

12/15/04

CHIEF[®] INDUSTRIES, INC.



HOUSING DIVISION

AURORA INDUSTRIAL SITE

West Hiway 34

Aurora, NE

***FIELD INSTALLATION
MANUAL
SINGLE SECTION HOME***

January 2004

SSM01

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 supplement details before any attempt is made in setting your home.**

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** **SERVICE LOCATION** - Single Section by Model
- SECTION II** **PIER CONSTRUCTION** - Single Section Homes
- SECTION III** **SUPPORT BLOCKING** - Single Section Homes
- SECTION IV** **PERIMETER FOUNDATION** - Single Section Homes
- SECTION V** **BASEMENT CONSTRUCTION** - Single Section Homes
- SECTION VI** **TYPICAL ANCHORAGE & FOOTAGE INSTRUCTIONS** - Single Section Homes
- SECTION VII** **SITE ASSEMBLY INSTRUCTIONS** - Single Section Homes

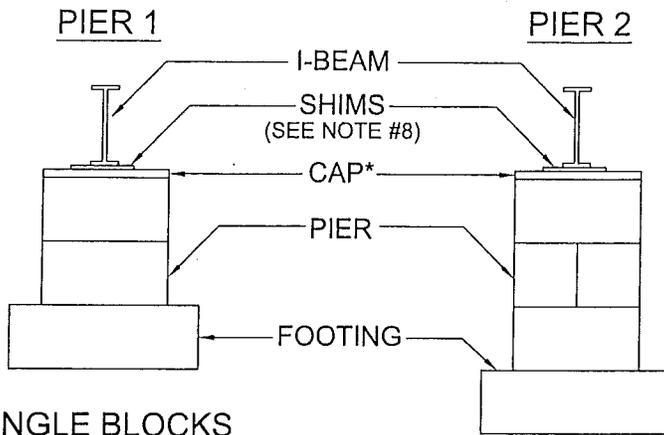
SECTION I
SERVICE ENTRANCE LOCATIONS
Single Section Homes

SECTION II

PIER CONSTRUCTION

Single Section Homes

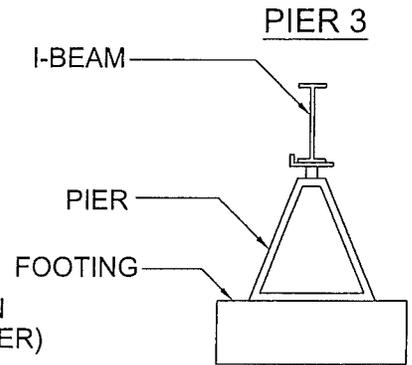
TYPICAL PIER CONSTRUCTION



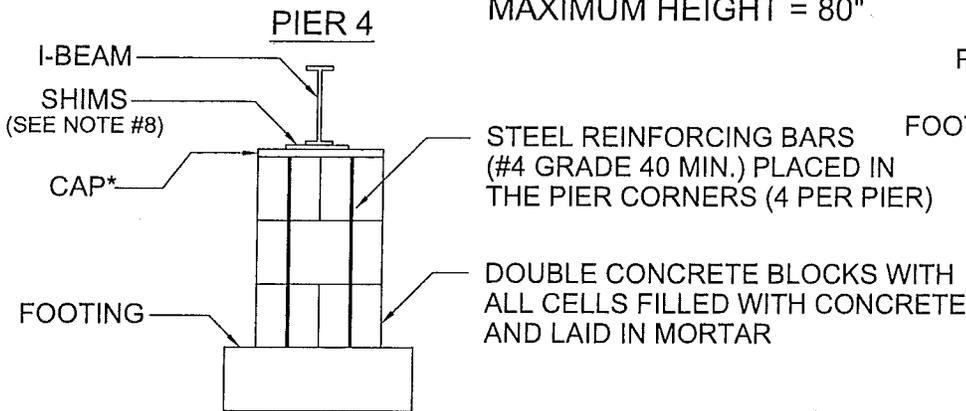
* CAP IS 4 X 16 X 16
SOLID CONCRETE BLOCK
FOR ALL DOUBLE STACKED
PIERS AND 2 X 8 X 16"
LONG MIN. FOR ALL
SINGLE STACKED PIER
(WOOD OR CONCRETE)

SINGLE BLOCKS
MAXIMUM HEIGHT = 36"
(SEE NOTE #2)

DOUBLE INTERLOCKED
BLOCKS
MAXIMUM HEIGHT = 80"



STEEL OR CONCRETE
MANUFACTURED PIER
(SEE NOTE#5)



DOUBLE INTERLOCKED BLOCKS
MAXIMUM HEIGHT = 96"

- NOTES:
1. CONCRETE BLOCKS FOR PIERS ARE 8 X 16 X 8 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. FOOTINGS MAY BE PRECAST OR POURED, BUT, IN EITHER CASE, MUST BE LEVEL IN ALL DIRECTIONS.
 4. IT IS RECOMMENDED THAT BOTTOM OF ALL FOOTINGS BE BELOW LOCAL FROST LINE.
 5. PIERS ARE TO BE PLACED ON THE FOOTING APPROXIMATELY CENTERED SO THAT THE FOOTING 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 FOOTING.
 6. PREFABRICATED PIERS (TYPE #3) MUST BE CERTIFIED FOR A RATED CAPACITY AT LEAST EQUAL TO THE LOAD DETERMINED FROM THE TABLES.
 7. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH (F) OF 3000 PSI AFTER 28 DAYS.
 8. GAP BETWEEN TOP OF PIER AND MAIN FRAME MAY BE A WOOD PLATE (NOT EXCEEDING TWO (2) INCHES IN THICKNESS) AND SHIMS (NOT EXCEEDING ONE (1) INCH IN THICKNESS). SHIMS SHALL BE AT LEAST FOUR (4) INCHES WIDE AND EIGHT (8) INCHES LONG, FITTED AND DRIVEN TIGHT BETWEEN WOOD PLATE OR PIER AND MAIN FRAME. (SHIMS TO BE PERPENDICULAR TO I-BEAM) TWO (2) INCHES OR FOUR (4) INCHES SOLID CONCRETE BLOCK MAY FILL REMAINDER OF GAP.

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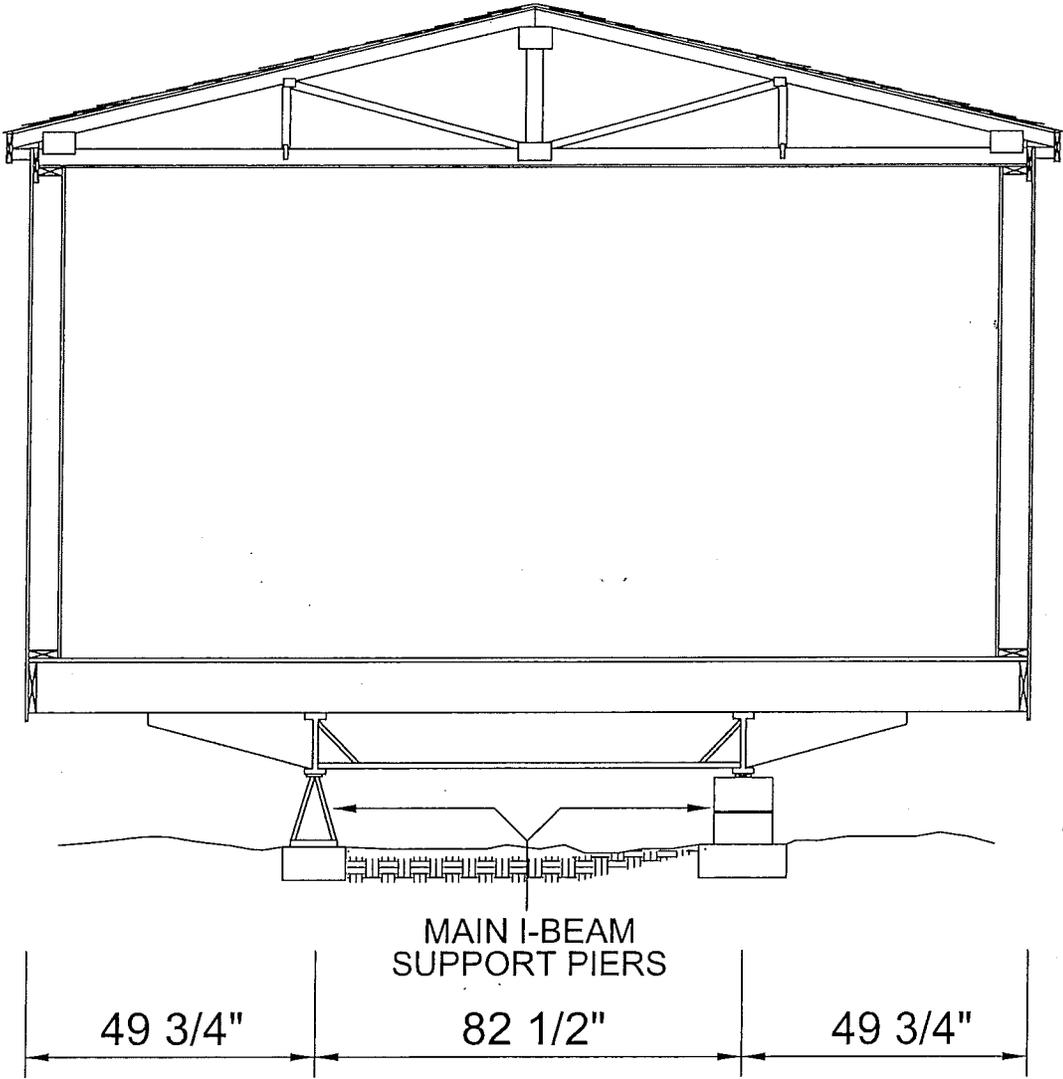
SECTION III

SUPPORT BLOCKING

Double Section Homes

STANDARD SUPPORT BLOCKING

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

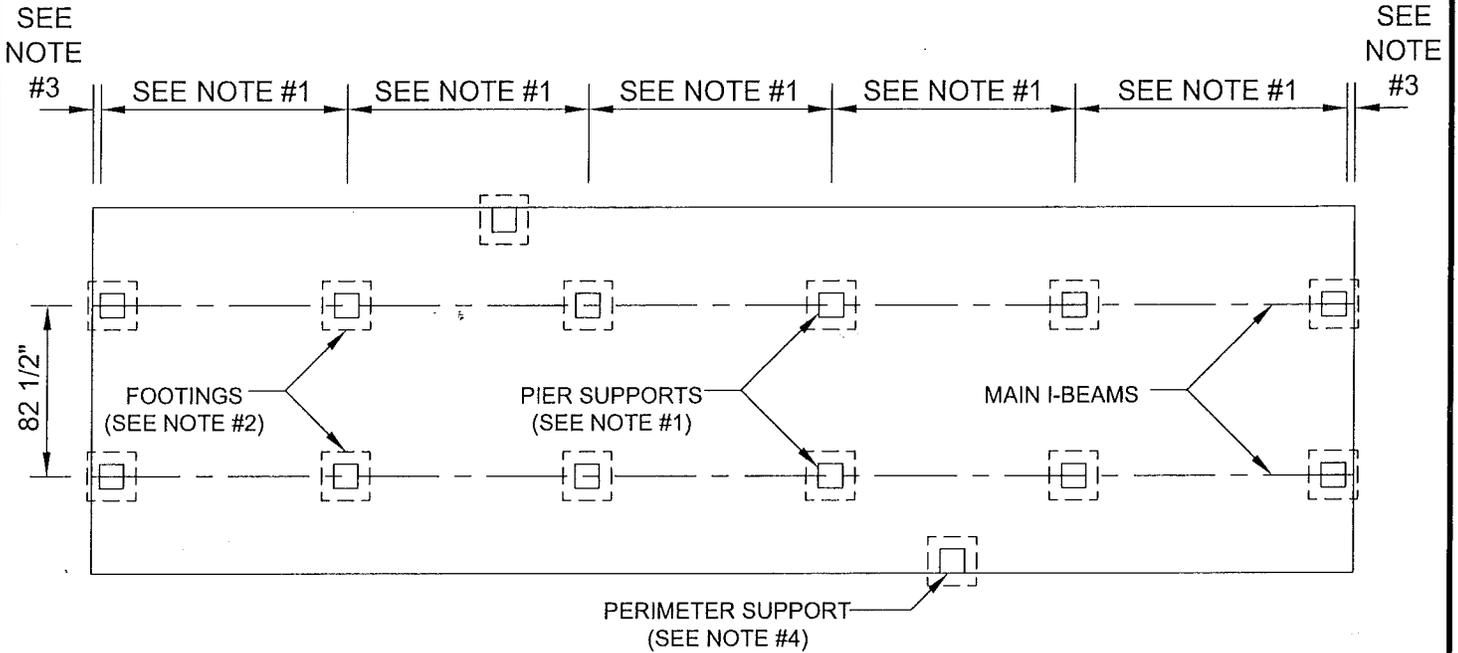


16' SINGLE WIDE
ACTUAL FLOOR DIMENSION 15'-2"

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TYPICAL BLOCKING LAYOUTS

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



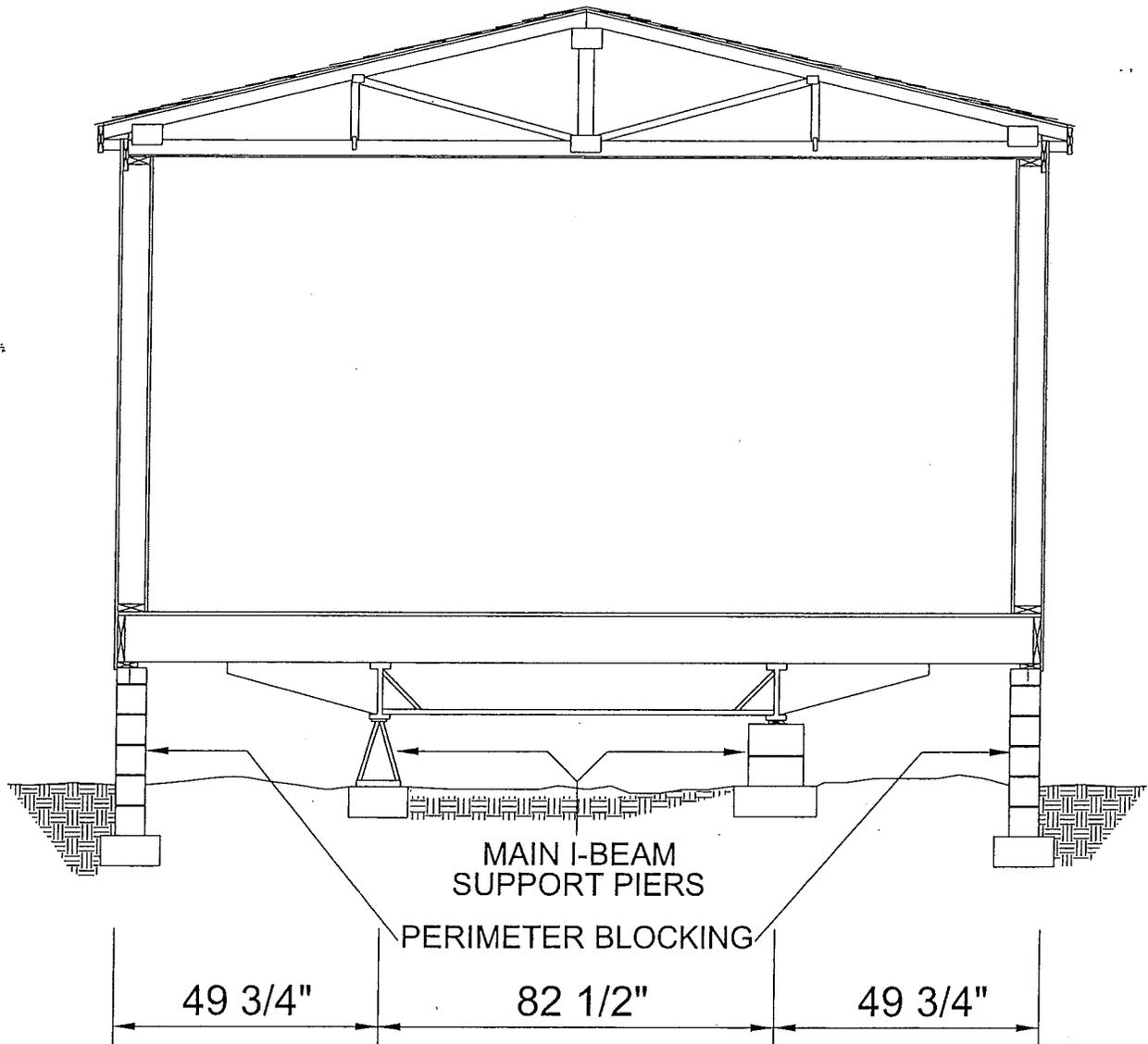
NOTES:

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 FLUSH WITH END OF HOME WITH THE STANDARD FRAME.
 - B. THE EDGE OF THE PIER SHALL BE LOCATED (4-1/2) INCHES IN FROM THE BOTH ENDS OF HOME WITH THE (4) INCH RECESSED FRAME.
 - C. THE EDGE OF THE PIER SHALL BE LOCATED (10) INCHES IN FROM THE 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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			SCALE: NONE	SSM09

STANDARD SUPPORT BLOCKING

WITH OPTIONAL ROOF LOADS



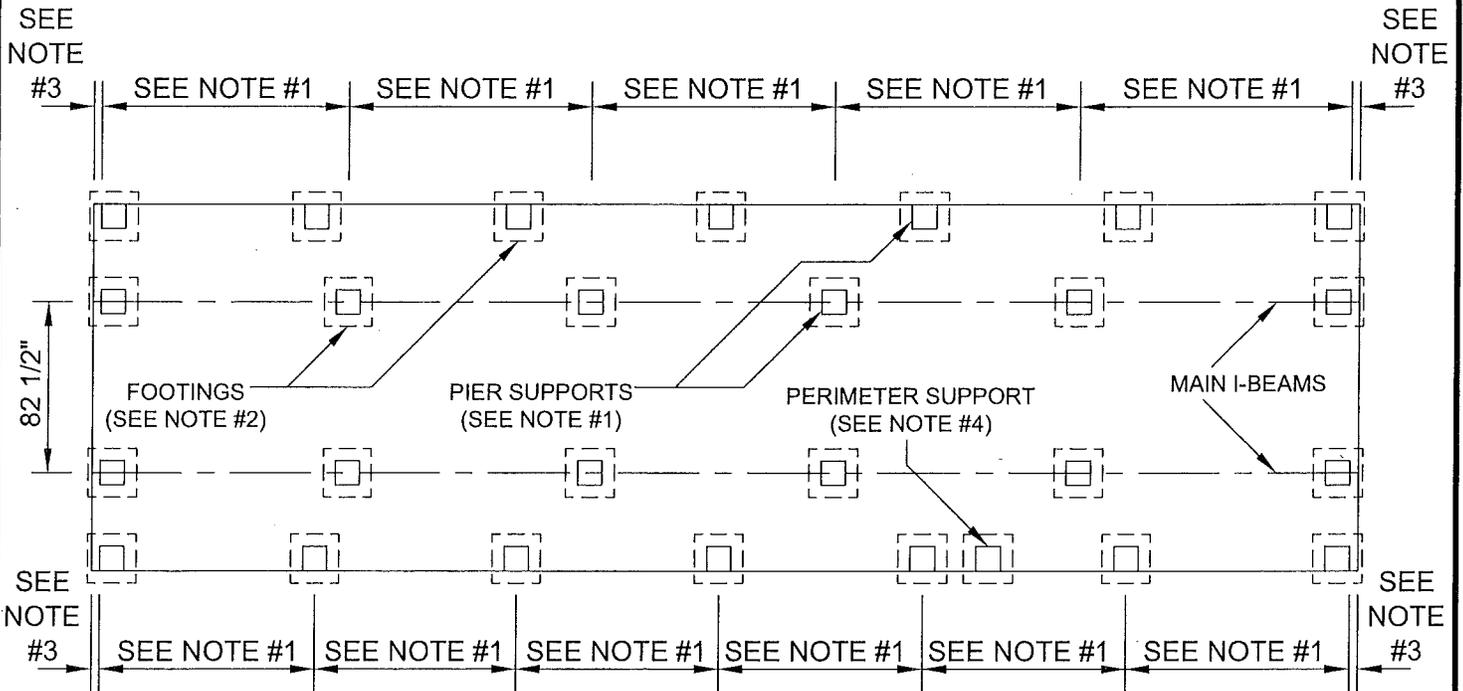
16' SINGLE WIDE
ACTUAL FLOOR DIMENSION 15'-2"

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			HOUSING DIVISION	CHKD. BY:
				SCALE: NONE SSM10

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 FLUSH WITH END OF HOME WITH THE STANDARD FRAME.
 - B. THE EDGE OF THE PIER SHALL BE LOCATED 4 1/2" IN FROM THE END OF HOME WITH THE 4" RECESSED FRAME.
 - C. THE EDGE OF THE PIER SHALL BE LOCATED 10" IN FROM THE END OF HOME WITH THE 10" 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" IN WIDTH.

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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"	9'-4"	10'-8"
16 WIDE (182" FLOOR)	30 PSF	3340	4330	5320	6310	7300	8290

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

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"	9'-4"	10'-8"
16 WIDE (182" FLOOR)	ALL LOADS	1435	1775	2125	2465	2810	3155

TABLE 3.2

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	2550	3265	3985	4700
	60	3200	4130	5065	5995
	80	3845	4990	6145	7290

TABLE 3.3

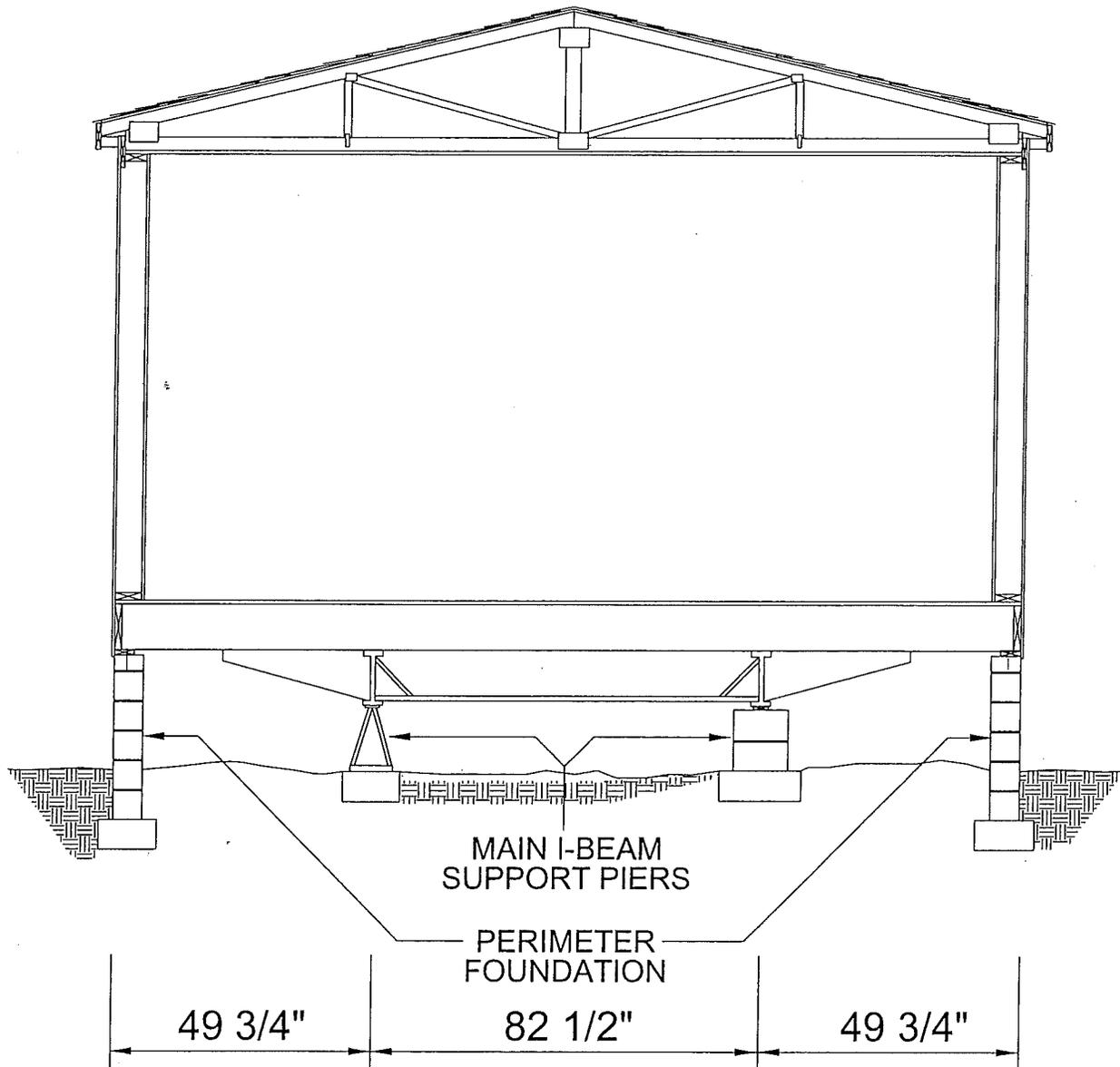
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				SCALE: NONE SSM12

SECTION IV

PERIMETER FOUNDATION

Single Section Homes

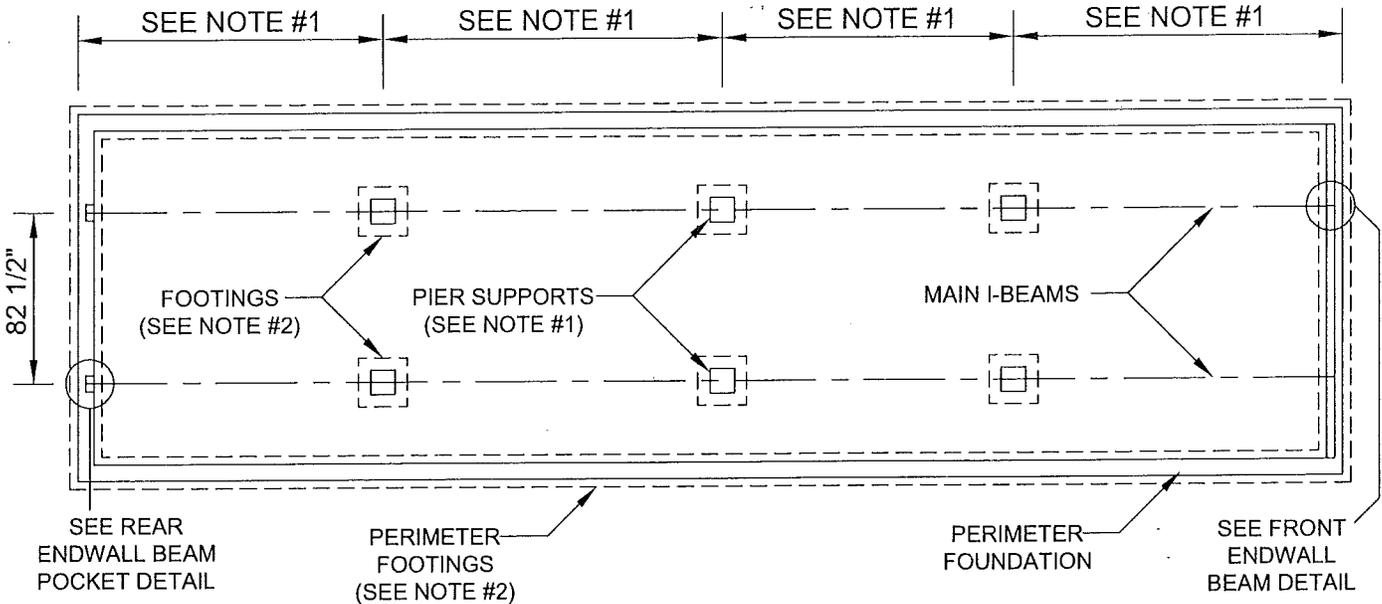
PERIMETER FOUNDATION W/PIERS



16' SINGLE WIDE
ACTUAL FLOOR DIMENSION 15'-2"

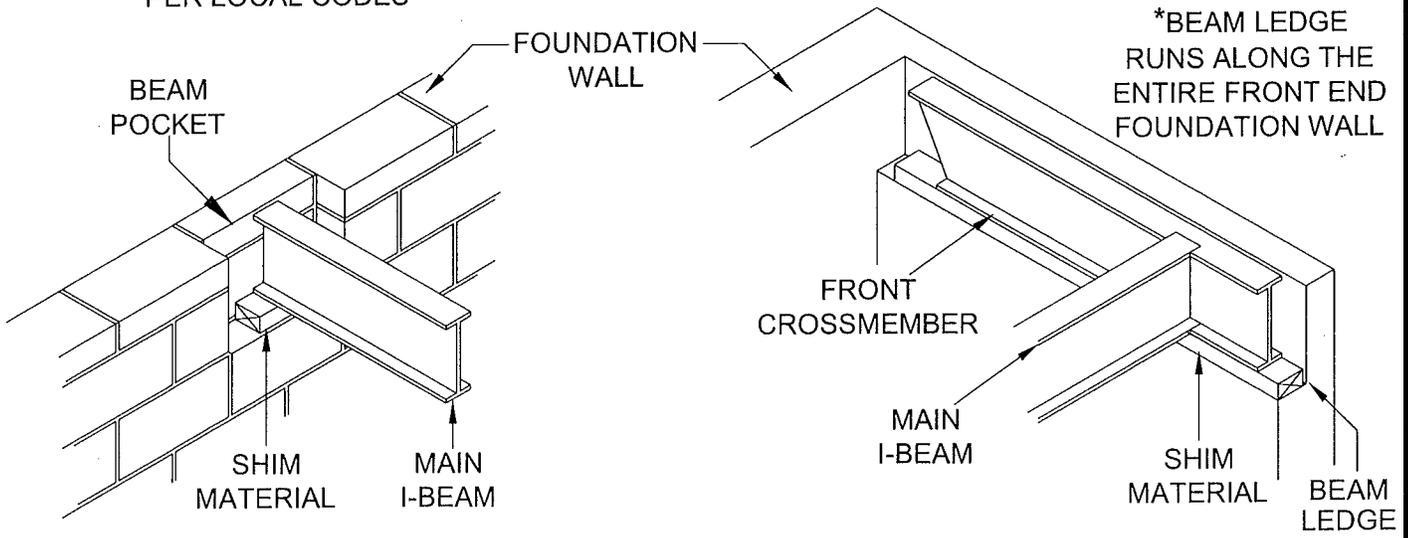
REVISIONS	DATE	 CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES 01/27/04
			CHKD. BY:
			SCALE: NONE SSM14

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



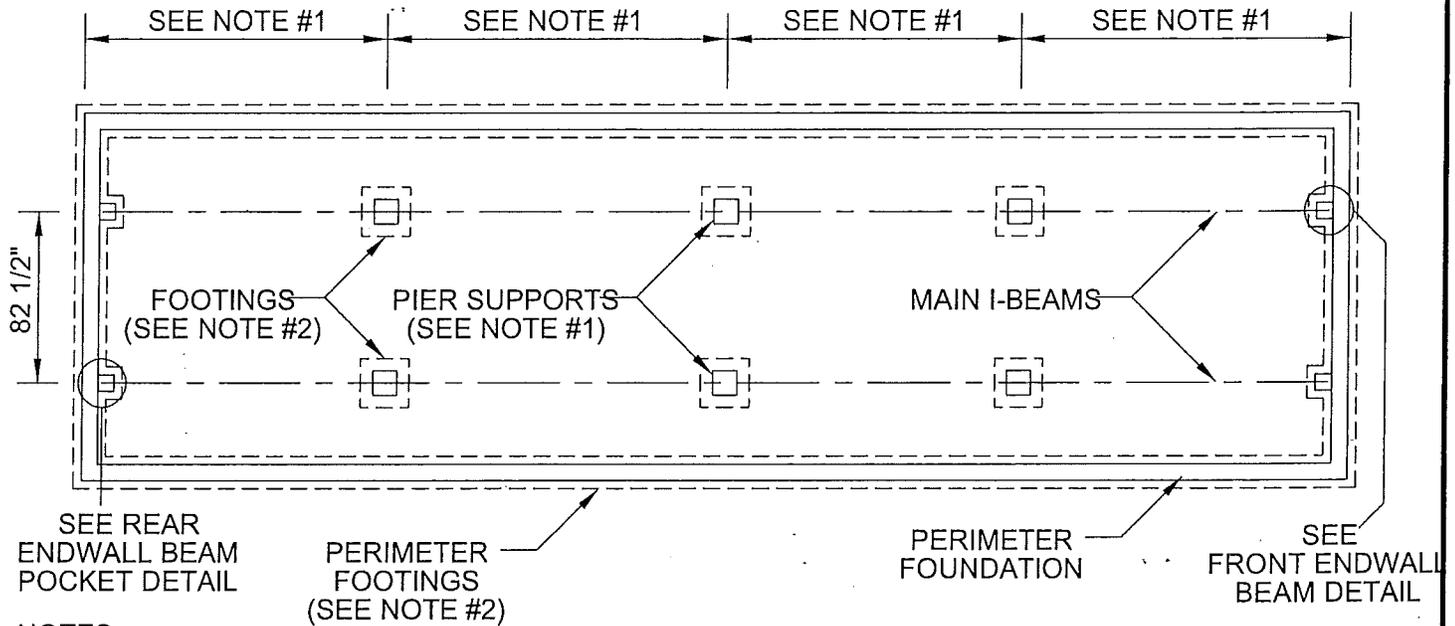
**REAR ENDWALL BEAM POCKET DETAIL
(CONCRETE BLOCK WALL SHOWN)**

**FRONT ENDWALL BEAM DETAIL
(POURED CONCRETE WALL SHOWN)**

FIGURE 4.1

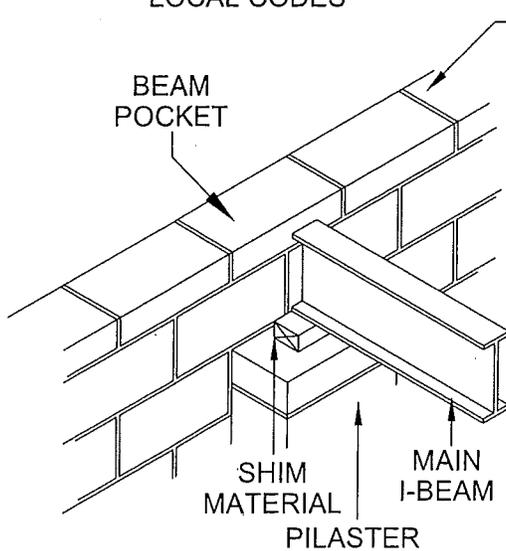
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			HOUSING DIVISION	CHKD. BY:
				SCALE: NONE SSM15

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

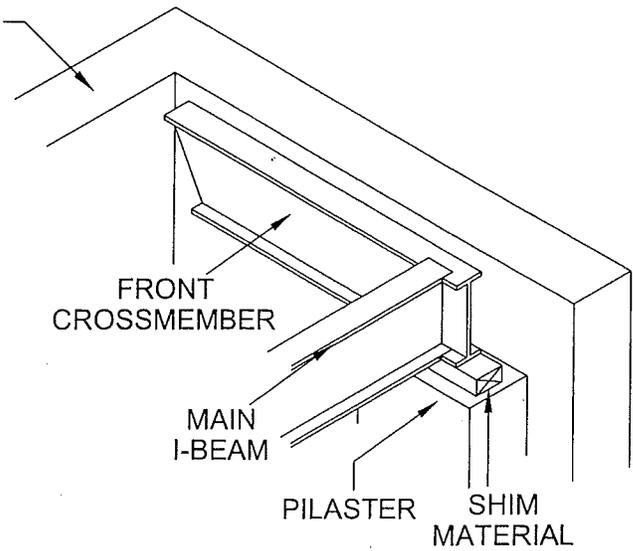


NOTES:

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

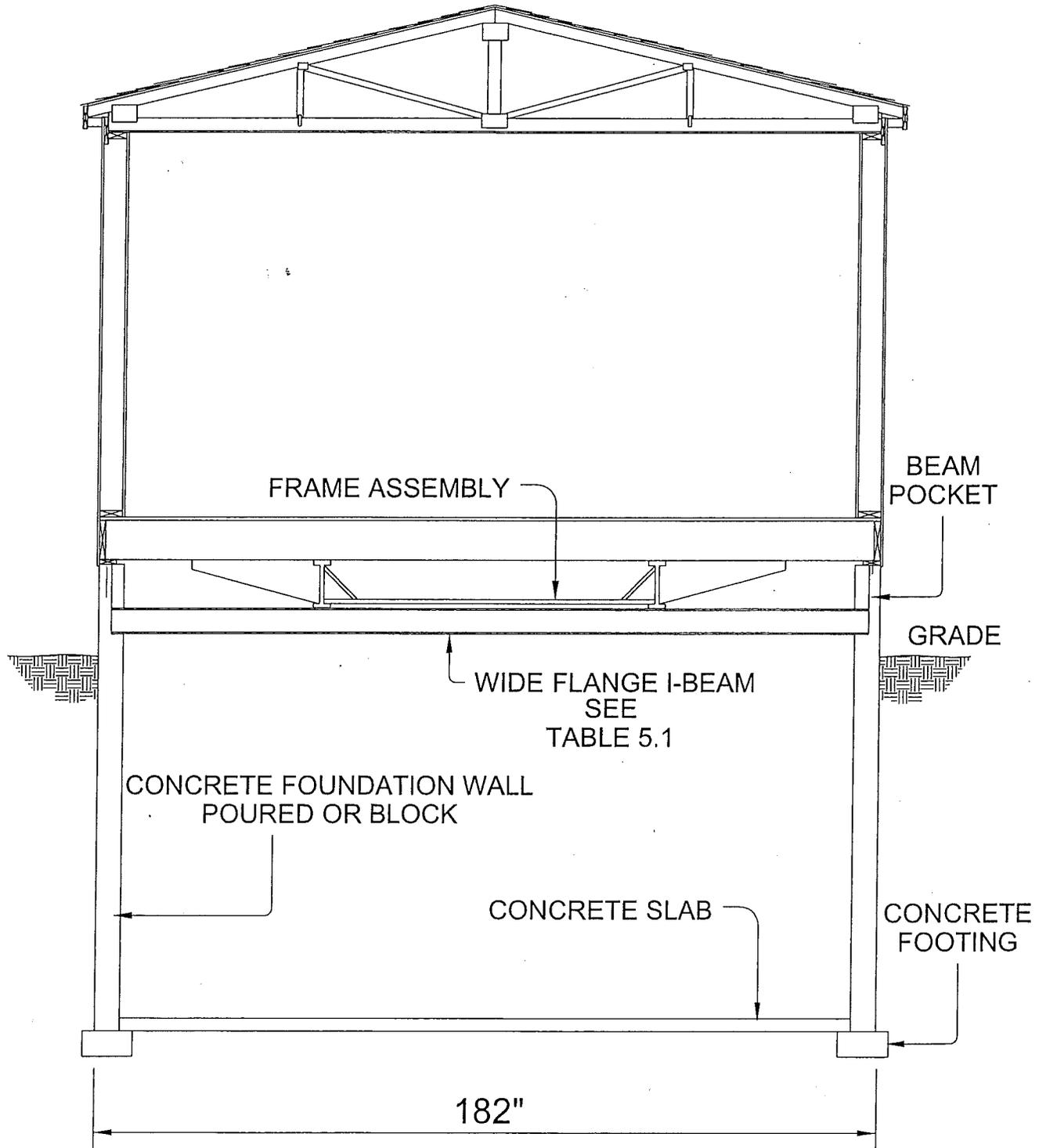
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SECTION V

BASEMENT FOUNDATION

Single Section Homes

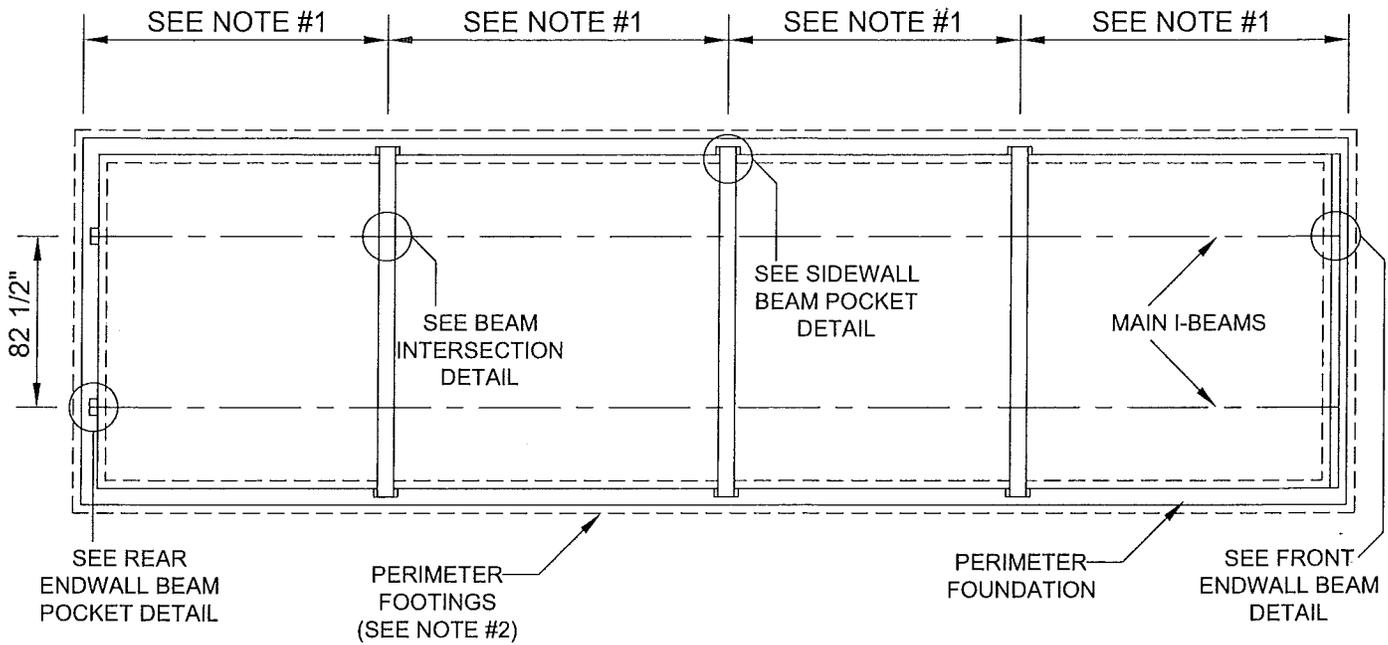
BASEMENT CONSTRUCTION W/ CROSSBEAMS



**16' SINGLE WIDE
ACTUAL FLOOR DIMENSION 15'-2"**

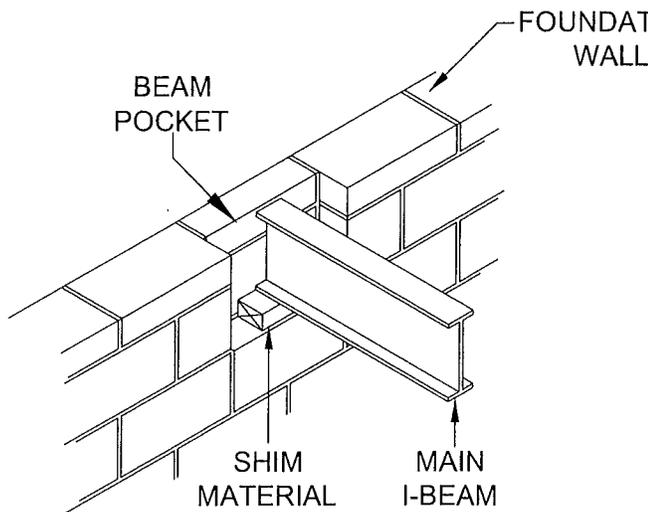
REVISIONS	DATE		CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES 01/28/04
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				SCALE: NONE SSM18

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

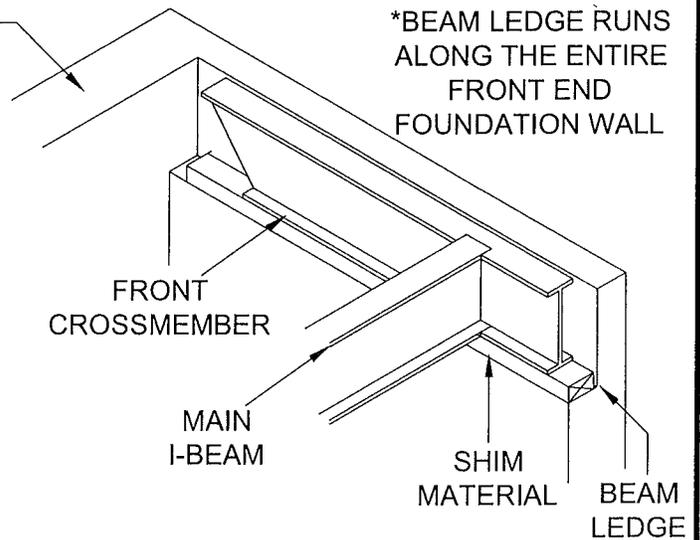


NOTES:

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



REAR ENDWALL BEAM POCKET DETAIL
(CONCRETE BLOCK WALL SHOWN)

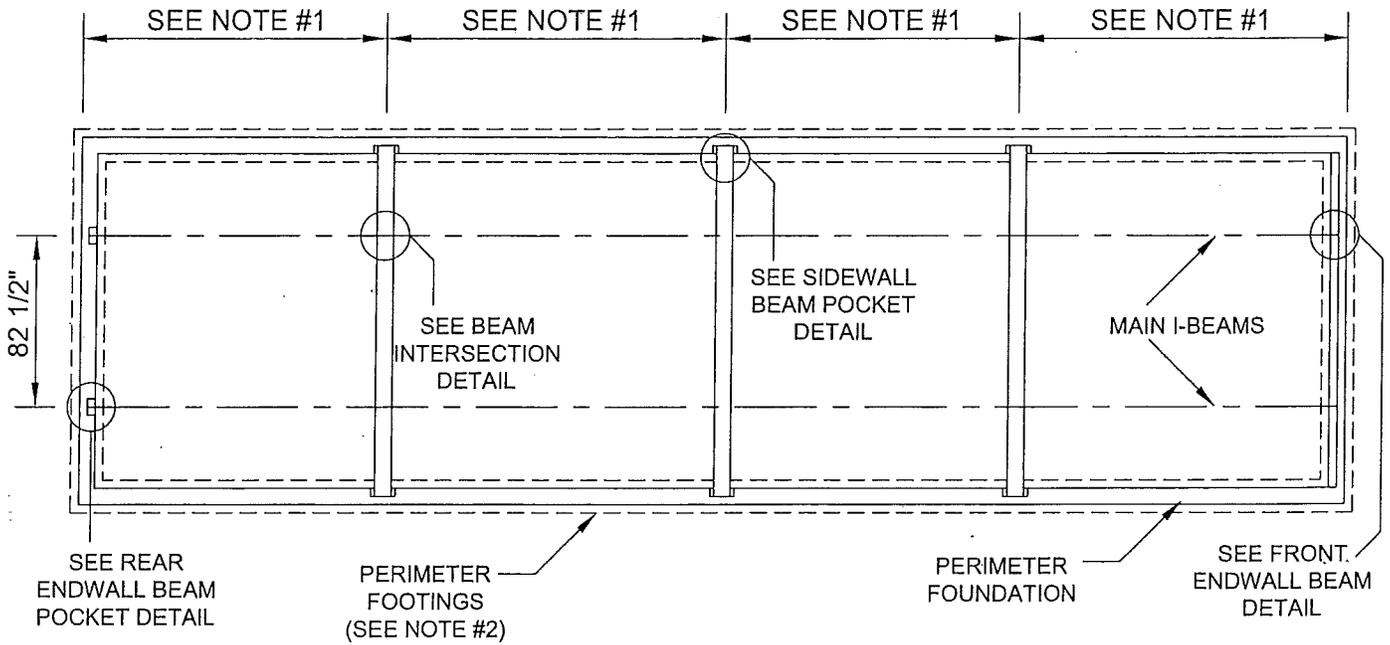


FRONT ENDWALL BEAM DETAIL
(POURED CONCRETE WALL SHOWN)

FIGURE 5.1

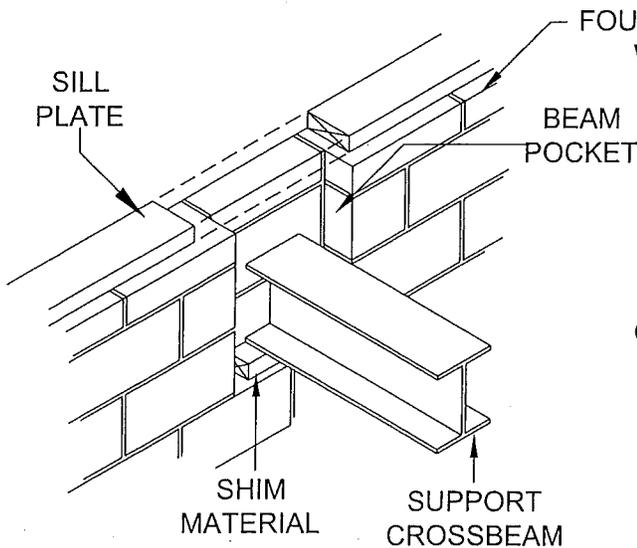
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			SCALE: NONE SSM19
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TYPICAL BASEMENT LAYOUT SINGLE-SECTION HOMES PERIMETER FOUNDATION WITH CROSSBEAMS 4" RECESSED FRAME

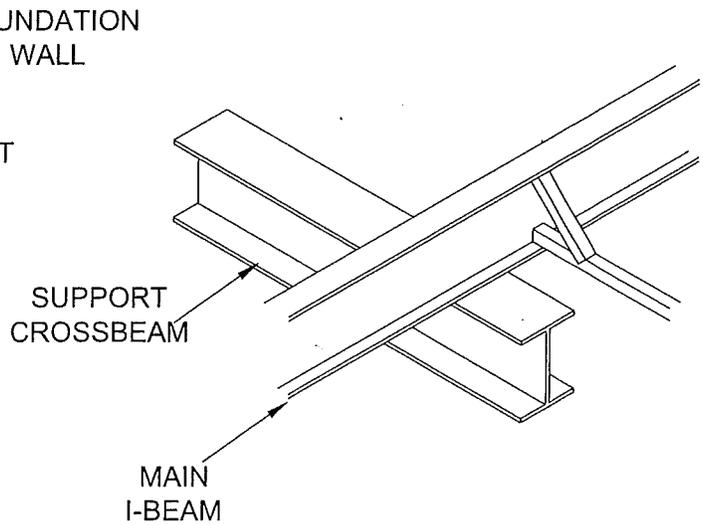


NOTES:

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)

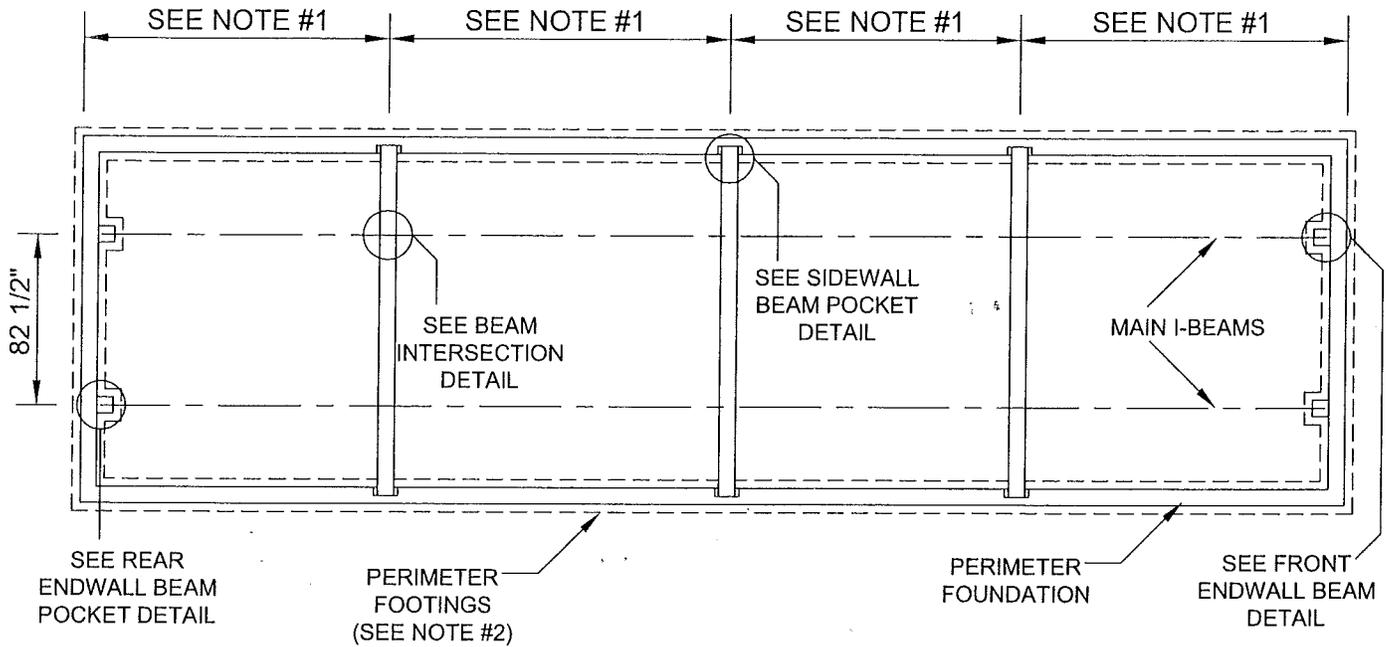


BEAM INTERSECTION DETAIL

FIGURE 5.2

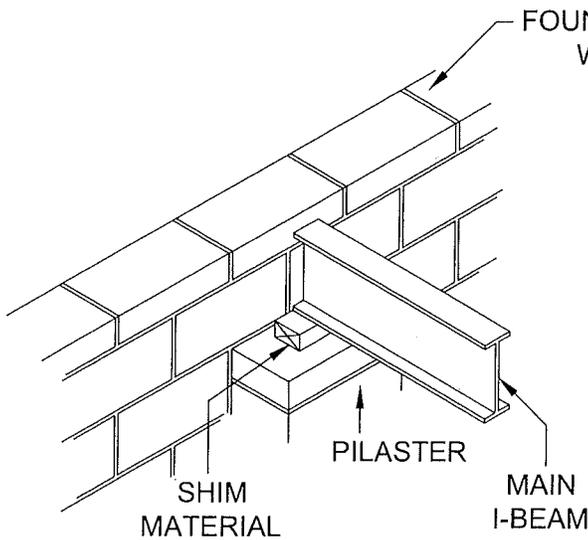
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TYPICAL BASEMENT LAYOUT SINGLE-SECTION HOMES PERIMETER FOUNDATION WITH CROSSBEAMS 10" RECESSED FRAME

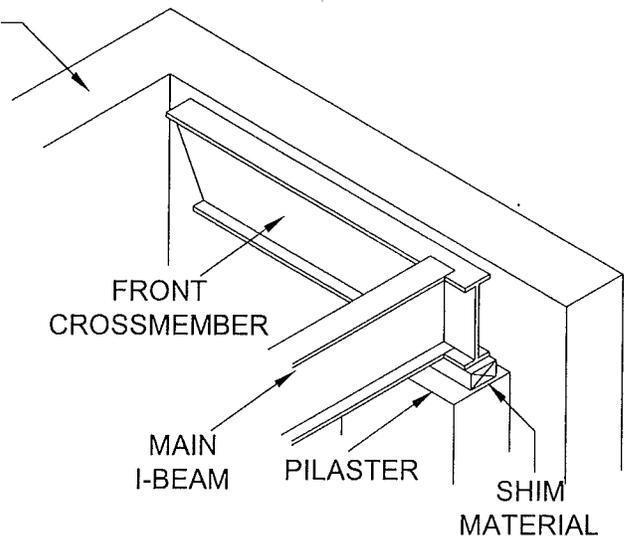


NOTES:

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



**REAR ENDWALL BEAM POCKET DETAIL
(CONCRETE BLOCK WALL SHOWN)**

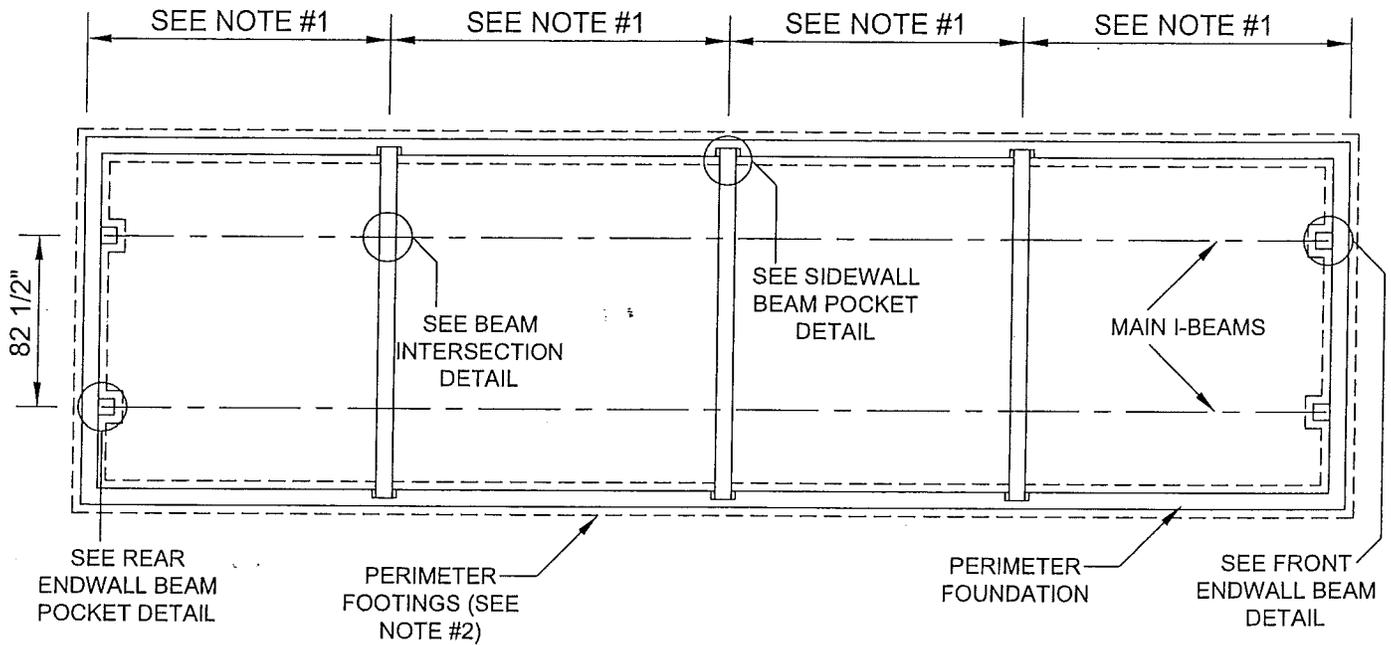


**FRONT ENDWALL BEAM DETAIL
(POURED CONCRETE WALL SHOWN)**

FIGURE 5.3

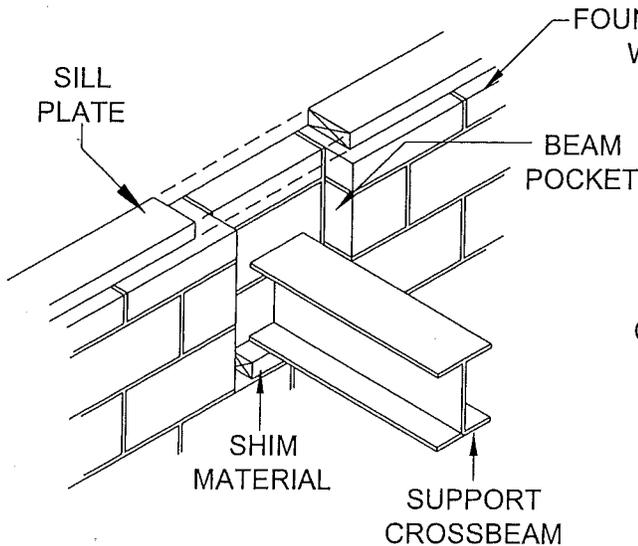
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TYPICAL BASEMENT LAYOUT SINGLE-SECTION HOMES PERIMETER FOUNDATION WITH CROSSBEAMS 10" RECESSED FRAME

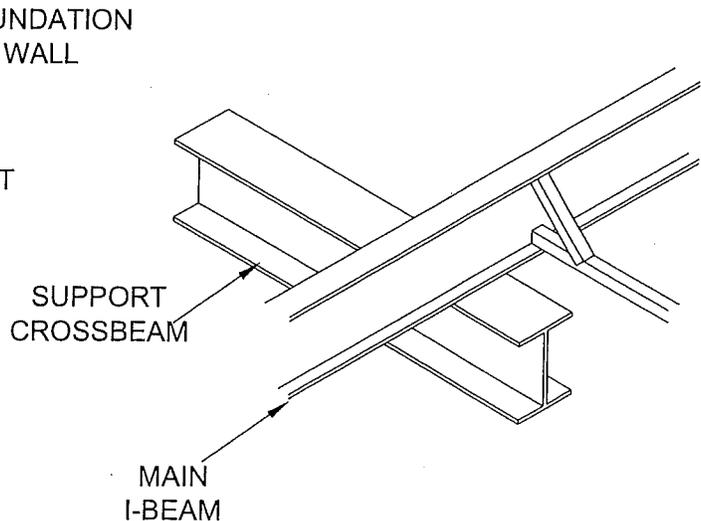


NOTES:

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)



BEAM INTERSECTION DETAIL

FIGURE 5.4

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MINIMUM CROSSBEAM CAPACITY TABLES

SINGLE-SECTION HOMES CROSSBEAM SUPPORT

SECTION WIDTH (FEET)	ROOF LIVE LOAD (PSF)	MINIMUM CROSSBEAM SIZE					
		MAXIMUM CROSSBEAM SPACING (FEET)					
		4'-0"	5'-4"	6'-8"	8'-0"	9'-4"	10'-8"
16 WIDE (182" FLOOR)	ALL LOADS	W8X35	-	-	-	-	-
		W10X33	W10X39	W10X45	W10X54	W10X60	-
		W12X27	W12X31	W12X40	W12X45	W12X53	W12X58

ANY ONE BEAM LISTED IN EACH CATEGORY MAY BE USED

TABLE 5.1

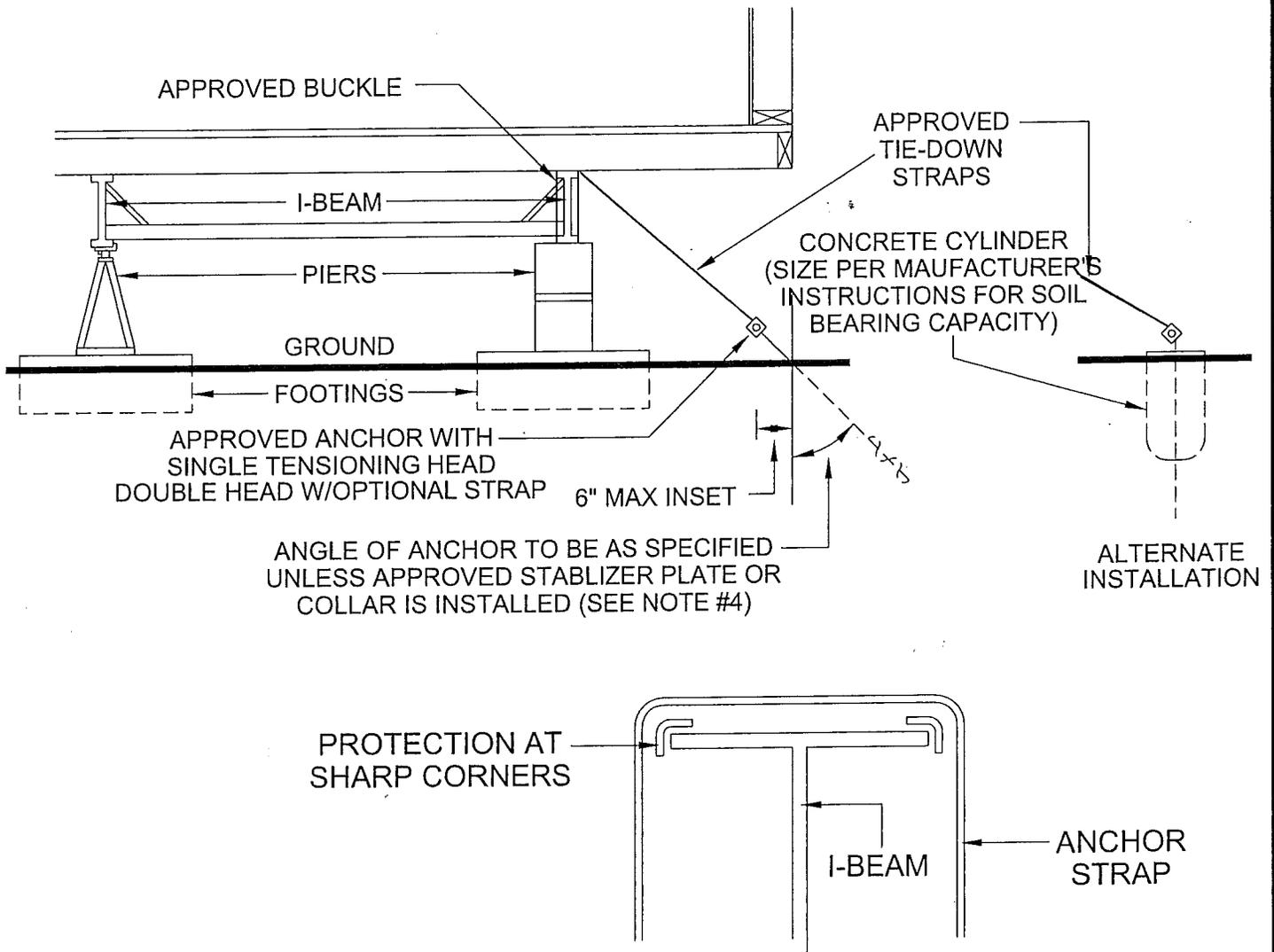
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SECTION VI

TYPICAL ANCHORAGE & FOOTINGS INSTRUCTIONS

Single Section Homes

TIE-DOWN STRAP AND ANCHORING POSITION INSTALLATION WITHOUT VERTICAL TIES



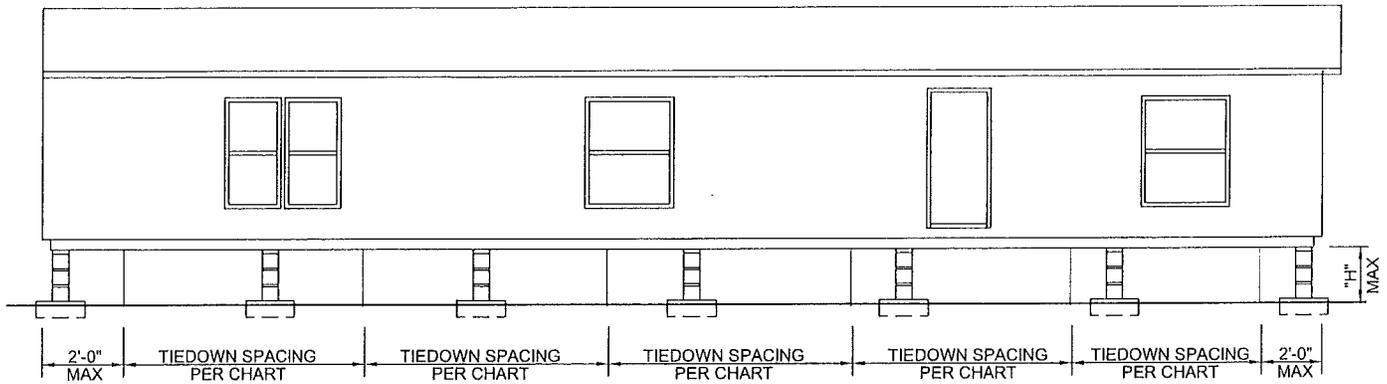
NOTES:

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

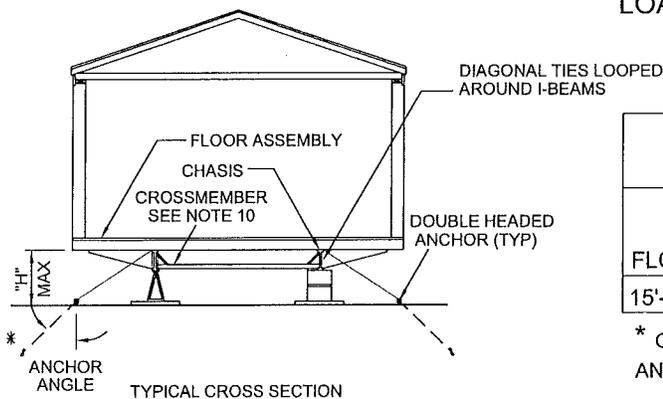
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RECOMMENDED TIEDOWN SYSTEM WIND ZONE 1



TYPICAL SIDE ELEVATION SHOWING TIEDOWN SPACING

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



TYPICAL CROSS SECTION

FRAME TIE-DOWN SPACING CHART SINGLE SECTION HOMES			
WIND ZONE I			
FLOOR WIDTH	SPACING	MAX. PIER HEIGHT "H MAX."	ANCHOR ANGLE
15'-2" MIN / 15'-6" MAX.	10'-0"	62"	35° - 40°

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

NOTES:

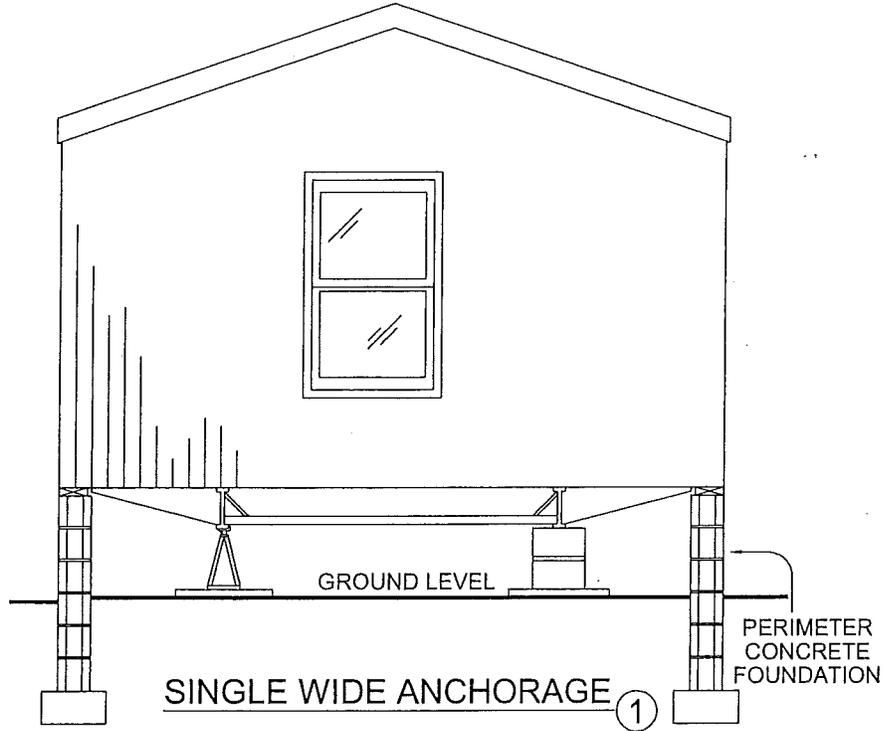
1. FRAME TIE-DOWN SHOULD BE INSTALLED TO PROPERLY SECURE THE HOME.
2. OPTIONAL VERTICAL TIES MAY BE SECURED TO THE SAME GROUND ANCHOR AS THE DIAGONAL TIE-DOWNS WHEN DOUBLE HEADED ANCHOR IS CAPABLE OF RESISTING COMBINED LOADING. WHEN ANCHORS ARE NOT INSTALLED AT THE ANGLE SPECIFIED IN THE TABLE, A STABILIZER 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 82 1/2" I-BEAM SPACING AND A MAXIMUM SIDEWALL HEIGHT OF 7'-6".
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

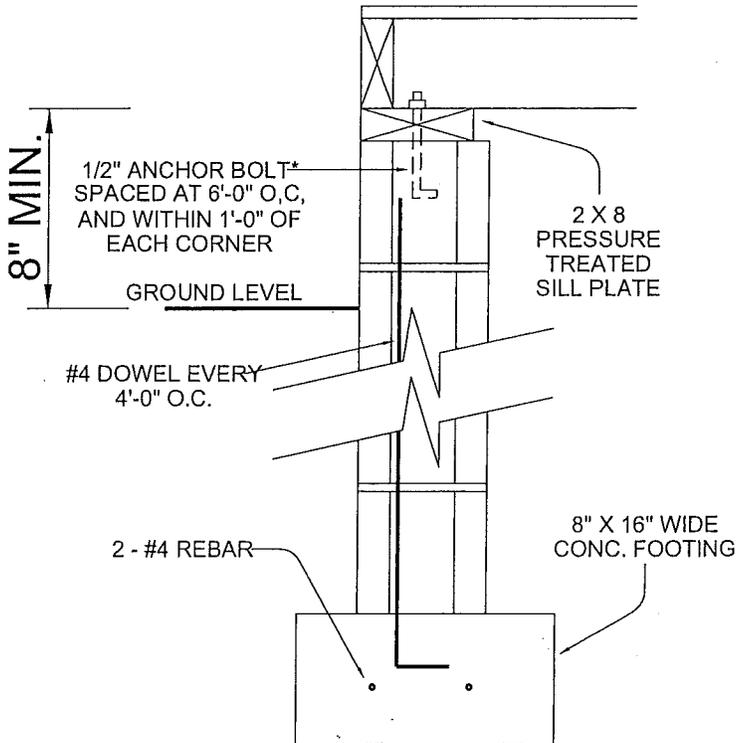
REVISIONS	DATE	 <p style="font-size: 24pt; font-weight: bold; margin: 0;">CHIEF® INDUSTRIES</p> <p style="font-weight: bold; margin: 0;">HOUSING DIVISION</p>	DRWG. BY: CES 01/28/04
			CHKD. BY:
			SCALE: NONE SSM26

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" MIN IN POURED CONCRETE WALLS AND 15" MIN IN MASONRY WALLS

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

SECTION THROUGH PERIMETER 2

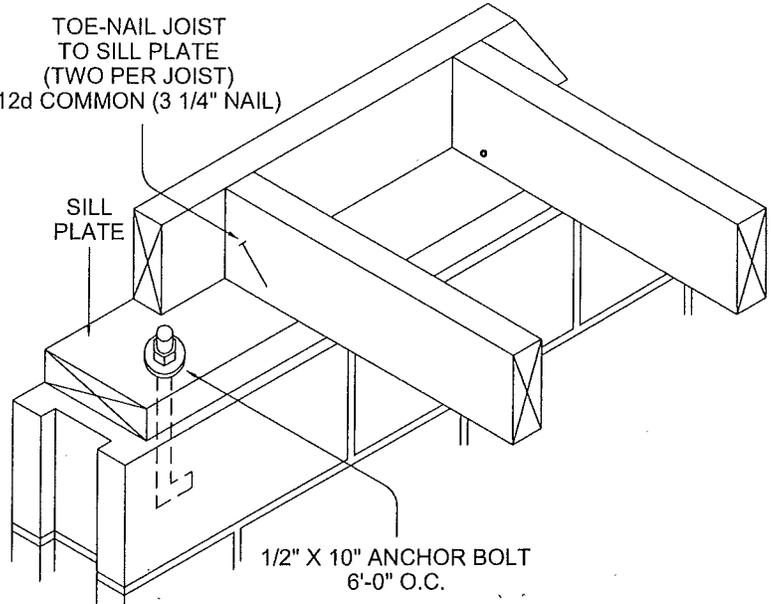
FIGURE 6.3

REVISIONS	DATE		CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES 01/29/04
			CHKD. BY:	
			SCALE: NONE SSM27	

SINGLE WIDE HOME ANCHORAGE DETAILS FOR PERIMETER FOUNDATION

SECURE FRONT AND REAR
RIM JOIST TO SILL PLATE
WITH 1 - 12d COMMON NAIL @ 16" O.C.

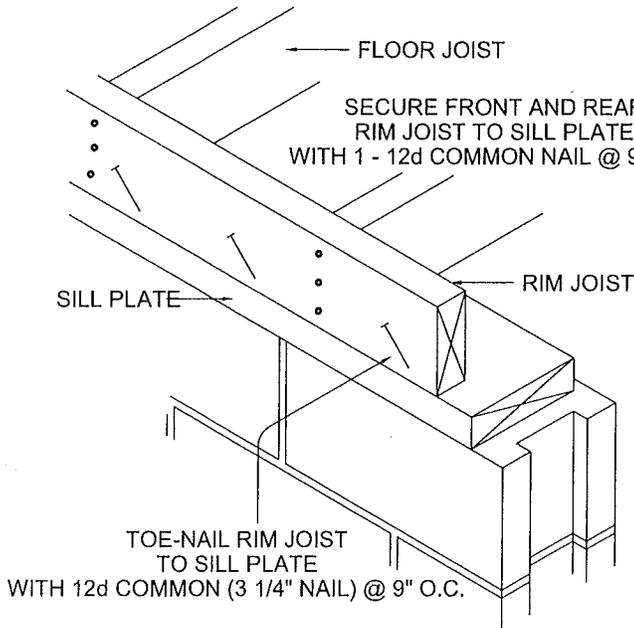
TOE-NAIL JOIST
TO SILL PLATE
(TWO PER JOIST)
12d COMMON (3 1/4" NAIL)



JOIST TO SILL CONNECTION ①
(METHOD A)

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

SECURE FRONT AND REAR
RIM JOIST TO SILL PLATE
WITH 1 - 12d COMMON NAIL @ 9" O.C.



RIM JOIST TO SILL CONNECTION ②
(METHOD B)

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

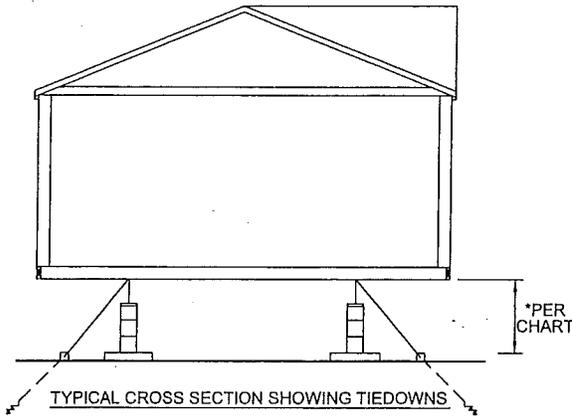
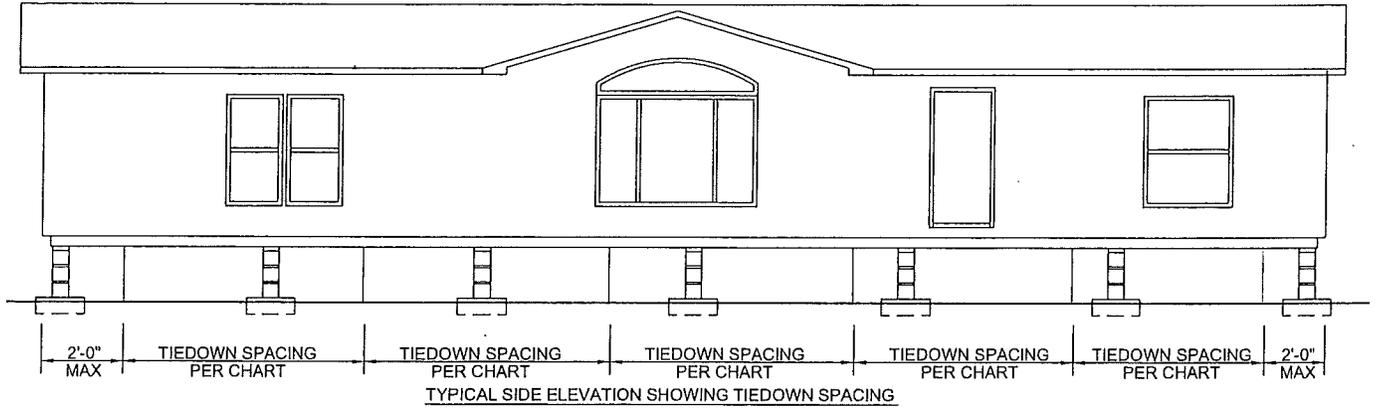
FIGURE 6.4

REVISIONS	DATE		CHIEF® INDUSTRIES	DRWG. BY: CES 01/29/04
			HOUSING DIVISION	CHKD. BY:
				SCALE: NONE SSM28

RECOMMENDED TIEDOWN SYSTEM

VAULTED DORMER

WIND ZONE 1 / 15 PSF LATERAL



FRAME TIE-DOWN SPACING CHART			
FLOOR WIDTH	WIND ZONE 1		
	SPACING	MAX. PIER HEIGHT (H MAX)	EAVE OVERHANG
15'-2"	10'-0"	44"	12" MAX.

* PIER HEIGHT INCLUDES DEPTH OF I-BEAM

NOTES:

1. FRAME TIE-DOWN SHALL BE INSTALLED TO PROPERLY SECURE THE HOME.
2. FRAME TIE-DOWNS AND ANCHORS ARE NOT SUPPLIED BY CHIEF INDUSTRIES HOUSING DIVISION.
3. GROUND ANCHORS AND FRAME TIES SHALL BE CAPABLE OF RESISTING A TENSILE 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.
4. STEEL ANCHORING EQUIPMENT EXPOSED TO THE WEATHER SHALL BE PROTECTED WITH AT LEAST 0.30 OZ. OF ZINC PER SQUARE FOOT OF STEEL
5. DESIGN BASED ON 82 1/2" I-BEAM SPACING AND A MAXIMUM SIDEWALL HEIGHT OF 9'-2" AT HIGHEST POINT.
6. 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.
7. 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.
8. 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.
9. STRAPPING TO BE TYPE 1, FINISH B, GRADE 1 STEEL STRAPPING, 1 1/4" WIDE AND .035 INCHES IN THICKNESS, CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER OR ARCHITECT AS CONFORMING WITH ASTM "STANDARD SPECIFICATION FOR STRAPPING, FLAT STEEL AND SEALS". THE CHART ABOVE IS ONLY APPLICABLE TO THE VAULTED PORTION OF THE UNIT. FOR TIEDOWN SPACING AND PIER HEIGHTS
10. BEYOND THIS PORTION, REFER TO STANDARD TIEDOWN DESIGNS.

FIGURE 6.5

REVISIONS	DATE		CHIEF® INDUSTRIES	DRWG. BY: CES 01/29/04
			HOUSING DIVISION	CHKD. BY:
				SCALE: NONE SSM29

PIER CAPACITY (POUNDS)	MINIMUM FOOTING SIZE (OR EQUAL AREA) (INCHES)			
	SOIL BEARING CAPACITY (PSF)			
	1000	1500	2000	4000
600	12 X 12	12 X 12	12 X 12	12 X 12
800	12 X 12	12 X 12	12 X 12	12 X 12
1000	12 X 12	12 X 12	12 X 12	12 X 12
1500	15 X 15	12 X 12	12 X 12	12 X 12
2000	17 X 17	14 X 14	12 X 12	12 X 12
2500	19 X 19	15 X 15	13 X 13	12 X 12
3000	21 X 21	17 X 17	15 X 15	12 X 12
3500	22 X 22	18 X 18	16 X 16	12 X 12
4000	24 X 24	20 X 20	17 X 17	12 X 12
4500	25 X 25	21 X 21	18 X 18	13 X 13
5000	27 X 27	22 X 22	19 X 19	13 X 13
5500	28 X 28	23 X 23	20 X 20	14 X 14
6000	29 X 29	24 X 24	21 X 21	15 X 15
6500	31 X 31	25 X 25	22 X 22	15 X 15
7000	32 X 32	26 X 26	22 X 22	16 X 16
7500	33 X 33	27 X 27	23 X 23	16 X 16
8000	34 X 34	28 X 28	24 X 24	17 X 17
8500	35 X 35	29 X 29	25 X 25	17 X 17
9000	36 X 36	29 X 29	25 X 25	18 X 18
9500	37 X 37	30 X 30	26 X 26	19 X 19
10000	38 X 38	31 X 31	27 X 27	19 X 19
11000	40 X 40	32 X 32	28 X 28	20 X 20
12000	42 X 42	34 X 34	29 X 29	21 X 21
13000	43 X 43	35 X 35	31 X 31	22 X 22
14000	45 X 45	37 X 37	32 X 32	22 X 22
15000	46 X 46	38 X 38	33 X 33	23 X 23
16000	48 X 48	39 X 39	34 X 34	24 X 24
17000	49 X 49	40 X 40	35 X 35	25 X 25
18000	51 X 51	42 X 42	36 X 36	25 X 25
19000	52 X 52	43 X 43	37 X 37	26 X 26
20000	54 X 54	44 X 44	38 X 38	27 X 27
21000	55 X 55	45 X 45	39 X 39	28 X 28
22000	57 X 57	46 X 46	40 X 40	28 X 28
23000	58 X 58	47 X 47	41 X 41	29 X 29
24000	59 X 59	48 X 48	42 X 42	30 X 30
25000	60 X 60	49 X 49	43 X 43	30 X 30

- 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.
- 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.
- IT IS RECOMMENDED THAT THE TOP OF THE FOOTINGS BE LOCATED AT THE DEPTH OF LOCAL FROST LINE LEVELS.

FOOTINGS		SGL STACKED	DBL STACKED
T	'P' MAX	PIERS (W X L)	BLOCKS (L X W)
4"	4"	16" X 16"	16" X 16"
6"	6"	16" X 24"	24" X 24"
8"	8"	19" X 27"	27" X 27"
12"	12"	24" X 32"	32" X 32"
18"	18"	32" X 40"	40" X 40"

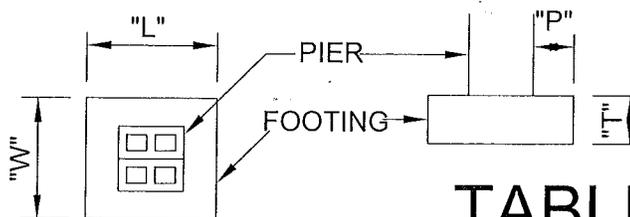


TABLE 6.1

REVISIONS	DATE	 CHIEF® INDUSTRIES HOUSING DIVISION	DRWG. BY: CES 01/29/04
			CHKD. BY:
			SCALE: NONE SSM30

SECTION VII

SITE ASSEMBLY INSTRUCTIONS

Single Section Homes

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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 supplement 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 Homeowners 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.

All 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" in from the left side and 12" 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 persons 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.

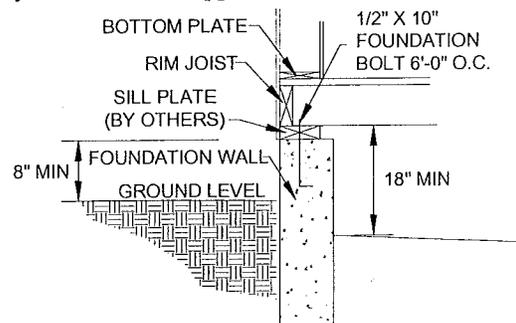
In addition, provision for utilities must be made before the home is set. Installation of lines and equipment supplying water, electricity and fuel, plus sewage disposal systems must be completed and ready for connection in accordance with all local codes and regulations. Your county engineer, building 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 concrete or mortared concrete block.

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.



TYPICAL PERIMETER FOUNDATION

The third method is the use of perimeter blocking. The perimeter blocking could be constructed of either poured concrete or concrete block. This type of blocking allows the I-beam supports to be spaced at larger intervals.

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. To determine the size of piers and footings, refer to the sections dealing with pier construction and footing instructions.

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.

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 your 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.

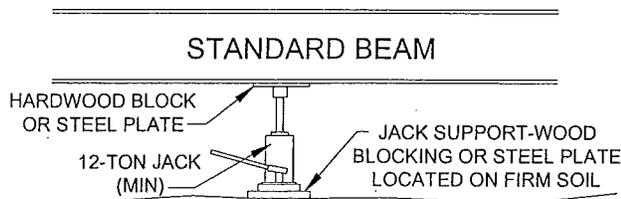
Lifting Considerations

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 or beams, 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 **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.



SAFE JACK SUPPORT

- 3) Leave tires and axles on the unit until all blocking is in place in order to reduce the hazard from collapse.

Section VII, Page 3

SSM33

- 4) Using a minimum of 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.

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 other spring-mounted member.
- 6) Avoid overstressing structural members.

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

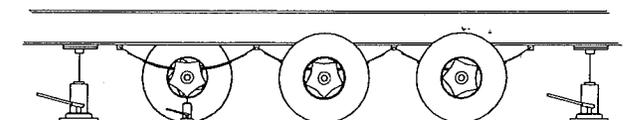
General

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.

Setting Procedure

- 1) Determine the proper spacing for the piers located under the home from previous sections. Concrete pads should be positioned as illustrated. This includes any additional piers needed under column supports.
- 2) Raise the hitch of the unit to be blocked and leveled approximately two (2) inches higher than its final position with a heavy duty hydraulic jack. Adequate blocking should then be placed under the hitch assembly to prevent its falling to the ground in the event the jack stem assembly should fail. Place a 12 ton jack under each main frame



Jack Placement for Axle Removal

member just to the rear of the rear spring hangers. These two jacks should be operated simultaneously to raise the home until it is approximately two (2) inches higher than its final position.

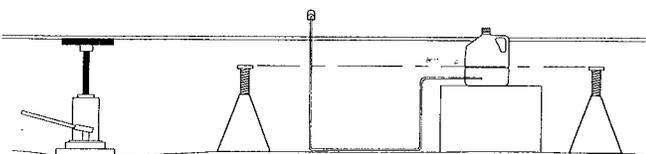
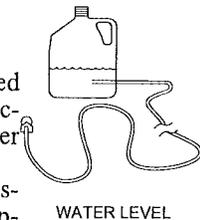
- 3) If the tires and axles are to be removed, safety supports should be placed tightly under the frame members at this point to prevent the home from dropping should the jack fail. When removing axles, one jack should be located directly in front of the first spring hanger and one directly behind the last spring hanger. It would be wise to position a jack under each end of the axle when removing bolts.
- 4) The concrete pier supports, previously positioned on site, should now be located directly under each I-Beam. Concrete or metal piers are then placed into position on the pads. The steel jacks to be used as piers have an adjustable bracket placed in the top, on which the steel frame will set.
- 5) The house should be checked for level and adjusted as needed. Some methods for leveling are listed in the next section.
- 6) The safety supports previously placed in the axle area when the wheels were being removed and the support under the A-frame should now be removed.
- 7) The jacks are then lowered together, allowing the frame to rest on each pier.
- 8) The screw jack assembly on the hitch is retracted so that it no longer touches the soil and all jacks are removed from under the frame.
- 9) If your house has a detachable hitch that you would like to remove, block under the A-frame to prevent it from falling to the ground. Store the A-frame for possible future movement when it can be reattached.
- 10) After completion of the leveling and set-up procedure, all doors and windows should be checked to see that they operate freely without binding.

Leveling

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

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 relevelled.

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 could cause your home to heave or settle.

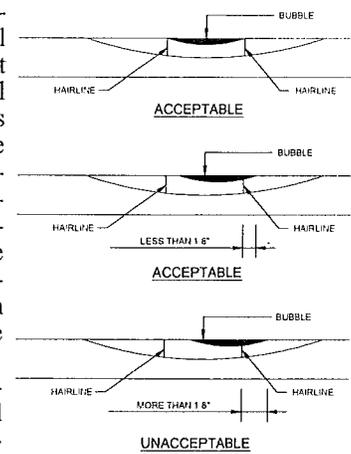
Anchorage Instructions

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."



BUBBLE LEVEL READING

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 ventilation underneath the house. There should be vents as close to the corners as possible as not to create "dead air pockets." One square foot of venting is required per every 150 square feet of floor space.

Example: a 16' x 80' house with actual demensions of 15'-6" x 76'-0" equals 1178 square feet. Divide 1178 which equals 7.85 square feet. Round up to 8 square feet. Round up to 8 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.

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 (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.

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 owners manual provided by the equipment manufacturer. The supports or slab built for the air conditioner must be freestanding. The condensation 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!

 **WARNING:** This is a Direct Vent Appliance, and care must be taken to ensure that the installation of the water heater and this kit are airtight!

1. **LOCATE AIR DIVERTER:** Determine which outside wall the Air Diverter Base will be located on.

 **CAUTION:** Location of the Air Diverter Base must take into consideration the 16 foot maximum length of Flexible Duct allowed between the Air Diverter Base and Air Inlet Plenum. The Air Diverter Assembly must be located a minimum of 12" from ground level. Refer to Figure 3. The Flexible Duct must be run reasonable straight (no turns).

2. **AIR INLET ASSEMBLY:** Remove the screws, which attach the wind baffle to the existing air inlet vent pipe located underneath the home. Refer to Figure 1. Discard the wind baffle and screws as they are no longer required with this field installation set.

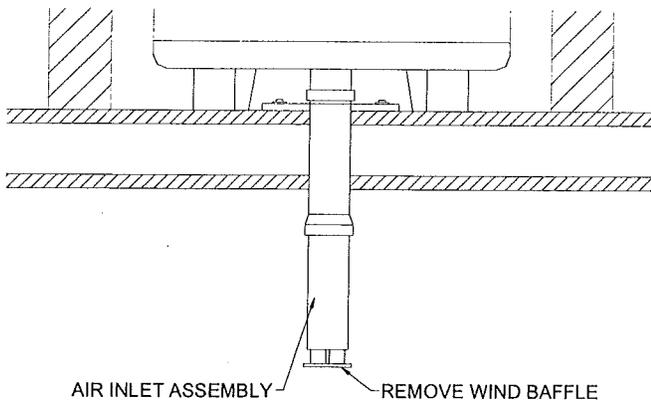


FIGURE 1

3. **CHECK LENGTH OF AIR INLET PIPE:** It may be necessary to trim the length of the 3" air inlet pipe so that the pipe fits into the plenum box without touching the bottom of the box. The 3" air inlet pipe should fit into the plenum box about 2" from the bottom of the box. Refer to Figure 3.

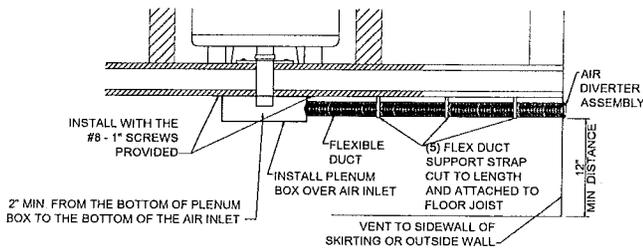


FIGURE 3

4. **ATTACH FLEX DUCT TO PLENUM:** Place one of the clamps provided over one end of the 5" flex duct and attach flex duct to air inlet plenum box 5" diameter collar. Ensure that the flex duct wire is pulled over and past the collar flush with the wall of the air inlet plenum box. Tighten the clamp to secure the flex duct to the collar. Tighten securely but do not over tighten.
5. **ATTACH PLATE (3-1/8" HOLE) TO PLENUM BOX:** Make sure plate covers 5-7/8" hole with flange on inside of plenum box. Attach plate with 3-1/8" hole to plenum box using the (4) #8 - 1/2" sheet metal screws provided.
6. **POSITION PLENUM:** Align the 3-1-8" hole in the plenum box with 3" air nlet vent pipe located underneath the home. Position the air inlet plenum box so that the 5" diameter collar faces the proposed direction of the air inlet diverter.
7. **INSTALL PLENUM:** The air inlet plenum box side flanges should be positioned so that they can attach to the underside of the floor joists. Once in place, securely attach the air inlet plenum box to the underside of the floor joists using the #8 - 1" self-tapping screws provided through the flanges into the floor joists. (Use at least three screws on each side of the plenum box.)

8. **AIR DIVERTER BASE:** Cut a 5" to 5-1/2" opening in sidewall of skirting or outside wall to allow entrance of air diverter tailpiece and 5" flexible duct. Attach air diverter base to outside wall using the #8 - 1" screws provided. Be sure taht the screw holes are aligned so that the air diverter cap can be installed with screw holes on top. The air diverter base must be located a minimum of 12" from ground level.
9. **CUT FLEX DUCT TO LENGTH:** Extend flex duct from the collar of the air inlet plenum box to the outside wall location of the air diverter base must be located a minimum of 12" from ground level.
10. **SUPPORT FLEXIBLE DUCT:** Support must be provided for the flexible duct at a minimum of 4' intervals. Use the 1" wide support strap and fasten with screws, staples, or nails to support the duct.
11. **ATTACH AIR DIVERTER CAP:** Attach the air diverter cap to the air diverter base using the tamper proof fasteners provided.
12. **INSPECT COMPLETE ASSEMBLY:** Inspect the complete assembly to ensure that all procedures have been completed.

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 pipijng before locating the pipe through the wall. Before securing the inside and the outside collars to the wall, use a silacone 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 can 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 protect line, which has been explained to you by your dealer.

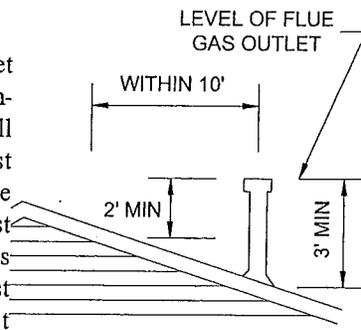
If you purchased the Blend-Air system with your home, the operation of this system is completely automatic. The Blend-Air Enviromental System is designed to work in con-

junction with the home's 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.

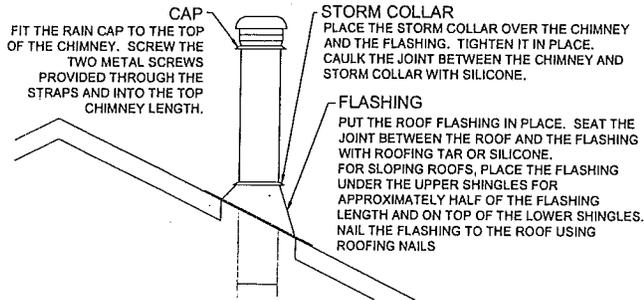
The Blend-Air Environmental System should be maintained as outlined in the owners manual provided by the manufacturer.

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. **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



Chimney Clearances



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 to enter 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.

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

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.

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 connector not be grounded in or on the manufactured home or the home service entrance cabinet.

Smoke Alarm Installation and Testing

Once your electrical system has been connected, be sure all smoke detectors for operation.

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 systems 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

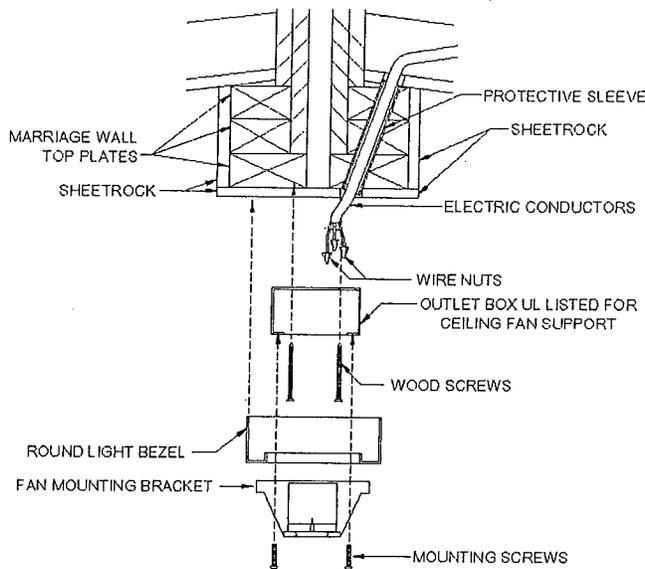
Large Light Fixtures

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 rented through this exterior wall. However, if your dryer doesn't set along an exterior wall, you will need to complete the means of renting after the home has been set.

Clothes Dryer

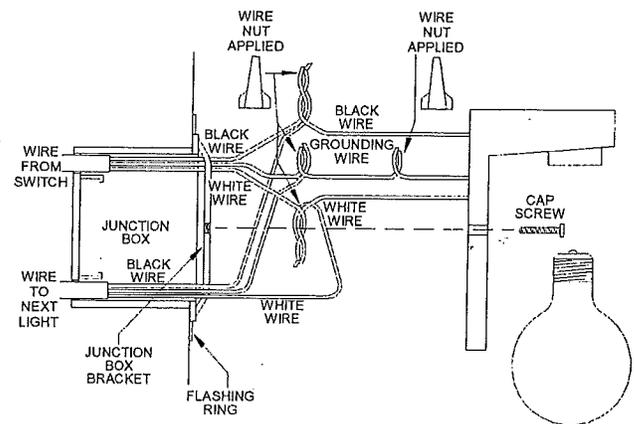
If your home has been constructed with provisions for a dryer vent, this installation shall be completed on site, prior to the use of your appliance. The dryer vent shall be installed as follows:

- 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 state, 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.



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.

Should your home be constructed with cedar siding, please be aware of that the home comes to you with the cedar unfinished. It is highly recommended that before or immediately after you have completed setting your home, you treat the siding with a wood preserving stain or sealant. It is also recommended that you repeat this finishing treatment at a time duration recommended by the preservative's manufacturer.

Cedar siding, being a natural product, will experience some natural expanding and contracting due to atmospheric conditions. To best protect your home you should annually check for any gaps or areas that may need to be recaulked.

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 residence. 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!

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