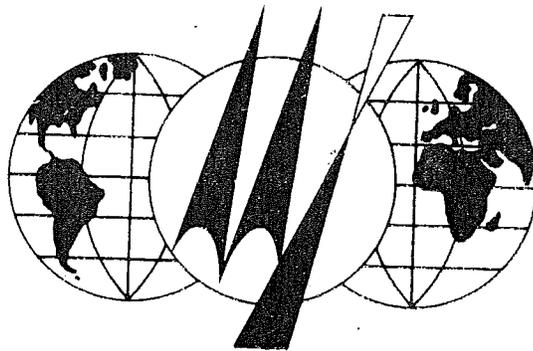


8/1976

FIELD SETUP INSTRUCTIONS



MODULINE INTERNATIONAL, INC
P.O. Box 209 • Chehalis, Wash. 98532

INTRODUCTION

MODULINE HOMES MEET RIGID FEDERAL STANDARDS

This Moduline Home has been designed and constructed to meet the Federal Code administered by H.U.D. effective June 15, 1976. It also complies with Manufactured Housing Institute recommendations for mobile home construction. The Federal tag on the rear endwall of the home indicates that this home has been inspected by a federally approved inspector during its manufacture.

The following instructions are minimum requirements, consequently before installation of this home, consult with regulatory agencies in your area for codes which may require licenses and permits, or which may affect procedures recommended in this manual.

Proper set-up is essential to your full satisfaction with your new home. In the event that you encounter unusual conditions not covered in this manual, please contact your dealer or factory service representative.

All drawings and picture contained in these instructions are intended to be representative only.

PLEASE READ ALL INSTRUCTIONS PRIOR TO INSTALLATION OF THE HOME

THIS MANUAL MUST STAY WITH THE HOME

TABLE OF CONTENTS

CONTENTS	PAGE
INTRODUCTION - - - - -	2
TABLE OF CONTENTS- - - - -	3
UNITED STATES ZONE MAPS- - - - -	4
SITE PREPARATION & PIER CONSTRUCTION - - - - -	5
SINGLEWIDE SET-UP- - - - -	6
DOUBLEWIDE SET-UP- - - - -	7
FOOTING DETAILS- - - - -	8
TIP OUT ROOM FIELD INSTALLATION- - - - -	9
TIE-DOWN INSTRUCTIONS- - - - -	10-19
ELECTRICAL UTILITY CONNECTION- - - - -	-20
WATER UTILITY CONNECTION - - - - -	-21
DRAIN UTILITY CONNECTION- - - - -	-22
GAS UTILITY CONNECTION - - - - -	-23
PRELIMINARY MAINTENANCE- - - - -	24-25
EMERGENCY EGRESS - - - - -	-26
ELECTRICAL CROSSOVER - - - - -	-27
WATER LINE CROSSOVER - - - - -	-28
DRAIN & GAS LINE CROSSOVER - - - - -	-29
HEAT DUCT CROSSOVER - - - - -	-30
INTERIOR FINISH- - - - -	-31
EXTERIOR FINISH- - - - -	32-34

UNITED STATES ZONE MAPS

ROOF LOAD ZONE MAP

-  NORTH 40 PSF (SNOW)
-  MIDDLE 30 PSF (SNOW)
-  SOUTH 20 PSF (SNOW)

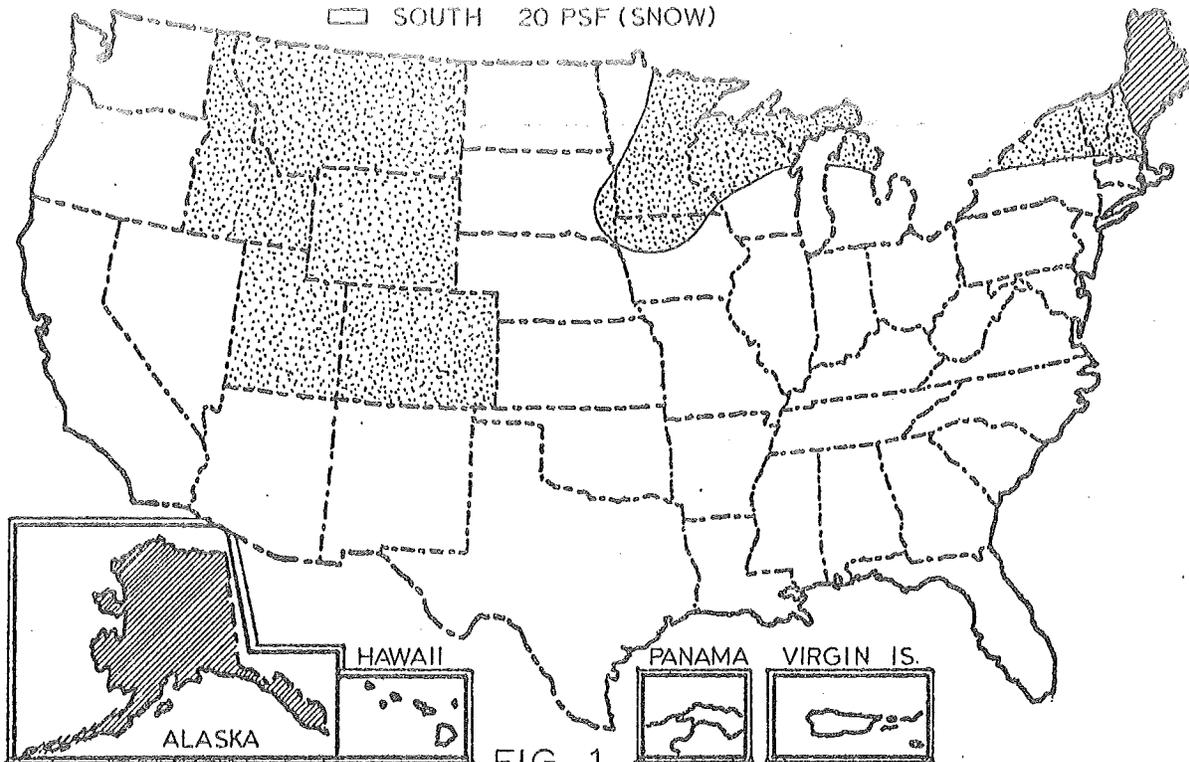


FIG. 1

WIND ZONE MAP

-  STANDARD WIND
-  HURRICANE
- ZONE I 15 PSF HORIZONTAL 9 PSF UPLIFT
- ZONE II 25 PSF HORIZONTAL 15 PSF UPLIFT

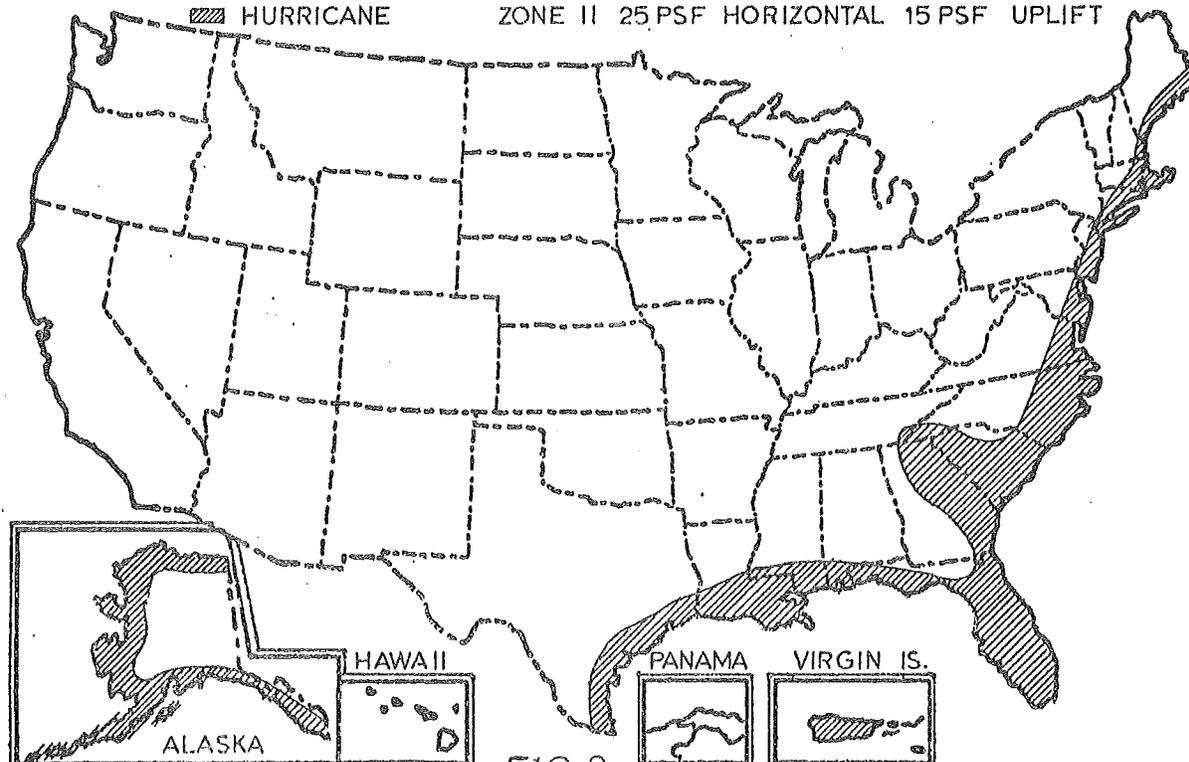


FIG. 2

SITE PREPARATION & PIER CONSTRUCTION

The area beneath and adjacent to the home site should be selected or altered relative to the prevention of water accumulation.

Proper support for your mobile home depends on soil conditions and climate conditions in your immediate area. Firm soil with at least 90% compaction or concrete slabs designed for mobile home parks are satisfactory. In areas which are subject to freezing and thawing, the pier footings must be designed in compliance with local building code requirements.

Homes manufactured by Moduline International, Inc. are designed to be supported by individual piers and secured with a tie-down system appropriate to local wind loads. Other methods of supporting your home exist, but this manual covers a common method which Moduline recommends. See Figure 3 and 4

Differing weather conditions impose some variation in pier and tie-down requirements. Figure 1 and Figure 2 indicate the various design requirements specified by the Federal Mobile Home and Safety Standard.

The effectiveness of the mobile home support structure is governed by the following:

- A. Piers must effectively carry the vertical loads imposed by the home itself.
- B. The foundation must resist side wind loads.
- C. In high wind areas, lifting and overturning forces are encountered.
- D. The base of each pier must have sufficient area to properly distribute the loads to the ground.
- F. The support structure must comply with local building codes and regulations applicable to your area.

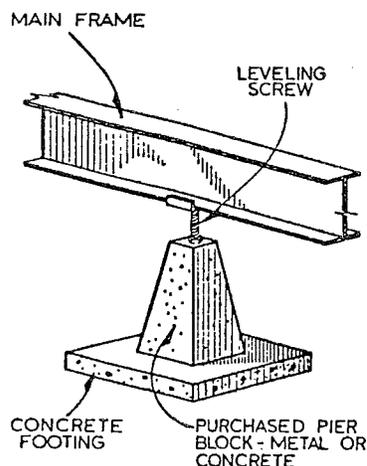


FIG. 3

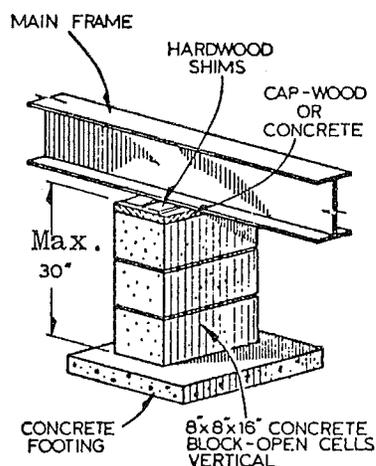


FIG. 4

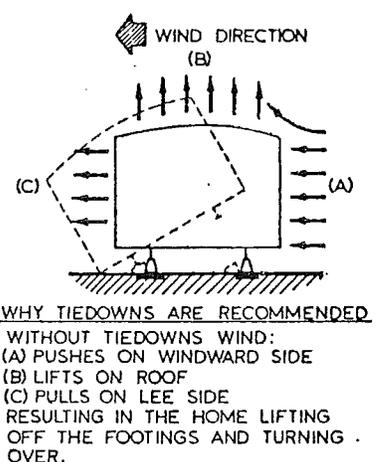


FIG. 5

SINGLEWIDE SET UP

GUIDELINES:

Maximum height above grade for each pier is 30". Requirements for pier heights more than 30" should be reviewed by a qualified engineer.

Maximum spacing of the piers is 8' center to center. In local areas where soil conditions will not support 1500 PSF soil bearing pressures, the 8' distance between piers must be reduced. See figure 8 for recommended pier block locations for your home.

Only use jacks with a minimum 5 ton rating.

Use a firm support under the jack base to prevent tipping or settling of the jack.

PROCEDURE (Singlewides)

1. When the home is located in its final position, the first step is to level the unit with the hitch jack.
2. The second step is to jack up one side of the house by placing a jack forward of the front spring shackle and another jack just behind the rear spring shackle. The home should then be lifted with both jacks simultaneously. Install piers, one just ahead of the front jack and one just behind the rear jack. (Be careful not to exceed the 8'-0" maximum spacing) (See Fig. 6)
3. Repeat step two for the other side.
4. Complete installation of pier blocks at the remaining locations specified on the pier block diagrams, Fig. 8
5. Level the home with the pier block screw jacks or with hardwood shims if concrete blocks are used for piers.

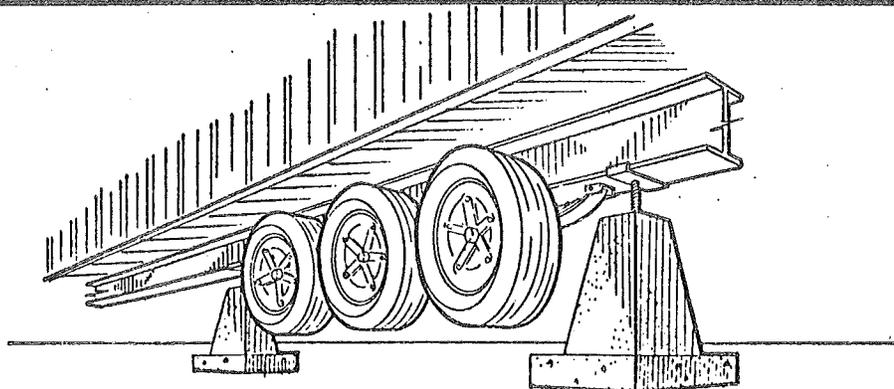


FIG. 6

DOUBLEWIDE SET UP

DOUBLEWIDE SET-UP & BLOCKING

1. The site should be prepared as described for singlewides.
2. Remove polyethylene and wood strip closure materials from both halves of the coach. Do not remove temporary structural supports.
3. Position the halves as close together on the final location site.
4. Draw the two floors together by jacking at an angle. It may be necessary to winch the halves together with a "comealong". Be careful not to overstress or bend any structural member during this final positioning phase. A greased piece of plywood or metal sheet under the tires will aid in sliding one unit to the other.
5. Install pier blocks and level the heavy half of the doublewide unit. Blocking should be accomplished similar to the singlewide method except that the inside axle area blocking should be initiated first. See Fig 8 for blocking.
6. Seal any potential areas of air infiltration around the floor, walls and ceiling marriage line with fiberglass insulation, etc. This marriage line joint should be tight and sealed when set-up is complete.
7. Correct any alignment problems in endwalls and interior walls during alignment and blocking of the second half.
8. When the two halves are properly aligned and the roofs slightly apart, attach bolts loosely to the outrigger or "L" floor clips under the floor.
9. Close the ceiling/roof gap by raising the outside of the second half with hydraulic jacks. Longitudinal roof alignment can be accomplished by raising or lowering the outside corners of the second (or light) half.
10. Fasten the top of the ridge beam together with bolts (supplied) through the pre-drilled holes. See Fig: 7
11. Finalize leveling of the second half.
12. Check the entire marriage connection for proper seal, alignment and tighten all fastenings.
13. Install the galvanized cap over the center beam with putty tape under each side and in joint. Secure with 3/4" sheetmetal screws 4" O.C.. Seal along both sides and joints of cap with roof coating. See Figure

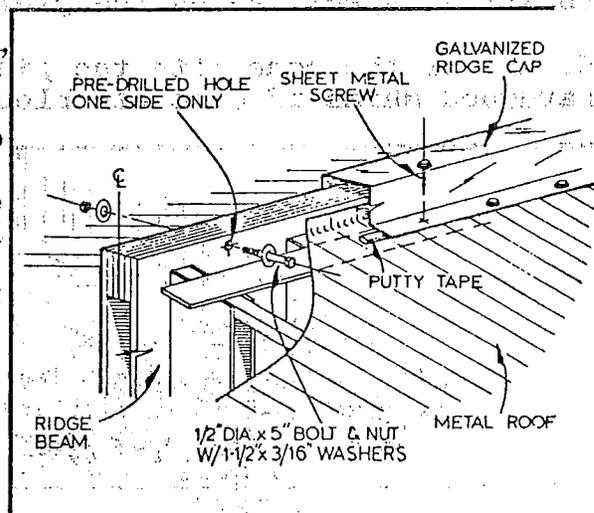
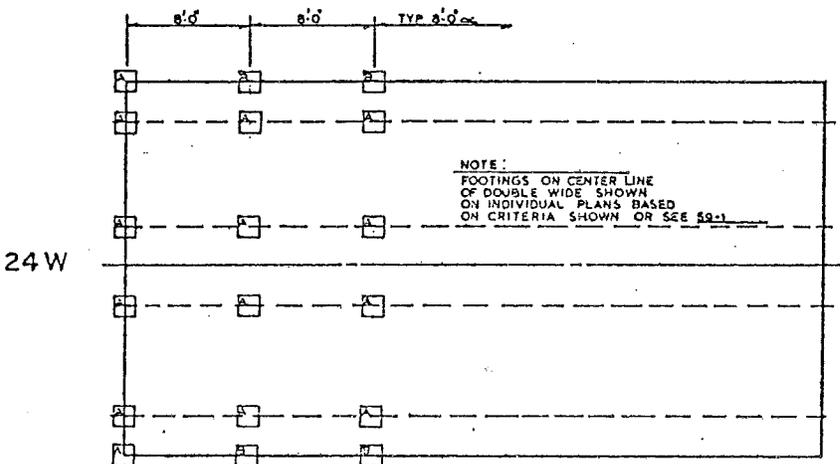
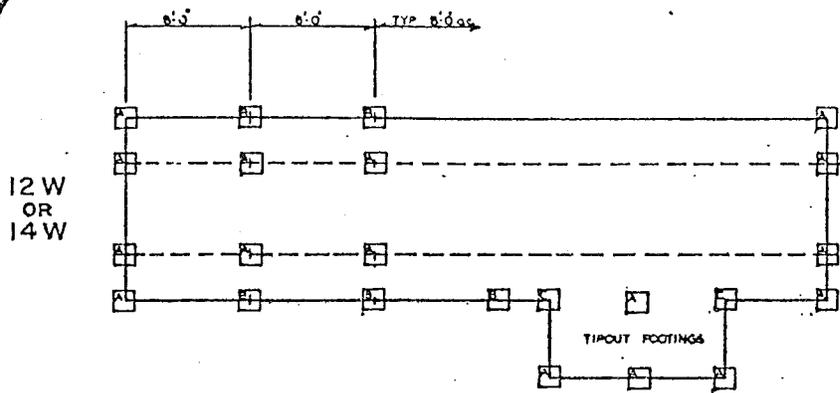


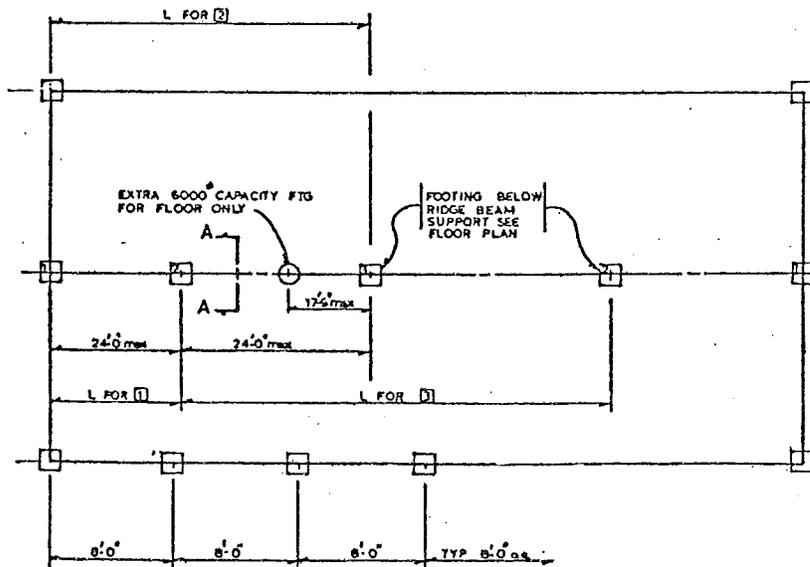
FIG. 7

FOOTING DETAILS



- NOTES
1. RIM JOIST TO HAVE A MIN OF 16" LONG BEARING AT TOP OF FOOTING.
 2. **A** FOOTING WITH A 2000^{LB} CAPACITY
 - B** FOOTING WITH A 3000^{LB} CAPACITY
 - C** FOOTING WITH A 4000^{LB} CAPACITY

STANDARD FRAME
PERIMETER FRAME



PERIMETER FOOTING CAPACITY

SOUTH	-----	4000 ^{LB}
MID	-----	4000 ^{LB}
NORTH	-----	5000 ^{LB}

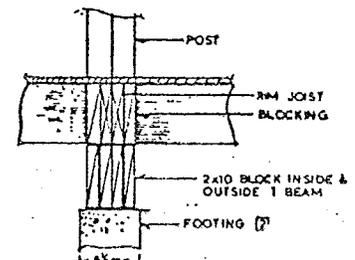


FIG. 8

TIP OUT ROOM FIELD INSTALLATION

The mobile home and tip-out room have been designed as a unit to meet the Federal construction standard. In order that the warrantee be maintained, it is important that the installation be accomplished in accordance with the following instructions:

The home must be in its final level position with all piers and supports installed before tip-out installation.

A minimum of two experienced mobile home men should be available for the tip-out room installation. Never attempt to make the installation yourself due to the weight of the structure.

PROCEDURE

1. Install piers and/or footings. See figure 8
2. Carefully lower the tip-out onto the piers and level with hardwood shims or screw jacks.

NOTE: Do not attempt to level the tip-out by changing the level of the main coach.
3. Secure inside panel facia to the exterior wall of the main unit with screws.
4. Trim the exterior gaps with the insulation strips supplied with the coach.
5. Install roof and aluminum sidewall flashing.
6. Caulk any open seams
7. For electrical crossover your home may be connected by direct wiring (schematic in owner's pack) or
8. The tip-out must be tied down. See Figure 9 for tip-out tie-down information.

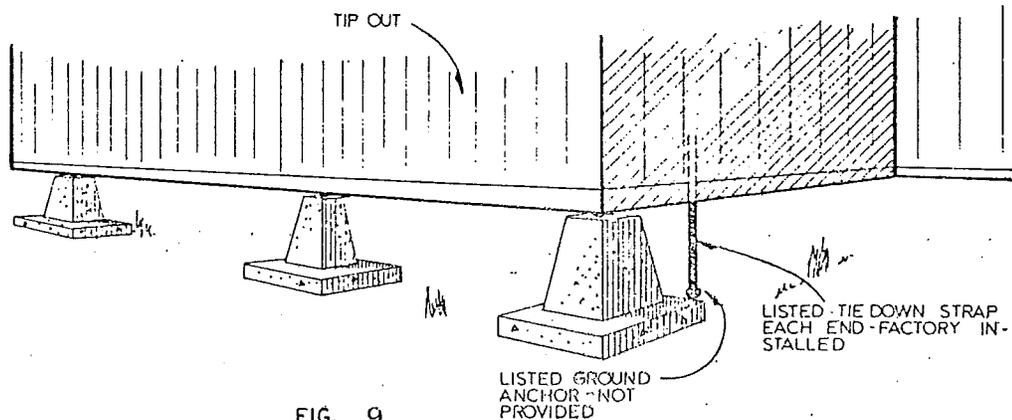


FIG. 9

TIE-DOWN INSTRUCTIONS

TIE-DOWN INSTRUCTIONS

Mobile homes located in the United States must be securely anchored to the site in order to resist wind forces. Figure I indicates U.S. wind zones as specified by the Federal Code. A data plate located near the electrical panel distribution box indicates which structural zone your unit was designed for.

MODULINE INTERNATIONAL products are furnished with tie-down attachment points, but do not include additional hardware necessary to complete the tie-down system. Approved tie-down equipment is available through your dealer or mobile home supply stores.

GENERAL REQUIREMENTS FOR TIE-DOWN EQUIPMENT

Tie-down systems must consist of listed materials of adequate strength. Material specifications contained herein should be considered as minimum specifications.

Galvanized cable or steel straps must have at least 4,725 pounds breaking strength.

Galvanized connection devices must have at least 4,725 pounds breaking strength.

Ground anchors should be installed per the manufacturer's recommendations and should withstand a minimum 4,725 pound pull.

TIE-DOWN PROCEDURE

See Figure 10 A and B for tie-down details. For your convenience the frame is stenciled "Tie-Down location", at each point that a tie-down is required for the zone your home was designed for.

Attach tie-down equipment only after the coach is properly leveled.

1. Place ground anchors in line with each tie-down clip and below the perimeter edge of the coach. Do not install the anchors outside the perimeter of the coach in order to avoid interference with the skirting installation.
2. Attach tension devices and cables or straps to the anchors and the attachment clips.
3. Tighten all tie-downs until they become taut in an alternating pattern from one side of the coach to the other.

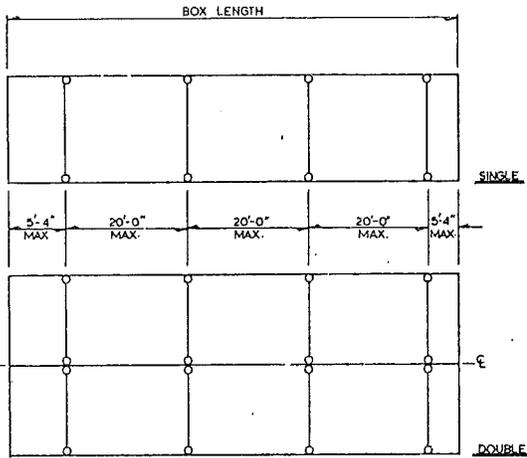
Periodical tightening and adjustment of the tie-downs may be necessary.

A detailed tie-down system by "Minute Man Anchors" is included as one system acceptable to MODULINE INTERNATIONAL. There are many systems available which you may choose from, as long as they meet the general requirements listed above and on Figure 10

TIE-DOWN INSTRUCTIONS

TIE DOWN PLACEMENT

ZONE I - 15 PSF WIND

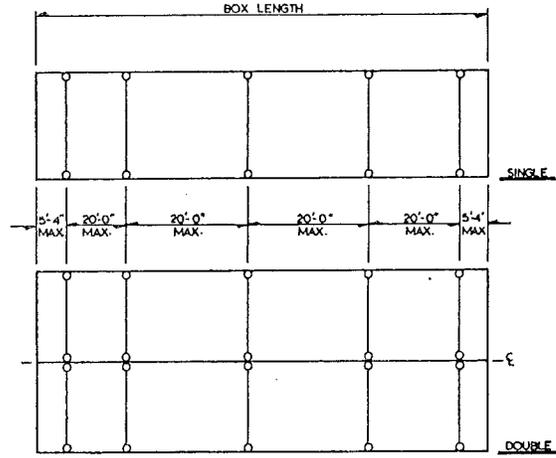


REQUIRED NUMBER OF TIEDOWNS					
BOX LENGTH	CEILING HEIGHT		BOX LENGTH	CEILING HEIGHT	
	84"-90"	95"		84"-90"	95"
40'-0"	6	6	64'-0"	8	8
44'-0"	6	6	65'-0"	8	8
48'-0"	6	6	68'-0"	8	10
52'-0"	6	8	72'-0"	8	10
56'-0"	8	8	76'-0"	8	10
60'-0"	8	8	80'-0"	8	10

* DOES NOT REFLECT FRONT & REAR ENDWALL TIEDOWNS. USE 2 TIE DOWNS AT EA. END FOR DOUBLEWIDES & 2 TIEDOWNS AT EA. END FOR SINGLEWIDES.

NOTE: 1/2 THE REQ'D NO. EA. SIDE

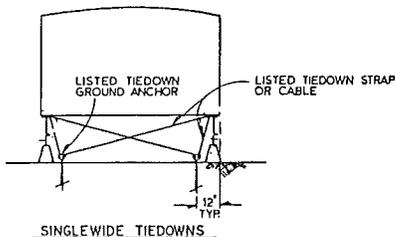
ZONE II - 25 PSF WIND



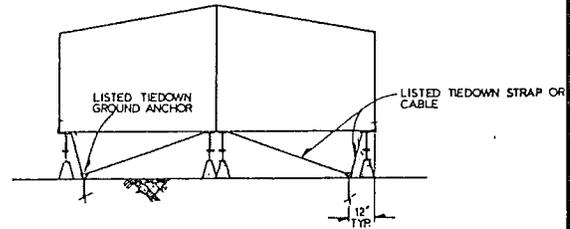
REQUIRED NUMBER OF TIEDOWNS					
BOX LENGTH	CEILING HEIGHT		BOX LENGTH	CEILING HEIGHT	
	84"-90"	95"		84"-90"	95"
40'-0"	10	10	64'-0"	14	16
44'-0"	10	10	66'-0"	14	16
48'-0"	12	12	68'-0"	16	16
52'-0"	12	12	72'-0"	16	18
56'-0"	12	14	76'-0"	16	18
60'-0"	14	14	80'-0"	18	20

* DOES NOT REFLECT FRONT & REAR ENDWALL TIEDOWNS. USE 4 TIE DOWNS AT EA. END FOR DOUBLEWIDES & 4 TIEDOWNS AT EA. END FOR SINGLEWIDES.

NOTE: 1/2 THE REQ'D NO. EA. SIDE

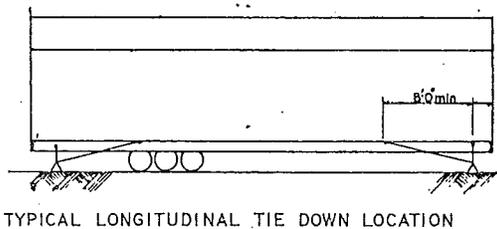


SINGLEWIDE TIEDOWNS



DOUBLEWIDE TIEDOWNS

TYPICAL CROSS-SECTIONS



TYPICAL LONGITUDINAL TIE DOWN LOCATION

NOTE:

1. A cross member must fall at each tie-down location
2. Tie-down straps are designed to wrap around main frame (See tie-down manufacturer's fastening details)

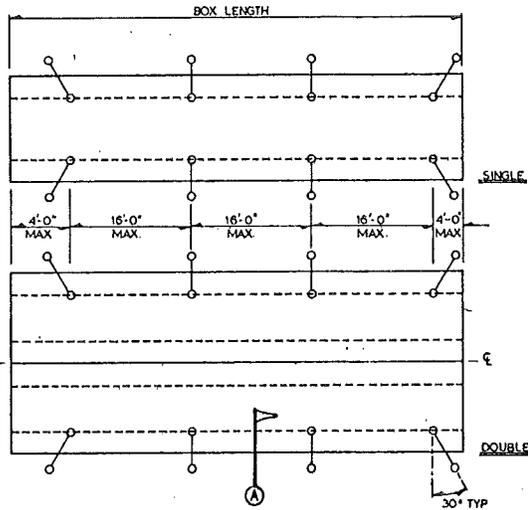
PERIMETER FRAME

FIG. 10A

TIE - DOWN INSTRUCTIONS

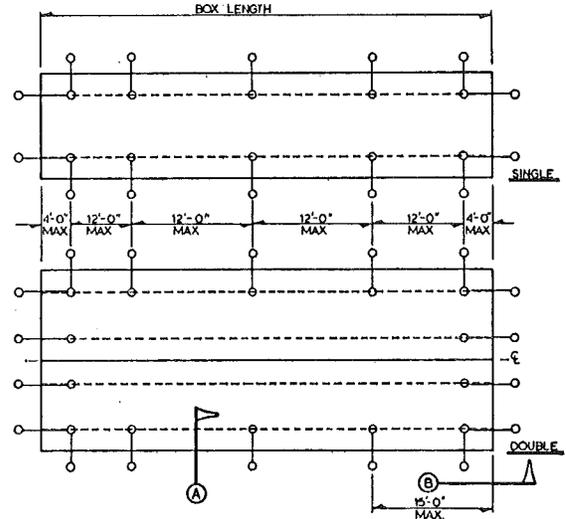
TIE DOWN PLACEMENT

ZONE I - 15 PSF WIND



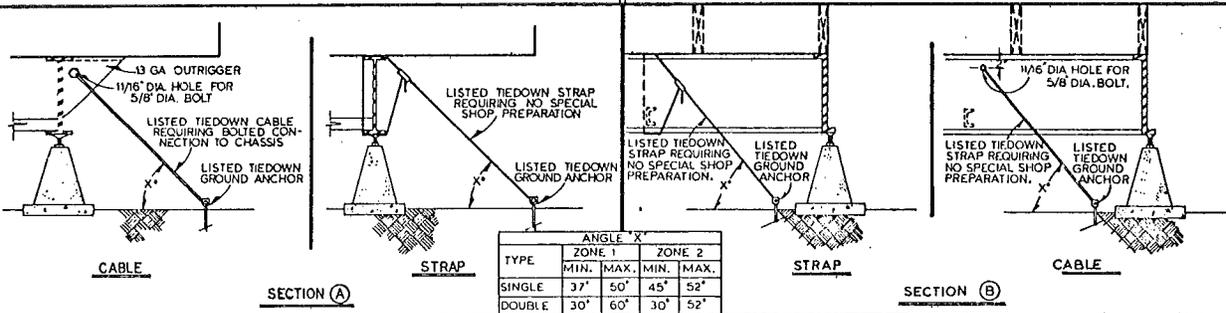
BOX LENGTH	REQUIRED NUMBER OF TIEDOWNS					
	84'-90"	96"	BOX LENGTH	84'-90"	96"	
40'-0"	5	8	64'-0"	10	10	
44'-0"	8	8	66'-0"	10	10	
48'-0"	8	8	68'-0"	10	12	
52'-0"	8	8	72'-0"	10	12	
56'-0"	8	10	76'-0"	12	12	
60'-0"	10	10	80'-0"	12	12	

ZONE II - 25 PSF WIND



BOX LENGTH	REQUIRED NUMBER OF TIEDOWNS *					
	SINGLE	DOUBLE	BOX LENGTH	SINGLE	DOUBLE	
40'-0"	12	16	64'-0"	18	22	
44'-0"	12	18	66'-0"	18	24	
48'-0"	14	18	68'-0"	18	24	
52'-0"	14	20	72'-0"	20	24	
56'-0"	16	20	76'-0"	20	26	
60'-0"	16	22	80'-0"	22	26	

* DOES NOT REFLECT FRONT & REAR ENDWALL TIEDOWNS. USE 4 TIE DOWNS AT EA. END FOR DOUBLEWIDES & 2 TIEDOWNS AT EA. END FOR SINGLEWIDES.



NOTE:

1. A cross member must fall at each tie-down location
2. Tie-down straps are designed to wrap around main frame (see tie-down manufacturer's fastening details)

STANDARD FRAME

FIG. 10B

TIE-DOWN INSTRUCTIONS

GROUND ANCHORAGE

The following Minute Man anchoring method is for reference only and all anchoring should be completed as per anchor manufacturer's instructions.



Minute Man anchors®



INSTALLATION

There are two basic methods of installing anchors, each equally effective in properly securing mobile homes to the ground.

Machine Installation

In this method, the anchor is turned the **full depth** of four feet into the ground by an anchor drive machine.



1. Attach anchor to machine.



2. Auger is placed in proper position in line with strap, and machine started.



3. Anchor should be installed at a slight angle as shown to assure head being positioned behind future skirting.

Installation with Manual or Mechanical Post Hole Digger

In this method, anchors can be installed with equipment available to the average home owner.



1. A hole is dug to a depth of approximately two feet in the proper position as explained under machine installation.



2. After the hole is dug to 24" depth, the anchor is turned into the ground by hand, using a rod or length of pipe for leverage.



3. After anchor is installed to full depth, earth is repacked, six inches at a time.

CAUTION: These instructions cover installation for frame ties only, and apply to those mobile homes that are specifically engineered to require only frame ties as specified in the mobile home manufacturer's printed installation instructions. Particular attention should be directed to selecting the proper capacity anchoring system, consistent with the home manufacturer's recommendations.

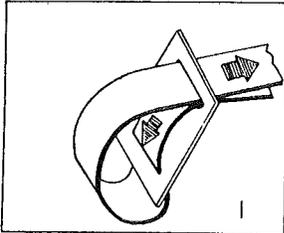
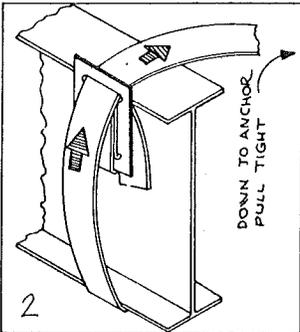
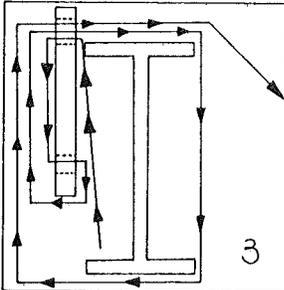
FOR FRAME TIES ONLY

TIE-DOWN INSTRUCTIONS

2.

POSITIONING FRAME TIE

FRAME TIE INSTALLATION INSTRUCTIONS

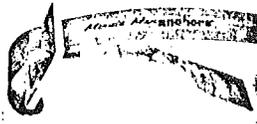




1. Thread 7' length of frame tie strap through buckle as shown.
2. Next, thread long end of strap between frame and floor of home. Bring strap through buckle as shown in diagram and fasten to anchor head.
3. Diagram showing strap in position around frame and through buckle. It is important to remove all slack from system.

1. See step one in installation instructions.



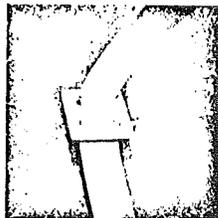
2. Insert strap in position through buckle.



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



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



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



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



7. Inside of frame tie, properly installed.

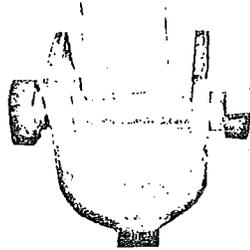
TIE-DOWN INSTRUCTIONS

PROPER TENSIONING OF STRAP TO ANCHOR HEAD 3.

Note: The tensioning bolt can be inserted in the head from either side.



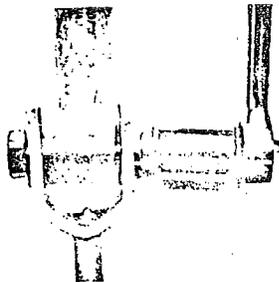
1. Insert bolt into head; attach nut loosely.



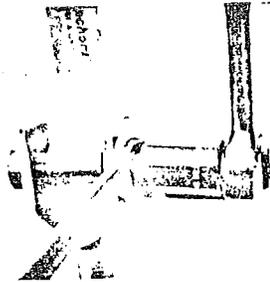
2. Insert strap in slot of bolt 5/8", or until strap is flush with far side of bolt.



3. Bend strap 90° and take at least four complete turns on bolt until strap is taut.



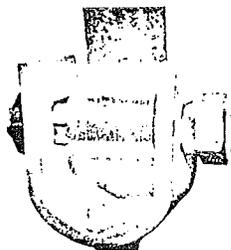
4. Bolt is turned with 15/16" socket wrench, or adjustable wrench, on hex head.



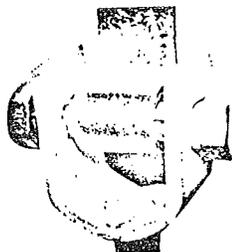
5. To hold bolt under tension while re-positioning wrench, an open-end wrench is placed on 5/8" square shoulders of bolt.



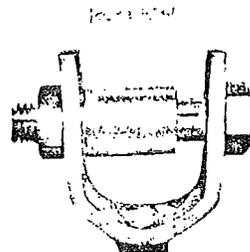
6. Align square shoulders of bolt with square hole in anchor head.



7. Holding hex head of bolt in position, tighten nut to draw square shoulders into square hole.



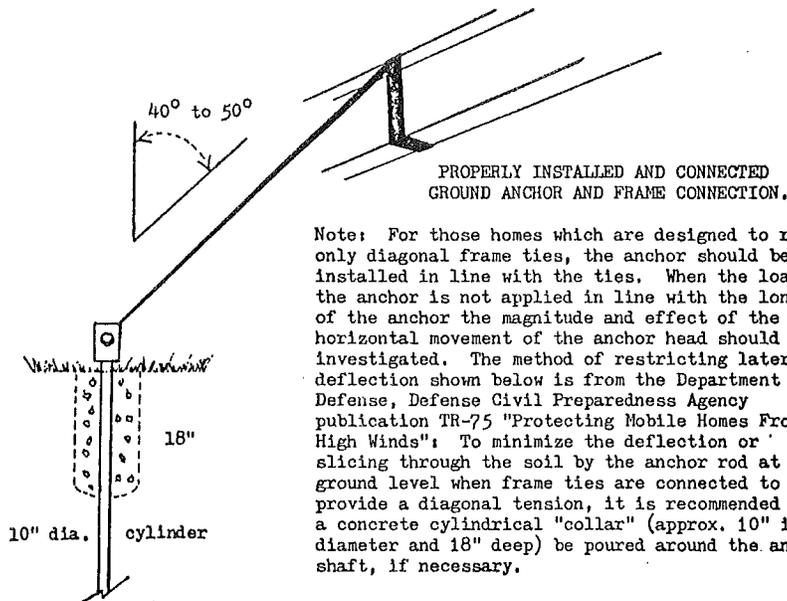
8. Shoulders are now in locking position; continue to tighten nut.



9. Tensioning device is now in locked, secure position.

For clarity, tools not shown on most photos above.

TIE-DOWN INSTRUCTIONS



TYPES OF SOIL

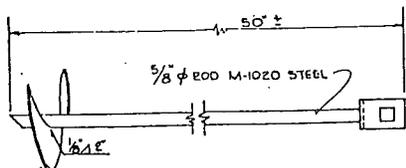
Many anchors are designed for particular soil conditions and are unacceptable for use in other type soils. We have therefore, listed the soils for which each anchor is designed and approved. Soil classifications are taken from the "STANDARD FOR THE INSTALLATION OF MOBILE HOMES" NFPA 501A 1975/ANSI A119.3 1976.

1. Sound hard rock.
2. Very-dense and/or cemented sands, coarse gravel and cobbles, preloaded silts, clays, and corals.
3. Medium-dense coarse sands, sandy gravels, very-stiff silts and clays.
4. Loose to medium dense sands, firm to stiff clays and silts, aluvian fill.

NOTE: All Minute Man Anchors tensioning devices are certified and tested to 7,100 pounds (3,220kg).

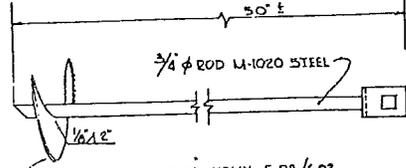
TIE-DOWN INSTRUCTIONS

5.



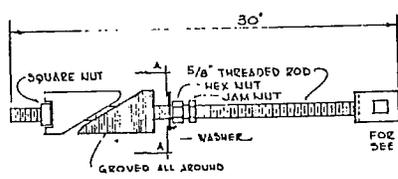
DISC - 8 GA DEVELED HELIX 5.98/4.02
M-1020 STEEL WELDED

650-S



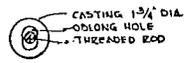
DISC - 8 GA DEVELED HELIX 5.98/4.02

650H-S

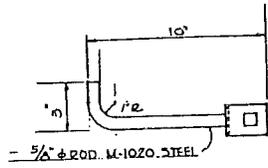


CASTINGS 25,000 PSI
SEMI-STEEL 134,000
ALL STEEL USED IN ANCHOR ASSEMBLY
CONFORMS TO A.S.T.M. A-50

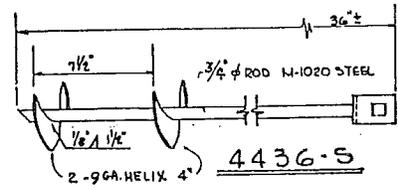
30-ER-S



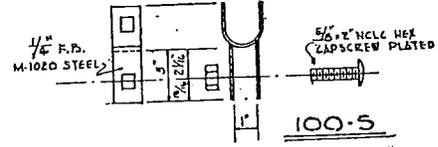
CASTING 1 3/4" DIA
OD LONG HOLE
THREADED ROD



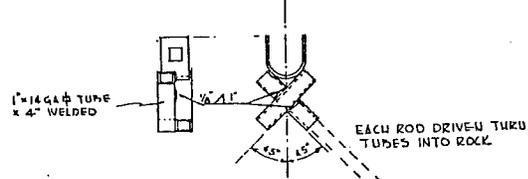
210-P-S



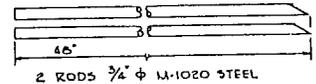
4436-S



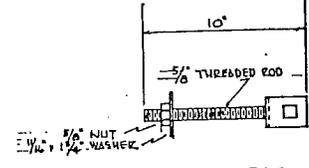
100-S



ALL STEEL USED IN ANCHOR ASSEMBLY
CONFORMS TO A.S.T.M. A-50



48X-S



210-S

ALL ANCHORS & ADAPTERS ALSO
AVAILABLE WITH DOUBLE HEADS

Minute Man anchors

TIE-DOWN INSTRUCTIONS

6.

MATHESON, HINTZ & ASSOCIATES, INC.

CONSULTING ENGINEERS AND LAND SURVEYORS
ASHEVILLE AIRPORT ROAD FLETCHER, N. C. 28732

JOE K. MATHESON, JR., P. E.
WILLARD A. HINTZ, R. L. S.
HARRY E. BYAS, JR., P. E., R. L. S.
H. C. ABERNETHY, P. E.

PHONES: CODE 704
ASHEVILLE 253-8692
ARDEN 684-7417

April 23, 1976

Mr. C. Denson Hutchinson
Minute Man Anchors, Inc.
305 W. Walker Street
East Flat Rock, North Carolina 28726

Dear Mr. Hutchinson:

I have analysed design drawings and physical testing reports for those Minute Man Anchors listed in the tabulation attached. My analysis and the physical test reports define the breaking strength of each of these anchors and their components to be in excess of 5,000 pounds. The strapping meets Federal Specification QQ-S-781H for Type I, Class B, Grade 1 strapping. The strapping is 1 1/4 x .035 hot dip galvanized steel.

In file are testing reports of the direct withdrawal strength of these anchors. These tests evaluate the anchorage strength of Minute Man Anchors installed resisting an axially applied withdrawal load. For the anchors listed on the attached sheet the ultimate holding power is not less than 4,725 pounds when installed in accordance with manufacturer instructions in the soil types indicated in the 'table'. If these anchors are to be installed vertically to resist other than direct withdrawal loads the magnitude and effect of horizontal movement of the anchor head should be investigated.

Very truly yours,

MATHESON, HINTZ & ASSOCIATES, INC.

H. C. Abernethy
H. C. Abernethy, P. E.

Attachment

HCA:ps



TIE-DOWN INSTRUCTIONS

LIST OF CERTIFIED MINUTE MAN ANCHORS WITH A MINIMUM HOLDING POWER OF 4,725 POUNDS (2143 kg).

7.

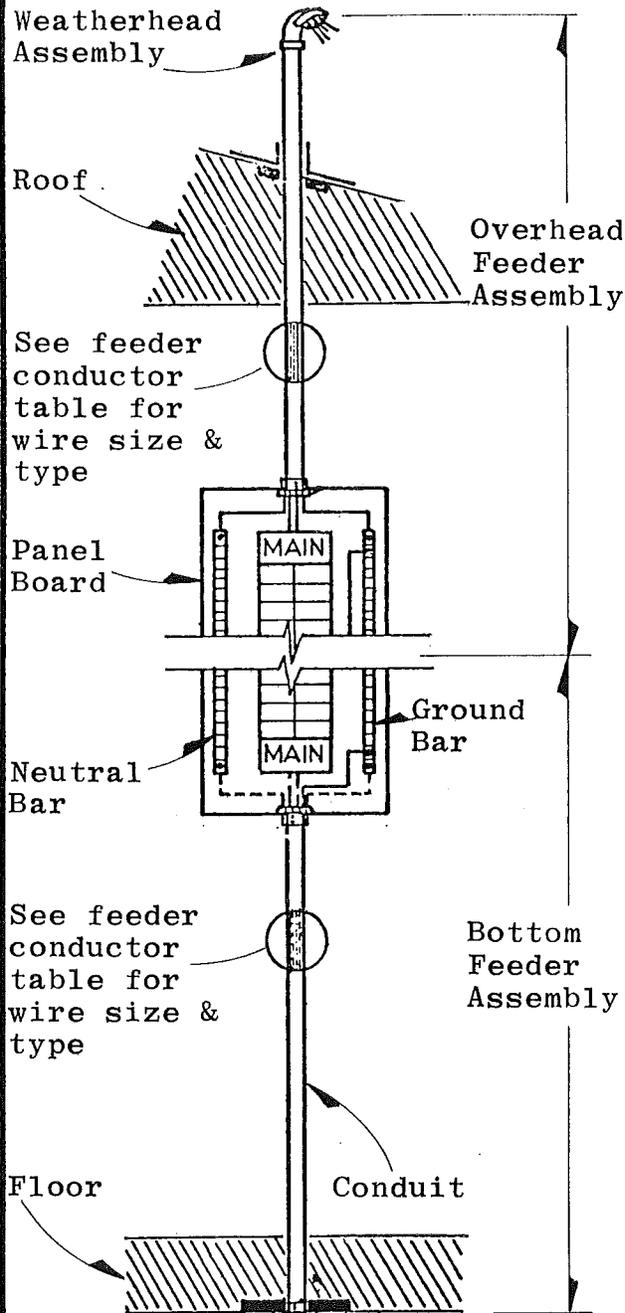
1. Sound hard rock.
2. Very-dense and/or cemented sands, coarse gravel and cobbles, pre-loaded silts, clays, and corals. (Probe torque value range - greater than 550 inch pounds)
3. Medium-dense coarse sands, sandy gravels, very-stiff silts and clays. (Probe torque value range - 350 - 550 inch pounds)
4. Loose to medium dense sands, firm to stiff clays add silts, aluvian fill. (Probe torque value range - 200 - 349 inch pounds)

MARK	MODEL	DESCRIPTION	USE IN SOIL TYPE *
MMA-1	650-S	Single Head, Earth Auger Anchor 5/8" shaft.	2,3,4
MMA-2	650-DH-S	Double Head, Earth Auger Anchor 5/8" shaft.	2,3,4
MMA-3	650-H-S	Single Head, Earth Auger Anchor 3/4" shaft.	2,3,4
MMA-4	650-H-DH-S	Double Head, Earth Auger Anchor 3/4" shaft.	2,3,4
MMA-5	4436-S	Single Head, Double Disk, Earth Auger Anchor 5/8" shaft.	2
MMA-6	4436-DH-S	Double Head, Double Disk, Earth Auger Anchor 5/8" shaft	2
MMA-7	48-X-S	Single Head Drive Anchor	2
MMA-8	48-X-DH-S	Double Head Drive Anchor	2
MMA-9	36-S	Single Head Coral Anchor	CORAL
MMA-10	36-DH-S	Double Head Coral Anchor	CORAL
MMA-11	210-S	Single Head Tension Device for Slab	SLAB
MMA-12	210-DH-S	Double Head Tension Device for Slab	SLAB
MMA-13	210-P-S	Single Head Tension Device for Concrete	SLAB
MMA-14	210-P-DH-S	Double Head Tension Device for Concrete	SLAB
MMA-15	30-ER-S	Single Head Expand Rock Anchor	1
MMA-16	30-ER-DH-S	Double Head Expand Rock Anchor	1
MMA-17	TH-S	Single Tension Head	SLAB
MMA-18	TH-DH-S	Double Tension Head	SLAB
MMA-21	100-S	Single Head Tension Device Adapter	CONNECT
MMA-22	100-DH-S	Double Head Tension Device Adapter	CONNECT

* NOTE: Many anchors are designed for particular soil conditions and are unacceptable for use in other type soils. We have therefore, listed the soils for which each anchor is designed and approved. Soil classifications are taken from the "STANDARD FOR THE INSTALLATION OF MOBILE HOMES" NFPA 501A 1975/ANSI A119.3 1976.

ELECTRICAL UTILITY CONNECTION

ELECTRICAL CONNECTION



Your home is equipped with either overhead or bottom feeder assembly.

The overhead feeder assembly comes complete, ready to connect to the main power supply.

The bottom feeder assembly must have a junction box (sized in accordance with the chart) or suitable fitting attached to the raceway (conduit). The proper size conductors must be installed from the main power supply to the panelboard. (See feeder conductor table for wire size and type)

It is the home owners responsibility to provide the supply connection.

Moduline recommends that all electrical work performed on the finished home be accomplished by a qualified, licensed electrician and in conformance with applicable codes.

NOTE: Your home may be equipped with a 50 amp plug-in type power cord. If so, site preparation must be made for a plug-in power box.

J-Box Sizing

100 Amp - 4"x10"x10"
200 Amp - 4"x10"x12"

Fig. 11

FEEDER CONDUCTOR TABLE

WIRE	WIRE SIZE & TYPE	
	100 AMP	200 AMP
HOT	#3 THW - CU	3/0 THW - CU
HOT	#3 THW - CU	3/0 THW - CU
NEUTRAL	#6 THW - CU	#3 THW - CU
GROUND	#6 THW - CU	#6 THW - CU

WATER UTILITY CONNECTION

The water distribution system may be connected to any safe potable water source. The location of the inlet is under the rear half of the coach and consists of a single 3/4" galvanized pipe with a cap. A label located near the inlet should help you locate it.

WATER PRESSURE DESIGN

This mobile home has been designed for an inlet water pressure of 80 PSI. When water pressures exceed 80 PSI, a pressure reducing valve should be installed.

SHUT OFF VALVE INSTALLATION

A master shut off valve should be installed between the potable water source and the water inlet. The valve shall be either a full port gate valve or a full port ball valve, and have threaded or solder joints.

TESTING

The water system in your MODULINE home was tested for leaks before your home was shipped from the factory. Due to vibration and shock encountered in transit, it is important that plumbing be re-checked for any possible leakage.

Testing of the water distribution can be done by subjecting the system to air or water at 80 PSI for 15 minutes without loss of pressure.

DRAINAGE OF WATER LINES

In order to drain the water lines the following procedure should be used:

1. Shut off water supply at main inlet and open all faucets in the home.
2. Disconnect the water lines at the water heater. Attach a pressurized air system to these lines and blow the water out. Do not pressurize the water heater.
3. Drain the water heater by running a drain hose to the exterior of the home and opening the water heater valve.

PROTECTION FROM FREEZING

All exposed water piping, in climates subject to freezing, should be protected by insulation or electric heat tapes. Any heat tape used is to be listed for mobile home use.

DRAIN UTILITY CONNECTION

The drainage system in your MODULINE home was tested for leaks before your home was shipped from the factory. Due to vibration and shock encountered in transit, it is important that plumbing be re-checked for any possible leakage.

The 3" main drainage outlet is located in the rear half of the coach. Insure that the drain pipe from the main drain outlet to the sewage outlet is securely blocked and has at least 1/4" per foot drain slope. Testing of the drain system can be accomplished by capping the outlet, then filling the entire system with water to the top of the toilet bowl.

NOTE: Plug lower drains

The test should be sustained for a period of 15 minutes without evidence of leaks.

FIELD INSTALLATION OF INCOMPLETE DRAIN LINE

On homes shipped with below the floor plumbing incomplete, the parts necessary to complete the system are shipped loose in the home. A diagram depicting the assembly of these parts, which apply specifically to your model home is located in the owner's instruction package.

GENERAL REQUIREMENTS FOR COMPLETING DRAINAGE PIPING

1. Following the assembly diagram, roughly lay out the plumbing beneath the home.
2. Starting at one end, work toward the furthest end of the line. Cut pipe to fit and install fittings without glue until the entire system is complete.
3. Starting at one end work toward the end of the line, gluing pipe and fittings together as you go. Glue must be applied to both the fitting and pipe in an even coat. Work on only one joint at a time.
4. The finished drain line must be supported 4'-0" on center and have a 1/4" slope per foot toward the outlet.

GAS UTILITY CONNECTION

MODULINE has pressure tested the gas piping system for leaks before your home left the plant. however, it is essential that the system be retested for leaks before use. (Your utility company may require an on site test and has test equipment)

NOTE: Follow all directions on the tag near the gas supply connection. See Figure 12 Below

THIS OUTLET IS DESIGNED FOR USE WITH
GAS PORTABLE APPLICANCES WHOSE TOTAL
INPUT DOES NOT EXCEED BTU.
REPLACE PROTECTIVE COVERING OVER
CONNECTOR WHEN NOT IN USE.

Fig. 12

TESTING

1. Close all appliance controls and all appliance pilot light valves (see the appliance instructions included in the home or attached to the appliance).
2. Pressure shall be measured with a mercury manometer or slope guage calibrated so as to be read in increments of not greater than 1/10 pound or an equivalent device.
3. Piping systems shall stand a pressure of at least six inches mercury or 3 PSI on the gauge for a period of not less than 10 minutes without showing any drop in pressure.
4. Check the pipe system to appliances by pressuring to at least 16 inches and not more than 14 inches water column. Check all connections being tested for leakage with soapy water or a bubble solution.
5. CAUTION Do not pressurize the system above the pressures stated above.
6. The connection to the gas supply should be made by an authorized representative of the utility company.

NOTE: Before a test is begun, the temperature of the ambient air and of the piping shall be approximately the same. Select a time during the day for testing when air temperatures will remain constant.

PRELIMINARY MAINTENANCE

REPAIRING THE BOTTOM COVERING

A special material is fastened to the bottom side of your new home. It has been installed at the factory to protect against moisture, rodents and unconditioned air from the outside. This covering was inspected at the factory, but could have been damaged during transit. It is important that any areas that are damaged be resealed.

If the covering is a vinyl coated material use vinyl patching tape designed to repair tears or holes. If the hole is large, use a patch of the same or similar material as the bottom covering and tape the edges for an airtight seal.

If the bottom covering is an asphalt impregnated board, use a patch of the same or similar material with beads of adhesive around the contact edges to assure an airtight seal. Secure the patch with tape or fasteners until the adhesive is set.

RECAULKING

After the home is leveled and all outside trim is installed, carefully inspect all outside areas which may require recaulking due to normal shocks and movement during transit.

Tighten and reseal any loose components with special attention to seams along the edge of the roof and vent projections through the roof.

A variety of semi-hardening caulks such as vinyl base caulks are available at local hardware stores.

SKIRTING

MODULINE recommends that you skirt your mobile home. This provides added comfort and conserves energy. In colder climates this also adds extra protection against the possibility of water line freeze-ups.

Quality skirting materials may be purchased from your dealer or mobile home supply stores. Your dealer can provide experienced installation or recommend a qualified person.

PRELIMINARY MAINTENANCE

ROOF COATING

If roof coatings are applied, choose a product that will not cause streaks or runs on the side of the home. Follow the manufacturer's instructions for application.

NOTE: If it is necessary to walk on the roof, use walk boards to distribute your weight. Avoid walking directly on seams or caulked areas.

GROUND VAPOR BARRIER

Moduline recommends that a layer of polyethylene plastic or roofing felt be placed on the ground under the coach to form a moisture vapor barrier in damp or cold climate areas.

CARPORTS AND AWNINGS

If you install an awning or carport to your home, MODULINE recommends the following after the coach is blocked and leveled:

1. Use the proper awning support railing (available through your awning dealer or supplier).
2. Choose an awning that is of a free standing design which has columns to support a portion of the weight.
3. Follow the recommendations of the manufacturer and applicable building codes during installation of the awning.
4. Caulk or seal all seams or connections from the awning to the mobile home.

EMERGENCY EGRESS

EGRESS WINDOWS

Your MODULINE home is designed to assure alternate exits from bedrooms in case of an Emergency. Horizontal slider type windows provide one-half of the window area for exit by simply sliding the window horizontally. Vertical slider windows provide exit openings by sliding the lower window portion up to exit.

STORM WINDOWS

If inside storms are in place, turn attachment clips 90 degrees and remove the storm glass and frame. Then exit through the window as noted above.

If self storing storms are provided, the procedure for opening them is similar to normal window exits.

REMINDER: When you occupy your MODULINE home, familiarize yourself and your family with Emergency procedures and check to see that all shipping clips on screens, storm windows and other appurtenances are removed to insure quick and safe Emergency exits.

NOTE: A sticker is located on bedroom windows which indicates the windows that are specifically designed for egress and the exact opening procedure.

ELECTRIC CROSSOVER

DOUBLEWIDE ELECTRIC CROSSOVER

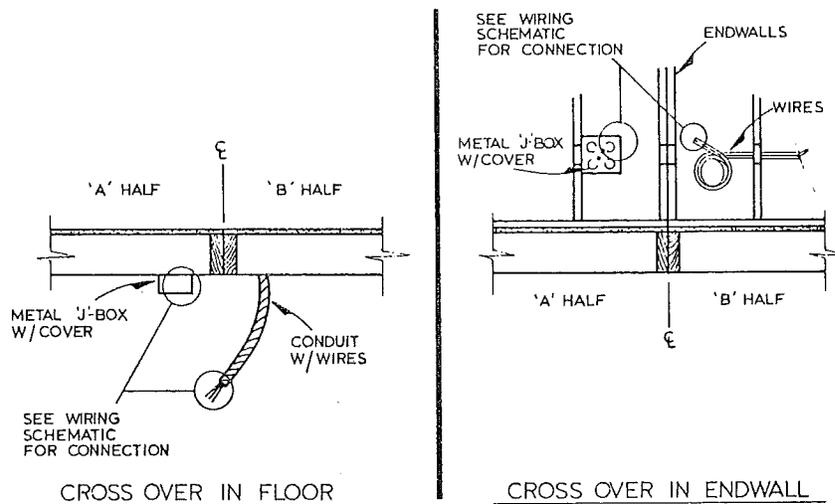
Your new doublewide home requires a crossover connection for the electrical system. A specific wiring schematic that applies to your model home is located in the owners instruction package.

GENERAL REQUIREMENTS FOR ELECTRICAL CROSSOVER

Before assembly on the electrical crossover is started, the doublewide home should be completely blocked, leveled and tied together.

MODULINE recommends that all electrical work performed on the finished home be accomplished by a qualified, licensed electrician and in conformance with applicable codes. See Figure 13 for typical connection.

1. Units shipped with wires ready to connect in "A" half "J" box
2. Power to crossover circuits shall be shut off at main panel board.
3. Remove "J" box cover
4. Remove knock-out in "J" box side and secure flex conduit to "J" box (connector provided)
5. Remove cable sheathing and bare conductors as needed for connectors. Attach per schematic. Ground wires (not shown) must also be connected to each other and a lead run to a grounding lug (s) (provided) which is bonded to the "J" box.
6. Tuck wires into "J" box and replace cover
7. Turn power on and test to be sure that no problems occur.



ALTHOUGH YOUR HOME MAY COME WITH CROSS-OVER WIRING IN THE FLOOR OR ENDWALL THE WIRING SCHEMATIC REMAINS THE SAME.

FIG. 13

WATER LINE CROSSOVER

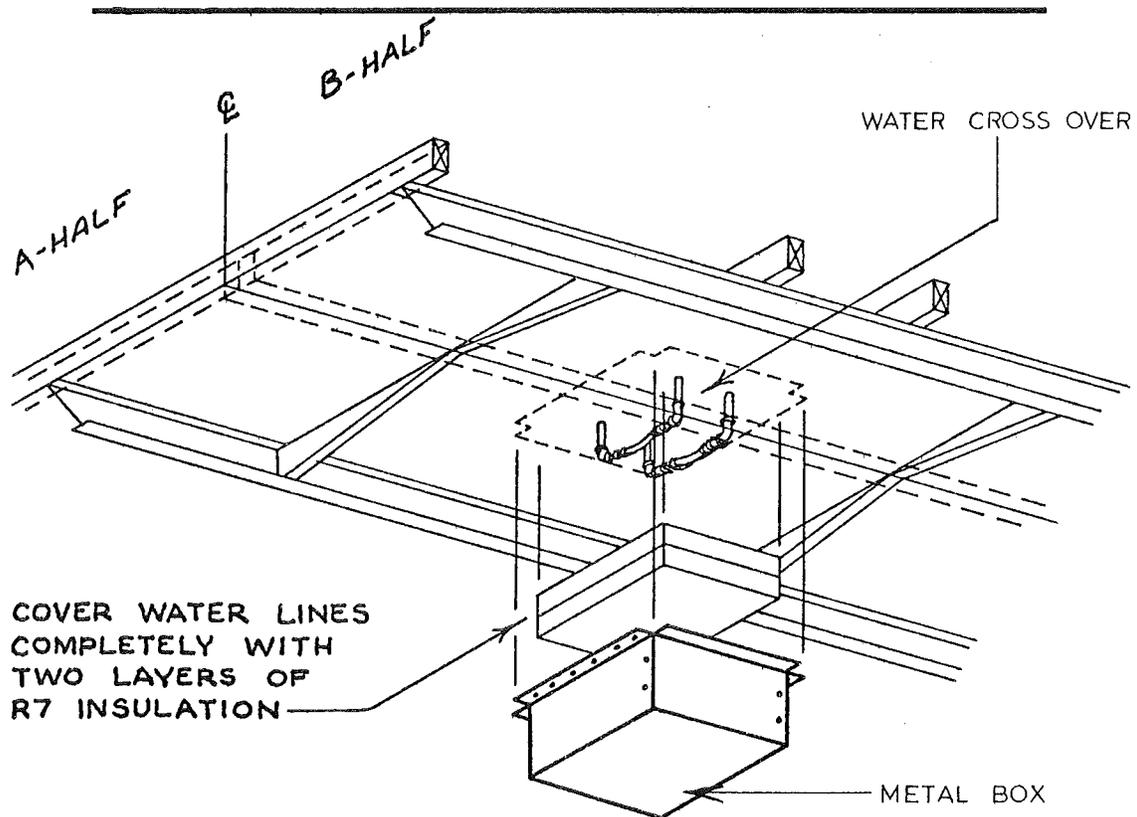
DOUBLEWIDE WATER LINES CROSSOVER

On doublewide homes with plumbing in both halves, two flex connectors for water lines are shipped loose with the home.

GENERAL REQUIREMENTS FOR WATER LINE CROSSOVER

Before assembly on the water lines crossover is started, the doublewide home should be completely blocked, leveled and tied together.

1. Locate the crossover point and remove the protective caps from the pipe ends.
2. Apply pipe dope to the male ends and attach the flex connectors.
3. Completely cover water lines with two layers of R-7 insulation and attach metal box (provided) to joists with sheet metal screws. See Figure 14



ASSEMBLY of METAL BOX AND INSULATION
OVER EXPOSED WATER LINE CROSS-OVER

FIG. 14

DRAIN & GAS LINE CROSSOVER

DOUBLEWIDE DRAINAGE CROSSOVER

On doublewide homes with plumbing in both halves, the parts necessary to connect the drain lines of both halves are shipped loose in the home. A diagram depicting the assembly of these parts, which apply specifically to your model home is located in the owners instruction package.

GENERAL REQUIREMENTS FOR DRAINAGE CROSSOVER

Before assembly on the drain crossover is started, the doublewide home should be completely blocked, leveled and tied together.

1. Following the assembly diagram, roughly lay out the plumbing beneath the home.
2. Starting at the "A" half outlet, work toward the furthest end of the line. Cut pipe to fit and install fittings without glue until the entire system is complete.
3. Starting at the "A" half outlet, work toward the end of the line, gluing pipe and fittings together as you go. Glue must be applied to both the fitting and pipe in an even coat. Work on only one joint at a time.
4. The finished drain line must be supported 4'-0" on center and have a 1/4" slope per foot toward the outlet.

DOUBLEWIDE GAS LINE CROSSOVER

On doublewide homes with gas appliances in both halves, a quick disconnect type assembly is provided. This connection will be located at either the front or rear center line of the home.

GENERAL REQUIREMENTS FOR GAS LINE CROSSOVER

Before assembly on the gas line crossover is started, the doublewide home should be completely blocked, leveled and tied together.

1. Locate the crossover point and quick connect gas lines.
2. Remove the protective caps and join the two lines together. This is a quick disconnect fitting and requires no tools. This connection should be made prior to turning on the gas and testing the lines for leaks. This connection is to remain readily accessible at all times (i.e. direct access is to be provided without having to remove any panel, door, or similar obstruction).

HEAT DUCT CROSSOVER

DOUBLEWIDE HEAT DUCT CROSSOVER

Your new doublewide home requires a crossover connection for the heating system. The crossover duct is shipped loose with your home.

GENERAL REQUIREMENTS FOR HEAT CROSSOVER

1. For your convenience, the crossover starting collars are factory installed. Locate these connection points under your home and remove the temporary cover. They are located approximately in line with each other directly under the furnace location.
2. Attach the insulated flex crossover duct to the starting collars with sheet metal screws. The insulation should be pulled back until the connection is made and then butted against the bottom of the coach and sealed with duct tape.
3. If the crossover duct comes in several sections, the sections must be connected with sheet metal screws, the joint insulated and sealed with duct tape.
4. The crossover duct must not contact the ground. This can be taken care of by loosely strapping the duct to the bottom of the coach.

Be sure that the duct is not compressed in any way that would restrict air flow. See Figure 15 below for typical heat duct crossover details.

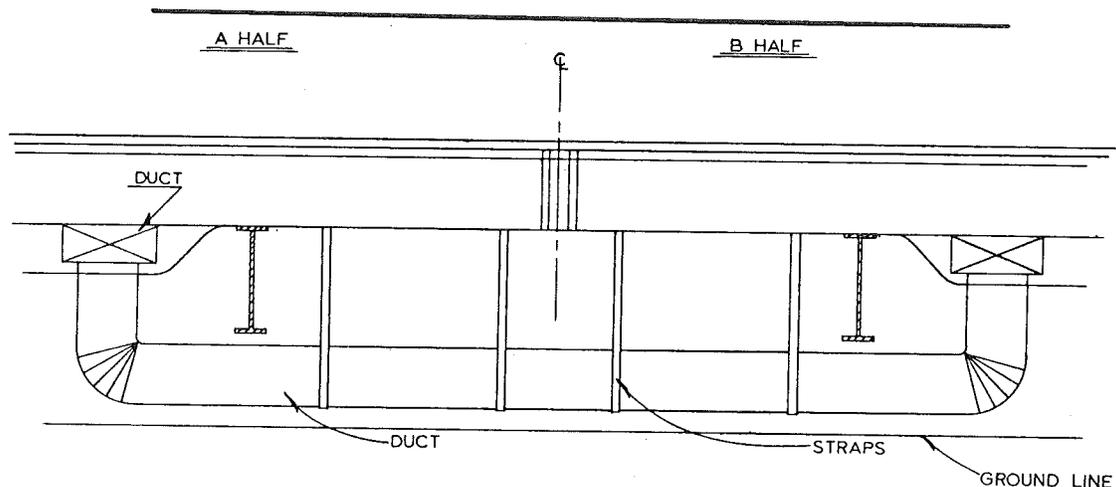


FIG. 15

INTERIOR FINISH

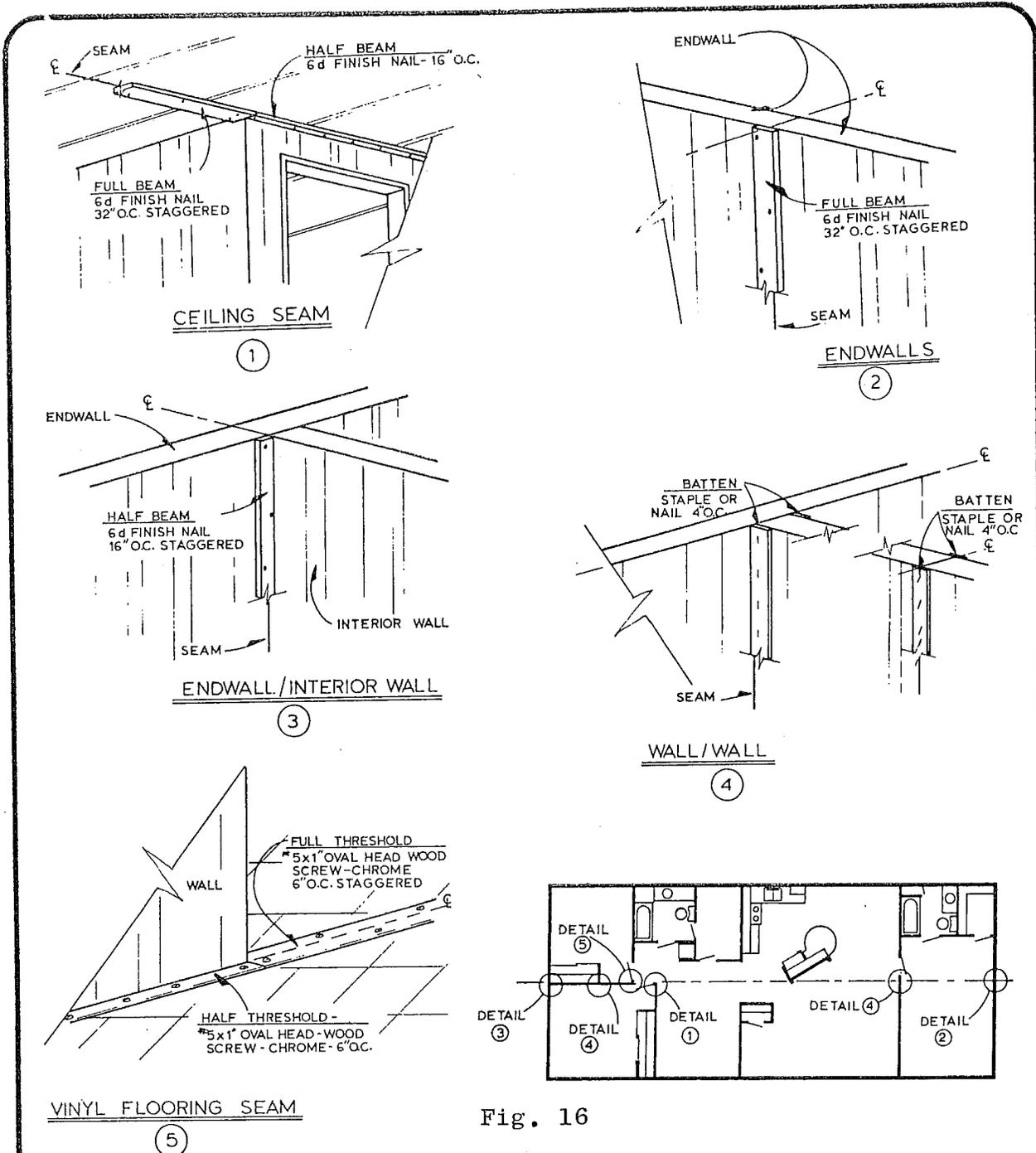
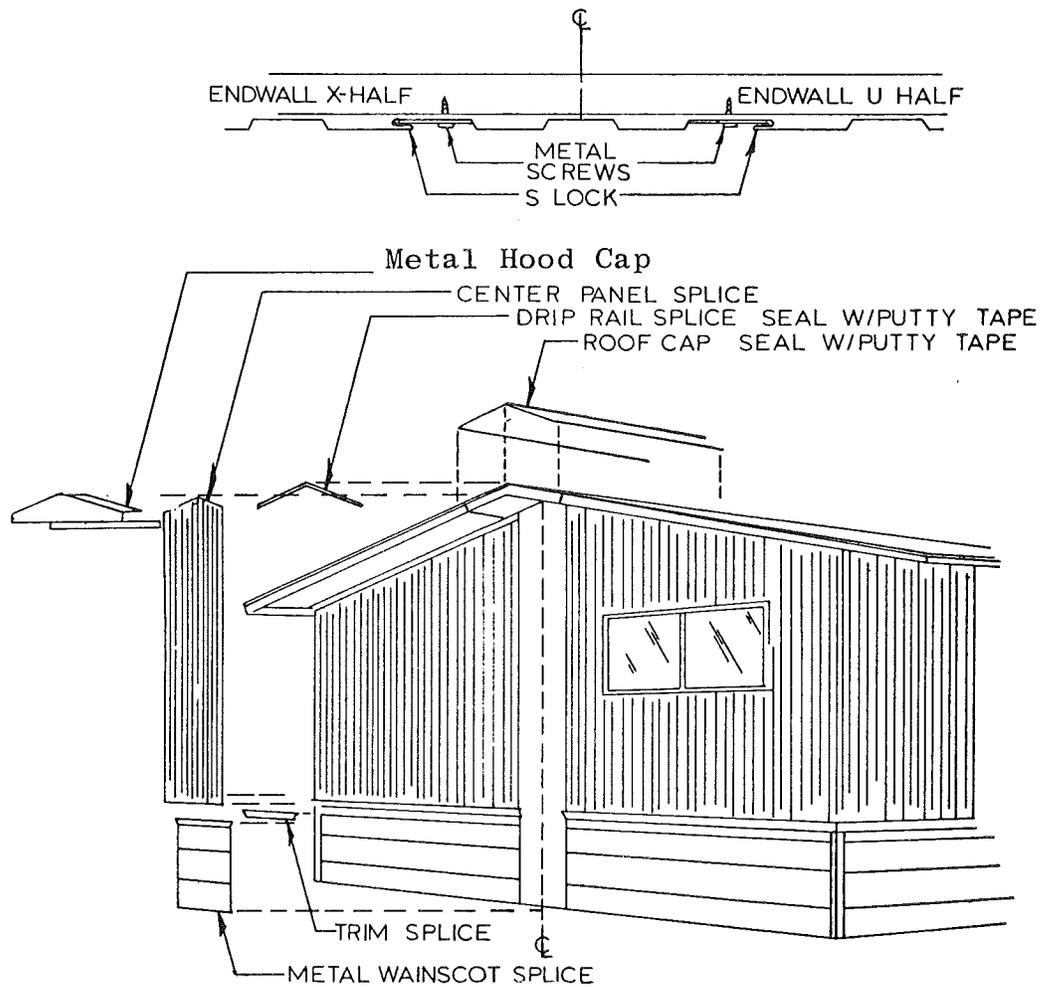


Fig. 16

NOTES:

1. Units must be fully leveled, blocked and fastened together before interior finish can be installed.
2. Fill all gaps in floor, wall and ceiling joints with insulation.
3. Install carpet bar, pad and tack strip. Finish out carpet work
4. Install all ceiling beams, half beam first.
5. Install end wall beams and interior wall mouldings
6. Install metal threshold over vinyl flooring seams.

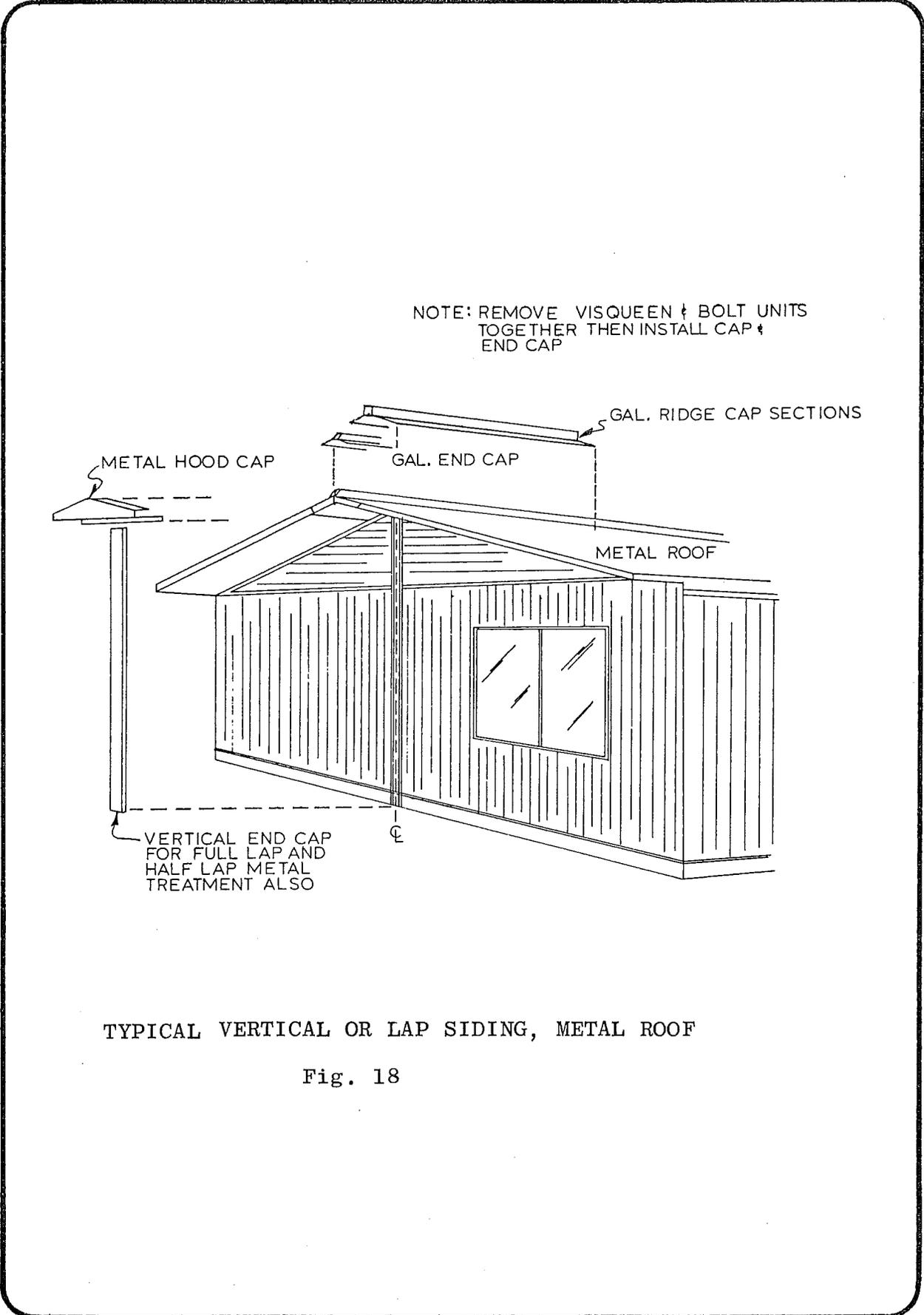
EXTERIOR FINISH



TYPICAL VERTICAL OR LAP SIDING, METAL ROOF

Fig. 17

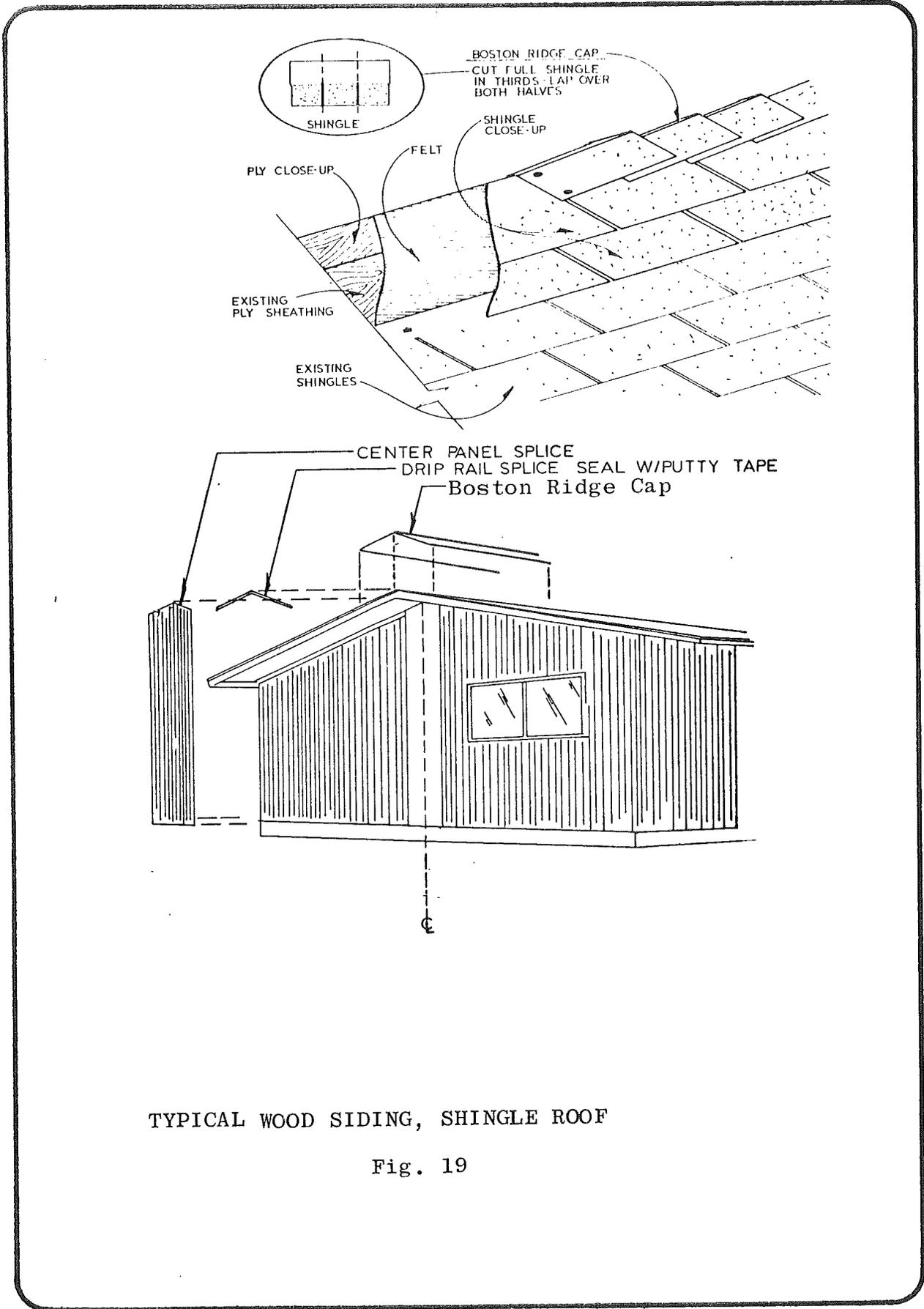
EXTERIOR FINISH



TYPICAL VERTICAL OR LAP SIDING, METAL ROOF

Fig. 18

EXTERIOR FINISH

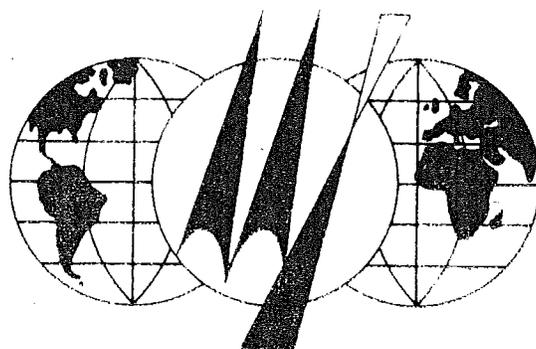


TYPICAL WOOD SIDING, SHINGLE ROOF

Fig. 19

NOTES

A large, empty rectangular box with rounded corners, intended for writing notes. The box is outlined in black and occupies most of the page below the 'NOTES' header.



MODULINE INTERNATIONAL, INC