ZONING) MUST START NO FURTHER THAN 2'-0" FROM EACH END OF HOME.
3. IF ANCHOR IS INSERTED VERTICALLY A CONCRETE COLLAR OR STABILIZING DEVICE MUST BE USED AT THE GROUND LINE. SEE FIG. 5-15 AND 5-16.
4. EACH OF THE STRAPS AND CONNECTIONS TO THE I-BEAM MUST HAVE AN ULTIMATE STRENGTH OF 4725 LBS. SEE FIG. 5-15 AND 5-16.
5. REFER TO CHART 5-11 FOR ZONE 1 AND ZONE 2 MAXIMUM STRAP SPACING FOR THIS ANCHORING SYSTEM.



FIG. 5-13



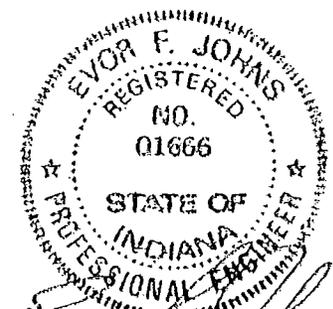
MAXIMUM ANCHOR SPACING (DIAGONAL) 99 1/2" I-BEAM CENTERS  
 ROOF SLOPE 12/12 ONLY

CHART 5-13

MAXIMUM PIER HEIGHT	28' WIDE UNITS 8' WALL HEIGHT		28' WIDE UNITS 9' WALL HEIGHT		32' WIDE UNITS 8' WALL HEIGHT		32' WIDE UNITS 9' WALL HEIGHT	
	10"	12"	10"	12"	10"	12"	10"	12"
9 1/2"	6 ft.	6 ft.	6 ft.	6 ft.	5 ft.	5 ft.	5 ft.	5 ft.
25 1/2"	6 ft.	6 ft.	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.
41 1/2"	5 ft.	5 ft.						
57 1/2"	5 ft.	5 ft.						
73 1/2"	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.	4 ft.	4 ft.

GENERAL NOTES

1. THE ANCHOR MUST BE MINUTE MAN OR EQUAL. ANCHOR AND ANCHOR HEAD MUST HAVE AN ULTIMATE STRENGTH EQUAL TO OR GREATER THAN 5318 LBS. FOR 23, 24, AND 26 WIDE, 5549 LBS. FOR 27 & 28 WIDE AND 5827 LBS. FOR 32 WIDE.
2. ANCHOR BOLTS (REGARDLESS OF ZONING) MUST START NO FURTHER THAN 2'-0" FROM EACH END OF HOME.
3. IF ANCHOR IS INSERTED VERTICALLY A CONCRETE COLLAR OR STABILIZING DEVICE MUST BE USED AT THE GROUND LINE. SEE FIG. 5-15 AND 5-16.
4. EACH OF THE STRAPS AND CONNECTIONS TO THE I-BEAM MUST HAVE AN ULTIMATE STRENGTH OF 4725 LBS. SEE FIG. 5-15 AND 5-16.
5. REFER TO CHART 5-13 FOR MAXIMUM STRAP SPACING FOR THIS ANCHORING SYSTEM.



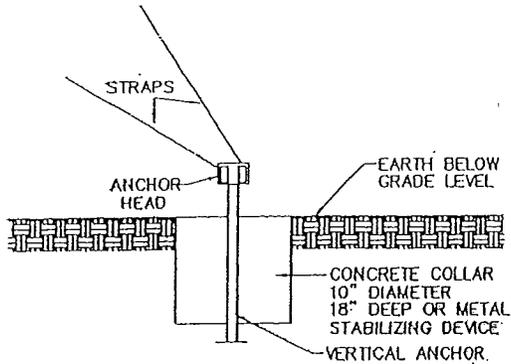


FIGURE 5-15

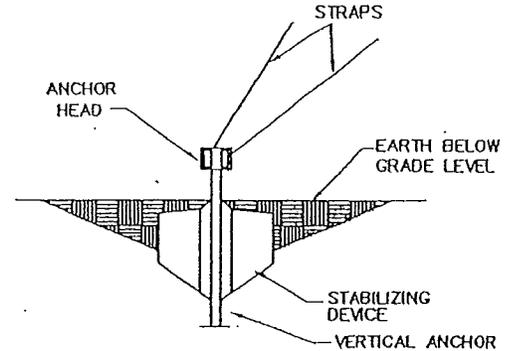


FIGURE 5-16

NOTES:

- \* THE TIE STRAP AND CONNECTORS MUST HAVE AN ULTIMATE STRENGTH MINIMUM OF 4725 LBS.

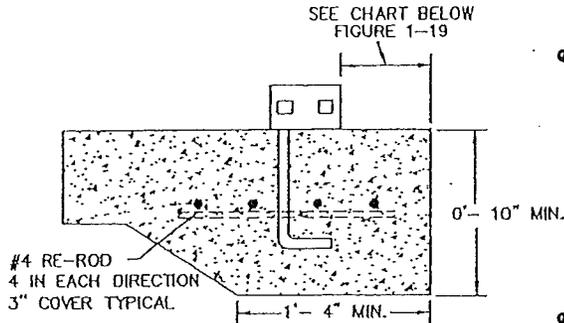


FIGURE 5-17

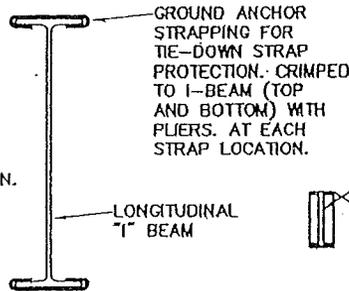
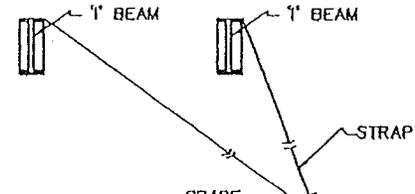


FIGURE 5-18

NOTE:

ANCHOR BOLT ONLY TO BE USED WITH CONCRETE PAD. GROUND SCREW ANCHOR (SHOWN BELOW) IS TO BE USED FOR ALL OTHER APPLICATIONS FOLLOWING THE MANUFACTURER'S RECOMMENDATIONS AND CONTINGENT UPON LOCAL SOIL CONDITIONS



GRADE

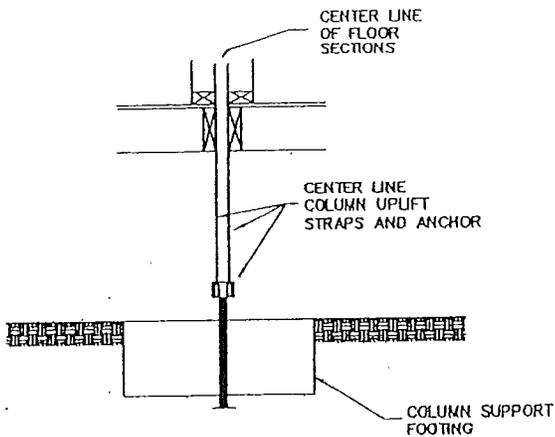


FIGURE 5-23

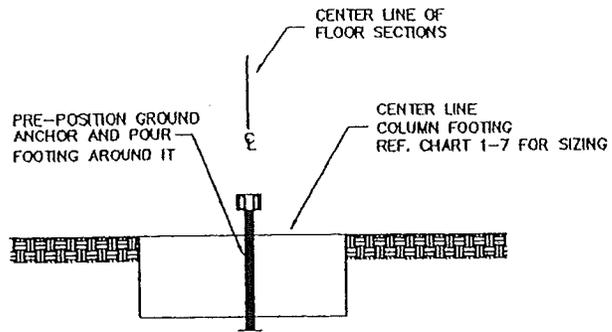
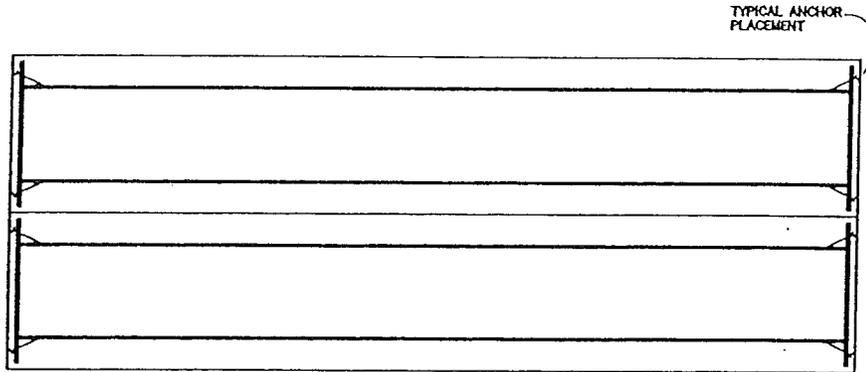


FIGURE 5-24



LONGITUDINAL TIE-DOWN SPACING FOR 23', 24', 26', 27', 28' AND 32' WIDE HOMES.  
FIGURE 5-28

CHART 5-15

LONGITUDINAL TIE-DOWN SPACING FOR ROOF SLOPES LESS THAN 4.38/12 (20°) ONLY			
SIDEWALL HEIGHT	PIER HEIGHT	ANCHOR SPACING NOT TO EXCEED	
		ZONE-I	ZONE-II
7.5 FT	28 1/2 IN	13 FT	7.7 FT
7.5 FT	33 1/2 IN	12 FT	7.4 FT
7.5 FT	41 1/2 IN	12 FT	7.1 FT
7.5 FT	49 1/2 IN	11 FT	6.7 FT
7.5 FT	57 1/2 IN	11 FT	6.4 FT

CHART 5-16

LONGITUDINAL TIE-DOWN SPACING FOR ROOF SLOPES TO 5/12			
SIDEWALL HEIGHT	PIER HEIGHT	ANCHOR SPACING NOT TO EXCEED	
		ZONE-I	ZONE-II
7.5 FT	28 1/2 IN	12 FT	7.0 FT
7.5 FT	33 1/2 IN	11 FT	6.7 FT
7.5 FT	41 1/2 IN	11 FT	6.4 FT
7.5 FT	49 1/2 IN	10 FT	6.1 FT
7.5 FT	57 1/2 IN	10 FT	5.8 FT

MINUTE MAN ANCHORS			
MODEL	DESCRIPTION	USE ON SOIL TYPE	DEPTH OF EMBEDMENT
650-DH 5/8	DOUBLE HEAD, EARTH AUGER ANCHOR	2,3,4	48"
650-DH 3/4	DOUBLE HEAD, EARTH AUGER ANCHOR	2,3,4	48"
650-DH 11/16	DOUBLE HEAD, EARTH AUGER ANCHOR	2,3,4	48"
210-PDH	DOUBLE HEAD TENSION DEVICE FOR CONCRETE	SLAB	6"

CHART 5-19

SOIL TYPE FOR ANCHOR EMBEDMENT	
1.	SOUND HARD ROCK
2.	VERY DENSE AND/OR CEMENTED SANDS, COARSE GRAVEL AND COBBLES, PRE LOADED



MISCELLANEOUS,  
OPTIONS, CONNECTIONS,  
REGULATION

## MISCELLANEOUS OPTIONS, CONNECTIONS, AND INFORMATION

### 6-1 Central Air Conditioning

6-1.1 If your home was not provided with an air conditioning or make-ready-for-air-conditioning option and you want to install a central air conditioning system, you must first consult the Heating and Cooling Design Basis Certificate. Comfort Cooling section to determine whether your home has been constructed with an air distribution system designed for use with central air conditioning. This certificate is part of the Compliance Certificate, which is located on a wall in the master bedroom clothes closet.

### 6-2 Self-Contained Air Conditioning Unit

6-2.1 If a self-contained central air conditioning unit is to be used (separate from the furnace) an automatic damper to prevent cooled air from blowing up into the furnace will have to be installed in the furnace base. Depending on the furnace installed in your home, this damper may already have been installed at the factory, or in some cases, the furnace may be of a type which is labeled as suitable for use with air conditioning without such a damper. In addition, the ducts carrying cooled air from the air conditioning unit into the home and return air from the

6-2.5 The connection of the flexible duct to the heat duct within the floor sections of the home must be properly supported to avoid stress on the heat duct and the connection thereto. The flexible ducts must also be supported above the surface of the ground.

### 6-3 Split System Air Conditioning Unit

6-3.1 If a split system (a system having an A-coil in the furnace and an external condensing unit) is installed, it must be listed for use with the heating equipment installed in this home. It may be necessary to change the furnace blower when installing this type of system.

### 6-4 General A/C Power Supply

#### NOTICE

ELECTRICAL CONNECTIONS MADE TO ENERGIZE AIR CONDITIONING EQUIPMENT SHOULD BE MADE ONLY BY QUALIFIED PERSONNEL. THE COMPLETED INSTALLATION MUST CONFORM TO ARTICLE 440 OF THE NATIONAL ELECTRIC CODE AND APPLICABLE

## Miscellaneous Options, Connections, and Information (continued)

**6-4.4** In all cases, the installation of air conditioning or heat pump equipment must be in accordance with the manufacturer's written installation instructions. The acceptability of the air conditioning equipment, rating and location of the disconnect, fused type branch circuit protection, and connections to the equipment are to be determined by the local inspection authorities.

### **6-5 Wood Burning Fireplace**

**6-5.1** If your home is equipped with a built-in fireplace, it will be necessary to complete the installation of the round top assembly, rain cap, spark arrestor, and chimney pipe. See Figure 6-3.

**6-5.2** Install the storm collar over the roof flashing. The storm collar must rest on top of the flashing spacers. Install the tabs through the slot on the opposite end of the storm collar and push storm collar down over the chimney so that it rests on the roof flashing. Pull the tab to tighten the storm collar against the chimney pipe. Seal top edge of storm collar with non-combustible waterproof sealant. See Figure 6-4.

### **6-6 Furnace Vent (roof jack)**

**6-6.1** The furnace vent for your home may have been shipped with a removable crown attached to comply with transportation height requirements. A warning tag may be attached to the fuel supply line, the furnace, and the furnace thermostat, if the furnace vent has a removable crown installed. The vent crown and instructions for its installation are provided with your home.

#### **WARNING**

**THE FURNACE ROOF JACK MUST BE INSTALLED BEFORE THE FURNACE IS OPERATED.**

**6-6.2** If the home has a high-efficiency furnace installed, the air intake pipe and the exhaust pipe may need to be extended to complete the installation. Piping assemblies have been provided (see figure 6-14) and are to be installed as follows: 1.) Match air intake and exhaust pipe assemblies to pipes extending above the roof surface. Exhaust pipe has a male end; intake has a female end. (coupler) 2.) Make certain pipe ends are clean and free of burrs inside and outside at the mating surface. 3.) Apply ABS pipe

## Miscellaneous Options, Connections, and Information (continued)

### **DRYER EXHAUST SYSTEM MUST NOT TERMINATE UNDERNEATH THE HOME.**

**6-7.2** An access panel is located in the dryer area to provide access to the dryer end of the duct system. See Figures 6-6 and 6-7.

**6-7.3** Access to rough in from outside may be located on the bottom side of the floor or on an exterior wall. See Figure 6-5.

**6-7.4** The exhaust system shall be completed on site as shown with materials provided by the owner. See Figures 6-6 and 6-7.

**6-7.5** Exhaust duct and termination fittings must be listed by an approved testing agency or certified as components of the dryer.

### **CAUTION**

**THE FACTORY-INSTALLED CLOTHES DRYER ELECTRICAL CIRCUIT IS SUPPLIED BY A CABLE CONTAINING 4 ELECTRICAL CONDUCTORS AND TERMINATES WITH A 4-PRONG RECEPTACLE. DO NOT CHANGE THE 4-PRONG RECEPTACLE**

**6-8.4** In installing carports, awning rails, or small storage buildings, select a unit that is designed with support columns, which will carry its own weight. As little weight as possible should be attached to the home itself.

**6-8.5** The foundation system for any structure attached to the home must be equal to the foundation system for the home. If the foundations are not equal, frost heave or settling could occur at different rates. This unequal movement can result in structural damage or lost weather seals, which will promote air and water infiltration.

**6-8.6** All joints created by attaching accessories to the home should be properly sealed with weather-stripping and covered, if possible, with molding or flashing. Attaching fasteners should be caulked or sealed. All holes or openings necessitated in the walls or roof of the home should be covered and sealed to insure against leakage.

### **CAUTION**

**MODIFICATIONS OR ALTERATIONS OF YOUR HOME MAY MAR ITS APPEARANCE AND WEAKEN IT STRUCTURALLY WHICH COULD**

## Miscellaneous Options, Connections, and Information (continued)

**6-10.1** Some homes have been made ready for the installation of evaporative coolers. The roof structure has been reinforced and a capped duct opening provided. The cooling unit must be installed per its manufacturer installation instructions and a water line with shut off valve provided.

**6-10.2** The electrical connection must be made at the junction box provided in the duct (See Figure 6-12) or on the roof (See Figure 6-13) in accordance with the requirements of the National Electric Code.

**6-10.3** A water overflow hose must be provided to allow the water from the accumulation pan under the cooler coils a pathway away from the home. Do not allow the water to run across the roof and down the side of the home.

### **6-11 Relocation of Home**

**6-11.1** In the event that the home is to be relocated, the installation process will need to be reversed to make the home ready for transportation. Earlier in this instruction you were made aware to "take special note of temporary structural supports and bracing locations, as they must be reinstalled for movement". These supports and

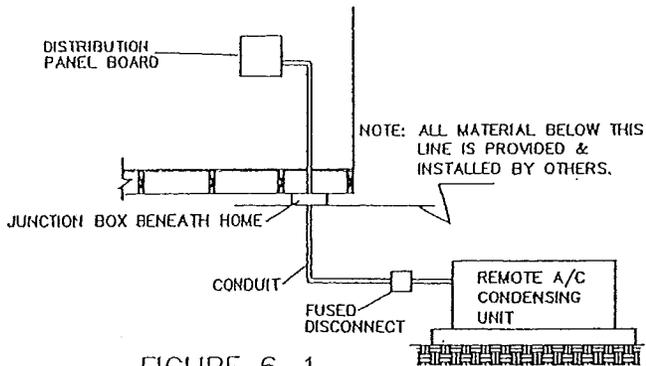
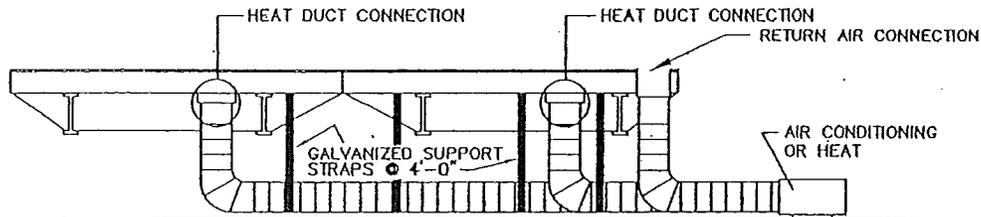


FIGURE 6-1

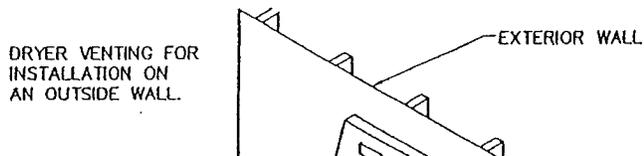
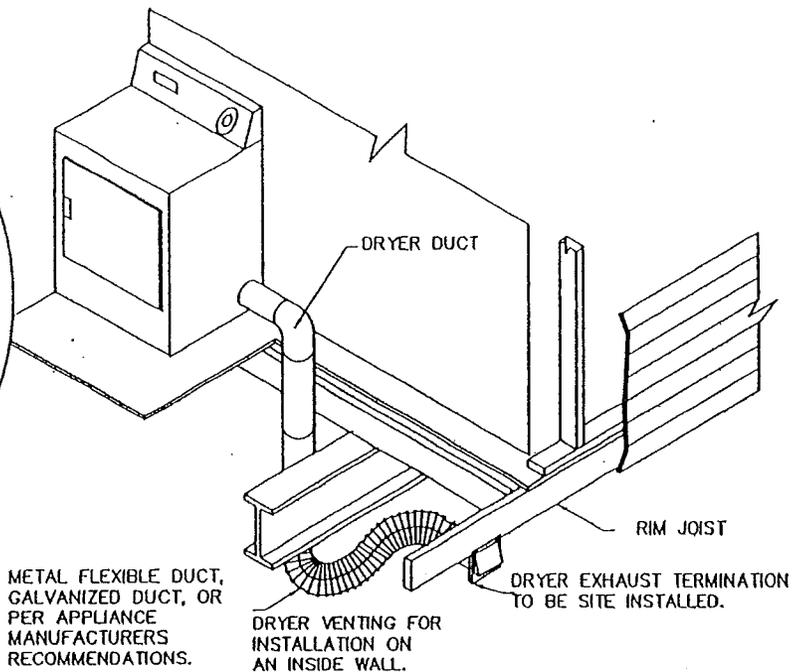
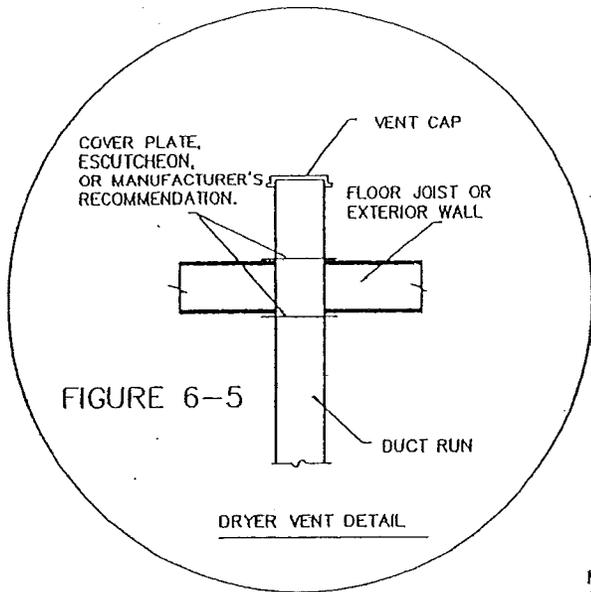
SPECIAL NOTES

- (1) FACTORY INSTALLED CIRCUIT HAS BEEN SIZED FOR A MAXIMUM WIRE AMPACITY OF 40 AMPS. & HAS AN OVERCURRENT PROTECTION DEVICE RATED AT 30 AMPS.
- (2) THIS CIRCUIT MAY NEED ADJUSTMENT ACCORDING TO THE AMPACITY OF THE A/C UNIT INSTALLED.
- (3) REFER TO THE NATIONAL ELECTRIC CODE & THE AIR CONDITIONER INSTALLATION REQUIREMENTS.

DOUBLE WIDE APPLICATION  
REMOTE AIR OR HEATING



NOTE: NOT IN ANY INSTANCE SHOULD THE DUCT MAKE CONTACT WITH THE GROUND.



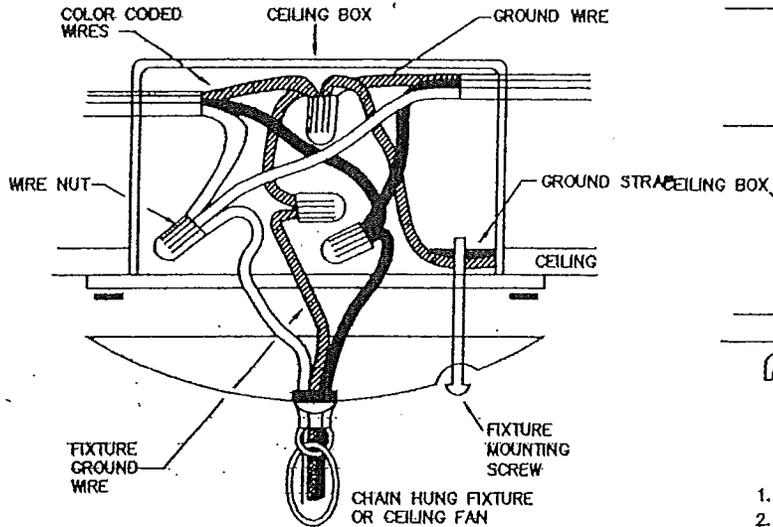
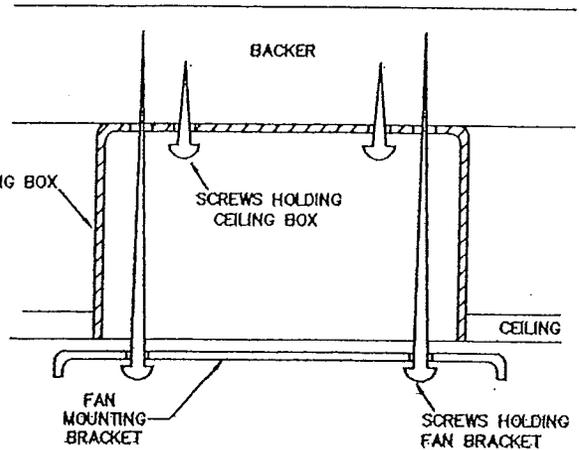
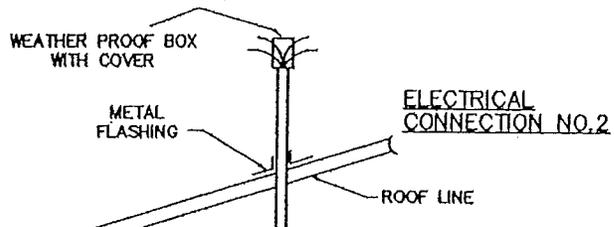
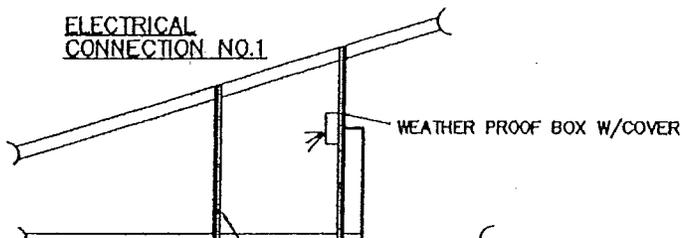


FIGURE 6-10



1. USE (2) TWO #8 SCREWS TO HOLD BOX TO BACKER.
2. USE (2) TWO #8 SCREWS TO HOLD BRACKET TO THE BACKER THROUGH THE BOX.
3. BOX MUST NOT SUPPORT BRACKET.
4. FAN BRACKET GROUND CONDUCTOR MUST CONNECT TO CIRCUIT GROUNDING CONDUCTOR.

FIGURE 6-11



**FINAL INSPECTION**

## FINAL INSPECTION

After your home has been completely installed, a final inspection should be made to insure that no items have been overlooked which could cause a problem. Special emphasis should be placed on the following items:

### 7-1 Exterior Siding and Trim

**7-1.1** A thorough check should be made of all portions of the exterior siding to make certain that it is not cracked or split, buckled, or loose in any manner. Any siding observed to be in this condition should be repaired or replaced. All fasteners that are loose should be retightened or replaced. All decorative trim pieces or molding strips, including molding along the edge of the roof, should have special attention to make certain there are no gaps or voids in the sealant tapes or caulking material. If any such places are observed, they should be resealed.

### 7-2 Roofs

**7-2.1** The roof must be checked to make certain that all vent, flue and intake flashings are firmly in place. That the roof ventilators, flue pipes, exhaust vents, and air intakes have not become damaged or loosened in transit or installation. That any eave or

### 7-4 Caulking and/or Sealers

**7-4.1** There are many good brands of caulking material and roof sealers, which can be purchased from local retail stores. Whatever brand of caulking and/or sealer is purchased the instructions regarding application should be read closely. This will include any special preparation of the surface to be coated. Observe the labeling on this material for any notes concerning resistance to running or streaking the sides of the home. This can be very unsightly and, in many cases, extremely difficult to remove. Special detergents or etching agents may be required in some cases to clean the metal surfaces on which caulking or sealers are to be applied. Again, the manufacturer's instructions should be followed to the detail to prevent damaging roof and side metals.

### 7-5 Egress Windows

**7-5.1** An egress window is provided for each bedroom and a label is located on the window to identify it and to provide opening instructions. The egress windows must be checked to assure that all shipping clips on screens, storm windows, and other appurtenances are removed so that quick and safe

## FINAL INSPECTION (continued)

**7-7.4** Provisions should also be made to inspect the home on a weekly basis to ensure that the skirting ventilators are open and not snow-covered or to remove any ice and snow build-up along the eaves. As stated in the Home Owners Manual this is to prevent the water created by melting ice and snow from backing up under the shingles or entering the home by other means.

### **7-8 High Wind Precautions**

**7-8.1** Homes located in Wind Zone II may occasionally be subjected to high winds. In the event of a high wind, you may wish to protect your primary windows, patio doors and entrance doors against the pressures created by the high winds. If you have not already installed storm shutters, these areas may be protected by a covering of plywood fastened to the wall studs, around the window or door frames with wood screws. Any joints in the plywood at patio door openings will need to be secured by fastening a 2 x 4 to each side of the plywood to stiffen the joint. When the plywood is removed the screw holes must be filled with a high quality silicone caulk. Such caulking is available at local retail stores.

## INSTALLATION NOTES



