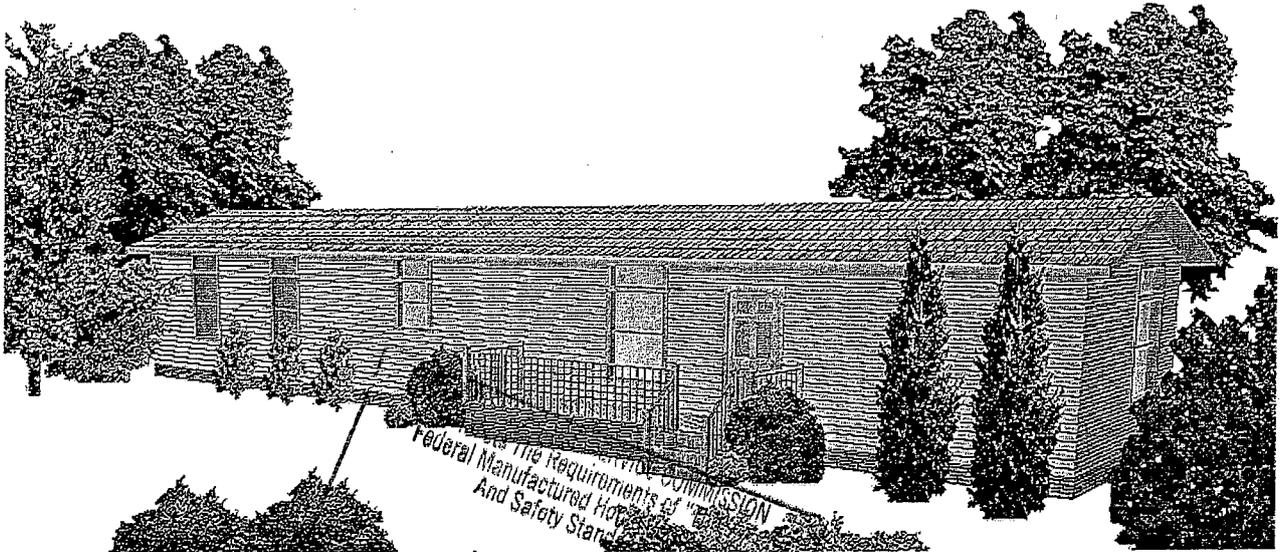


Bonnavilla[®] Homes



Sig. M
APR 3 2008
**FIELD INSTALLATION MANUAL
MANUFACTURED HOMES (HUD)
SINGLE SECTION HOMES**



Housing Division of Chief[®] Industries, Inc.

111 Grant Street, P.O. Box 127
Aurora, Nebraska 68818-0127
Visit us at www.bonnavilla.chiefind.com

January 2007

21.0100

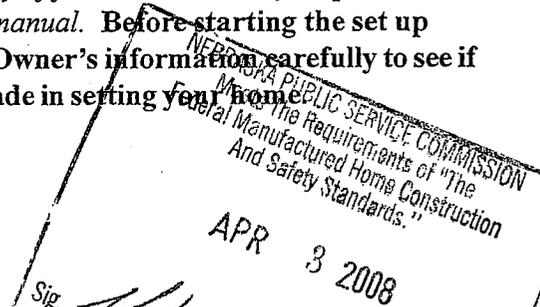
FOREWORD

Thank you for choosing Chief® Industries as your home builder. We hope your new home brings you comfort and pleasure for many years to come. This home was engineered, constructed and inspected to comply with the *Federal Manufactured Homes Construction and Safety Standards* in effect on the date of construction. Minimal specifications are required from national standards for the design, construction, thermal protection, heating systems, plumbing systems and electrical systems for HUD homes intended for residential use.

Our intent is to produce a safe and comfortable home for you. Our company standards surpass compliance with national standards. Chief® Industries has highly qualified plant personnel to inspect these standards throughout the construction process.

Before set up can even begin, you must contact the building officials in your area for necessary permits, licenses and inspections required for installation of this home. It is extremely important in preparing your home for its occupancy that it be properly blocked, set and leveled by an experienced HUD home mover, dealer or installer. Correct procedures in setting your home could prevent any costly future reconstruction.

The following step-by-step instructions were designed to assist you with the installation of your home. *Due to changes that are brought about by Chief® Industries continuing effort to improve our product and provide our customers with a wide variety of features; there may be products in or on your home that are not thoroughly covered by this manual.* **Before starting the set up process, you should go completely through your Home Owner's information carefully to see if there are supplemental details before any attempt is made in setting your home.**



NOTICE: This manual addresses the setting, repairing and maintaining of products manufactured by *BonnaVilla® Homes*. In the case that the dealer, retailer or customer wishes to vary from these procedures *BonnaVilla® Homes* will not be responsible for quality, durability and safety. In such case the entity varying from these procedures shall bear all responsibility for their methodologies in setting, repairing and maintaining of such products.

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INTRODUCTION

This manual contains detailed installation instructions, including specifications and procedures for erection and hookup of your manufactured home. It has been written in an objective and easy-to-understand manner so it can be understood by people without extensive technical training. It discusses the set-up of the home from preparing the site through final inspection. It includes many tables and figures giving important data for proper set-up. Careful adherence to this manual by the homeowner and installation crew, and consultation with a registered professional or structural engineer in those unusual circumstances it does not cover, will assure you of a quality, safe and affordable home for many years to come.

Prior to locating or relocating your home, contact the local authority having jurisdiction for installation to see if permits for such procedures as blocking, anchoring, or utility connections are required. Inspections may be required during installation. On private property, zoning or development covenants may apply and should be taken into consideration. **NOTE: Preparation of the site, when accomplished by other than the home installer, may not be in accordance with these instructions.**

Fire separation distances must be in accordance with the requirements of Chapter 6 of NFAP 501A, 2003 Edition or the requirements of the local authority having jurisdiction. The installer must take into account these and any local requirements.

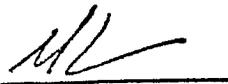
Only trained crews should install the home. Installers should follow the safety instructions provided in this manual. **USE ENOUGH TEMPORARY WOOD BLOCKING TO SUPPORT THE HOME DURING SET-UP.** No one should be allowed under the home unless it is securely in place, even if it is not moving.

Before installing support or anchorage that is different than those methods specified in these instructions or when the site or other conditions prevent the use of these instructions, the installer must first attempt to obtain DAPIA approved designs and instructions from Chief Industries Inc., Housing Division. If these are not available, obtain an alternate design prepared and certified by a registered engineer that meets the Manufactured Construction and Safety Standards and has been approved by the manufacturer and the DAPIA.

It is recommended that any home that has been reinstalled after its original installation should be inspected after it is set up, in order to assure that it has not been damaged and is properly installed.

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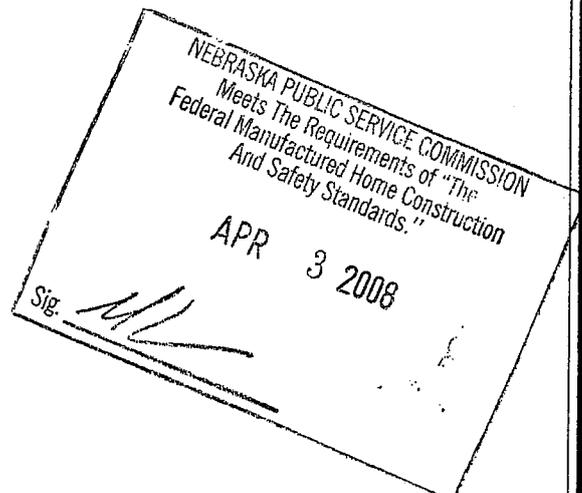
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CHIEF® INDUSTRIES, INC.
HOUSING DIVISION

---CONTENTS---

This booklet contains **Field Installation Specifications**
for all Chief® Industries, Inc., Housing Division
Single Section Homes per category as follows:

- SECTION I REQUIREMENTS FOR LOCATION OF HOME SUPPORT PIERS**
- SECTION II PIER CONSTRUCTION**
- SECTION III SUPPORT BLOCKING**
- SECTION IV PERIMETER FOUNDATION**
- SECTION V BASEMENT CONSTRUCTION**
- SECTION VI TYPICAL ANCHORAGE & FOOTAGE INSTRUCTIONS**
- SECTION VII SITE ASSEMBLY INSTRUCTIONS**



SECTION I

**REQUIREMENTS FOR LOCATION
OF HOME SUPPORT PIERS**

Single Section Homes

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ADDENDUM - LOCATION OF HOME SUPPORT PIERS

Information contained on these addendum pages is to enhance and sometimes supersede the following pages that pertain to the details of the completion of the setting of your home.

Incorrect size, location or spacing of piers may cause serious structural damage to your home. It is important to install piers around the perimeter if required for your home. Failure to do so may lead to sagging floors, walls and roofs.

The location and spacing of piers depends upon the dimensions and weight of the home, the roof load zone, the type of construction (single- or multi-section), and other factors such as the locations of doors, support wall openings or fireplace sidewall locations. Place piers on the hinge side of exterior doors, both sides of sidewall openings 4' or wider and at fireplace sidewall locations.

Piers used for perimeter support must be installed with the long dimension parallel to the perimeter rail. Piers may be offset up to 6" in either direction along the supported members to allow for plumbing, electrical, etc. Location of all piers (main beams, perimeter, etc) are designated by labels on the bottom side of the home. (Detail shown on page 21.104)

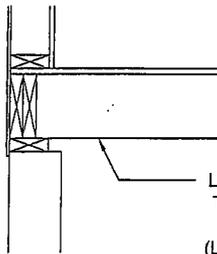
The load that each pier must carry depends on factors such as the dimensions of the home, the roof live load, the spacing of the piers, and the way they are used to support the home. Center beam/marriage wall blocking is required for multi-section homes.

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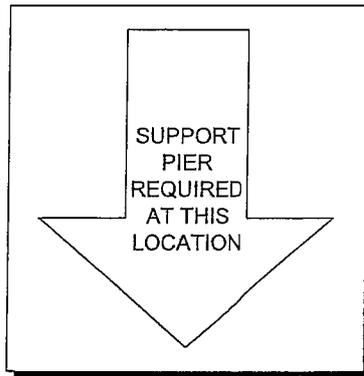
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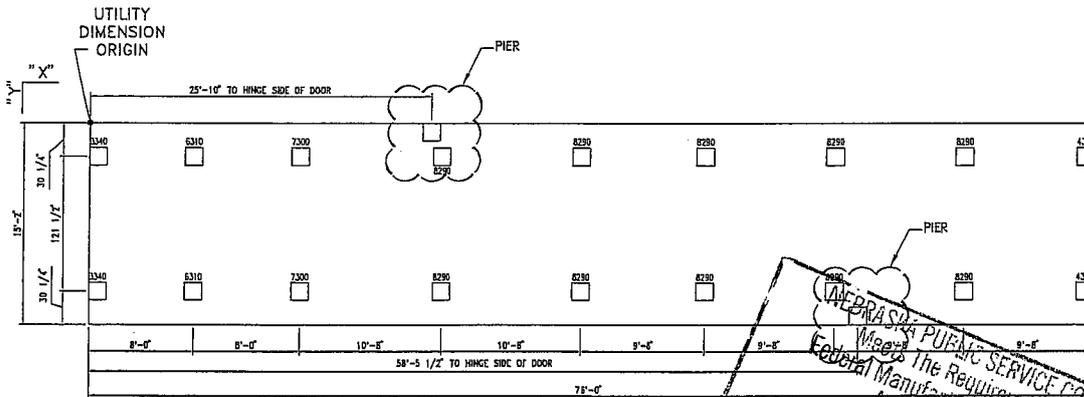


LOCATE LABEL AT EACH PIER LOCATION ON THE UNDERSIDE OF BELLY PAPER, SO IT IS STILL VISIBLE WHEN HOME IS SET. (LABEL SHOWN IN DETAIL) (DO NOT REMOVE)

PIER BLOCKING @ EXTERIOR ON HINGE SIDE OF DOOR AND WINDOW OR SLIDING GLASS DOORS OPENINGS LARGER THAN (48) INCHES IN WIDTH.



DETAIL OF LABEL



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SCALE: NONE	21.0104

SECTION II

PIER CONSTRUCTION

Single Section Homes

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21.0105

ADDENDUM - PIER CONSTRUCTION

Information contained on these addendum pages is to enhance and sometimes supersede the following pages that pertain to the details of the completion of the setting of your home.

Piers may be concrete blocks or pressure-treated wood, capped and shimmed with wedges, or adjustable manufactured metal or concrete devices. Manufactured piers must be listed and labeled for the required load capacity and installed to the pier manufacturer's installation instructions. Metal or other types of pre-manufactured piers must be provided with corrosion resistance of at least equal to that provided by a coating of zinc on steel of 0.30 oz/sq ft of surface.

You may construct piers less than 36" high out of single, open or closed-cell concrete blocks, 8" x 8" x 16". Install them so that the long side is at right angles to the supported I-beam. Horizontal offsets are not to exceed 1/2" top to bottom. Mortar is not required. Manufactured piers should be listed and labeled. Do not extend their adjusting stands beyond the limits specified by the manufacturer.

Construct all piers between 36" and 67" high, out of double, interlocked concrete blocks. Mortar will not be required. Horizontal offsets are not to exceed 1/2" top to bottom. Piers over 67" high must be designed by a registered professional engineer with consideration also given to the tie down system. They must also be constructed to provide a minimum clearance of 12" between the lowest member of the main frame and the grade under all areas of the home.

Concrete blocks should have nominal dimensions of at least 8" x 16". They must be stacked with their hollow cells aligned vertically. When piers are constructed of blocks stacked side-by-side (double stacked), every layer should be at right angles to the previous one.

Cap hollow block piers to distribute the structural load evenly across them. Caps must be of solid masonry of at least 4" nominal thickness or hard wood, or pressure treated lumber at least 2" nominal thickness, or of corrosion-protected minimum 1/2" steel, and of the same length and width as the piers they rest upon. Avoid plywood, as it may lead to unwanted settling or movement.

When split caps are used on double-stacked blocks, the caps must be installed with the long dimension across the joint in the blocks below.

Use 4" x 6" hardwood or pressure treated shims to level the home and fill any gaps between the base of the I-beam and the top of the pier cap. Always use shims in pairs. Drive them in tightly so they do not occupy more than 1" of vertical space.

Select manufactured pier heights so that their adjustable risers do not extend more than 2" when finally positioned.

All piers must rest on footings that either extend below the frost line or are otherwise protected from frost effects, and are placed on either undisturbed soil or compacted fill. Consult local authorities to determine frost penetration.

Support every pier with a properly designed footing. Footings may consist of precast or poured-in-place concrete, pads, slabs or ribbons with a 28-day compressive strength of at least 3,000 psi. Unreinforced footings must have a depth in accordance with Table 6.1. Precast footings must meet or exceed ASTM C90-02. Poured footings must be 6" thick minimum or per tables (whichever strictest). ABS Footing Pads are permitted provided they are installed in accordance with the pad manufacturer's installation instructions and certified for use in the soil classification and capacity at the site. They must be listed or labeled for the required load capacity.

When properly engineered by a registered professional engineer, complete with a charge requirements of section 6, and acceptable to the local authority having jurisdiction, "Non-Bearing Foundations may be constructed above the frost line.

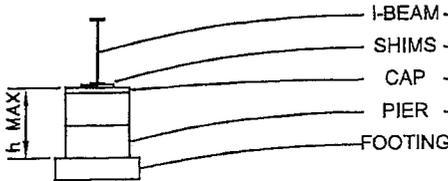
Proper sizing of footings depends upon the load-carrying capacity of bearing piers and the soil. See Table 6.1 for recommended footing sizes for various pier capacities.

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TYPICAL PIER CONSTRUCTION

PIER 1

I-BEAM PIER SINGLE
STACKED BLOCKS

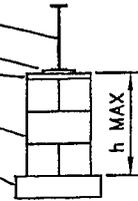


HORIZONTAL OFFSET
OF PIER = 1/2" MAXIMUM
SINGLE BLOCKS
MAXIMUM HEIGHT = 36"
(SEE NOTE #2)

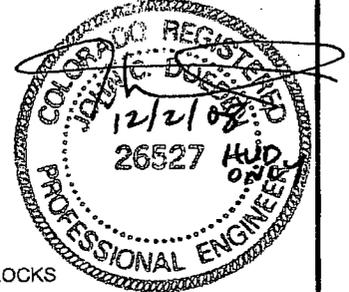
SPECIAL NOTE: MINIMUM SET HEIGHT OF
HOME IS 12" AS MEASURED UNDER HOME
TO GROUND, INCLUDING AREA BETWEEN
THE LOWEST POINT OF THE FRAME OR
CROSSMEMBERS.

PIER 2

I-BEAM PIER DOUBLE STACKED
BLOCKS PIERS OVER 36" HEIGHT
TO MAXIMUM HEIGHT, HORIZONTAL
OFFSET = 1" MAXIMUM

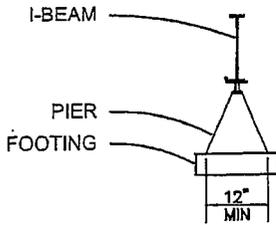


DOUBLE INTERLOCKED BLOCKS
MAXIMUM HEIGHT = 67"
OR AS ILLUSTRATED ON
MAXIMUM PIER HEIGHTS OF
FRAME TIEDOWN SPACING
CHARTS



PIER 3

I-BEAM PIER

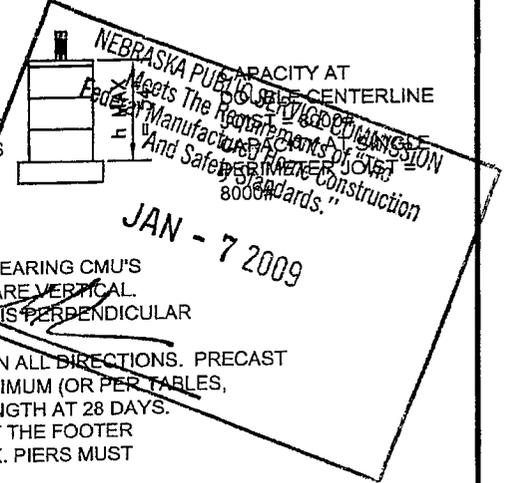


STEEL OR CONCRETE
MANUFACTURED PIER
(SEE NOTE #5)

PIER 4

SINGLE STACKED PIER SUPPORTING
CENTERLINE COLUMNS OR PERIMETER
OR CENTERLINE JOISTS

SINGLE STACKED
BLOCKS
PERPENDICULAR TO
CENTERLINE JOISTS
OR PARALLEL TO
PERIMETER RAIL
MAX. HEIGHT = 54"



NOTES:

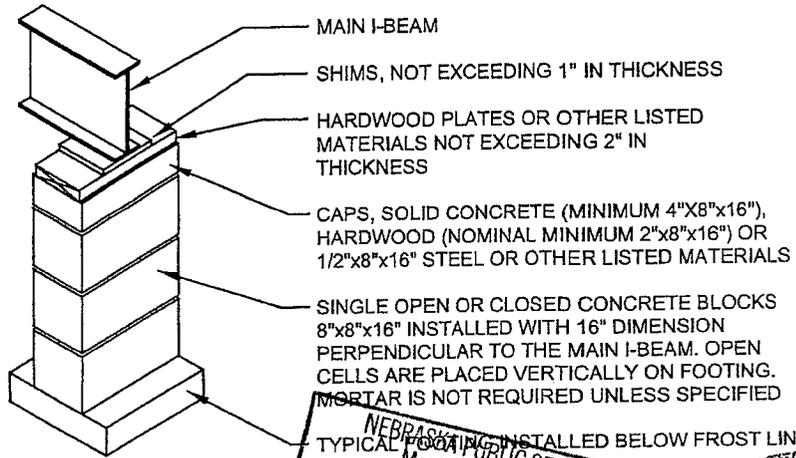
1. CONCRETE BLOCKS FOR PIERS ARE 8x8x16 NOMINAL SIZE, HOLLOW CELL LOAD BEARING CMU'S MANUFACTURED IN CONFORMANCE WITH ASTM C90-70, GRADE 'N'. OPEN CELLS ARE VERTICAL.
2. SINGLE STACKED CONCRETE BLOCKS ARE ORIENTED SO THAT LONG DIRECTION IS PERPENDICULAR TO THE LONG DIRECTION OF THE MAIN BEAM.
3. FOOTERS MAY BE PRECAST OR POURED, BUT, IN EITHER CASE, MUST BE LEVEL IN ALL DIRECTIONS. PRECAST MUST MEET OR EXCEED ASTM C90-02a. POURED FOOTERS MUST BE 6" THICK MINIMUM (OR PER TABLES, WHICHEVER IS STRICTEST) AND MUST BE MINIMUM 3000 psi COMPRESSIVE STRENGTH AT 28 DAYS.
4. PIERS ARE TO BE PLACED ON THE FOOTER APPROXIMATELY CENTERED SO THAT THE FOOTER PROJECTION FROM THE PIER IS EQUAL FROM SIDE-TO-SIDE AND FRONT-TO-BACK. PIERS MUST BE LEVEL VERTICALLY ON ALL SIDES AND SQUARE WITH THE FOOTER.
5. PREFABRICATED PIERS (TYPE #3) MUST BE CERTIFIED FOR A RATED CAPACITY AT LEAST EQUAL TO THE LOAD DETERMINED FROM THE TABLES.
6. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH (F_c) OF 3000 PSI AFTER 28 DAYS.
7. GAP BETWEEN TOP OF PIER AND MAIN FRAME MAY BE A WOOD PLATE (NOT EXCEEDING 2" IN THICKNESS) AND SHIMS (NOT EXCEEDING 1" IN THICKNESS). SHIMS SHALL BE AT LEAST 4" WIDE AND 8" LONG, FITTED AND DRIVEN TIGHT BETWEEN WOOD PLATE OR PIER AND MAIN FRAME (SHIMS TO BE PERPENDICULAR TO I-BEAM). TWO INCH OR FOUR INCH SOLID CONCRETE BLOCK MAY FILL REMAINDER OF GAP.
8. PIER HEIGHT IS MEASURED FROM TOP OF FOOTER TO THE TOP OF THE PIER. THESE DRAWINGS TYPIFY THE CONSTRUCTION ONLY OF DIMENSIONED BLOCK HEIGHTS.
9. PIER AND FOOTER DESIGNS SHOWN DO NOT CONSIDER FLOOD OR SEISMIC LOADS AND ARE NOT INTENDED FOR USE IN FLOOD OR SEISMIC HAZARD AREAS. IN THOSE AREAS, THE DESIGN MUST BE DONE BY A PROFESSIONAL ENGINEER.

FIGURE 2.1

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REVISE FOR NEW HUD REQ.	10/8/08		CHKD. BY:

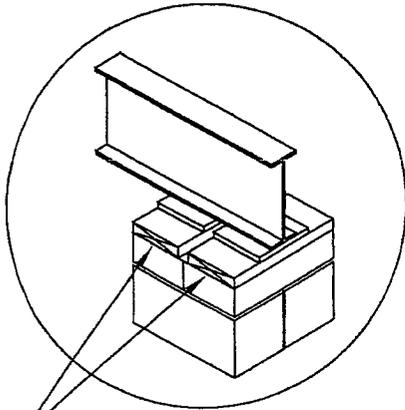
TYPICAL PIER CONFIGURATION

SINGLE STACKED CONCRETE BLOCKS

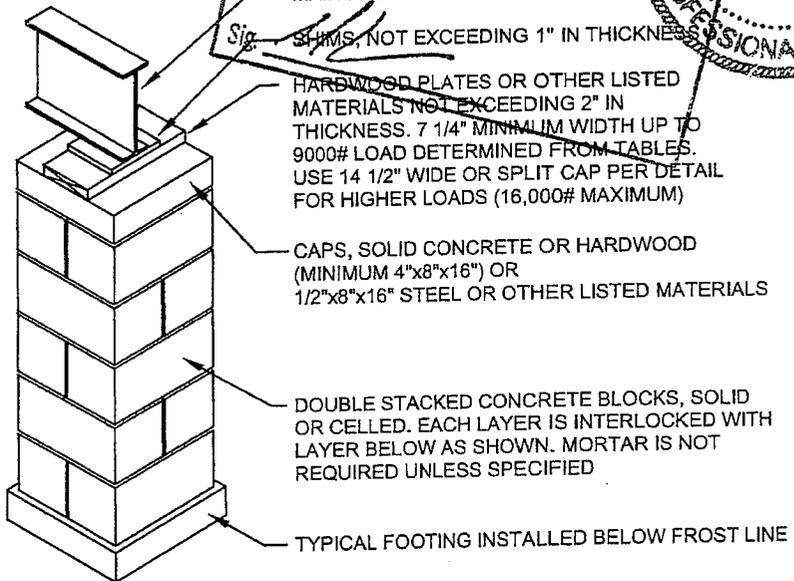


CAPACITY = 8000 LBS.

DOUBLE STACKED CONCRETE BLOCKS



WHEN SPLIT CAPS ARE USED AND THE JOINT RUNS PERPENDICULAR TO THE MAIN I-BEAMS, SHIMS AND BLOCKS MUST BE INSTALLED OVER EACH INDIVIDUAL CAP.

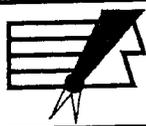


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26527 H20047
PROFESSIONAL ENGINEER

NOTES:

1. SHIMS, WHEN REQUIRED, ARE TO BE USED IN PAIRS, INSTALLED IN OPPOSITE DIRECTIONS AND BE FITTED AND DRIVEN TIGHT BETWEEN MAIN I-BEAM FRAME AND SHIMS OR CAPS BELOW. SHIMS MUST BE INSTALLED SO THAT ALL GAPS BETWEEN THE HOME'S BEARING MEMBER (I-BEAM OR RIM JOISTS) ARE FILLED FOR THE LENGTH OF THE PIER OR REQUIRED PLATES. MINIMUM COMPRESSIVE STRESS CAPACITY FOR SHIMS IS 425 psi.
2. STEEL CAPS MUST BE PROTECTED BY A MINIMUM OF A 10 MIL COATING OF AN EXTERIOR PAINT OR AN EQUIVALENT CORROSION RESISTANT PROTECTION.

FIGURE 2.2

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			CHKD. BY:
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SECTION III

SUPPORT BLOCKING

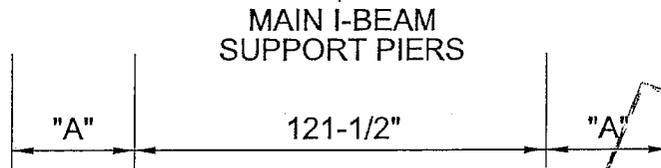
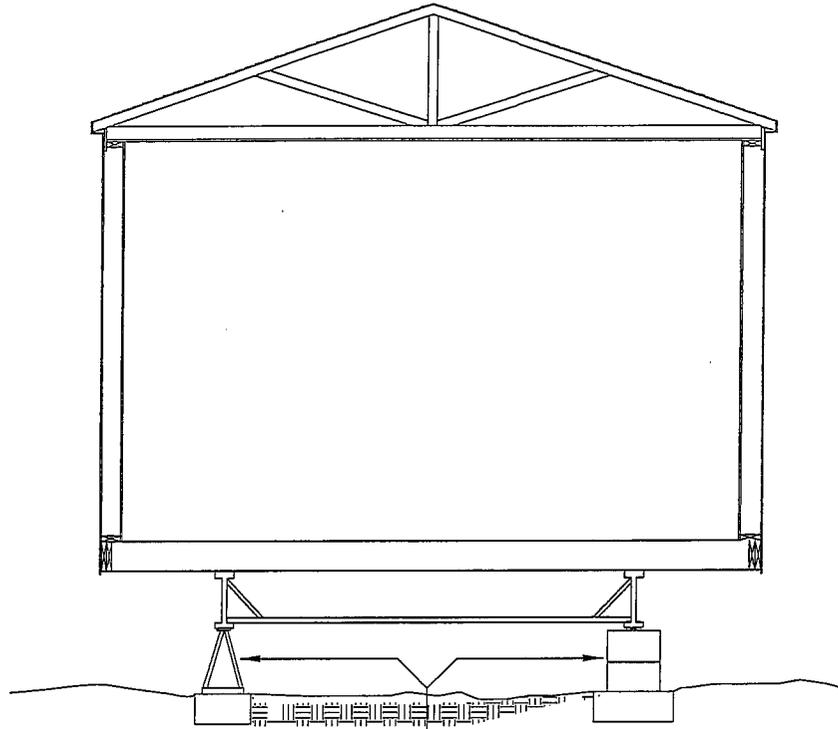
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STANDARD SUPPORT BLOCKING

FOR 30 LB./SQ. FT. ROOF LIVE LOAD



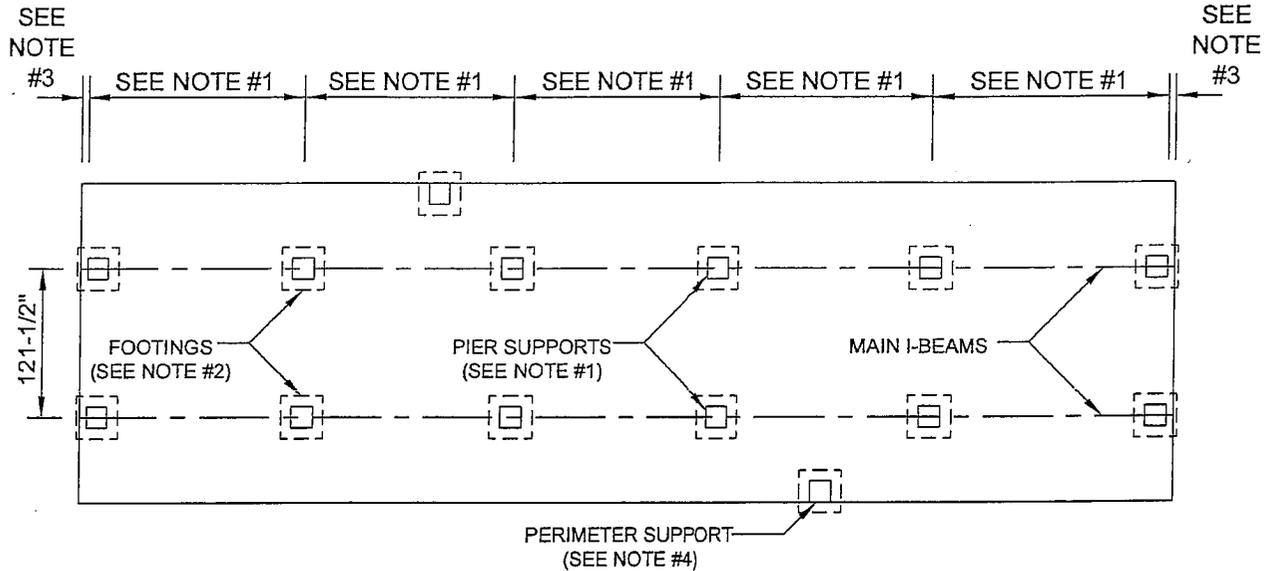
	ACTUAL SIZE	STANDARD ROOF PITCH	"A"
16' SINGLE WIDE	15'-2"	4/12	30-1/4"

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			SCALE: NONE	21.0108

TYPICAL BLOCKING LAYOUTS

SINGLE-SECTION HOMES STANDARD BLOCKING AND 30 LB. ROOF LOAD



NOTES:

1. SEE TABLE 3.1 FOR REQUIRED PIER CAPACITY AND SPACING.
2. SEE TABLE 6.1 FOR FOOTING REQUIREMENTS.
3. A. THE EDGE OF THE PIER SHALL BE LOCATED (4-1/2) INCHES IN FROM BOTH ENDS OF HOME WITH THE (4) INCH RECESSED FRAME.
B. THE EDGE OF THE PIER SHALL BE LOCATED (10) INCHES IN FROM BOTH ENDS OF HOME WITH THE (10) INCH RECESSED FRAME.
4. PIERS SHALL BE LOCATED AT THE HINGE SIDE OF ALL EXTERIOR DOORS AND ON BOTH SIDES OF ANY OPENING LARGER THAN (48) INCHES IN WIDTH.
5. ABOVE DESIGN IS FOR 30 PSF ROOF LIVE LOADS ONLY.

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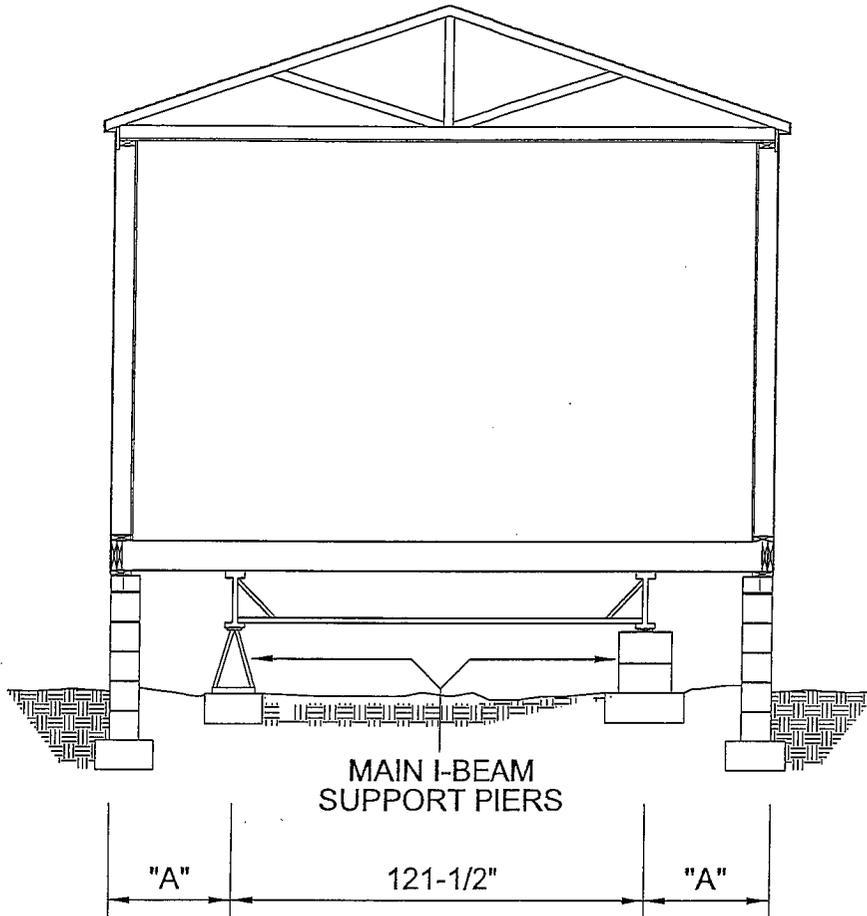
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JOHN C. DOEDEN
REGISTERED PROFESSIONAL ENGINEER
STATE OF NEBRASKA
8/15/00
HWD
UNITS
07/04

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STANDARD SUPPORT BLOCKING

WITH OPTIONAL ROOF LOADS



	ACTUAL SIZE	STANDARD ROOF PITCH	"A"
16' SINGLE WIDE	15'-2"	4/12	NEBRASKA PUBLIC SERVICE COMMISSION Meets The Requirements of "The Federal Manufactured Home Construction 30-1 And Safety Standards."

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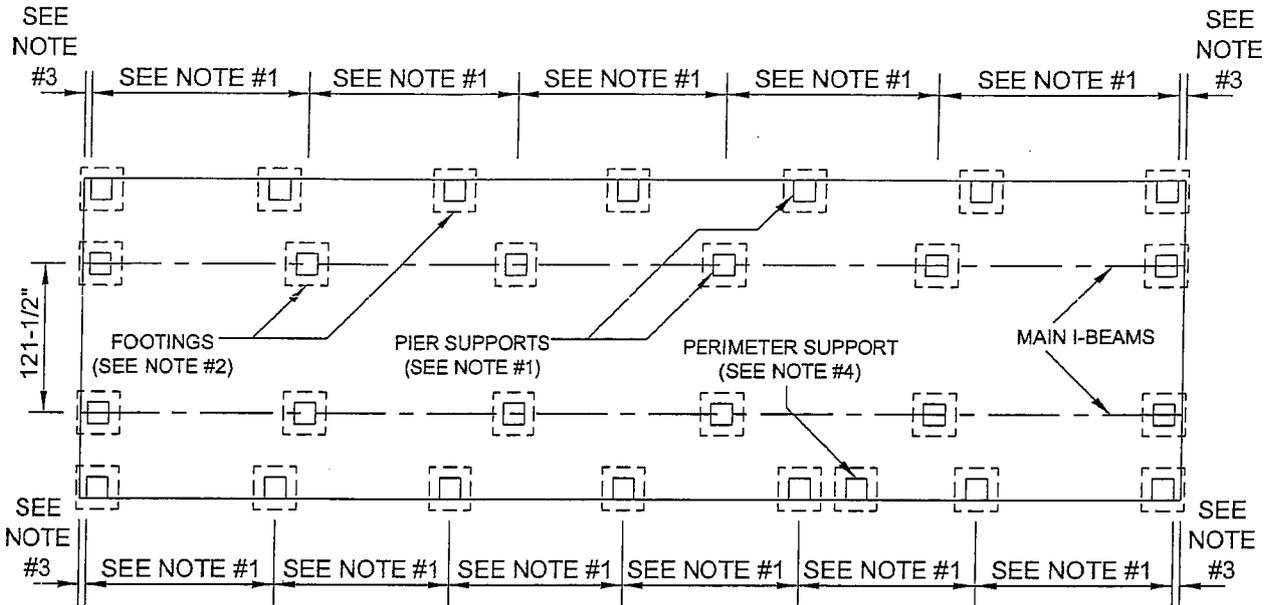
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			CHKD. BY:	
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TYPICAL BLOCKING LAYOUTS

SINGLE-SECTION HOMES

OPTIONAL ROOF LOADS W/ PERIMETER BLOCKING

* PERIMETER FOUNDATION MAY BE USED IN LIEU OF BELOW - SEE FIG. 4.1.



NOTES:

1. A. SEE TABLE 3.2 FOR REQUIRED PIER CAPACITY AND SPACING OF MAIN I-BEAM PIERS.
 B. SEE TABLE 3.3 FOR REQUIRED PIER CAPACITY AND SPACING OF PERIMETER (SIDEWALL) PIERS.
2. SEE TABLE 6.1 FOR FOOTING REQUIREMENTS.
3. A. THE EDGE OF THE PIER SHALL BE LOCATED (4-1/2) INCH IN FROM THE END OF HOME WITH THE (4) INCH RECESSED FRAME.
 B. THE EDGE OF THE PIER SHALL BE LOCATED (10) INCH IN FROM THE END OF HOME WITH THE (10) INCH RECESSED FRAME.
4. PIERS SHALL BE LOCATED AT THE HINGE SIDE OF ALL EXTERIOR DOORS AND ON BOTH SIDES OF ANY OPENING LARGER THAN (48) INCH IN WIDTH.

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JOHN C. DOEDEN
 REGISTERED PROFESSIONAL ENGINEER
 INDIANA
 8/5/06
 HUB UNITS

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			SCALE: NONE	21.0111

MINIMUM PIER CAPACITY TABLES

SINGLE-SECTION HOMES MAIN I-BEAM BLOCKING WITHOUT PERIMETER BLOCKING

SECTION WIDTH (FEET)	ROOF LIVE LOAD (PSF)	MINIMUM PIER CAPACITY (POUNDS)				
		MAXIMUM PIER SPACING (FEET)				
		4'-0"	5'-4"	6'-8"	8'-0"	10'-0"
16 WIDE (182" FLOOR) 6" MAX. EAVE	30 PSF	3420#	4410#	5405#	6395#	7880#

SEE PERIMETER BLOCKING REQUIREMENTS FOR ROOF LOADS HIGHER THAN 30 PSF AND FOR FLOORS NOT CAPABLE OF SUPPORTING ADDITIONAL ROOF LIVE LOADS

NOTES:

1. MAXIMUM EAVE IS (6) INCHES.
2. MAXIMUM SPACING OF PIERS IS 8'-0" O.C. FOR 8" I-BEAM, 10'-0" O.C. FOR 10" I-BEAM & FOR 12" I-BEAM STARTING NO MORE THAN 2'-0" FROM EACH END.
3. REFERENCE TABLE 6.1 FOR FOOTING SIZES CORRESPONDING TO THE LOAD DETERMINED IN THE TABLES (INCLUDES WIEGHT OF BLOCK PIER AND CONCRETE FOOTER)
4. LOADS BASED ON AN I-BEAM SPACING OF 121-1/2" CENTER TO CENTER.

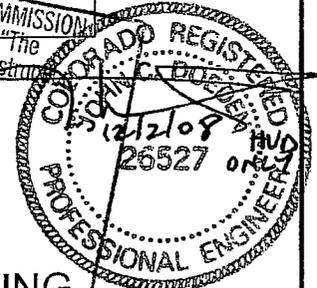
TABLE 3.1

SINGLE-SECTION HOMES MAIN I-BEAM BLOCKING WITH PERIMETER BLOCKING

SECTION WIDTH (FEET)	ROOF LIVE LOAD (PSF)	MINIMUM PIER CAPACITY (POUNDS)				
		MAXIMUM PIER SPACING (FEET)				
		4'-0"	5'-4"	6'-8"	8'-0"	10'-0"
16 WIDE (182" FLOOR)	40, 60, & 80	1580#	1975#	2365#	3345#	3345#

TABLE 3.2

JAN - 7 2009



SINGLE-SECTION HOMES ROOF LOAD SIDEWALL PERIMETER BLOCKING

SECTION WIDTH (FEET)	ROOF LIVE LOAD (PSF)	MINIMUM PIER CAPACITY (POUNDS)			
		MAXIMUM PIER SPACING (FEET)			
		4'-0"	5'-4"	6'-8"	8'-0"
16 WIDE (182" FLOOR) 6" EAVE MAX.	40	2405#	3075#	3740#	4410#
	60	3050#	3935#	4820#	5700#
	80	3700#	4800#	5895#	N/A

TABLE 3.3

REVISIONS	DATE	 CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES 01/27/04
			CHKD. BY:
			SCALE: NONE 21.0112

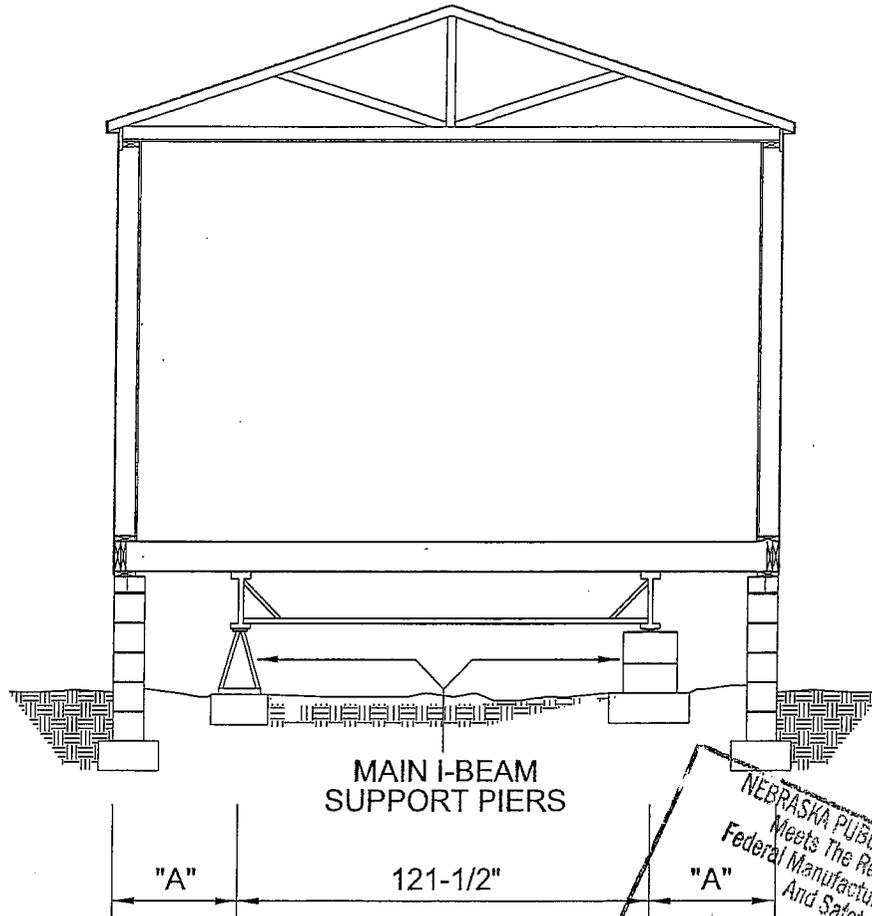
SECTION IV

PERIMETER FOUNDATION

Single Section Homes

NEBRASKA PUBLIC SERVICE COMMISSION
Meets The Requirements of "The
Federal Manufactured Home Construction
And Safety Standards."
APR 3 2008
Sig. 
21.0113

PERIMETER FOUNDATION W/PIERS



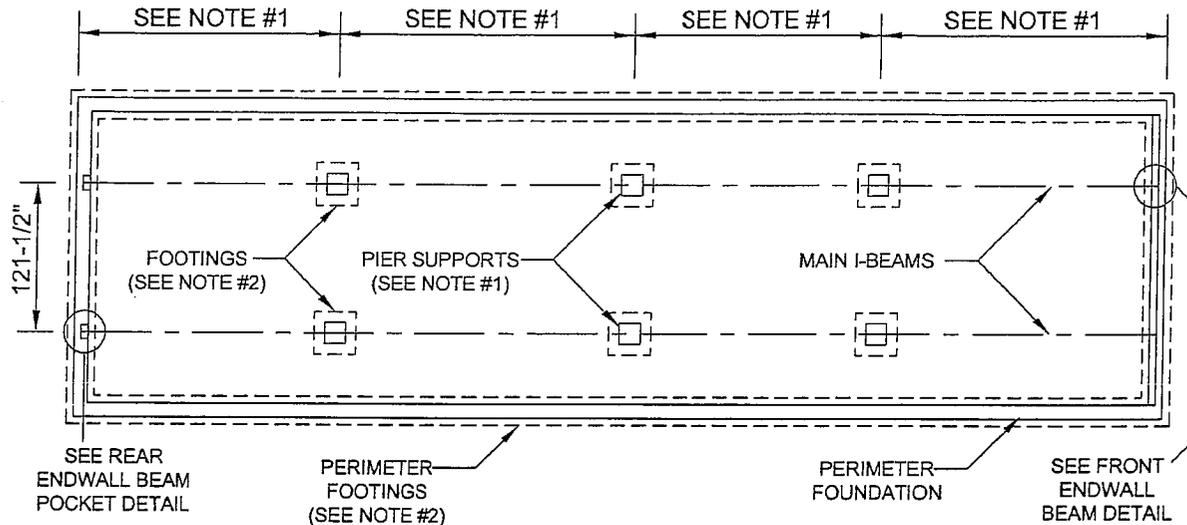
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APR 3 2008

	ACTUAL SIZE	STANDARD ROOF PITCH	"A"
16' SINGLE WIDE	15'-2"	4/12	30-1/4"

REVISIONS	DATE	 CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES	01/27/04
			CHKD. BY:	
			SCALE: NONE	21.0114

TYPICAL BLOCKING LAYOUT SINGLE-SECTION HOMES PERIMETER FOUNDATION WITH PIERS 4" RECESSED FRAME



NOTES:

1. SEE TABLE 3.2 FOR REQUIRED PIER CAPACITY AND SPACING.
2. SEE TABLE 6.1 FOR FOOTING REQUIREMENTS.
3. FOUNDATION WALL TO BE CONSTRUCTED IN ACCORDANCE WITH 1 AND 2 FAMILY DWELLING CODE OR ANSI A225.1 "MANUFACTURED HOME INSTALLATION" OR PER LOCAL CODES.

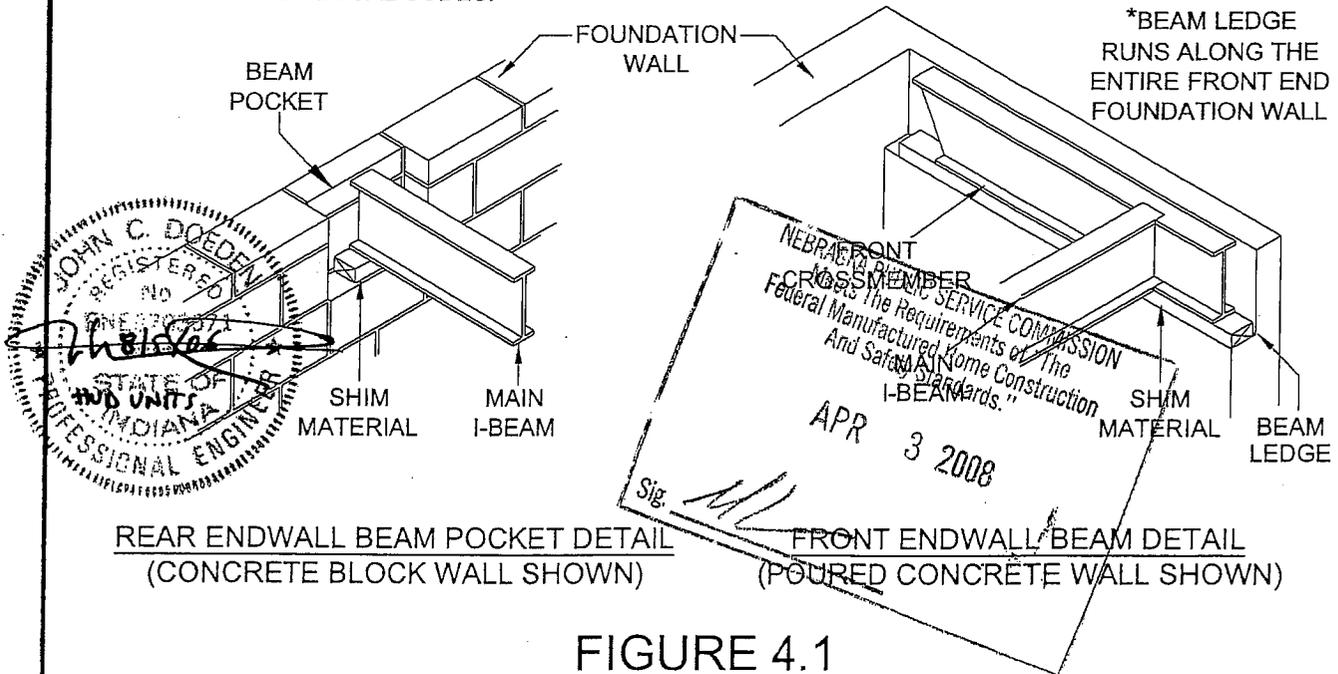
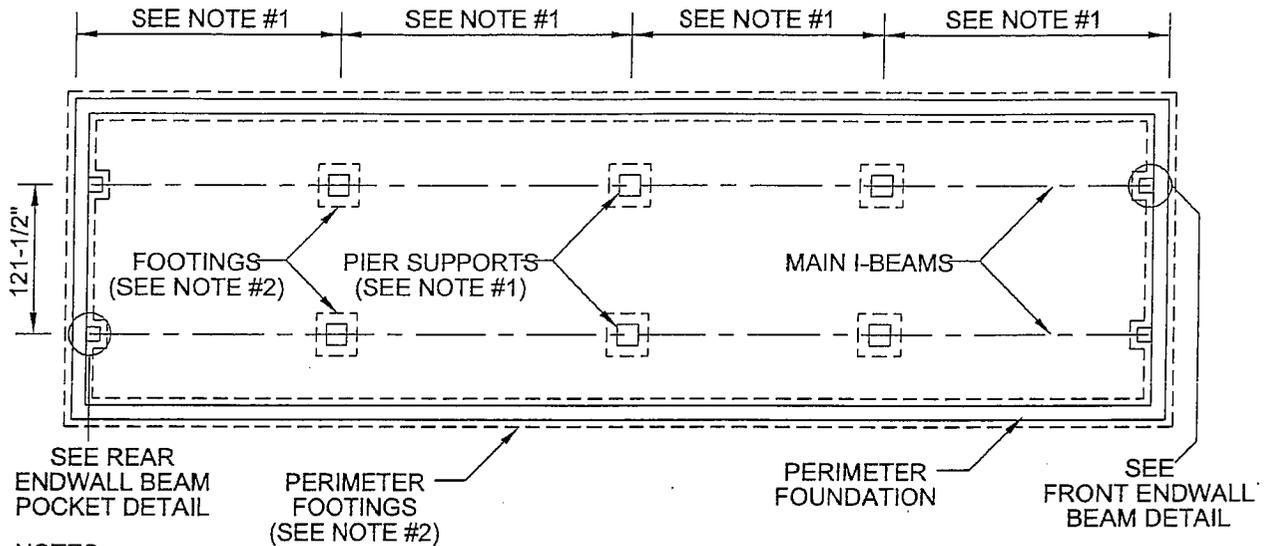


FIGURE 4.1

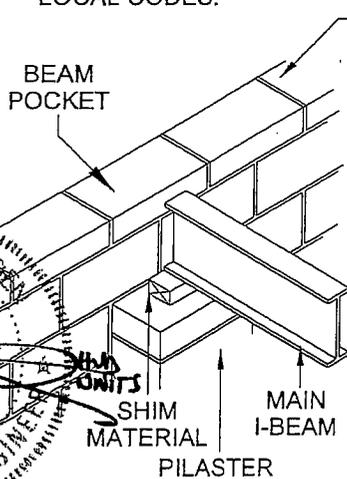
REVISIONS	DATE	 CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES 01/28/04	
			CHKD. BY:	
			SCALE: NONE	21.0115

TYPICAL BLOCKING LAYOUT SINGLE-SECTION HOMES PERIMETER FOUNDATION WITH PIERS 10" RECESSED FRAME

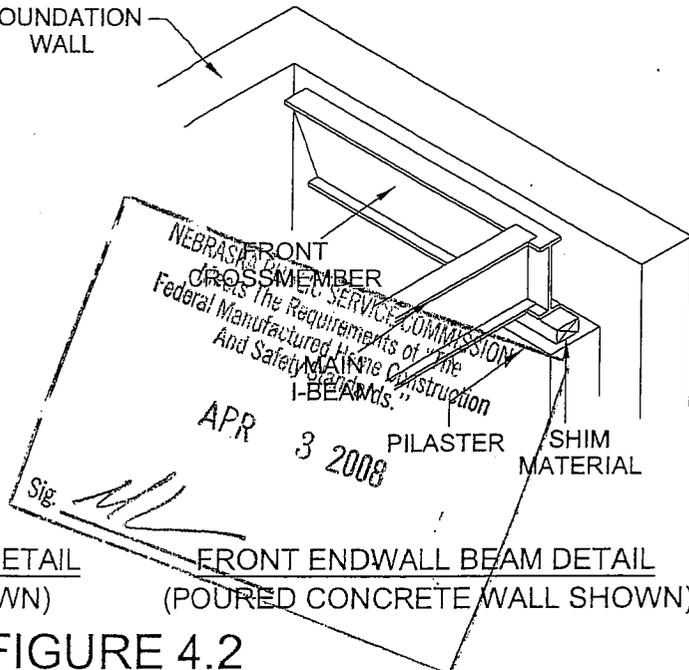


NOTES:

1. SEE TABLE 3.3 FOR REQUIRED PIER CAPACITY AND SPACING.
2. SEE TABLE 6.1 FOR FOOTING REQUIREMENTS.
3. FOUNDATION WALL TO BE CONSTRUCTED IN ACCORDANCE WITH 1 AND 2 FAMILY DWELLING CODE OR ANSI A225.1 "MANUFACTURED HOME INSTALLATION" OR PER LOCAL CODES.



REAR ENDWALL BEAM POCKET DETAIL
(CONCRETE BLOCK WALL SHOWN)



FRONT ENDWALL BEAM DETAIL
(POURED CONCRETE WALL SHOWN)

FIGURE 4.2



REVISIONS	DATE	 CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES	01/28/04
			CHKD. BY:	
			SCALE: NONE	21.0116

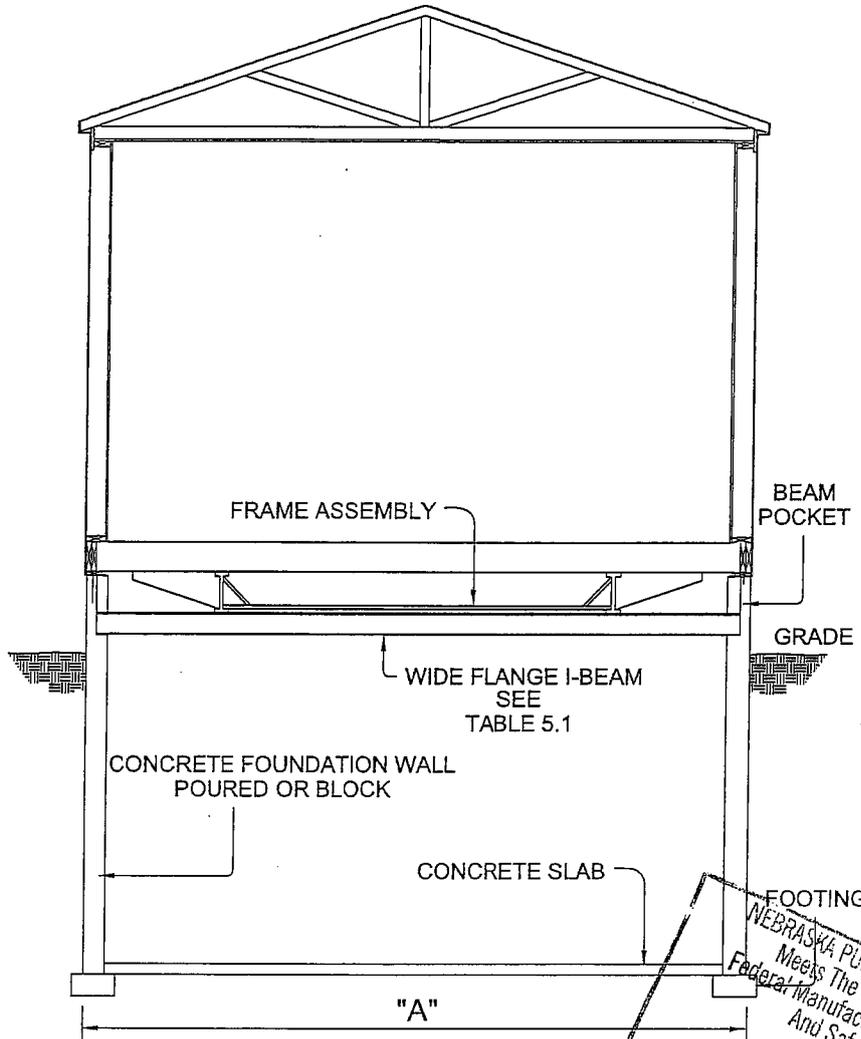
SECTION V

BASEMENT FOUNDATION

Single Section Homes

NEBRASKA PUBLIC SERVICE COMMISSION
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21.0117

BASEMENT CONSTRUCTION w/ CROSSBEAMS

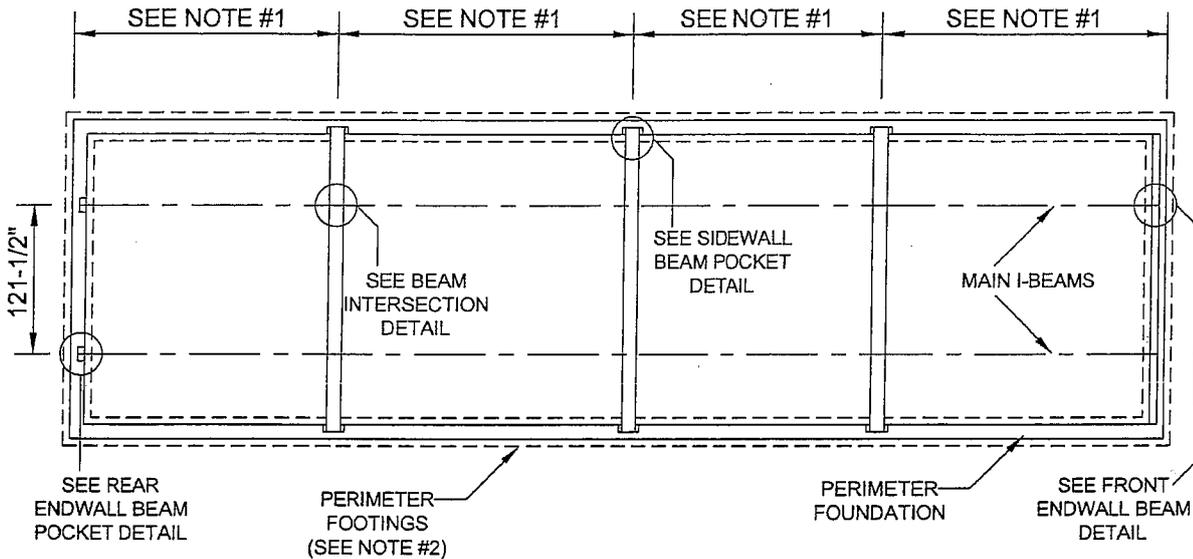


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 Sig. *[Signature]*

	ACTUAL SIZE	STANDARD ROOF PITCH	"A"
16' SINGLE WIDE	15'-2"	4/12	182"

REVISIONS	DATE	CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES	01/28/04
			CHKD. BY:	
			SCALE: NONE	21.0118

TYPICAL BASEMENT LAYOUT SINGLE-SECTION HOMES PERIMETER FOUNDATION WITH CROSSBEAMS 4" RECESSED FRAME



NOTES:

1. SEE TABLE 5.1 FOR REQUIRED BEAM SIZE AND SPACING.
2. SEE TABLE 6.1 FOR FOOTING REQUIREMENTS.

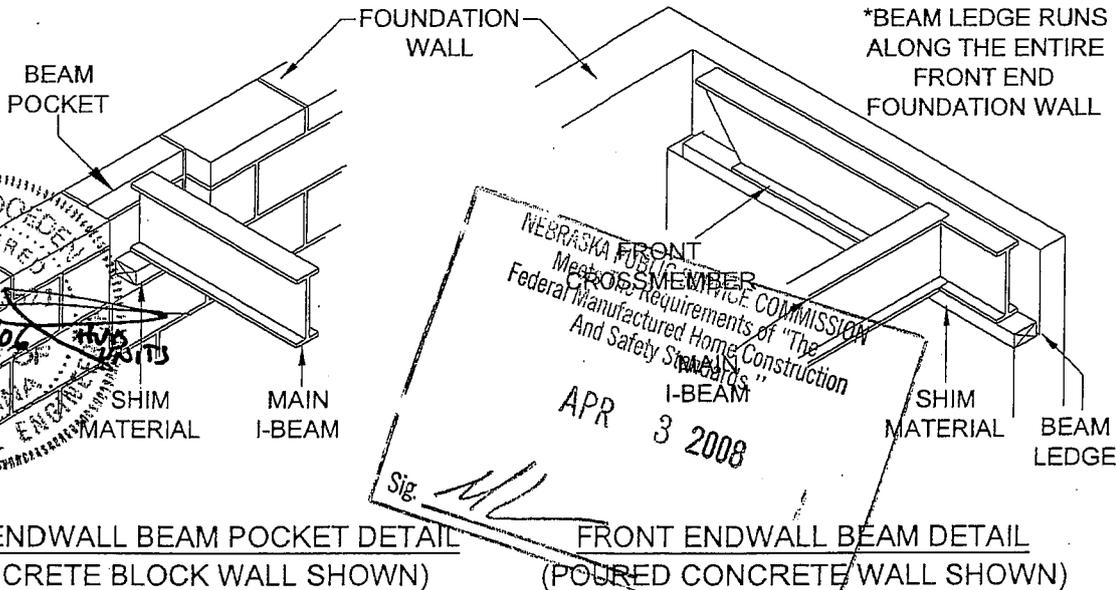
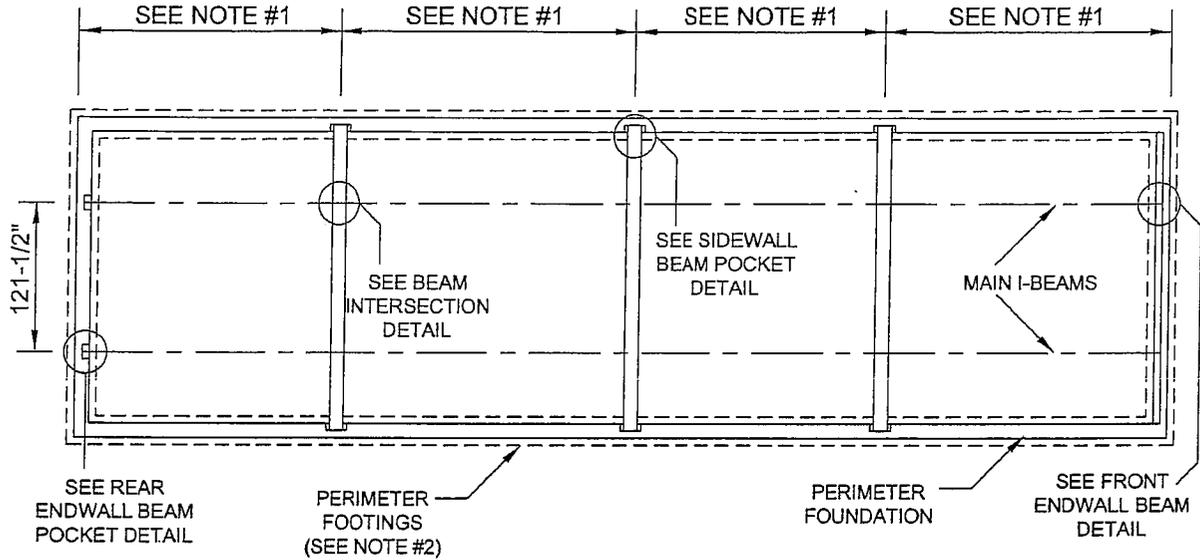


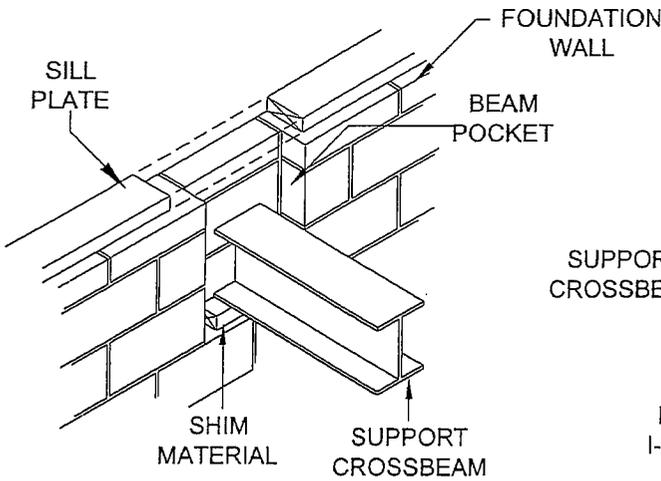
FIGURE 5.1

REVISIONS	DATE	 CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES	01/28/04
			CHKD. BY:	
			SCALE: NONE	21.0119

TYPICAL BASEMENT LAYOUT SINGLE-SECTION HOMES PERIMETER FOUNDATION WITH CROSSBEAMS 4" RECESSED FRAME



- NOTES:
1. SEE TABLE 5.1 FOR REQUIRED BEAM SIZE AND SPACING.
 2. SEE TABLE 6.1 FOR FOOTING REQUIREMENTS.



**SIDEWALL BEAM POCKET DETAIL
(CONCRETE BLOCK WALL SHOWN)**

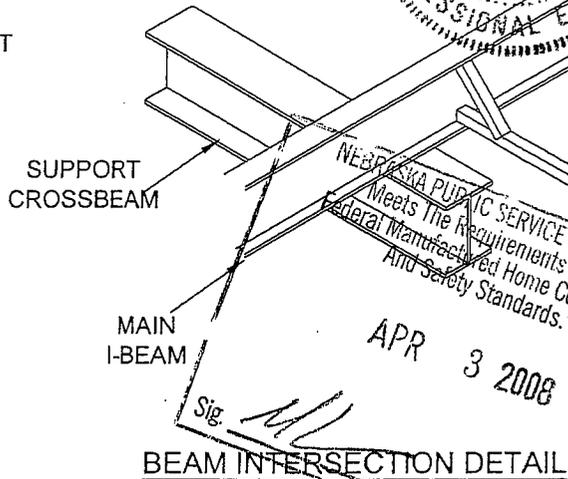
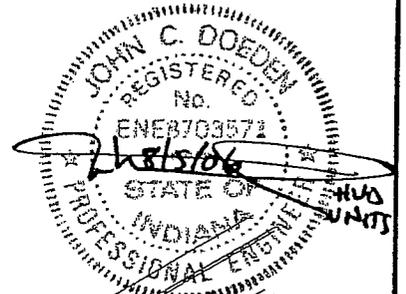
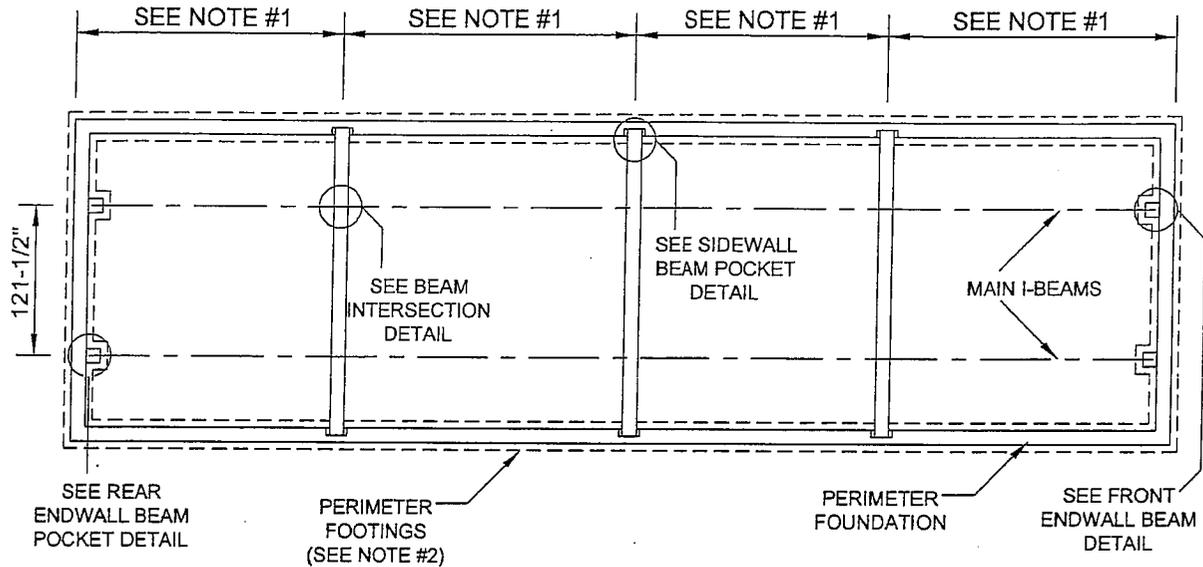


FIGURE 5.2



REVISIONS	DATE		CHIEF® INDUSTRIES	DRWG. BY: CES	01/28/04
			HOUSING DIVISION	CHKD. BY:	
				SCALE: NONE	21.0120

TYPICAL BASEMENT LAYOUT SINGLE-SECTION HOMES PERIMETER FOUNDATION WITH CROSSBEAMS 10" RECESSED FRAME



NOTES:

1. SEE TABLE 5.1 FOR REQUIRED BEAM SIZE AND SPACING.
2. SEE TABLE 6.1 FOR FOOTING REQUIREMENTS.

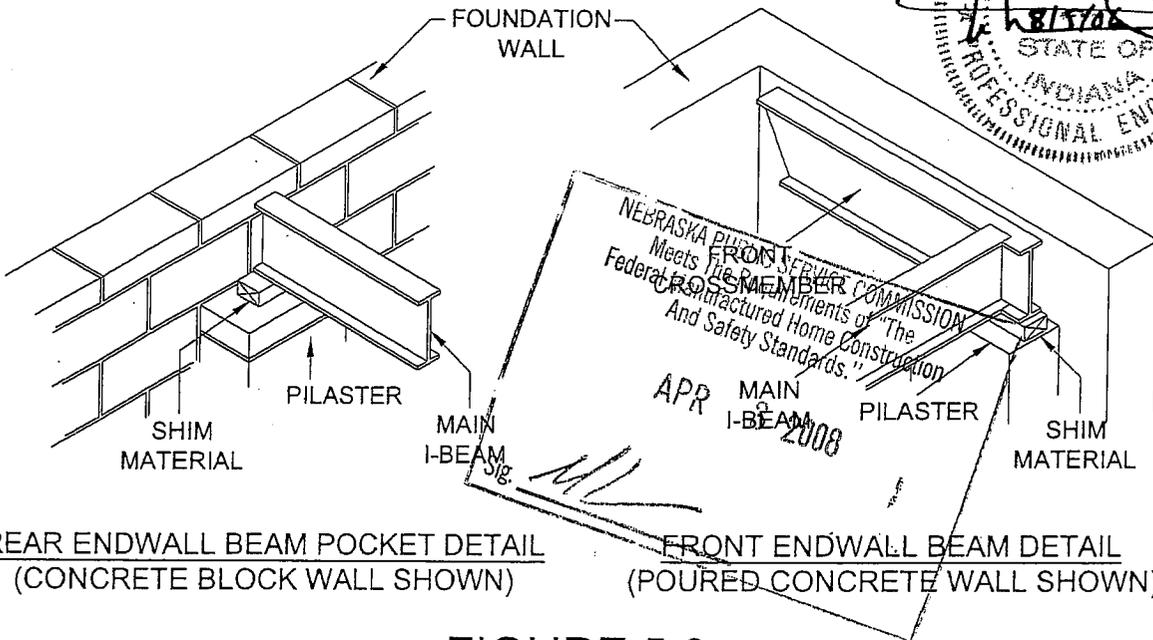
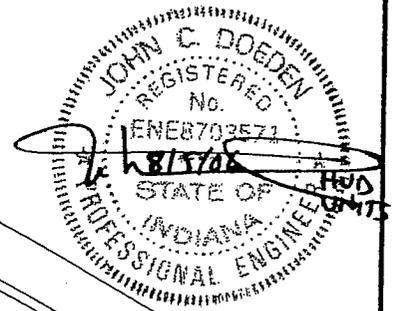
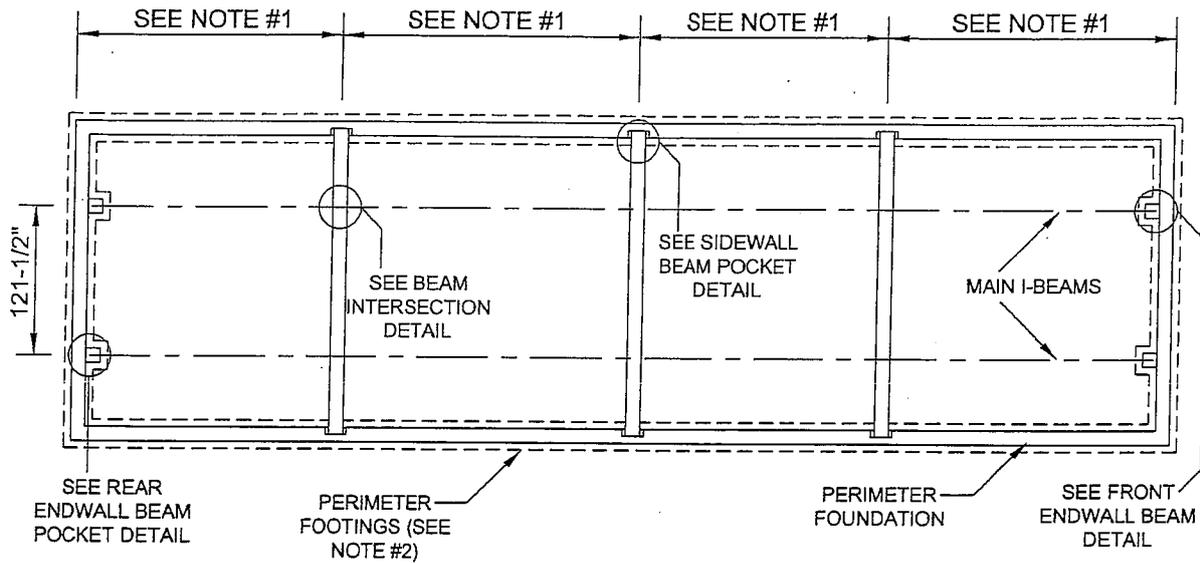


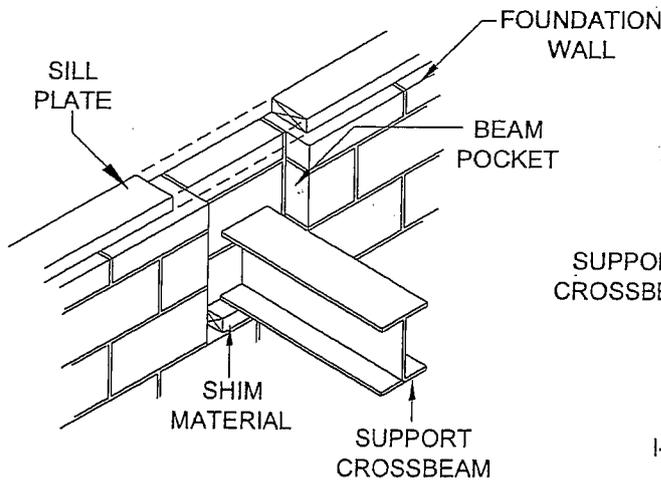
FIGURE 5.3

REVISIONS	DATE	 CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES	01/28/04
			CHKD. BY:	
			SCALE: NONE	21.0121

TYPICAL BASEMENT LAYOUT SINGLE-SECTION HOMES PERIMETER FOUNDATION WITH CROSSBEAMS 10" RECESSED FRAME



- NOTES:
1. SEE TABLE 5.1 FOR REQUIRED BEAM SIZE AND SPACING.
 2. SEE TABLE 6.1 FOR FOOTING REQUIREMENTS.



SIDEWALL BEAM POCKET DETAIL
(CONCRETE BLOCK WALL SHOWN)

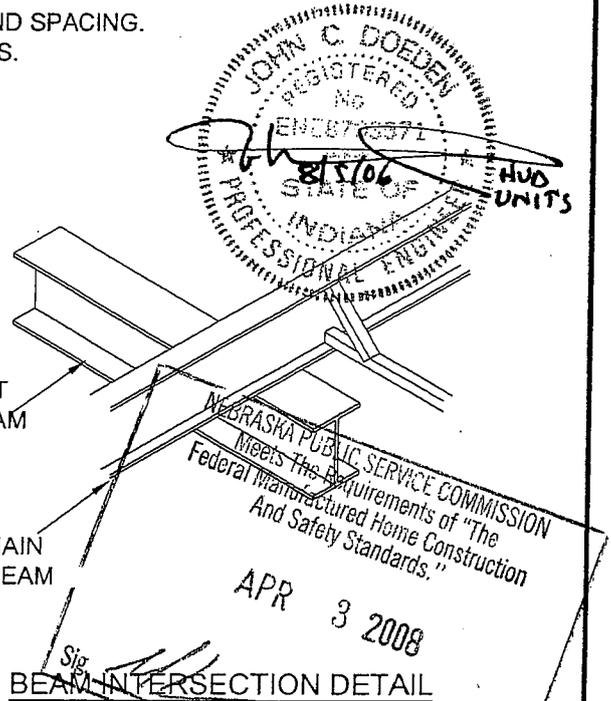


FIGURE 5.4

REVISIONS	DATE	CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES	01/28/04
			CHKD. BY:	
			SCALE: NONE	21.0122

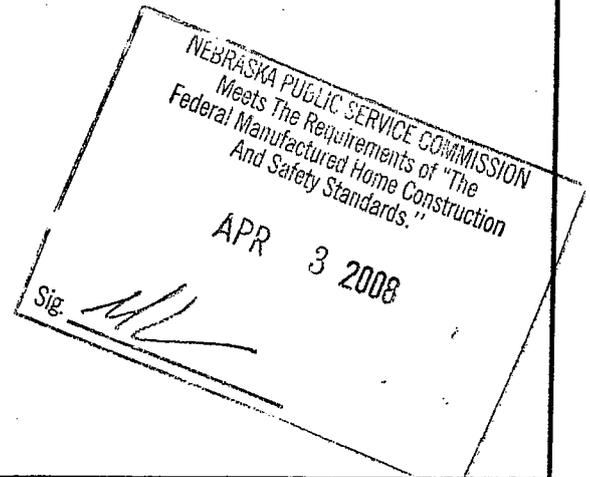
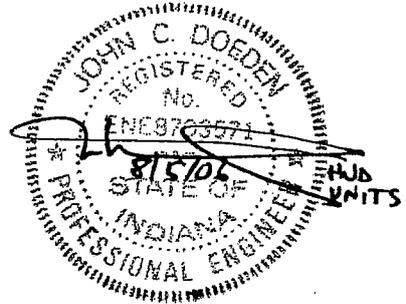
MINIMUM CROSSBEAM CAPACITY TABLES

SINGLE-SECTION HOMES CROSSBEAM SUPPORT

SECTION WIDTH (FEET)	ROOF LIVE LOAD (PSF)	MINIMUM CROSSBEAM SIZE			
		MAXIMUM CROSSBEAM SPACING (FEET)			
		6'-8"	8'-0"	9'-4"	10'-8"
16 WIDE (182" FLOOR)	ALL LOADS	W6X12	W6X12	W6X12	W6X16

ANY ONE BEAM LISTED IN EACH CATEGORY MAY BE USED

TABLE 5.1



REVISIONS	DATE	 CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES	01/28/04
			CHKD. BY:	
			SCALE: NONE	21.0123

SECTION VI

TYPICAL ANCHORAGE & FOOTING INSTRUCTIONS

Single Section Homes

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21.0124

ADDENDUM - ANCHORAGE

Information contained on these addendum pages is to enhance and sometimes supersede the following pages that pertain to the details of the completion of the setting of your home.

After blocking and leveling, the installer must secure the home against the wind. In order for the manufactured home to be secure against high winds, it must be anchored to the ground. The homeowner is cautioned that if the manufactured home is not properly anchored, it is highly susceptible to wind damage when high wind conditions occur.

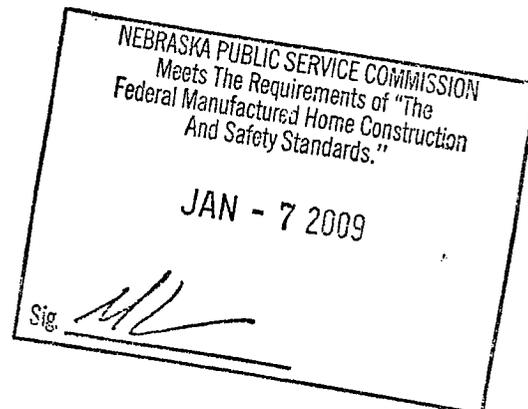
Select the number and location of straps and anchors from the appropriate chart and diagram in Section 6. Use only listed and approved ground anchors capable of resisting a minimum ultimate load of 4725 pounds and a working load of 3150 pounds as installed unless reduced capacities are specified by the anchor manufacturer. A reduced capacity of the ground anchor or strap will require a reduced tiedown strap and anchor spacing proportional to that given in the charts. However, ground anchors must not be spaced closer than the minimum spacing permitted by the listing or certification.

Install the anchors at the locations indicated in Section 6, following the anchor manufacturer's instructions. Install double-headed anchors at all vertical tie locations. Line up the shaft of each anchor with its strap or resultant angle between vertical tie and diagonal tie or install an approved stabilizer plate. You may want to consult a registered professional or structural engineer to determine the correct angles for the anchors. See notes in figures regarding stabilizer plate installation when this angle cannot be achieved.

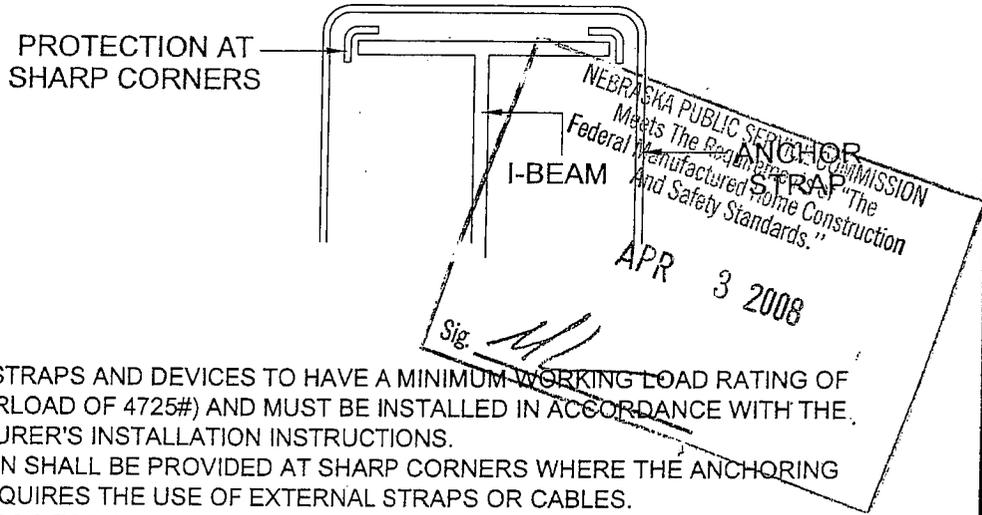
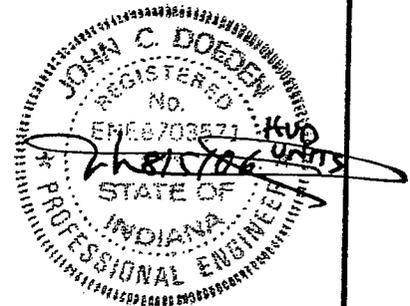
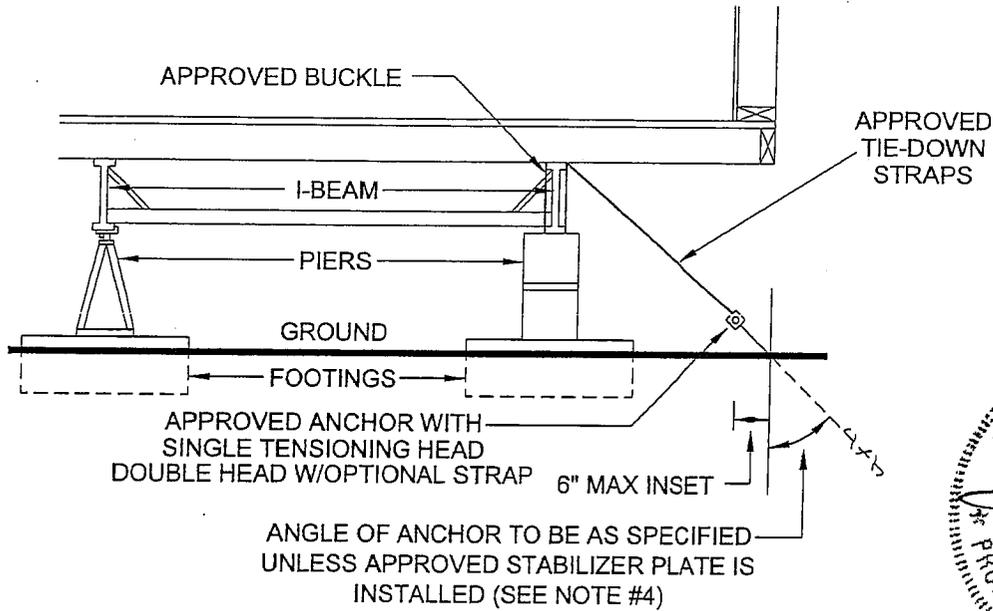
If your home is re-leveled at some date after the initial tensioning of the anchoring straps, the straps should be re-tensioned as specified in the anchor manufacturer's installation instructions. Straps must be inspected periodically to assure that proper tension is provided in each strap. If straps are found to be loose, then re-tensioning of the straps must be performed.

Protection shall be provided at sharp corners such as I-beam flange, crossmembers, angle brackets, etc. at point of load on strap by placing an additional layer of strapping 2" long, (when possible) approximately centered between the strap and the sharp corner.

The anchor tables and designs do not consider floor or seismic loads and is not intended for use in flood or seismic hazard areas. In those areas the anchorage system is to be designed by a Registered Professional Engineer.



TIE-DOWN STRAP AND ANCHORING POSITION INSTALLATION WITHOUT VERTICAL TIES



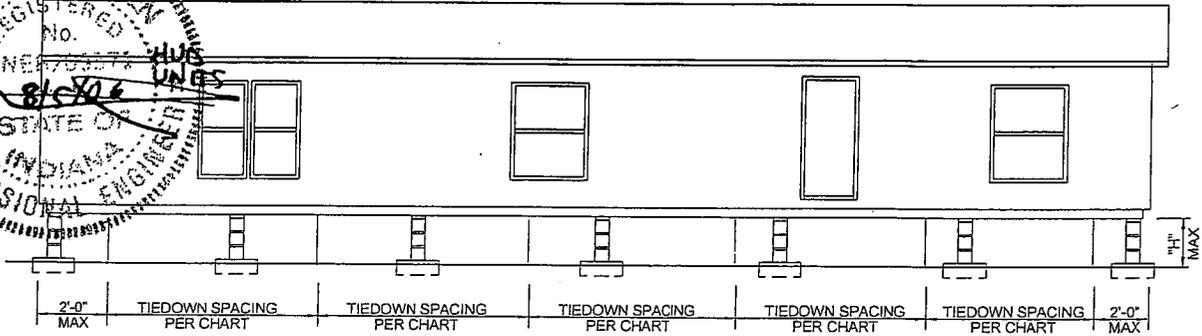
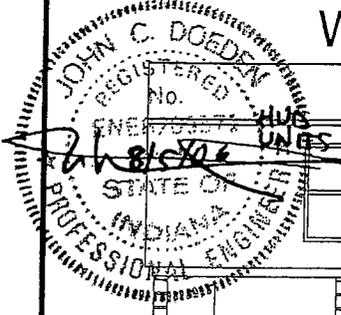
NOTES:

1. TIE-DOWN STRAPS AND DEVICES TO HAVE A MINIMUM WORKING LOAD RATING OF 3150# (OVERLOAD OF 4725#) AND MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. PROTECTION SHALL BE PROVIDED AT SHARP CORNERS WHERE THE ANCHORING SYSTEM REQUIRES THE USE OF EXTERNAL STRAPS OR CABLES.
3. SEE FIGURE 6.2 FOR ADDITIONAL REQUIREMENTS.

FIGURE 6.1

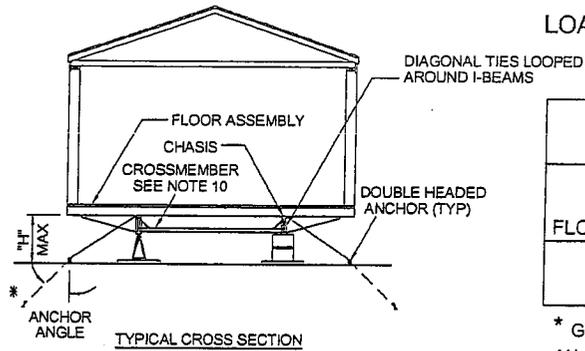
REVISIONS	DATE	 CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES	01/28/04
			CHKD. BY:	
			SCALE: NONE	21.0125

RECOMMENDED TIEDOWN SYSTEM WIND ZONE 1 & 4/12 ROOF PITCH



TYPICAL SIDE ELEVATION SHOWING TIEDOWN SPACING

LOADS: HORIZONTAL = 15 PSF X 1.5 SAFETY FACTOR
UPLIFT = 9 PSF X 1.5 SAFETY FACTOR



FRAME TIE-DOWN SPACING CHART SINGLE SECTION HOMES			
WIND ZONE I			
FLOOR WIDTH	SPACING	MAX. PIER HEIGHT	ANCHOR ANGLE
15'-2" MAX.	8'-0" 6'-0"	NEBRASKA MAX. 9'-0" Meets 36" Federal Manufacture PUBLIC SERVICE COMMISSION Requirements for Home Construction And Manufacture Safety Standards.	30° - 35° 25° - 30°

* GROUND ANCHORS NOT INSTALLED AT ANGLE SPECIFIED MUST HAVE AN APPROVED STABILIZER PLATE INSTALLED.

APR 3 2008

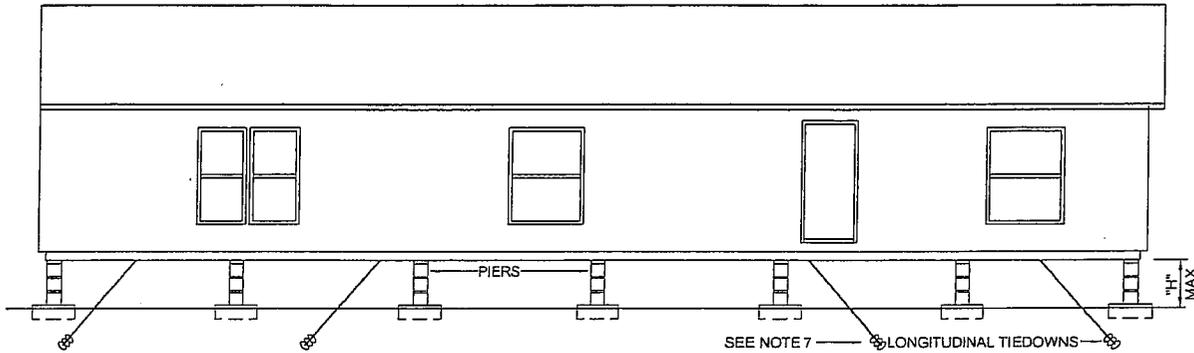
NOTES:

1. FRAME TIE-DOWN SHOULD BE INSTALLED TO PROPERLY SECURE THE HOME.
2. OPTIONAL VERTICAL TIES MAY BE SECURED TO THE SAME GROUND ANCHOR AS THE DIAGONAL TIE-DOWNS WHEN DOUBLE HEADED ANCHOR IS CAPABLE OF RESISTING COMBINED LOADING. WHEN ANCHORS ARE NOT INSTALLED AT THE ANGLE SPECIFIED IN THE TABLE, A STABILIZER PLATE MUST BE INSTALLED IN ACCORDANCE WITH ANCHOR MANUFACTURER'S INSTRUCTIONS.
3. DIAGONAL TIE-DOWNS AND ANCHORS ARE NOT SUPPLIED BY CHIEF INDUSTRIES HOUSING DIVISION.
4. ALL TIE STRAPS ARE SUPPLIED BY OTHERS. ANCHORS AND END TREATMENTS ARE TO BE SUPPLIED BY OTHERS.
5. GROUND ANCHORS AND FRAME TIES SHALL BE CAPABLE OF RESISTING AN ULTIMATE TENSION LOAD OF 4,725 LBS AND ARE TO BE INSTALLED PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, BUT ARE NOT TO EXTEND BEYOND THE SIDEWALL OF THE HOME.
6. STEEL ANCHORING EQUIPMENT EXPOSED TO THE WEATHER SHALL BE PROTECTED WITH AT LEAST 0.30 OZ. OF ZINC PER SQUARE FOOT OF STEEL.
7. DESIGN BASED ON 121-1/2" I-BEAM SPACING AND A MAXIMUM SIDEWALL HEIGHT OF 9'-0".
8. LONGITUDINAL TIES ARE INSTALLED JUST INSIDE I-BEAMS AT CROSSMEMBERS IN ACCORDANCE WITH THE TABLE AND NOTES 4, 6, & 7.
9. FRAME TIE-DOWNS ARE POSITIONED AT CROSSMEMBER LOCATIONS (WITHIN 3") WHEN STRAP COMES OFF FLANGE OF BEAM WITH APPROVED BUCKLE OR LOOP.
10. ANCHORS SHOULD BE CERTIFIED FOR THESE CONDITIONS BY A PROFESSIONAL ENGINEER, ARCHITECT OR A NATIONALLY RECOGNIZED TESTING LABORATORY AS TO THEIR RESISTANCE, BASED ON THE INSTALLED ANGLE OF DIAGONAL TIE AND/OR VERTICAL TIE LOADING AND ANGLE OF ANCHOR INSTALLATION, AND TYPE OF SOIL IN WHICH THE ANCHOR IS TO BE INSTALLED.
11. GROUND ANCHORS SHOULD BE EMBEDDED BELOW THE FROST LINE AND BE AT LEAST 12" ABOVE THE WATER TABLE. ANCHORS SHOULD ALSO BE INSTALLED TO THEIR FULL DEPTH, AND STABILIZER PLATES INSTALLED TO PROVIDE RESISTANCE TO OVERTURNING OR SLIDING FORCES.
12. 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.

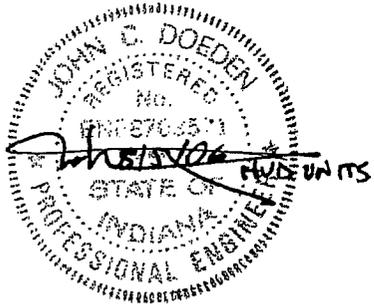
FIGURE 6.2

REVISIONS	DATE	CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES	01/28/04
			CHKD. BY:	
			SCALE: NONE	21.0126

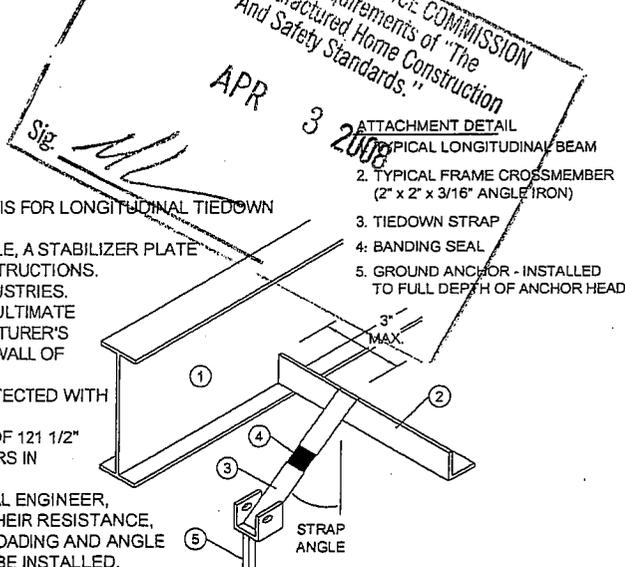
RECOMMENDED LONGITUDINAL TIEDOWN SYSTEM SINGLE SECTION WIND ZONE 1 (15 PSF LATERAL) / 9'-0" MAX. SIDEWALL



TYPICAL SIDE ELEVATION SHOWING LONGITUDINAL TIEDOWNS



4:12 MAXIMUM ROOF SLOPE-SINGLE SECTION HOMES NO RESTRICTION AS TO PIER TYPE OR HEIGHT (EXCEPT AS LIMITED BY OTHER DETAILS)		
FLOOR WIDTH	MINIMUM QUANTITY EACH END OF EACH SECTION	MINIMUM STRAP ANGLE (DEGREES)
15'-2" MAX.	2	38°

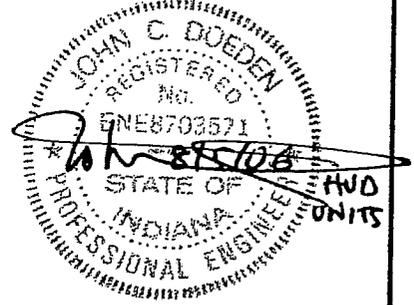
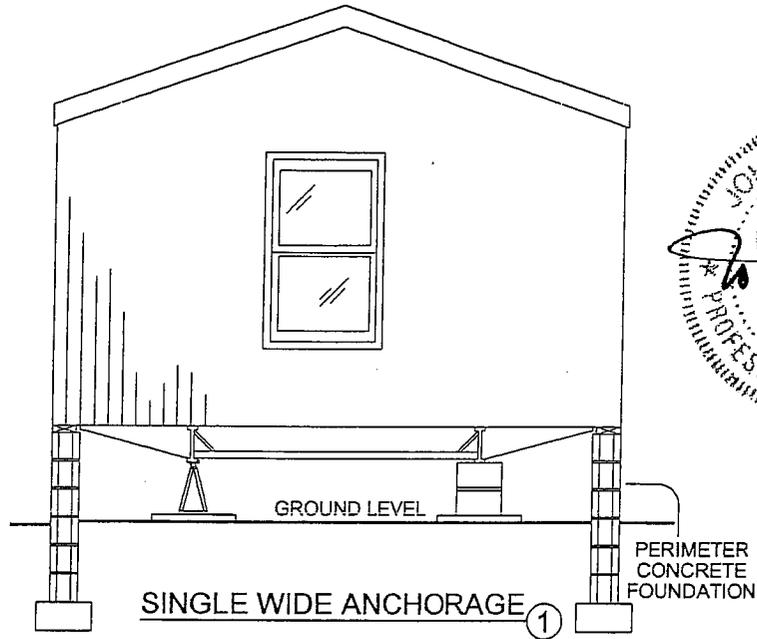


NOTES:

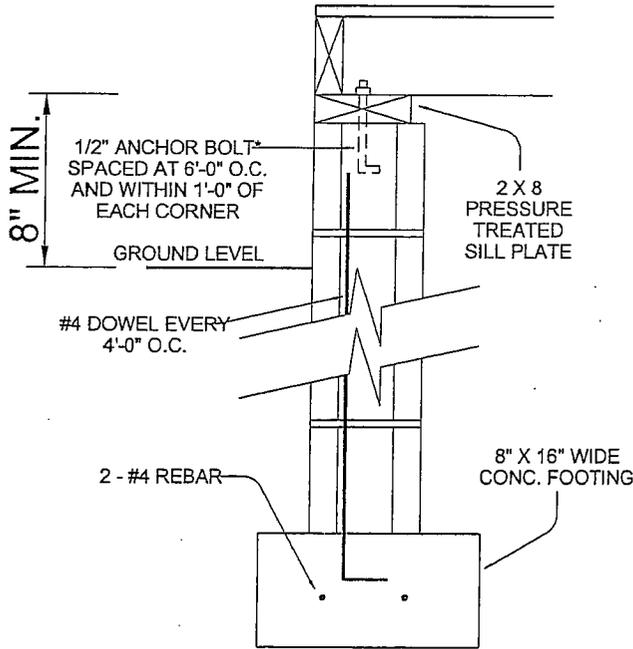
1. SEE OTHER DRAWINGS FOR FRAME TIEDOWN REQUIREMENTS. THIS DETAIL IS FOR LONGITUDINAL TIEDOWN DESIGN ONLY.
2. WHEN ANCHORS ARE NOT INSTALLED AT THE ANGLE SPECIFIED IN THE TABLE, A STABILIZER PLATE MUST BE INSTALLED IN ACCORDANCE WITH ANCHOR MANUFACTURER'S INSTRUCTIONS.
3. LONGITUDINAL TIEDOWNS AND ANCHORS ARE NOT SUPPLIED BY CHIEF INDUSTRIES.
4. GROUND ANCHORS AND FRAME TIES SHALL BE CAPABLE OF RESISTING AN ULTIMATE TENSION LOAD OF 4,725 LBS. AND ARE TO BE INSTALLED PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, BUT ARE NOT TO EXTEND BEYOND THE SIDEWALL OF THE HOME.
5. STEEL ANCHORING EQUIPMENT EXPOSED TO THE WEATHER SHALL BE PROTECTED WITH AT LEAST 0.30 OZ. OF ZINC PER SQ FT OF STEEL.
6. DESIGN BASED ON A MAX. SIDEWALL HEIGHT OF 8'-0" AND I-BEAM SPACING OF 121 1/2"
7. LONGITUDINAL TIES ARE INSTALLED JUST INSIDE I-BEAMS AT CROSSMEMBERS IN ACCORDANCE WITH THE TABLE AND NOTES 3, 4, 5, 12, AND 13.
8. ANCHORS SHALL BE CERTIFIED FOR THESE CONDITIONS BY A PROFESSIONAL ENGINEER, ARCHITECT OR A NATIONALLY RECOGNIZED TESTING LABORATORY AS TO THEIR RESISTANCE, BASED ON THE INSTALLED ANGLE OF DIAGONAL TIE AND/OR VERTICAL TIE LOADING AND ANGLE OF ANCHOR INSTALLATION AND TYPE OF SOIL IN WHICH THE ANCHOR IS TO BE INSTALLED.
9. GROUND ANCHORS SHALL BE EMBEDDED BELOW THE FROST LINE AND BE AT LEAST 12" ABOVE THE WATER TABLE. ANCHORS SHALL ALSO BE INSTALLED TO THEIR FULL DEPTH, AND STABILIZER PLATES INSTALLED TO PROVIDE RESISTANCE TO OVERTURNING OR SLIDING FORCES.
10. ANCHORING EQUIPMENT SHALL 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.
11. STRAPPING TO BE BY TYPE 1, FINISH B, GRADE 1 STEEL STRAPPING, 1 1/4" WIDE AND .035" IN THICKNESS, CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER OR ARCHITECT AS CONFORMING WITH ASTM STANDARD SPECIFICATION D3953-91, "STANDARD SPECIFICATION FOR STRAPPING, FLAT STEEL AND SEALS.
12. SELECT A CROSSMEMBER WHERE PIERS DO NOT INTERFERE WITH THE REQUIRED ANGLE OF THE STRAP. INSTALL THE STRAP JUST INSIDE THE MAIN BEAMS LOOPED AROUND THE CROSSMEMBER AND TIE TO AN ANCHOR LOCATED DIRECTLY UNDER THE MAIN BEAM AT THE ANGLE SPECIFIED IN THE CHAR ABOVE (SEE DETAIL).
13. WHEN THIS ANCHOR ANGLE IS NOT ATTAINABLE, INSTALL ANCHOR PER MANUFACTURER'S INSTRUCTIONS WITH APPROVED STABILIZING PLATE.

REVISIONS	DATE	 CHIEF INDUSTRIES HOUSING DIVISION	DRWG. BY: CES	07/11/06
			CHKD. BY:	
			SCALE: NONE	21.0127

SINGLE WIDE HOME ANCHORAGE DETAILS ANCHORAGE DETAILS FOR PERIMETER FOUNDATION



BASEMENT CONSTRUCTION.



DETAIL 2 APPLIES TO BOTH PERIMETER FOUNDATION WITH PIERS AND BASEMENT CONSTRUCTION

* ANCHOR BOLTS EMBEDDED 7" IN POURED CONCRETE WALLS AND 15" MIN IN MASONRY WALLS

ANCHORAGE DESIGNED FOR STANDARD WIND ZONE 1 (15 PSF HORIZONTAL WIND PRESSURE)

APR 3 2008
Sig. *[Signature]*

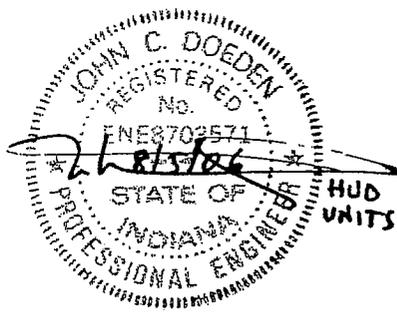
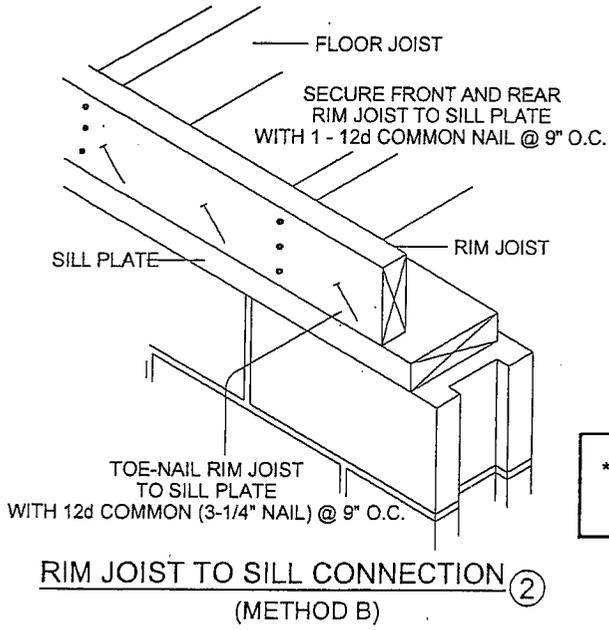
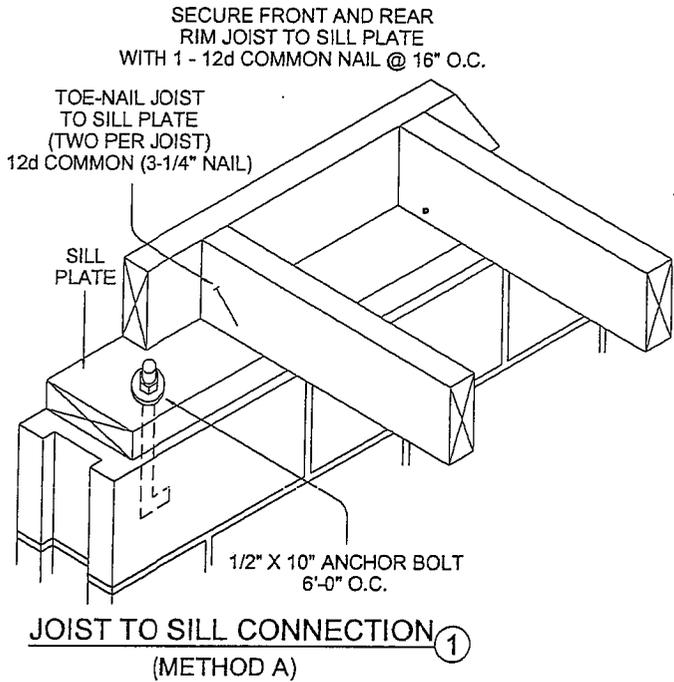
SECTION THROUGH PERIMETER ②

FIGURE 6.3

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			CHKD. BY:	
			SCALE: NONE	21.0128

SINGLE WIDE HOME ANCHORAGE DETAILS FOR PERIMETER FOUNDATION

* DETAILS 1 AND 2 APPLY TO BOTH PERIMETER FOUNDATION WITH PIERS AND BASEMENT CONSTRUCTION.



* ANCHORAGE DESIGNED FOR STANDARD WIND ZONE 1 (15 PSF HORIZONTAL, 9 PSF UPLIFT)

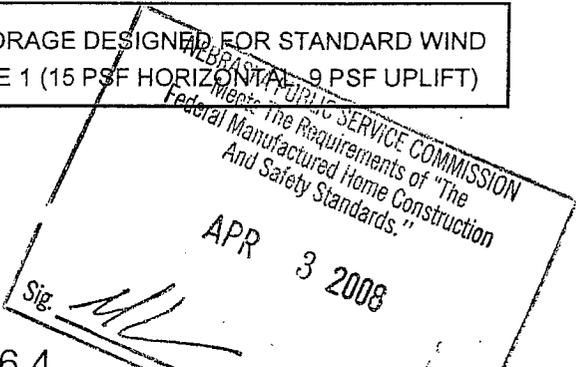


FIGURE 6.4

REVISIONS	DATE	 CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES	01/29/04
			CHKD. BY:	
			SCALE: NONE	21.0129

MINIMUM FOOTING SIZE (OR EQUAL AREA) (INCHES)

PIER CAPACITY (POUNDS)	SOIL BEARING CAPACITY (PSF)				
	1000	1500	2000	4000	
600	12x12	12x12	12x12	12x12	SINGLE ↓ STACK CMU
800	12x12	12x12	12x12	12x12	
1000	12x12	12x12	12x12	12x12	
1500	15x15	12x12	12x12	12x12	
2000	17x17	14x14	12x12	12x12	
2500	19x19	15x15	13x13	12x12	
3000	21x21	17x17	15x15	12x12	
3500	22x22	18x18	16x16	12x12	
4000	24x24	20x20	17x17	12x12	
4500	25x25	21x21	18x18	13x13	
5000	27x27	22x22	19x19	13x13	DOUBLE ↑ STACKED CMU
5500	28x28	23x23	20x20	14x14	
6000	29x29	24x24	21x21	15x15	
6500	31x31	25x25	22x22	15x15	
7000	32x32	26x26	22x22	16x16	
7500	33x33	27x27	23x23	16x16	
8000	34x34	28x28	24x24	17x17	
8500	35x35	29x29	25x25	17x17	
9000	36x36	29x29	25x25	18x18	
9500	37x37	30x30	26x26	19x19	
10000	38x38	31x31	27x27	19x19	
11000	40x40	32x32	28x28	20x20	
12000	42x42	34x34	29x29	21x21	
13000	43x43	35x35	31x31	22x22	
14000	45x45	37x37	32x32	22x22	
15000	46x46	38x38	33x33	23x23	
16000	48x48	39x39	34x34	24x24	
17000	49x49	40x40	35x35	25x25	
18000	51x51	42x42	36x36	26x26	
19000	52x52	43x43	37x37	27x27	
20000	54x54	44x44	38x38	28x28	
21000	55x55	45x45	39x39	28x28	
22000	57x57	46x46	40x40	28x28	
23000	58x58	47x47	41x41	29x29	
24000	59x59	48x48	42x42	30x30	
25000	60x60	49x49	43x43	30x30	

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 And Safety Standards.

NOTES:
 1. FOOTING SIZES SHOWN ARE FOR SQUARE PADS AND ARE BASED ON THE AREA (SQUARE INCHES) REQUIRED FOR THE LOAD. OTHER FOOTING CONFIGURATIONS, SUCH AS RECTANGULAR, MAY BE USED PROVIDED THE AREA (SQUARE INCHES) IS EQUAL TO OR GREATER THAN THE AREA OF THE SQUARE FOOTING SHOWN IN THE TABLE. FOR EXAMPLE, A 12"x22" (288 SQ. IN.) FOOTING MAY BE USED IN PLACE OF A 16"x16" (256 SQ. IN.) FOOTING. ALSO, TWO 12"x24" PADS MAY BE USED IN PLACE OF ONE 24"x24" PAD. PROJECTION SHALL NOT EXCEED "P".
 2. THE FOLLOWING TABLE SPECIFIES THE MAXIMUM FOOTING SIZE FOR VARIOUS FOOTING THICKNESSES. THIS TABLE IS BASED ON UNREINFORCED FOOTINGS. REINFORCED FOOTINGS MAY REQUIRE A SMALLER THICKNESS THAN THAT LISTED BUT MUST BE DESIGNED BY A LICENSED ENGINEER.
 3. THE FOOTING CAPACITIES TABULATED ARE FOR TOTAL LOAD. THE GRAVITY LOADS PRESENTED IN THE TABLES IN THIS MANUAL INCLUDE THE WEIGHT OF THE PIER AND FOOTER AND NO FURTHER ADJUSTMENT IS REQUIRED. HOWEVER, WHEN ADDITIONAL LOAD CALCULATIONS ARE REQUIRED THE LOAD MUST INCLUDE THESE WEIGHTS. PIER CMU BLOCKS TYPICALLY WEIGH APPROXIMATELY 30 POUNDS APIECE AND CONCRETE FOOTERS WEIGH APPROXIMATELY 150 PCF (EXAMPLE: 24x24x6 FOOTER WEIGHS 300#)

TABLE 6.1 FOOTING SIZES

REVISIONS	DATE	 CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES 11/08/06
REVISE FOR NEW HUD REQ.	10/8/08		CHKD. BY:
			SCALE: NONE 21.0130

FOUNDATION DESIGN: GENERAL NOTES

GENERAL NOTES:

1. THIS FOUNDATION HAS BEEN DESIGNED FOR SITES WITH AN ALLOWABLE SOIL BEARING CAPACITY OF 2000 PSF MINIMUM.
2. FOUNDATIONS TO BE CONSTRUCTED ON SOIL WITH A LOWER BEARING CAPACITY SHALL BE DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE BY A LICENSED ENGINEER TO LOCAL CONDITIONS AND CODES.
3. CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS TO BE 3000 PSI MINIMUM.
4. REINFORCING STEEL SPECIFIED TO BE GRADE 60 BARS MEETING ASTM A615, A616, AND A617.
5. FOUNDATION WALL MAY BE POURED CONCRETE EIGHT (8) INCHES THICK, REINFORCED WITH #4 REBAR AT (12") O.C. VERTICAL AND #5 REBAR AT (18") O.C. HORIZONTAL.
6. THESE SPECIFICATIONS ARE TYPICAL. LOCAL CODES MAY CONTAIN ADDITIONAL REQUIREMENTS.
7. FOUNDATION WALL STEMS MAY BE CONCRETE OR CONCRETE BLOCK.
8. CONCRETE BLOCK SHALL CONFORM TO ASTM C-90.
9. IN CONCRETE BLOCK STEM WALLS A MINIMUM OF (2) - #4 REBARS ARE TO BE INSTALLED IN BLOCK WITH MUD SILL ANCHORS. FULLY GROUT EACH CELL CONTAINING REBAR.
10. ALL LUMBER IN CONTACT WITH CONCRETE SHALL BE OF PRESSURE TREATED TYPE OR OF SPECIES APPROVED FOR USE IN DIRECT CONTACT WITH CONCRETE. STEEL (FASTENERS, CONNECTORS, OR BEAMS) MUST BE EITHER ISOLATED FROM ANY CONTACT WITH LUMBER CONTAINING COPPER PRESERVATIVES OR MUST BE ZINC PLATED TO MEET G185 COATING RATING.
11. THE INSTALLATION SITE MUST BE GRADED SO THAT WATER DRAINAGE IS AWAY FROM STRUCTURE AND DOES NOT ACCUMULATE UNDER THE HOME.
12. BACK FILL ADJACENT TO THE SHALL NOT BE PLACED UNTIL THE WALL HAS SUFFICIENT STRENGTH OR HAS BEEN BRACED TO PREVENT DAMAGE.
13. MINIMUM FOUNDATION VENTILATION REQUIREMENTS:
 - a. 18" X 24" ACCESS CRAWL SPACE TO UNDER FLOOR AREA.
 - b. 1-1/2 SQUARE FEET OF VENTILATION PER 25 LINEAL FEET OF FOUNDATION WALL.
 - c. COVER VENT OPENINGS WITH CORROSION-RESISTANT WIRE MESH NOT LESS THAN (1/8") NO MORE THAN (1/2") IN ANY DIRECTION.
15. THIS FOUNDATION SYSTEM FOR USE WITH FLOOR SYSTEMS WHICH ARE DESIGNED TO SPAN FROM PERIMETER WALL TO CENTERLINE SUPPORTS.
16. DAMP PROOFING OF CONCRETE OR MASONRY WALLS TO BE IN ACCORDANCE WITH LOCAL CODES. IN THE ABSENCE OF CODE REQUIREMENTS, THE FOLLOWING SHALL APPLY:
 - a. EXTERIOR FOUNDATION WALLS OF MASONRY CONSTRUCTION ENCLOSING BASEMENTS SHALL BE DAMP PROOFED BY APPLYING NOT LESS THAN (3/8") OF PORTLAND CEMENT PARGING TO THE WALL FROM THE FOOTING TO THE FINISH GRADE. THE PARGING SHALL BE COVERED WITH A COAT OF APPROVED BITUMINOUS MATERIAL APPLIED AT THE RECOMMENDED RATE. EXTERIOR FOUNDATION WALLS OF CONCRETE CONSTRUCTION ENCLOSING BASEMENTS SHALL BE DAMP ROOFED BY APPLYING A COAT OF APPROVED BITUMINOUS MATERIAL TO THE WALL FROM THE FOOTING TO THE FINISH GRADE AT THE RECOMMENDED RATE.

GENERAL NOTES:

- a. FOUNDATION WALL OF HABITABLE ROOMS LOCATED BELOW GRADE SHALL BE WATER PROOFED WITH MEMBRANES EXTENDING FROM THE EDGE OF THE FOOTING TO THE FINISH GRADE LINE. THE MEMBRANE SHALL CONSIST OF EITHER 2-PLY HOT MOPPED FELT, 6-MIL POLYVINYL CHLORIDE, 55 LB. ROLL ROOFING OR EQUIVALENT MATERIAL. THE LAP IN THE MEMBRANE SHALL BE SEALED AND FIRMLY AFFIXED TO THE WALL.
- b. FOUNDATION WALLS MAY BE DAMP PROOFED OR WATER PROOF USING MATERIALS AND METHODS OF CONSTRUCTION OTHER THAN COVERED IN THIS SECTION WHEN APPROVED BY THE LOCAL BUILDING OFFICIAL.
17. DRAINS SHALL BE PROVIDED AROUND FOUNDATIONS ENCLOSING HABITABLE OR USEABLE SPACES LOCATED BELOW GRADE AND WHICH ARE SUBJECT TO GROUND WATER CONDITIONS. DRAINS SHALL BE INSTALLED AT OR BELOW THE AREA TO BE PROTECTED AND SHALL DISCHARGE BY GRAVITY OR MECHANICAL MEANS INTO AN APPROVED DRAINAGE SYSTEM.
18. THE TOP OF OPEN JOINTS OF DRAIN TILES SHALL BE PROTECTED WITH STRIPS OF BUILDING PAPER AND THE DRAINAGE TILES SHALL BE PLACED ON TWO (2) INCHES OF WASHED GRAVEL OR CRUSHED ROCK ONE SIEVE SIZE LARGER THAN THE TILE JOINT OPENING OR PERFORATION AND COVERED WITH NOT LESS THAN SIX (6) INCHES OF THE SAME MATERIAL.
19. THE DESIGNS ON THIS AND ACCOMPANYING SHEETS AREA APPLICABLE TO SEISMIC ZONES 0, 1, AND 2.
20. THIS FOUNDATION DESIGN IS NOT FOR INSTALLATION ON A FLOOD PLAIN. WHEN INSTALLING CRAWL SPACE OR BASEMENT IN AN AREA WITH SOILS HAVING POOR DRAINAGE, CONSIDERATION SHOULD BE GIVEN TO METHODS OF ELIMINATING ACCUMULATION OF WATER IN THE CRAWL SPACE OR BASEMENTS, SUCH AS THE USE OF SUMP PUMP(S). INSTALLATION OF SUMP PUMPS TO BE IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS.

JOHN C. DOEDEN
 REGISTERED
 NO. 5NE0703571
 STATE OF NEBRASKA
 PROFESSIONAL ENGINEER

NEBRASKA PUBLIC SERVICE COMMISSION
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 And Safety Standards."
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REVISIONS	DATE	 CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES 02/14/05
			CHKD. BY:
			SCALE: NONE 21.0131

SECTION VII

SITE ASSEMBLY INSTRUCTIONS

Single Section Homes

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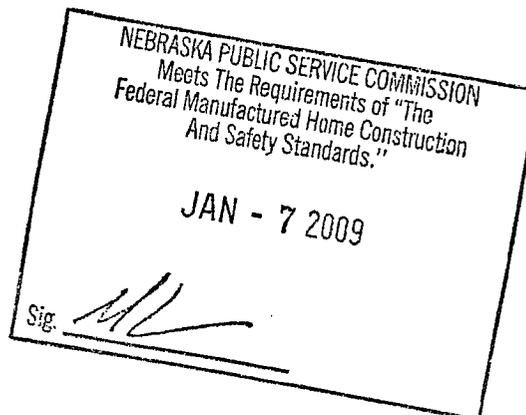
ADDENDUM – SITE PREPARATION

Information contained on these addendum pages is to enhance and sometimes supersede the following pages that pertain to the details of the completion of the setting of your home.

Grade the home site to permit water to drain from under the home. All drainage at the home site must be diverted away from the home and must slope a minimum of $\frac{1}{2}$ " per foot away from the foundation for the first ten feet.

Cover the entire area under the home using a polyethylene sheeting or its equivalent, at least six mils thick. Overlap it at least 12" at all joints with adhesive at all joints. Where soil and frost conditions permit placement of footings at grade level, place the sheeting directly beneath them. Sheeting shall be sealed or caulked at all penetration for piers, utility connections or other items. Repair any voids or tears in the retarder by patching with like material, maintaining a 12" minimum overlap and sealing joints with mastic.

If the crawlspace under the home is to be enclosed with skirting or other material you must provide ventilation of this space. Skirting installed around the home should have non-closing vents located at or near each corner and as high as possible to cross-ventilate the entire space under the home. Vent free area should be equal to at least one square foot for every 150 square feet of the home's floor area. This area should be further increased when insect screens, slats, etc. are used over the open vent area. When a 6 mil plastic vapor retarder is installed under the home, the ventilation requirement may be reduced to one square foot per every 1500 square feet of floor area. In freezing climates, install skirting so as to accommodate 1 – 2 inches of frost heave uplift to prevent buckling of floors. Take care that rainwater cannot be channeled or trapped between the skirting and siding. Skirting is to be installed in such a manner that the vinyl will be allowed to slide (expand and contract)



Contents

General

Introduction
Set Up Responsibility
Site Implications

Home Installation

Site Preparation
Footings & Piers
Snow Load Designed Roofs
Lifting Considerations
Pre-Foundation Set-Up

Setting, Blocking & Positioning

Crawlspace with Standard Blocking
Crawlspace Completion
Leveling

Perimeter Foundation with Crossbeams

Post Foundation (Finish) Setup

Anchorage Instructions

Utility Connections

Heating, Ventilation and Air Conditioning
Installation of Roof Jack Extension
Electrical System
Water System
Drain, Waste and Vent
Gas System

Interior Finishing

Large Light Fixtures
Ceiling Fan on Marriage Wall Beam
Appliance Installation

Exterior Finishing

Exterior Light Connection
Porches & Steps
Home Extensions & Additions

Final Inspection

Air Infiltration Barrier
Exterior Siding and Trim
Roofs
Clearances
Caulking
Interior

Summary

General

Introduction

Thank you for choosing Chief® Industries as your home builder. We hope your new home brings you comfort and pleasure for many years to come. This home was engineered, constructed and inspected to comply with the *Federal Manufactured Homes Construction and Safety Standards* in effect on the date of construction. Minimal specifications are required from national standards for the design, construction, thermal protection, heating systems, plumbing systems and electrical systems for HUD homes intended for residential use.

Our intent is to produce a safe and comfortable home for you. Our company standards surpass compliance with national standards. Chief® Industries has highly qualified plant personnel to inspect these standards throughout the construction process.

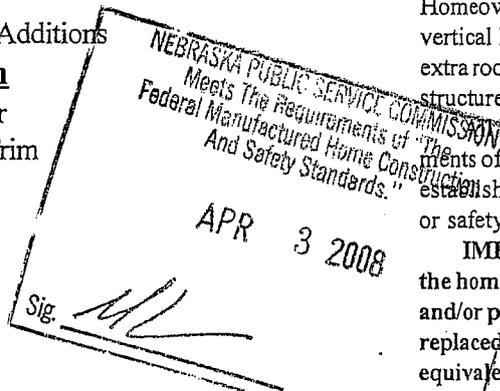
Before set-up can even begin, you must contact the building officials in your area for necessary permits, licenses and inspections required for installation of this home. It is extremely important in preparing your home for its occupancy that it be properly blocked, set and leveled by an experienced HUD home mover, dealer or installer. Correct procedures in setting your home could prevent any costly future reconstruction.

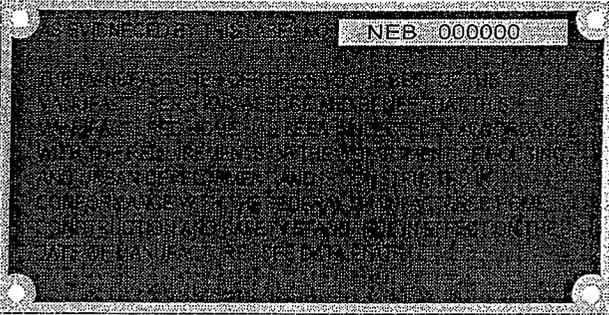
The following step-by-step instructions were designed to assist you with the installation of your home. *Due to changes that are brought about by Chief® Industries continuing effort to improve our product and provide our customers with a wide variety of features; there may be products in or on your home that are not thoroughly covered by this manual.* Before starting the set up process, you should go completely through your home owner's information carefully to see if there are supplemental details before any attempt is made in setting your home.

Data describing the roof and wind loads for which your home was designed may be found on the data plate in your home. Load zone maps of the United States showing roof load, wind load and thermal zones are also included in the Homeowner's Manual. The support system must resist all vertical loads from the weight of your home, plus temporary extra roof loading and it must resist side loads imposed on the structure by wind gust.

HUD home installers shall comply with the requirements of local zoning ordinances and conditional use permits established by local authorities pertaining to any health and/or safety codes.

IMPORTANT: The HUD label attached to the exterior of the home needs to remain visible. Do not obstruct the view and/or permanently remove. If siding needs to be repaired or replaced make sure to reattach the HUD label in the same or equivalent method. The HUD label should be located on the endwall at the rear of the home (12) inches in from the left side and (12) inches up from the bottom of the home. The label looks like the picture following:





Set Up Responsibility

Many local codes require that your home must be set-up by a dealer, installer or home mover specially licensed for this procedure. If your dealer is not licensed himself, he will make the arrangements with a contractor who is licensed. It is strongly recommended that the home be set and leveled by professional experienced in the construction of HUD homes.

Site Implications

When selecting a site some items to be considered are as follows:

- Is your site suitable for its intended use?
- Does this intended use act in accordance with any jurisdiction over it? (Federal, State and Local laws)
- Have you considered inherent potential hazards?

Considering such things as:

- proximity to flood plains or water features; these might cause flooding, excessive humidity, erosion and sediment deposition.
- proximity to noise and air pollution such as industrial sites, construction sites, landfills, traffic ways and airports.
- "hidden" factors such as groundwater table level, soil composition and bearing capacity, frost line and possible termite infestation.

Once all problems encountered on your site are addressed with corrective work, you will be able to begin site preparation.

Home Installation

Site Preparation

The process of supporting your home for occupancy has three initial steps -- site preparation, setting and blocking and leveling. These are the first of many important steps to be seriously adhered to in order to prevent costly reconstruction measures you may encounter in the future. If you intend to place the home on a site of your own, some work will be necessary.

Normally, the area of the site where you will locate the home should be relatively level. However, the area beneath the home should have enough slope to allow for good water

drainage. The recommended slope is one (1) inch for every four (4) feet. The rest of the site should be graded in a manner that rainwater and melting snow will be diverted from the support or foundation of the house. A vapor barrier, such as a layer of polyethylene plastic sheeting or similar material must be placed on the ground under the home. Supports must rest on undisturbed soil or on fill that has been compacted and fully settled.

In addition, provision for utilities must be made before the home is set. Installation of lines and equipment supplying water, electricity and fuel, plus sewage disposal systems must be completed and ready for connection in accordance with all local codes and regulations. Your county engineer, building inspector or local utility company officials can advise you on the requirements in your community.

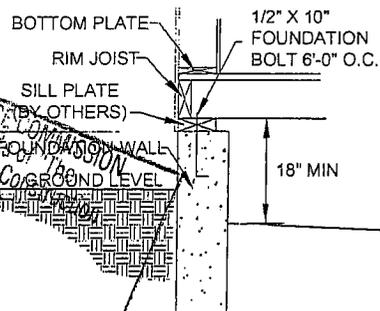
Footings & Piers

Proper support for your home includes footings and blocking. The purpose of supports is to distribute the load of your home as evenly as possible on the footings and to provide a sturdy base. The footings carry and distribute the weight of the home placed on the blocking. Piers are usually built or appropriate support stands on individual footings. We recommend three types of piers: concrete block, steel jacks and concrete perimeter blocking.

Support piers are generally constructed of standard (8" x 8" x 16") concrete blocks. Blocking must be tall enough to raise the under side of the frame at least (12) inches off ground level and to keep the under sides of the floor joist at least (18) inches off the ground. On sloped sites where tall piers are unavoidable, many codes require a permanent supporting structure, such as piers of poured or block concrete.

Adjustable steel jacks make excellent supports and simplify the job of leveling. Any manufactured supports that you use should be listed and labeled by an approved testing agency. Your setup contractor or your local building inspector can advise you on the best supports to use.

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TYPICAL PERIMETER FOUNDATION

The perimeter foundation could be constructed of either poured or block concrete. This type of perimeter support allows the I-Beam piers to be spaced at larger intervals. This versatile foundation setup allows for a crawlspace setup or a basement application.

Even though Chief® recommends footings installed below frost level, footings may be installed shallower. You will have fewer problems maintaining a level home if the footings lie below the frost line in your community. This minimizes the heave and fall of the piers during the freeze and thaw cycle. **Bonna Villa® Homes is not responsible for foundation design. Foundation and piers are to be designed per local jurisdiction requirements by an Engineer or Architect.** Refer to the respective sections in this manual dealing with these areas.

Pre-cast footings can be substituted for poured concrete footings. They simplify the process of blocking. These should be listed and labeled by an approved testing agency.

This next set of instructions is specifically for a snow load roof option. This option and is not included with a standard specification house.

Snow Load Designed Roofs

In order to support the snow load applied to the home, perimeter blocking becomes a necessity. To accommodate this additional blocking prints are provided with your installation manual.

- 1) The blocking prints provided will demonstrate proper pier spacing for you situation. Refer to the appropriate section for information on the foundation type that you have chosen.
- 2) Pier size and construction are also listed on the charts for pier loading.
- 3) Continue set up per foundation type.

Lifting Considerations

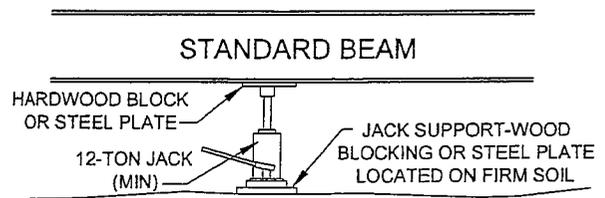
By following this information you will minimize the setup related problems you may have during the installation of your home.

WARNING: Sitting under a home when it is suspended on jacks is dangerous. If the home slips off of the jack(s), you or someone else could be seriously or even fatally injured.

If it is ever necessary to be underneath the home, make sure that there is sufficient blocking to safely carry the load of the home. If the home is being moved by rollers, beams or craning make sure there are timbers or other safety blocking material supports in place so as to safely limit the distance the home can fall or unexpectedly move. Never suspend a home more than four (4) inches above safety supports. Always follow the six (6) minimum safety precautions when lifting a home:

- 1) Use only jacks in good condition with a (12) ton minimum rating.
- 2) Provide a firm support such as wood blocking or a steel plate underneath the jack bases to prevent them from tipping.
- 3) Leave tires and axles on the unit until all blocking is in place in order to reduce the hazard from collapse.
- 4) Using a minimum of three (3) jacks along each length of I-

Beam distribute the concentrated loads created by the jacks by using (3/8" x 4" x 12") steel plates or (4" x 4" x 12") hard wood blocks between the jacks and the main I-Beam.



SAFE JACK SUPPORT

WARNING: Never apply the jack directly to the I-Beam or other structural member.

Such a concentrated load may cause the I-Beam or structural member to fail resulting in the home sliding off the jack.

- 5) Position safety support beneath solid members such as I-Beams or floor joists and never under an axle or spring-mounted member.
- 6) Avoid overstressing structural members.

Craning Method

Another method of placing the home sections onto a foundations is with the use of a crane(s), otherwise referred to as "slinging a home." The procedure involves lifting each home section with slings suspended from a crane. The slings should always be secured to a spreader bar at the lifting point to prevent damaging the homes' exterior components (see Figure 1). Typically, two (2)

cranes are used to locate the slings at the correct position lengthwise. Slinging homes has the benefit of the ability to set the home in a quicker time span and allow adaptation to current property and landscape restrictions. Unfortunately, there are some negative aspects to this system as well. In some cases, if slings are not located in

structurally sound locations of the home, damage to the framing and wall finish can occur. To determine the capacity of the cranes needed contact a BonnaVilla® Homes Salesperson or Engineering Department representative for typical home weights. This information can also be found on the BonnaVilla® Homes website in the Dealer Section.

The initial steps of preparing the home for craning will be no different from those requirements described in "Lifting Considerations" section of the Installation Manual. Chief Industries, Inc. recommends the use of synthetic flat straps rather than the cable slings. Finally, all set-up materials (siding, shingles, lumber, etc.) will need to be removed from the unit prior to craning, as this will provide maximum strength of the unit with the least amount of weight during the craning

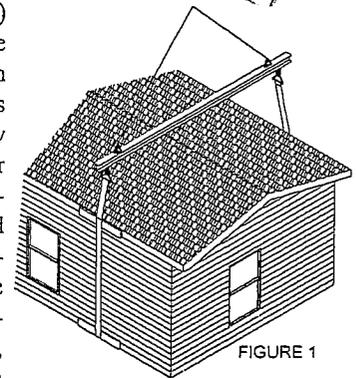
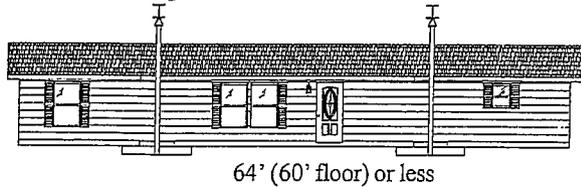


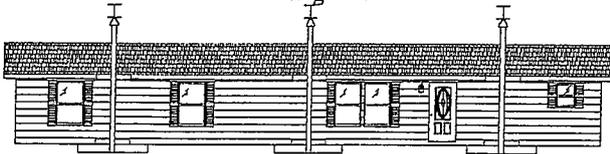
FIGURE 1

process, then the slings should be placed in the lifting locations (these locations shall be reinforced with lumber to resist penetration of the structure and/or damage to exterior siding). These locations are based on several factors: First, the location should be spaced according to Figure 2 and Figure 3 to balance the weight of the home.



64' (60' floor) or less

Figure 2



68' (64' floor) or more

Figure 3

Secondly, the straps should be located in an area where a minimum of four (4) foot of exterior wall occurs. This would be away from window, door and archway locations, if possible. A final consideration is two (2) slings are required as a minimum on a 64' home (60' floor actual size) and three (3) slings are required as a minimum on 68' home (64' floor actual size) or longer. Thirdly, the slings should be placed over a framing member (floor joist and exterior wall stud) - mandatory.

When the slings are placed, lumber shall be placed under each sling and each sling shall be placed on the outside of the steel frame (as shown in

Figure 4), this is the responsibility of the installer to follow this procedure to clear such structures. The structures are as listed: drain lines, water lines, electrical wiring and all HVAC ductwork. Provision should be made on the foundation for the removal of the slings once the home is set. One method is to leave a masonry block out wherever a sling will be located. If the perimeter wall is constructed of poured concrete, the sill plate can be cut at locations of the slings. Once the home is placed drive the sill plates back into position and seal properly with a quality silicone caulk.

Another design consideration is locating slings where porches are constructed. Porches are constructed strictly with floor loads and will not withstand the force when a sling is place in this area.

WARNING: Some homes have designs that do not lend itself to point loads (slinging). Such cases are porches, recessed decks and chamfered corners. When placing slings, avoid locating in these areas. Additional supports (beams, lumber, etc.) may be required if a sling must be located in one of these areas. Chief® Industries is

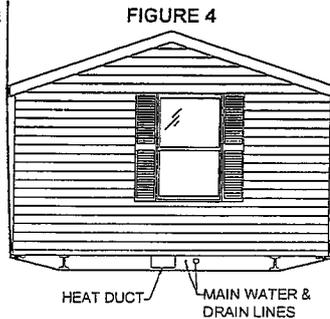


FIGURE 4

not responsible for damage to the home as a result of sling or beam placement during the set process.

The home may now be completed as described in the remainder of this manual.

Pre-Foundation Home Set-Up

Any items which could be difficult to place after the home is set should be dealt with now. If you are using only the Crawlspace with Standard Blocking, it is much easier to place the moisture barrier before the house is set. It can be left folded up and then unfolded after pads and support piers have been positioned under the frame members.

Setting, Blocking & Positioning

General

If the wheels are going to be left in place, it should be determined at this time. Any other items which could be difficult to install after the home is positioned such as ground anchors installed at an angle, should be placed in the proper locations. It is more convenient to place the moisture barrier under the house before it is set. It can be left folded up and then unfolded after pads and support piers have been positioned under the frame members.

NOTE: Excessive nonuniform lifting during the leveling process can cause the home to be racked and twisted. This could result in serious structural damage to the home, thus voiding your warranty.

*****This next section involves lists for setting your home on its foundation. There are three (3) different sets of instructions for their corresponding foundation types. you must find the set that is descriptive of your particular circumstance. At the end of these set of lists, there will be a checklist for post-foundation or finish setup.*****

It is imperative that you provide a legal drain tile or other approved method for draining water away from the foundation footing. You must also provide a means of interior support for a basement wall until the backfilled earth on the exterior of the wall has stabilized. It is the responsibility of the homeowner to see that this support is done and not removed until the proper time.

NOTICE: These are Chief's recommended lists for home setup. Other methodology may be employed. Guaranteed that these allow for complete structural integrity during the entire setting process.

List of Sets:

- Crawlspace with Standard Blocking
- Crawlspace with Perimeter Foundation
- Perimeter Foundation with Crossbeam

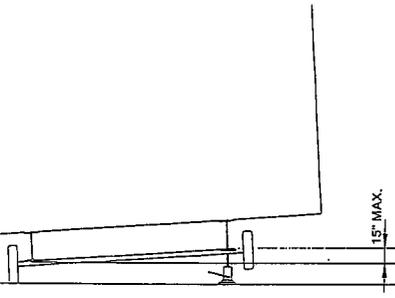
Crawlspace with Standard Blocking

- 1) The supports footings must be completed.
- 2) Appropriately position the home by aligning the main l-21.0136

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 Requirements for home
 construction
 And Safety Standards

Beams over the support footings. Once the section is aligned longitudinally and over the support footings, block the sets of tires at the front and rear to prevent the unit from moving.

- 3) Along one of the main I-Beams, place your jacks one in from each end approximately ten (10) feet with the remaining jacks spaced evenly between the end jacks. On

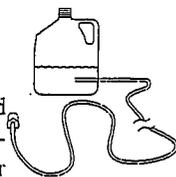


longer homes, you will be better served by using four (4) jacks along each beam. When attempting to evenly space your jacks, should a location be in an axle area, place the jack just outside of the axles.

- 4) Operating these jacks simultaneously, raise the I-Beam to a position approximately two (2) inches higher than its final position. Concrete or metal piers should now be placed into position under the beam and on top of the footings, adhering to the specified spacing. Level each pier and slowly lower each beam onto the support piers. Some methods for leveling are listed at the end of this section.
- 5) Once the first beam has been set, move the jacks to the other I-Beam, repeating steps 4 and 5.
- 6) If the tires and axles are going to be removed, this should now be done once the unit is set in it's final position. It would be wise to position a jack or a support under each end of the axle before removing the bolts from the spring hangers to keep them from a sudden drop that could end in an injury.
- 7) Piers should be placed under the rim joist of the sidewalls wherever there are exterior doors. This is to be done so as to provide greater support for your floor system to ensure long-term, proper operation of your doors. This type of pier should be placed at the hinge side of any steel, swinging door and on both sides of any sliding glass or swinging patio doors.

Leveling

There are many commonly accepted methods for leveling homes. One of our recommended methods of leveling is: a "water level" system.

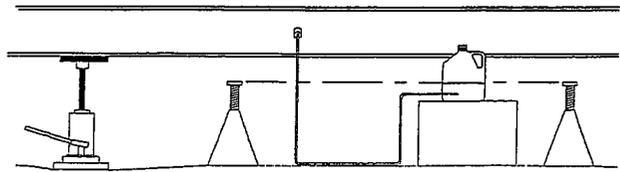


WATER LEVEL

A "water level" system is simply a plastic reservoir holding colored water with approximately (75) feet of plastic hose attached. This device operates on the principle that water seeks its own level.

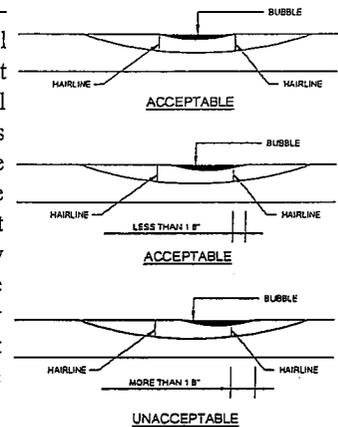
Position the water level in the reservoir exactly at the height of the bottom of the steel frame when it will be in its final position. By placing a shut-off valve at the end of the plastic tubing, the liquid will be prevented from escaping when

the hose is placed below the level of the fluid in the reservoir. Pull the end of the plastic tube to the first pier and holding the end well above the top of the pier, open the valve. When this operation is complete, then each succeeding pier is leveled in the same manner.



WATER LEVEL SYSTEM

Another method of leveling is using a bubble level that is at least four (4) feet long. A deviation from level where part of the bubble is less than (1/8) inch outside one hairline, is usually acceptable as long as the reading is not the aforesaid consistently throughout the length of the home. Any deviation greater than (1/8) inch would suggest that the house should be releveled.



To achieve the best results, your home must stand as level as possible on its supports. If it does not, here are some of the problems that can result:

- Walls, partitions and floors that buckle.
- Leaks around windows, doors, seams in the roof, ceiling and walls.
- Cabinet doors and drawers won't shut properly.
- Loose materials on walls, partitions and ceilings.
- Floor covering can wrinkle.
- Floor structure can loosen enough to feel soft and spongy under foot.
- Exterior siding can wrinkle or crack.
- Piping and wiring can snap under tension.

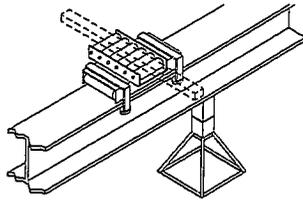
To prevent these non-warranted problems, your setup contractor should check and adjust the level of your home during the entire blocking process.

Keep in mind that you are obligated to check the level of your home once a month for the first three months and twice a year thereafter. Check after the spring thaw (when frost is out of the ground), and check again when the ground refreezes. The freeze-thaw cycle can cause your home to heave or settle.

Crawlspace with Perimeter Foundation

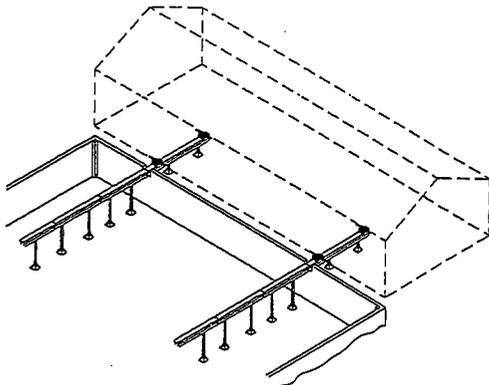
- 1) The perimeter foundation and support footings must be completed prior to setting the home. A (2 x 8) pressure treated sill plate must be secured to the foundation wall with one (1) - (1/2" x 10") foundation anchor bolt every six (6) feet on center beginning one (1) foot (maximum) from each corner.

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ROLLER DEVICE ON BEAM

- 2) Set up the "Roller Beam" or I-Beam within the foundation walls per *Setting System* manufacturer guidelines. Place roller devices on the proper devices to help distribute the weight of the home evenly. Make sure that appropriate jacks or temporary blocking is spaced as listed. **If the floor length of your house is 60'-0" or longer, we require the use of three (3) beams for setting the house.** Space the beams along the length of the house.



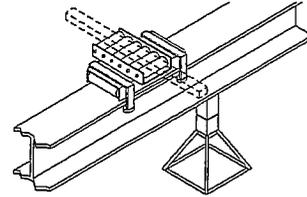
Roller Beam Setup

- 3) Move and align the house parallel to the foundation wall.
- 4) Using the method described in steps 3 and 4 of crawlspace with standard blocking, raise the house high enough to slide "Roller Beam" under the frame leaving a height allowance for the roller device used for sliding the home. Also leave enough room for the "building support" that will disperse the weight of the home evenly on the rollers. In order to prohibit excess shear stress to the main structural members, distribute concentrated loads by using plate or smaller beam.
- 5) Lower home onto the foundation.
- 6) Secure flooring system to sill plate in one of these manners: (refer to details on pages SHUDSM28 and SHUDSM29)
 - a) Along the sidewalls, toenail two (2) - (12d) common nails from each floor joist into sill plate. At the endwalls, toenail one (1) - (12d) common nail every eight (8) inches on center along the length of each front and rear rim joist. Toenails should be driven at an angle of approximately (30) degrees with the joist. Start the nailing from the end of the joist.
 - b) For this method of nailing floor system to sill plate, the home must be ordered with the lower siding trim shipped loose. After the home has been set into place, toenail one (1) - (12d) common nail every eight (8) inches on center around the entire perimeter of

the home from the rim joist into the foundation sill plate.)

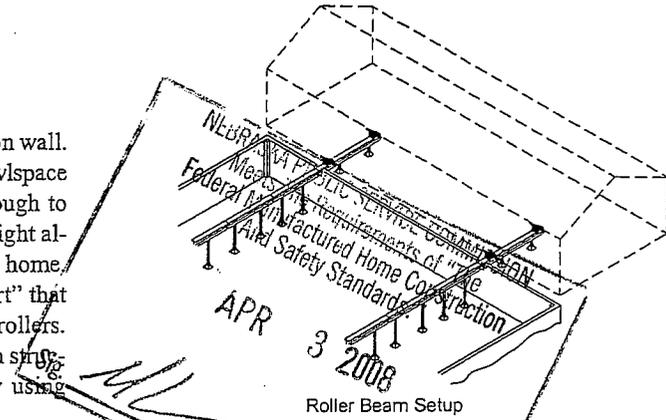
Perimeter Foundation with Crossbeams

- 1) The perimeter foundation and support footings must be completed prior to setting the home. A (2 x 8) pressure treated sill plate must be secured to the foundation wall with one (1) - (1/2" x 10") foundation anchor bolt every six (6) feet on center beginning one (1) foot (maximum) from each corner.



ROLLER DEVICE ON BEAM

- 2) Set up the "Roller Beam" or I-Beam within the foundation walls per *Setting System* manufacturer guidelines. Place roller devices on the proper devices to help distribute the weight of the home evenly. Make sure that appropriate jacks or temporary blocking is spaced as listed. **If the floor length of your house is 60'-0" or longer, we require the use of three (3) beams for setting the house.** Space the beams along the length of the house.



Roller Beam Setup

- 3) Move and align the house parallel to the foundation wall.
- 4) Using the method described in steps 3 and 4 of crawlspace with standard blocking, raise the house high enough to slide "Roller Beam" under the frame leaving a height allowance for the roller device used for sliding the home. Also leave enough room for the "building support" that will disperse the weight of the home evenly on the rollers. In order to prohibit excess shear stress to the main structural members, distribute concentrated loads by using plate or smaller beam.
- 5) Lower home onto the foundation.
- 6) Secure flooring system to sill plate in one of these manners: (refer to details on pages SHUDSM28 and SHUDSM29)

- a) Along the sidewalls, toenail two (2) - (12d) common nails from each floor joist into sill plate. At the endwalls, toenail one (1) - (12d) common nail every eight (8) inches on center along the length of each front and rear rim joist. Toenails should be driven at an angle of approximately (30) degrees with the joist. Start the nailing from the end of the joist.
- b) For this method of nailing floor system to sill plate, the home must be ordered with the lower siding trim shipped loose. After the home has been set into place, toenail one (1) - (12d) common nail every eight (8) inches on center around the entire perimeter of the home from the rim joist into the foundation sill plate.)

Anchorage Instructions

In accordance with the *Federal Manufactured Housing Construction and Safety Standard* in effect on date of construction, the following anchorage requirements for all Wind Zones are in addition to any requirements covered under the previous standard:

Design of anchors should be certified for their installation by a professional engineer of a nationally recognized testing laboratory as to their resistance based on the installed angle of diagonal tie and/or vertical tie loading and type of soil in which the anchor is to be installed.

Ground anchors should be embedded below the frost line and be at least (12) inches above the water table and should be installed to their full depth and stabilizer plates should be installed to provide added resistance to overturning or sliding forces.

Anchoring equipment should be certified by a registered engineer or architect to resist these specified forces in accordance with testing procedures in ASTM specification D3953-91; "Standard Specification for Strapping, Flat Steel and Seals." Tie Downs must start no more than two (2) feet from each end of unit.

Protections shall be provided at sharp corners where the anchoring system requires external straps or cables.

Strapping to the Type 1, Finish B, Grade 1 steel strapping, 1.25 inches wide and .035 inches in thickness, certified by a registered professional engineer or architect as conforming with aforesaid ASTM specifications.

The tie down straps should now be installed around the frame members and the ground anchors in accordance with the ground anchor manufacturer's installation instructions. Recommendations and illustrations for this tie down procedure are included in another section of this manual.

Crawlspace Completion

Keep in mind when completing the skirting around the perimeter of the home (if it is not set on a perimeter foundation) that you must allow for ventilation underneath the house. There should be vents as close to the corners as possible to prevent "dead air pockets." One (1) square foot of venting is

required for every (150) square feet of floor space.

Example: a (32' x 80') house with actual dimensions of (29'-0" x 76'-0") equals 2204 square feet. Divide 2204 square feet by (150) which equals 14.69 square feet. Round up to (15) square feet of venting area within the crawlspace skirting.

Utility Connections

General

Before connecting any utility systems, it is recommended that local, county and state authorities be consulted for compliance with local requirements.

CAUTION: It must be possible to gain access to utility hookups, either by removable sections of skirting or through access doors.

Heating, Ventilation and Air Conditioning

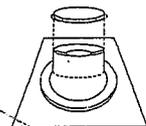
It is imperative that you read and understand the Owner's Manual provided by the manufacturer of each piece of equipment in the house. In the event that there is a discrepancy between this manual and the appliance manufacturers' provided manual, follow the instructions given by the manufacturer of the appliance.

It is mandatory that the combustion air and flue tube assembly be fully engaged at back sides and front and combustion air tube securely fastened to the furnace with sheet metal screws in the screw holes provided.

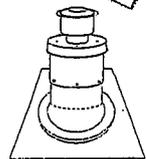
CAUTION: Vent piping must be insulated with R-5 insulation if it will be subjected to freezing temperatures such as routing through unheated areas. The combustion air pipe should also be insulated when it passes through a warm, humid space.

Installation of Exterior Roof Jack Extension

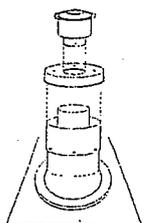
- 1) Remove weather cover. Remove the three (3) screws that secure the weather cover to the roof jack barrel. Remove and discard the cover.
- 2) Install crown assembly. Slide the crown assembly over the roof jack barrel. Secure with the three (3) screws previously removed from the weather cap, using the prepunched holes as guides.
- 3) Remove upper and lower caps. Remove the two (2) screws that secure the upper cap to the crown assembly base and remove the upper cap. Next, remove the three (3) screws that secure the lower cap to the crown assembly base. Set both caps aside for later use.
- 4) Install Extension. Place the roof jack extension on top of the crown assembly base, pushing down firmly to assure a snug fit. **IMPORTANT:** Make sure that the pipes are connected. Using the four



STEP 1



STEP 2



STEP 3

(4) holes at the base of the extension as a guide, drill four (4) holes (1/8) inch in diameter into the crown assembly base. Secure the extension to the crown assembly base with the four (4) screws provided.

- 5) Reinstall Upper and Lower Cap to Extension. Install the lower cap on top of the extension so that the center pipesticks through the hole in the lower cap. Using the three (3) screws removed in step 3, attach the lower cap to the extension bracket. Install the upper cap over the center pipe of the extension. Using the two (2) holes located at the base of the upper cap as guides, drill two (2) holes (1/8) inch diameter into the center pipe. Finally, attach the upper cap to the center pipe using the two (2) screws removed in step 3 to center the pipe.

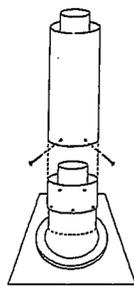
Use (1/2) inch blunt or sharp end metal screws to fasten roof jack combustion air pipe to furnace combustion air collar. Screw holes are provided in the pipe and collar. Excessively long screws may extend to the flue pipe and puncture it. Screws are not to exceed (1-1/2) inches in length.

Combustion air tube and flue pipe are part of the same assembly. Only the combustion air tube need be fastened to the furnace.

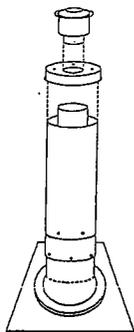
- 1) Check to be certain that the flue pipe and combustion air tube are present.
- 2) Pull the telescoping flue tube and combustion air tube assembly down from the roof jack. Slide the flue tube/combustion air tube assembly down firmly over the furnace outlet and combustion air collar. Insure that the back side, and front of combustion air tube collar is fully engaged. Fasten the combustion air tube to the furnace combustion air collar using two (2) (1/2) inch sheet metal screws. (Screw holes are provided in combustion air tube and furnace combustion air collar.)

At this time have all the gas connections checked for air pressure and the flue checked for tightness. A serviceman can then light the pilot. Change the furnace filter as often as needed. Clean the air distribution system regularly to prevent the motor from overheating. Keep up maintenance on the air distribution system as defined in the manufacturer's instructions. Check the flue pipe regularly for soot, rust or corrosion.

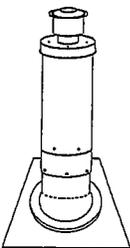
OPTIONAL: Branch circuits installed at the factory for the purpose of energizing exterior air conditioning equipment will have a (1-1/4") conduit from the service panel through the floor. You must connect the air conditioning equipment according to the instructions given in the Owner's Manual provided by the equipment manufacturer. The supports or slab built for the air conditioner must be freestanding. The con-



STEP 4



STEP 5



STEP 6

densation tubing for the air conditioner should drain to the exterior of the house.

Check all air intakes and outlets regularly to make sure that they are completely free from any constrictions. Be sure to check the return air filter which must also be kept clean.

Water Heater Side Wall Air Inlet Set

For Field Installation Over Basement or Crawl Space ONLY!
NOTICE: Refer to the Addendum included in this package, 21.0455 - 21.0459.

Collar Installation through Exterior

Determine the location of the opening in the rim joist and cut a (3-3/4) inch hole 30 or 40 gallon or (4-3/4) inch hole 50 gallon through the rim joist.

The three (3) inch or four (4) inch PVC, ABC or CPVC Schedule 40 vent pipe, whichever is the most convenient, can be run from the water heater. The vent pipe must extend a minimum of (1-1/2) inch through the exterior wall. Note that the inside collar must be slipped over the vent piping before locating the pipe through the wall. Before securing the inside and the outside collars to the wall, use a silicone sealer between the pipe and opening to insure a water tight seal.

! WARNING: A gas water heater cannot operate properly without the correct amount of air for combustion. Provide ventilation and combustion air by means of floor and wall openings as shown in the drawing. Never obstruct the flow of combustion and ventilation air. If you have any doubts or questions at all, call your gas company. Failure to provide the proper amount of combustion air can result in a fire or explosion and even cause property damage, serious bodily injury or even death.

Air Quality Improvement System

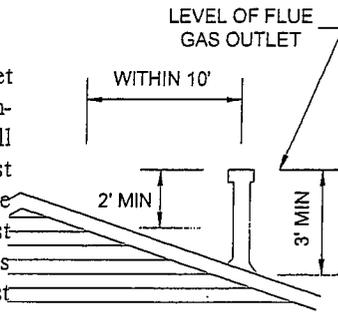
Federal standards require that an air quality improvement system be made available to all prospective home purchasers. The Coleman Blend-Air system is offered in the Chief Industries product line, which has been explained to you by your dealer.

If you purchased the Blend-Air system with your home, the operation of this system is completely automatic. The Blend-Air Environmental System is designed to work in conjunction with the homes heating system to introduce fresh air to the living area. Federal standards require that a mechanical air quality device have the capacity to introduce fresh air to the living area. Federal standards require that a mechanical air quality device have the capacity to introduce a minimum of (25) cubic feet of air per minute (cfm) into the living area. The Blend-Air Environmental System can help reduce the level of humidity in your home. There is a general consensus that higher levels of humidity can result in higher levels of indoor air pollution.

The Blend-Air Environmental System should be maintained as outlined in the Owner's Manual provided by the manufacturer.

Fireplace Installation

Once the home is set and leveled, finish the chimney for the fireplace. All chimney extensions must extend a minimum of three (3) feet above the highest point where it passes through the roof and must be at least two (2) feet



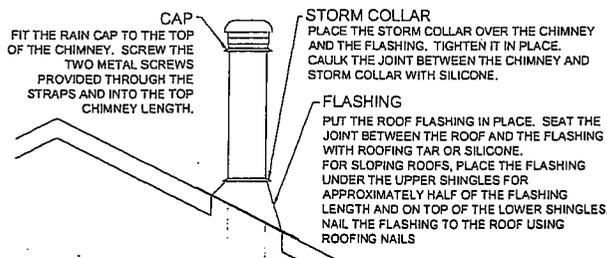
above the roof peak if within a (10) foot horizontal span from the peak. **Chimney Clearances** **IMPORTANT: If an exposed portion of chimney is greater than four (4) feet above the roof line, use support wires to keep chimney secure.**

The support wires may be attached to the outer pipe of the chimney with screws, provided the screws do not penetrate the inner flue pipe.

When starting a fire in the fireplace remember to fully open the glass doors and flue damper for sufficient air combustion. Always keep the fire from coming into contact with the glass doors. Clean the glass with any commercial glass cleaner or soap and water. Do NOT use any abrasive material to clean glass. Do NOT clean glass with cool water if it is still hot from fire.

The damper control lever should be located inside the fire chamber. Pull down to close, push up to open. The damper must be open when lighting a fire, not doing so will cause smoke spillage into the room. When the fireplace is not in use, close the damper to prevent downdrafts from entering the room.

The grate in the fire chamber is there to provide air combustion space beneath the solid fuel. Remember to keep the ashes cleaned out for this reason.



Electrical System

Your home is typically designed to be connected to an electrical supply source rated at 240V, 3 pole, 4-wire including ground system. If an option was purchased for an overhead mast or meter hub, the home may have been designed as a 240V, 3 pole, 4-wire including ground system. Refer to name plate on exterior of home to determine type of system.

In making the feeder connections to this power source, it is extremely important that wire of the correct size be used. If the wire is incorrectly sized, the ampacity for that wire may be exceeded and you will experience a voltage drop to your home. Ampacity is the safe carrying capacity of a wire expressed in

amperes. The greater the amperes flowing, the greater the heat produced.

Moreover, if the amperage is allowed to become too great, the wire may become so hot that it will damage the insulation or even cause a fire. A voltage drop in your home can cause a drop in the efficiency of all lights as well as appliances. Motors may burn out and you may be paying for electricity that you do not use. Refer to the following table to determine recommended conductor type and size for the size of panel box.

SERVICE AMPS	WIRE SIZE			CONDUIT SIZE
	FEEDER	GROUNDING CONDUCTOR	GROUNDING ELECTRODE CONDUCTOR	
100	#4	#8	#8	1-1/2"
150	#1	#6	#6	2"
200	#2/0	#4	#4	2"
225	#3/0	#4	#4	2"

Copper Conductor types: RH, RHH, -RHW, -THHN, -THW, -THWN, -XHHN

It is also critical for the protection of the occupants of the home that all non-current-carrying metal parts be properly grounded. The only safe and approved method of grounding your home is through an electrical-isolated grounding bar in the manufactured home power supply panel which grounds all non-current-carrying metal parts to the electrical system in your home at a single point.

The ground conductor of the power supply feeder cable connects the grounding bar to a good electrical ground. Insulate the grounded circuit conductor (neutral or white) wire from the grounding conductors (green wires) and from equipment enclosures and other grounded parts. Bonding screws, straps or buses in the distribution panel board should have been removed and discarded at the manufacturing facility.

Homes with a factory-installed service meter base must be grounded differently. The exterior equipment and enclosure must be waterproof and conductors must be suitable for use in wet locations. When a meter is provided on the home, connect the neutral (white) conductor to the system grounding (green) conductor on the supply side of the main disconnect. The grounding electrode conductor is run from the meter to the grounding electrode conductor(s). The grounding electrode should be an eight (8) foot length of (1/2) inch diameter copper rod or bury it horizontally in a (2-1/2) inch deep trench. Connect the grounding conductor wire to the grounding electrode with a grounding clamp.

WARNING: On a 3 pole, 4 wire feed it is extremely important that the neutral conductor not be grounded in or on the manufactured home or the home service entrance cabinet.

Smoke Alarm Installation and Testing

Once the wiring is connected and the alarm secured in place, press the test button on each alarm individually. As you test be sure that again, the alarm sounds on every mechanism in the system. Should the alarm(s) you are installing or the others in the system you are testing not sound, replace the alarm with a new and similar mechanism. Perform another operational test on all alarms.

Phone and Television Hookups

If you have ordered phone and television hookups, these will be located in the third floor joist cavity from the rear of the house.

Water System

Your home's water system has been designed for an inlet water pressure of 80 psi. Should the home be installed in an area where pressure exceeds 80 psi, a pressure reducing valve should be installed.

A (3/4) inch threaded inlet is provided by the manufacturer for the water supply system's connection. This inlet is located below the home and usually near the water heater compartment. A tag on the side of the home indicates the location of the water inlet. A shutoff valve must also be installed between the water supply and the house inlet. The valve must be a full port gate valve or a full port ball valve.

CAUTION: The main shutoff valve is not supplied by the manufacturer, but must be installed on the system to comply with the federal construction and safety standards.

All piping located underneath the home is subject to freezing temperatures and shall be insulated to prevent freezing. The manufacturer has provided a heat tape receptacle outlet located on the underside of the home within two (2) feet of the water supply inlet. The use of a heat tape is recommended to further prevent pipes from freezing. Be sure that heat tapes are listed and approved for use in manufactured homes. Installation shall be in accordance with the heat tape manufacturer's installation instructions.

Drain, Waste, and Vent

If your home has been designed with a plumbing system that needs to be completed after the home has been blocked in its final position, a print has been enclosed showing the recommended assembly of the plumbing system.

Due to the possibility of transportation damage, the manufacturer has provided the drain line fittings, the drain line pipe sections and the assembly instructions (shown on the Drain Line print in dashed lines) and are shipped loose to complete the plumbing system at the setup site.

The drain line shall be assembled using the pipe, cement and supports shipped with the home. Assembly of the system shall be in accordance with state and local codes.

Final drain connections are made at the three (3) inch outlet located in the center of the home. When connecting this drain outlet to the main sewer system, an approved three (3) inch connector should be used at this point. The drain lines installed on the home must have a slope of (1/4) inch per foot. In order to support the connecting drain line, fittings, pipe, strapping and glue has been provided by the manufacturer. This support strapping should be spaced at intervals not greater than four (4) feet apart.

Be sure to check that all P-traps are hand tightened.

Gas System

The heating system in your home may have been designed to operate on natural gas. If your energy source is LP (liquid propane) modifications must be made to each gas appliance in the house. Check with each respective appliance manual for conversion standards, these conversions are to be done by qualified individuals.

To avoid possible damage to associated gas valves and regulators incorporated on appliances, do not pressurize the gas line in excess of eight (8) ounces maximum after final connections are made.

Hook the gas system to the house then check it to insure freedom from leaks. To avoid damage to the lines or possible injuries to oneself use a mixture of soap and water to check these lines for leaks.

After final testing of the gas lines, the pilot light can be lit by a professional.

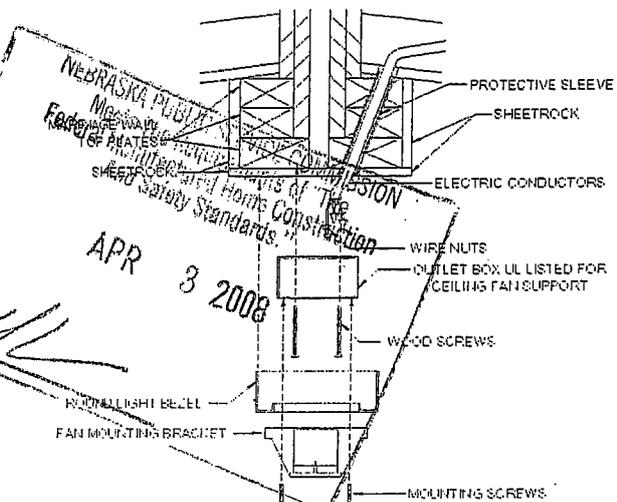
Interior Finishing

Large Light Fixtures

If your home has large light fixtures or ceiling fans, you will have to complete their installation on site. The light fixtures will be shipped loose with the home. Locate the junction box that has been placed where your light fixture will be attached. Remove the cover plate from the junction box, this will expose the wires for assembly.

Remove the wire nuts from the end of the wires and complete as follows:

- 1) Connect wires together according to color (i.e. black to black) using a wire nut. Note: Grounding wires may be either bare or color coded green.
- 2) Grounding of the mounting bracket must be made by attaching the grounding conductor to the bracket grounding screw or if no screw exists, a listed clamp must be



used. This connection must be made prior to the connection of the fixture.

- 3) Place fixture over junction box, secure it with the bracket supplied by the fixture manufacturer.

Appliance Installation

General

A gas or electric clothes dryer installed in the home must be exhausted on the outside by a moisture lint exhaust duct and termination fittings. If your dryer sits along an exterior wall, the appliance will have already been properly vented through this exterior wall. However, if your dryer doesn't set along an exterior wall, you will need to complete the means of venting after the home has been set.

Clothes Dryer

If your home has been constructed with provisions for a dryer vent, this installation shall be completed on site, prior to the use of your appliance. The dryer vent shall be installed as follows:

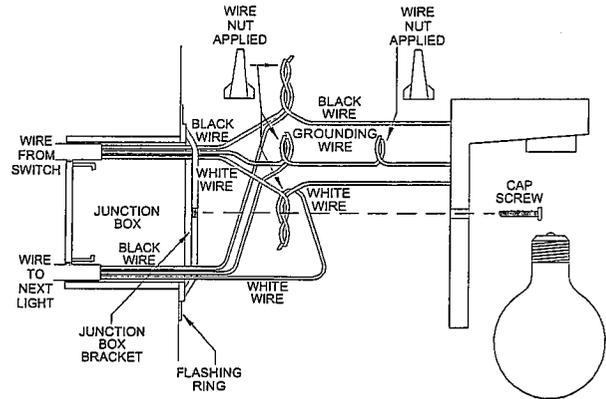
- 1) A four (4) inch diameter access has been provided in the floor directly behind the dryer. The access hole has been covered with a plywood cover.
- 2) Select a length of four (4) inch dryer duct to complete the vent. **This duct will be required to exhaust to the outside of the home. The vent can not terminate underneath the home.**
- 3) Secure the duct to the vent of the dryer. Feed the duct through the access hole, through the protection membrane covering the underside of the home and out to the exterior of the home.
- 4) Install a louvered vent termination kit on the exterior of the home. (This kit is not provided as part of the home and is the responsibility of the homeowner.)
- 5) Completion of the vent shall be the sealing of the outer membrane at the point the duct exits the membrane. Several types of tape sealant are available on the market locally that would adequately seal the membrane from entrance of moisture and/or rodents.

Exterior Finishing

Exterior Light Connection

- 1) Remove junction box cover.
- 2) Connect wires together according to color (i.e. black to black) using a wire nut. Note: Grounding wires may be either bare or color coded green.
- 3) Grounding of the junction box bracket must be made by attaching the grounding conductor to the bracket grounding screw or if no screw exists, a listed clamp must be used. This connection must be made prior to the connection of the fixture.

- 4) Fold wires over the junction box bracket back into junction box.
- 5) Place light fixture over junction box and using a cap screw, secure the fixture into the threads in the junction box bracket.
- 6) Caulk the top of the light fixture to complete weather seal.
- 7) Furnish bulb and attach globe.



EXTERIOR LIGHT CONNECTION

Porches & Steps

Porches and steps must be designed and built to the specifications of any local authority having jurisdiction over the site. It is the responsibility of the homeowner to ensure compliance. These must **NOT** use any part of the home for structural bearing or support. The home was designed and built to meet specific loading requirements; any alteration to this loading will void the structural warranty and any problems thereafter are the responsibility of the homeowner.

Home Extensions & Additions

Addition or extension design, construction and acceptance is the responsibility of the homeowner, city or municipality having jurisdiction. The home was designed and built to meet specific loading requirements; any alteration to this loading will void the structural warranty and any problems thereafter are the responsibility of the homeowner.

Gutters & Downspouts

Homes containing a vertical fascia board of at least 1x4 and a drip edge are suitable for the installation of a standard 4" gutter and downspout system. Verify suitability with the gutter contractor. Be sure to have the contractor locate downspouts so that runoff is directed away from the home.

Final Inspection

General

After your home has been completely set up, it is

imperative to have a final inspection to insure no items have been overlooked. Any missed step could cause a service problem. Special emphasis should be placed on the following items:

Air Infiltration Barrier

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

Using vinyl patching tape designed to repair tears or holes. If a hole is large, use a patch of the same or similar material as the bottom covering and tape the edges for an airtight seal. Specifications for the sealing tape are listed in the Homeowner's Packet.

Exterior Siding and Trim

A thorough check should be made of all portions of the exterior siding to make certain that it is not cracked, 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 moulding strips 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.

It is highly recommended that you employ the use of gutters and downspouts to help preserve your exterior siding. The downspouts, if done correctly, will make most water flow away from the foundation of the house.

Roofs

The roof should be checked to make certain that all vent pipe flashings are in place, properly attached and properly sealed.

The shingles should be checked for proper attachment, making certain that none are loose or have been displaced during transit.

Clearances

If there are any low-hanging trees or bushes adjacent to your home which could cause damage to the exterior or the roof, they should be trimmed out or cut accordingly. Future growth of these bushes or trees should be considered in connection with possible movement during wind conditions or under snow or ice loads.

Caulking

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.

Interior

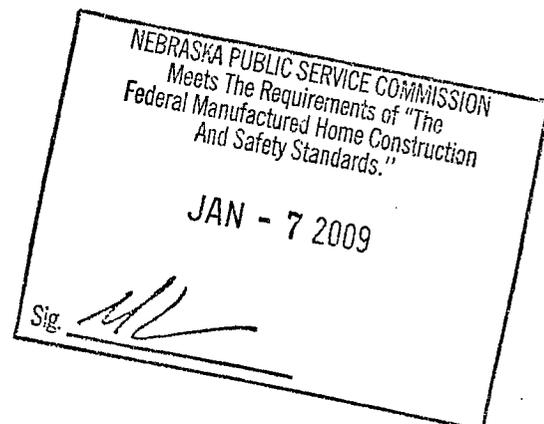
At this time, all furniture, carpet, fixtures or other loose items should be installed. All clamps or brackets installed on windows and doors for shipping purposes should be removed and the operation of these items checked. After initial leveling, recheck doors, cabinet doors and windows for square and re-square as needed.



Summary

Once you are initially finished with this manual, remember to store it with all your home related manuals for future reference.

This concludes the setup portion in preparing your home for residency. We hope you enjoy your new investment for many years to come. Thank you for choosing Chief® Industries to assist you in making your dream a reality!



ADDENDUM - TEST PROCEDURES AND EQUIPMENT

The following section is to describe all tests that are to be made on units manufactured by Chief® Industries, Inc., Housing Division at the time of home's initial setup or any subsequent re-setting.

ELECTRICAL TESTS

I CONTINUITY TEST

A. TEST ELECTRICAL CONTINUITY

1. All metallic parts of each unit should be checked for continuity.
2. Check gas and water lines (if of metallic material) to frame.
3. Remaining metal parts of home should be tested, such as heat ducts, range hoods, and etc. (if of metallic material)

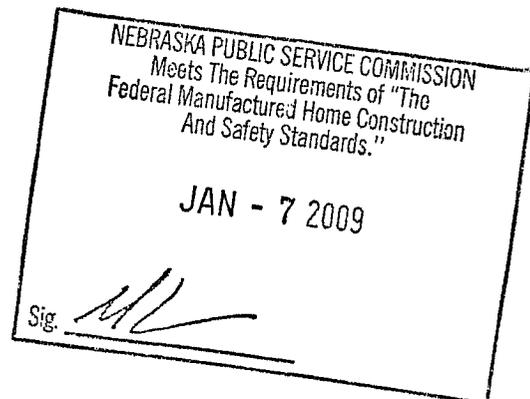
II OPERATIONAL TEST & POLARITY TEST

A. TEST ELECTRICAL OPERATION

1. Switch all breakers in panel box to "ON" position.
2. Check each fixture and receptacle for actual operation and polarity with polarity tester.
3. A visual check of the connection of the fixture wires to the branch circuit wires can be made.
4. Verify that the black ungrounded or "HOT" conductor from the branch circuit is connected to the ungrounded conductor from the fixture.
5. Verify that the white grounded or "NEUTRAL" conductor from the branch circuit is connected to the ridged grounded conductor from the fixture.
6. Verify that the "BARE" grounding conductors are connected to each other.
7. Check current to all 220 volt fixtures and appliances by checking each hot conductor to the neutral conductor. The test may be made with a volt meter or a lamp holder with individual leads or with Test Cord/Recept/Polarity Testers.
8. Defective fixtures and receptacles should be traced according to wiring diagram to find and correct problem.

B. UNIT COMPLETION:

After the operational and polarity test has been performed. The ground fault receptacle should also have a polarity test performed. An operational test should be performed on all hardwired fixtures and appliances. This shall include a test on each smoke alarm installed, making sure the alarm sounds on every mechanism in the system when each alarm is tested. Replace any alarm(s) that don't function properly and retest the system.



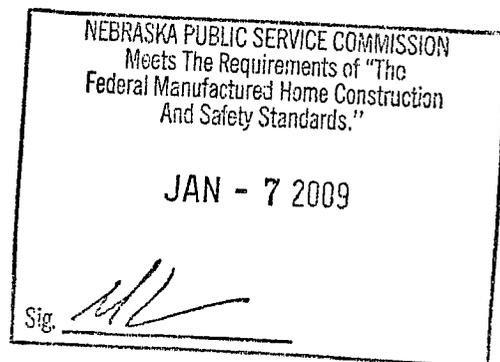
PLUMBING LINES

II. GASLINE PRESSURE TEST

- A. EQUIPMENT (L.P. and Natural Gas Systems)
Proper function of gas system test will require a controlled air supply with a test gauge calibrated in increments of not more than 1/10th P.S.I. with a minimum total valve reading of 3 P.S.I.
- B. SET UP
Close all gas valves.
Connect gauge to main inlet.
Be sure the air temperature in the piping remains constant.
- C. TEST
- PART ONE:
1. Apply a minimum test pressure of 3 P.S.I. at gas inlet.
 2. Allow system 10 minutes to indicate any loss of pressure.
 3. In the event leakage is evident, repair connection and re-apply test pressure as in step 1.
 4. When gas system retains the prescribed pressure for 10 consecutive minutes, release all air pressure from gas system and proceed to Part Two, Gas Test.
- PART TWO:
1. Prepare gas systems for test by the following steps:
 - a. Ensure that no pressure is in the gas piping system (relieve pressure at gas inlet).
 - b. Place on the "off" position, all valves provided by manufacturer on gas appliances (i.e., range and oven burner valves, furnace and water heater thermo coupler valves).
 - c. Open "Gas Supply" valve to each gas appliance.
 2. With air supply and test gauge secured to gas inlet, apply maximum of one-half (1/2) P.S.I. air pressure.
 3. Using a soapy water solution, test all appliance connections for leakage by starting at the "appliance side" of gas supply valve and including all connections between that point and the appliance valve (including the gas valve).
 4. In the event leakage is evident (by bubble from soap solution):
 - a. Repair connections as required.
 - b. Re-apply one-half (1/2) P.S.I. pressure.

SPECIAL NOTES: GAS TEST

1. It is important that the "room air" and "gas piping" temperatures not be of extreme difference.



IV. WATER SUPPLY LINE TEST

- A. Securely assemble all main branch and lateral arm connections (Floor Distribution System).
- B. Seal all openings, except one, by the use of threaded caps and plugs as required, and fill water heater.
- C. Secure water supply and test gauge to water inlet, apply and retain 100 P.S.I. of pressure for a minimum of 15 minutes.
- D. Secure water supply to non-sealed fitting, and apply air pressure to system.
- E. In the event of leakage, locate source of leak, repair and re-test until system passes.
- F. When there is no evidence of leakage within the system:
 - 1. Release pressure.
 - 2. Disassemble test equipment.
 - 3. Remove outlet plugs/caps and drain system.

V. DRAIN LINE TEST

A. SETUP

- 1. Cap drain outlet.
- 2. Check to ensure all fixtures, drains are completely connected.
- 3. Position stool flush valve in bottom of all stool tanks in a "non-sealing" position (to prevent air blockage to stool bowl.)

B. TEST

Part One (Flood Level Test)

- 1. Fill drain system with water through highest fixture in the home until water level of lowest stool bowl and within 2" of rim level on stool furthest from lowest stool.
- 2. After water has risen above the trap and drain of each tub and shower, plug the tub and shower drains. (This permits the release of all trapped air in the drain system.)
- 3. Retain water in drain line for a period of fifteen (15) minutes, during which inspection is made for evidence of drain leakage at all seals and connections.
- 4. In the event leakage is indicated (during or after filling of drain),
 - a. Discontinue filling drain.
 - b. Locate origin of leakage.
 - c. Drain remaining water by removing drain outlet cap.
 - d. Repair defect causing leakage.
 - e. Re-fill drain per item #1 continue test per item #2.

NEBRASKA PUBLIC SERVICE COMMISSION
Meets The Requirements of "The
Federal Manufactured Home Construction
And Safety Standards."

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ADDENDUM - DISPLAY AND STORAGE OF THE HOME

If the installation is not started immediately upon delivery of the home, the retailer and/or installer has the responsibility to ensure the exterior weather protection covering has not been damaged during shipment. Inspect the home immediately upon the delivery and frequently during storage. Promptly repair tears in the home closure materials to prevent damage from the elements. Inspect and repair roof shingles and siding as needed.

When a new or used manufactured home is to be displayed at a retail location, temporarily block and support the home. Set up single-section homes with a single block pier spaced no further apart than 12 feet on center beneath each I-beam. The tire and axle system may be used as one of these required supports and the hitch jack may be used as another. Locate the first pier no further than two feet from the rear end of the home. Place additional pier along the perimeter on either side of openings greater than four feet (i.e. sliding glass doors, bay windows, etc.)

For all homes, place footings below each pier. Footings may be placed directly on the surface grade without excavation and may be AVC pads, 2x10x16 inch long pressure treated lumber or 16"x16"x4" thick concrete pads.

To prevent damage to homes being stored but not on display (i.e. people shall not be permitted inside the home) for a period not exceeding thirty days, locate piers below each I-beam no further than two feet from each end of the home and at the approximate center of the home length.

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