

STATE OF COLORADO

FACTORY BUILT RESIDENTIAL APPLICATION

Fee due with application-Not subject to return Mar 2016

Name of Manufacturer: KARSTEN HOMES	Plant street address: 2700 KARSTEN CT. SE. ALBQ. NM 87102	Plant I.D. Number: 3429
Plant Mailing Address: 2700 KARSTEN CT. SE. ALBUQUERQUE NM 87102	Plant Telephone: (505) 242-5580	
Contact Person/s: Richard Martinez	Email address: Richard.Martinez@KarstenHomes.com	Telephone No:

Third Party Inspection Agency: RADCO	Telephone No: (562) 272-7231
Mailing Address: 3220 E. 59th ST. LONG BEACH CA. 90805	Fax No:

☒	2012 I-Code Compliant	Roof snow load	80 PSF	Floor Design Load	40 PSF
☒	2014 NEC Compliant	Wind Design Speed	90 MPH		
	2015 IECC Compliant	Seismic Category	B		
	2012 IECC Compliant				
☒	2009 IECC Compliant				

Fee Schedule	Total footage	Amount	Model Name/No.
Annual Registration Fee (Submit new/updated QA Manual) \$600.00/per factory location			RC4068A STANKO
Fee Calculator for Plan Approvals= (Building Square footage) x (factor indicated below): Manufactured portion only			
Plan Approval Fee- \$0.25/sq. ft. (Finished floor area)	2466	\$616.50	
\$0.10/sq. ft. (Unfinished floor area) i.e. garage, unfinished loft	288	\$28.80	
Minimum Fee for Plan Approvals- \$160.00			
			Plan Approval Number
Plan revision-\$0.10/sq.ft. of area revised, minimum \$50.00			
Plan renewal (no changes) \$0.10/sq. ft., \$50.00 minimum. If changes exist submit same as a new plan.			
TOTAL AMOUNT SUBMITTED:		\$645.30	EXPIRES:

MANUFACTURER CERTIFIES that only approved equipment and materials will be used and the installations shall be made in accordance with approved plans and applicable codes and provisions of the Colorado Division of Housing. Manufacturer agrees to in-plant inspection of units manufactured under the above plan approval. Application shall be made for and insignia affixed to each factory built residential unit that is subject to Colorado statutes and which is manufactured or is to be sold, offered for sale, or occupied in the State of Colorado.

LUMBER-		BRACING-	
TOP CHORD	2x4 SPF No.2	TOP CHORD	Structural wood sheathing directly applied or 2-7-15 oc purlins, except end verticals
BOT CHORD	2x4 SPF No.2	BOT CHORD	Rigid ceiling directly applied or 2-2-0 oc bracing.
WEBS	2x3 SPF Stud *Except* W6: 2x3 SPF No.2		

NOTES-

- 1) Wind: ASCE 7-10; Vult=146mph (3-second gust) Vasd=115mph; TC DL=4.0psf; BCDL=4.0psf; h=25ft; Cat. II; Exp C; enclosed; MWFRS (envelope) gable end zone and C-C Exterior(2) zone; C-C for members and forces & MWFRS for reactions shown; Lumber DOL=1.60 plate grip DOL=1.60
- 2) TC LL: ASCE 7-10; Pg= 103.9 psf (ground snow); Pf=80.0 psf (flat roof snow); Category II; Exp C; Partially Exp.; Ct=1.1
- 3) Unbalanced snow loads have been considered for this design.
- 4) This truss has been designed for greater of min roof live load of 20.0 psf or 2.00 times flat roof load of 80.0 psf on overhangs non-concurrent with other live loads.
- 5) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
- 6) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 264 lb uplift at joint 2 and 227 lb uplift at joint 7.
- 7) This truss is designed in accordance with the 2012 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
- 8) "Fix heels only" Member end fixity model was used in the analysis and design of this truss.

E. signed by: Stuart Walter

E-signed by Stuart Walter



Truss shall not be cut or modified without approval of the truss design engineer.

This component has only been designed for the loads noted on this drawing. Construction and lifting forces have not been considered. The builder is responsible for lifting methods and system design. Builder responsibilities are defined under TP11. This design is based only upon parameters shown, and is for an individual building component to be installed and loaded vertically. Applicability of design parameters and proper incorporation of component is responsibility of building designer - not truss designer. Bracing shown is for lateral support of individual web members only. Additional temporary bracing to insure stability during construction is the responsibility of the erector. Additional permanent bracing of the overall structure is the responsibility of the building designer. For general guidance regarding fabrication, quality control, storage, delivery, erection and bracing, consult BCSI 1-06 from the Wood Truss Council of America and Truss Plate Institute Recommendation available from WTCA, 6300 Enterprise LN, Madison, WI 53719. J:\support\MitekSupport\templates\ufp.tpe





UNIVERSAL FOREST PRODUCTS, INC.

Job	Truss	Customer	MFG
85008	M917101	KARSTEN	223

The professional engineering seal indicates that a licensed professional has reviewed the design under the standards referenced within this document, not necessarily the current state building code. The engineering seal is not an approval to use a design in a specific state. The final determination on whether a truss design is acceptable under the locally adopted building code rest with the building official or designated appointee.



Job 85008	Truss P1644401	Truss Type KINGPOST	Qty 1	Ply 1	Karsten 223 Clayton 993 K-101M-80
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Universal Forest Products Inc., Grand Rapids, MI 49525, Tom Craig

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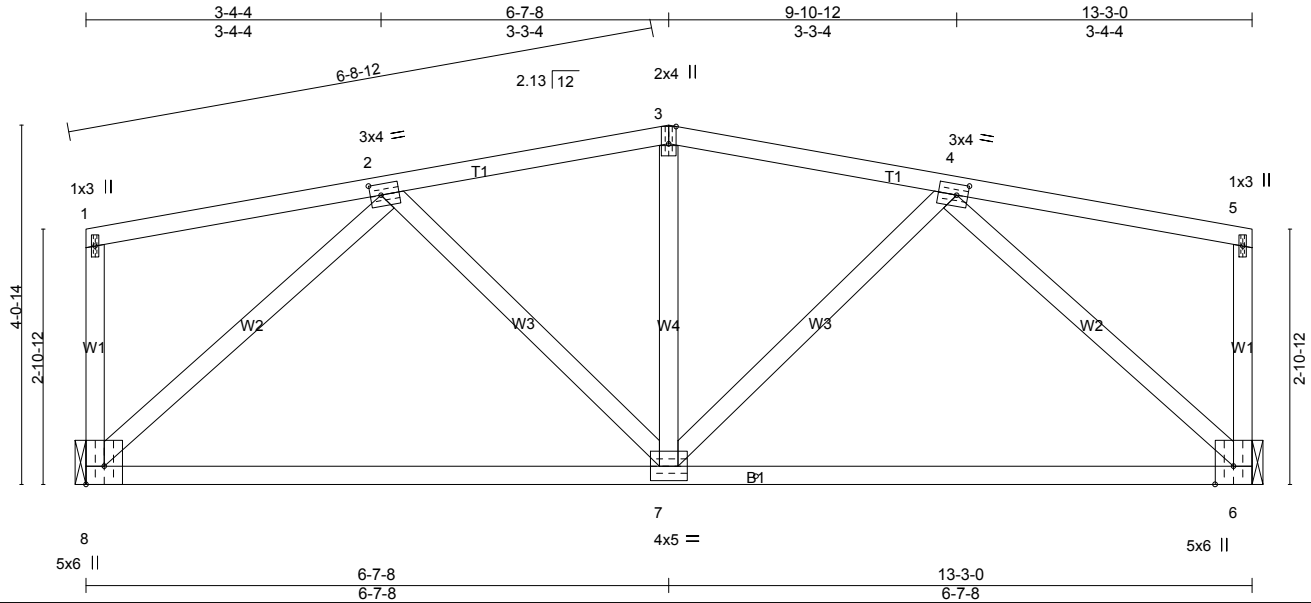


Plate Offsets (X,Y)-- [2:0-1-8,0-1-8], [3:0-2-6,Edge], [4:0-1-8,0-1-8], [8:Edge,0-2-8]

LOADING (psf)	SPACING-	CSI	DEFL.	PLATES	GRIP
TCLL 80.0 (Ground Snow=103.9)	1-4-0 Plate Grip DOL 1.00	TC 0.71	in (loc) l/defl L/d	MT20	197/144
TCDL 10.0	Lumber DOL 1.00	BC 0.53	Vert(LL) -0.08 6-7 >999 240		
BCLL 0.0	Rep Stress Incr YES	WB 0.66	Vert(TL) -0.22 6-7 >725 180		
BCDL 10.0	Code IBC2012/TPI2007	(Matrix)	Horz(TL) 0.02 6 n/a n/a		
				Weight: 43 lb	FT = 10%

LUMBER-
TOP CHORD 2x3 SPF No.2
BOT CHORD 2x3 SPF No.2
WEBS 2x3 SPF Stud

BRACING-
TOP CHORD Structural wood sheathing directly applied or 4-9-10 oc purlins, except end vert
BOT CHORD Rigid ceiling directly applied or 10-0-0 oc bracing.

REACTIONS. (lb/size) 8=869/Mechanical, 6=869/Mechanical
Max Horz 8=-22(LC 9)
Max Uplift 8=-184(LC 6), 6=-184(LC 7)

FORCES. (lb) - Maximum Compression/Maximum Tension
TOP CHORD 1-2=-22/49, 2-3=-805/268, 3-4=-805/268, 4-5=-22/49, 1-8=-172/61, 5-6=-172/61
BOT CHORD 7-8=-224/685, 6-7=-224/685
WEBS 3-7=-26/58, 2-8=-970/317, 4-7=-48/216, 4-6=-970/317, 2-7=-48/216

NOTES-
1) Wind: ASCE 7-10; Vult=146mph (3-second gust) Vasd=115mph; TCDL=4.0psf; BCDL=4.0psf; h=25ft; Cat. II; Exp C; enclosed; MWFRS (envelope) gable end zone and C-C Exterior(2) zone; C-C for members and forces & MWFRS for reactions shown; Lumber DOL=1.60 plate grip DOL=1.60
2) TCLL: ASCE 7-10; Pg= 103.9 psf (ground snow); Pf=80.0 psf (flat roof snow); Category II; Exp C; Partially Exp.; Ct=1.1
3) Unbalanced snow loads have been considered for this design.
4) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
5) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 184 lb uplift at joint 8 and 184 lb uplift at joint 6.
6) This truss is designed in accordance with the 2012 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
7) "Fix heels only" Member end fixity model was used in the analysis and design of this truss.

E-signed by Stuart Walter



9/26/2016

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WARNING - Verify design parameters and READ NOTES Universal Forest Products, Inc. 2801 EAST BELTLINE RD, NE
PHONE (616)-364-6161 FAX (616)-365-0060 GRAND RAPIDS, MI 49525

Truss shall not be cut or modified without approval of the truss design engineer.
This component has only been designed for the loads noted on this drawing. Construction and lifting forces have not been considered. The builder is responsible for lifting methods and system design. Builder responsibilities are defined under TPI1. This design is based only upon parameters shown, and is for an individual building component to be installed and loaded vertically. Applicability of design parameters and proper incorporation of component is responsibility of building designer - not truss designer. Bracing shown is for lateral support of individual web members only. Additional temporary bracing to insure stability during construction is the responsibility of the erector. Additional permanent bracing of the overall structure is the responsibility of the building designer. For general guidance regarding fabrication, quality control, storage, delivery, erection and bracing, consult BCSI 1-06 from the Wood Truss Council of America and Truss Plate Institute Recommendation available from WTCA, 6300 Enterprise LN, Madison, WI 53719 J:\support\MitekSupp\templates\ufp.tpe





UNIVERSAL FOREST PRODUCTS, INC.

Job	Truss	Customer	MFG
85008	P1644401	KARSTEN	223

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Job 85465	Truss A349401	Truss Type MONO TRUSS	Qty 1	Ply 1	Karsten 223 Clayton 993 K-100M-80 Porch
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Universal Forest Products Inc., Grand Rapids, MI 49525, Tom Craig

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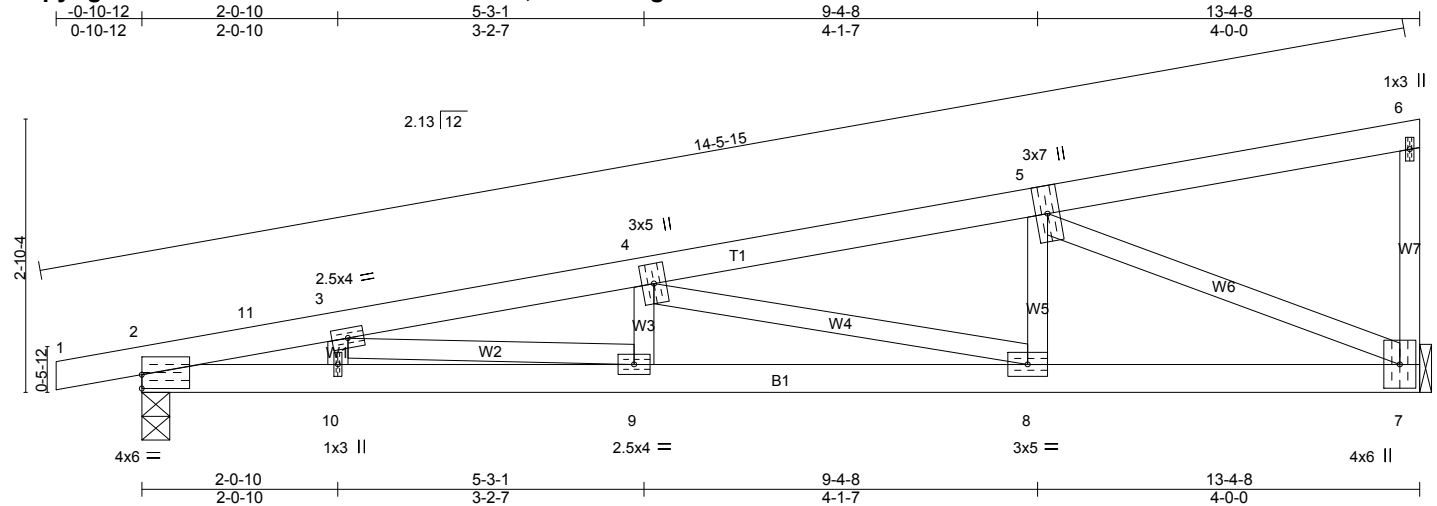


Plate Offsets (X,Y)-- [2:Edge,0-1-12]

LOADING (psf)	SPACING-	CSI	DEFL.	PLATES	GRIP
TCLL 80.0 (Ground Snow=103.9)	1-4-0 Plate Grip DOL 1.00 Lumber DOL 1.00 Rep Stress Incr YES Code IBC2012/TPI2007	TC 0.57 BC 1.00 WB 0.88 (Matrix)	in (loc) l/defl L/d Vert(LL) -0.20 9 >784 240 Vert(TL) -0.26 9 >603 180 Horz(TL) 0.06 7 n/a n/a	MT20	197/144
TCDL 10.0 BCLL 0.0 BCDL 10.0				Weight: 45 lb	FT = 10%

LUMBER-
TOP CHORD 2x4 SPF No.2
BOT CHORD 2x4 SPF No.2
WEBS 2x3 SPF Stud *Except*
W6: 2x3 SPF No.2

BRACING-
TOP CHORD Structural wood sheathing directly applied or 2-7-15 oc purlins, except end vert
BOT CHORD Rigid ceiling directly applied or 2-2-0 oc bracing.

REACTIONS. (lb/size) 2=1005/0-3-8 (min. 0-1-13), 7=870/Mechanical
Max Horz 2=105(LC 8)
Max Uplift 2=342(LC 6), 7=309(LC 6)
Max Grav 2=1166(LC 2), 7=1061(LC 2)

FORCES. (lb) - Maximum Compression/Maximum Tension
TOP CHORD 1-2=-6/0, 2-11=-2905/1523, 3-11=-2862/1525, 3-4=-3072/1615, 4-5=-1783/911, 5-6=-62/29, 6-7=-227/67
BOT CHORD 2-10=-1568/2750, 9-10=-1568/2750, 8-9=-1677/3000, 7-8=-949/1708
WEBS 3-10=-71/46, 4-9=-160/93, 5-8=-414/420, 3-9=-110/254, 4-8=-1339/754, 5-7=-1891/1051

- NOTES-**
- 1) Wind: ASCE 7-10; Vult=146mph (3-second gust) Vasd=115mph; TCDL=6.0psf; BCDL=6.0psf; h=20ft; Cat. II; Exp C; enclosed; MWFRS (envelope) gable end zone and C-C Exterior(2) zone; porch left and right exposed; C-C for members and forces & MWFRS for reactions shown; Lumber DOL=1.60 plate grip DOL=1.60
 - 2) TCLL: ASCE 7-10; Pg= 103.9 psf (ground snow); Pf=80.0 psf (flat roof snow); Category II; Exp C; Partially Exp.; Ct=1.1
 - 3) Unbalanced snow loads have been considered for this design.
 - 4) This truss has been designed for greater of min roof live load of 20.0 psf or 2.00 times flat roof load of 80.0 psf on overhangs non-concurrent with other live loads.
 - 5) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
 - 6) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 342 lb uplift at joint 2 and 309 lb uplift at joint 7.
 - 7) This truss is designed in accordance with the 2012 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
 - 8) "Fix heels only" Member end fixity model was used in the analysis and design of this truss.
 - 9) Addendum to M917102-85465; added porch wind exposure.

E-signed by Stuart Walter



10/26/2016

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This component has only been designed for the loads noted on this drawing. Construction and lifting forces have not been considered. The builder is responsible for lifting methods and system design. Builder responsibilities are defined under TPI1. This design is based only upon parameters shown, and is for an individual building component to be installed and loaded vertically. Applicability of design parameters and proper incorporation of component is responsibility of building designer - not truss designer. Bracing shown is for lateral support of individual web members only. Additional temporary bracing to insure stability during construction is the responsibility of the erector. Additional permanent bracing of the overall structure is the responsibility of the building designer. For general guidance regarding fabrication, quality control, storage, delivery, erection and bracing, consult BCSI 1-06 from the Wood Truss Council of America and Truss Plate Institute Recommendation available from WTCA, 6300 Enterprise LN, Madison, WI 53719 J:\support\MitekSupp\templates\ufp.tpe





UNIVERSAL FOREST PRODUCTS, INC.

Job	Truss	Customer	MFG
85465	A349401	KARSTEN	223

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The diagram illustrates a symmetrical roof truss structure. Key components and labels include:

- Dimensions:**
 - Horizontal spans: 3-4-4, 6-7-8, 9-10-12, 13-3-0 (top); 6-7-8, 6-7-8, 13-3-0 (bottom).
 - Vertical heights: 4-0-14 (total), 2-10-12 (truss height).
- Structural Members:**
 - Roof Purlins:** 1x3 II (left), 3x4 II (middle-left), 2x4 II (middle-right), 3x4 II (middle-right), 1x3 II (right).
 - Truss Members:** W1 (vertical), W2 (diagonal), W3 (diagonal), W4 (vertical).
 - Truss Joints:** T1 (top-left), T2 (top-right).
 - Supports:** B1 (bottom-left), B2 (bottom-right).
- Labels:** 1, 2, 3, 4, 5, 6, 7, 8 (joint numbers); 1, 2, 3, 4, 5, 6, 7, 8 (member numbers).

Plate Offsets (X,Y)-- [2:0-1-8,0-1-8], [3:0-2-6,Edge], [4:0-1-8,0-1-8], [8:Edge,0-2-8]

LOADING (psf)	SPACING-	1-4-0	CSI.	DEFL.	in (loc)	l/defl	L/d	PLATES	GRIP
TCLL 80.0	Plate Grip DOL 1.00		TC 0.71	Vert(LL) 0.25	6-7	>630	240	MT20	197/144
(Ground Snow=103.9)	Lumber DOL 1.00		BC 0.65	Vert(TL) -0.22	6-7	>725	180		
TCDL 10.0	Rep Stress Incr YES		WB 0.66	Horz(TL) 0.02	6	n/a	n/a		
BCLL 0.0	Code IBC2012/TPI2007		(Matrix)					Weight: 43 lb	FT = 10%
BCDL 10.0									

LUMBER-
TOP CHORD 2x3 SPF No.2
BOT CHORD 2x3 SPF No.2
WEBS 2x3 SPF Stud

BRACING-	
TOP CHORD	Structural wood sheathing directly applied or 4-9-10 oc purlins, except end verticals.
BOT CHORD	Rigid ceiling directly applied or 6-7-0 oc bracing.

REACTIONS. (lb/size) 8=869/Mechanical, 6=869/Mechanical
Max Horz 8=-21(LC 9)
Max Uplift 8=-267(LC 6), 6=-267(LC 7)

FORCES. (lb) - Maximum Compression/Maximum Tension
 TOP CHORD 1-2=-22/49, 2-3=-805/598, 3-4=-805/598, 4-5=-22/49, 1-8=-172/55, 5-6=-172/55
 BOT CHORD 7-8=407/685, 6-7=-407/685
 WEBS 3-7=105/58, 2-8=-970/576, 4-7=-190/216, 4-6=-970/576, 2-7=-190/216

NOTES-

- 1) Wind: ASCE 7-10; Vult=146mph (3-second gust) Vasd=115mph; TCDF=6.0psf; BCDF=6.0psf; h=20ft; Cat. II; Exp C; enclosed; MWFRS (envelope) gable end zone and C-C Exterior(2) zone; porch left and right exposed; C-C for members and forces & MWFRS for reactions shown; Lumber DOL=1.60 plate grip DOL=1.60
2) TLL: ASCE 7-10; Pg= 103.9 psf (ground snow); Pf=80.0 psf (flat roof snow); Category II; Exp C; Partially Exp.; Ct=1.1
3) Unbalanced snow loads have been considered for this design.
4) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
5) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 267 lb uplift at joint 8 and 267 lb uplift at joint 6.
6) This truss is designed in accordance with the 2012 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
7) "Fix heels only" Member end fixity model was used in the analysis and design of this truss.
8) Addendum to P1644401-85008; added porch wind exposure.

E-signed by Stuart Walter



10/26/2016

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 WARNING - *Verify design parameters and READ NOTES*

Truss shall not be cut or modified without approval of the truss design engineer.

This component has only been designed for the loads noted on this drawing. Construction and lifting forces have not been considered. The builder is responsible for lifting methods and system design. Builder responsibilities are defined under TP11. This design is based only upon parameters shown, and is for an individual building component to be installed and loaded vertically. Applicability of design parameters and proper incorporation of component is responsibility of building designer - not truss designer. Bracing shown is for lateral support of individual web members only. Additional temporary bracing to insure stability during construction is the responsibility of the erector. Additional permanent bracing of the overall structure is the responsibility of the building designer. For general guidance regarding fabrication, quality control, storage, delivery, erection and bracing, consult BCSI 1-06 from the Wood Truss Council of America and Truss Plate Institute Recommendation available from WTCA, 6300 Enterprise LN, Madison, WI 53719. J:\support\MitekSupport\templates\ufp.tpe

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UNIVERSAL FOREST PRODUCTS, INC.

Job	Truss	Customer	MFG
85465	A349501	KARSTEN	223

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Job 85465	Truss M917102	Truss Type MONO TRUSS	Qty 1	Ply 1	Karsten 223 Clayton 993 K-100M-80
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Universal Forest Products Inc., Grand Rapids, MI 49525, Tom Craig

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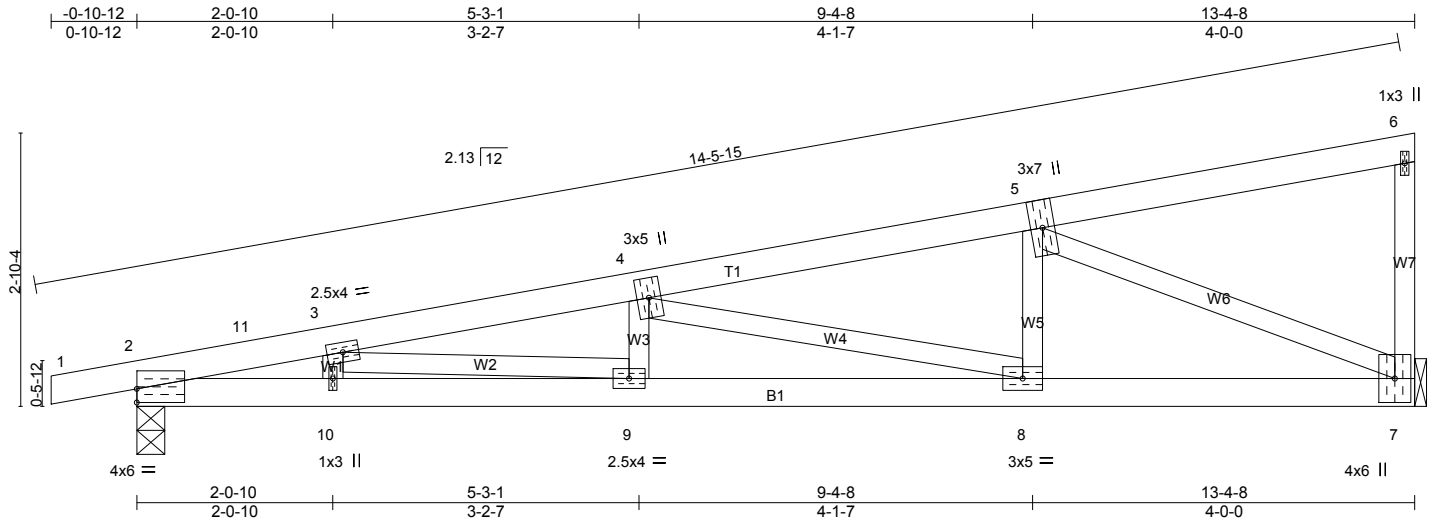


Plate Offsets (X,Y)-- [2:Edge,0-1-12]

LOADING (psf)	SPACING-	CSI.	DEFL.	PLATES	GRIP
TCLL 80.0 (Ground Snow=103.9)	1-4-0 Plate Grip DOL 1.00	TC 0.57	in (loc) l/defl L/d	MT20	197/144
TCDL 10.0	Lumber DOL 1.00	BC 1.00	Vert(LL) -0.20 9 >784 240		
BCLL 0.0	Rep Stress Incr YES	WB 0.88	Vert(TL) -0.26 9 >603 180		
BCDL 10.0	Code IBC2012/TPI2007	(Matrix)	Horz(TL) 0.06 7 n/a n/a		
				Weight: 45 lb	FT = 10%

LUMBER-
TOP CHORD 2x4 SPF No.2
BOT CHORD 2x4 SPF No.2
WEBS 2x3 SPF Stud *Except*
W6: 2x3 SPF No.2

BRACING-
TOP CHORD Structural wood sheathing directly applied or 2-7-15 oc purlins, except end vert
BOT CHORD Rigid ceiling directly applied or 2-2-0 oc bracing.

REACTIONS. (lb/size) 2=1005/0-3-8 (min. 0-1-13), 7=870/Mechanical
Max Horz 2=105(LC 8)
Max Uplift 2=-211(LC 6), 7=-179(LC 8)
Max Grav 2=1166(LC 2), 7=1061(LC 2)

FORCES. (lb) - Maximum Compression/Maximum Tension
TOP CHORD 1-2=-6/0, 2-11=-2905/522, 3-11=-2862/523, 3-4=-3072/585, 4-5=-1783/328, 5-6=-62/29, 6-7=-227/66
BOT CHORD 2-10=-611/2750, 9-10=-611/2750, 8-9=-661/3000, 7-8=-374/1708
WEBS 3-10=-71/50, 4-9=0/93, 5-8=-43/420, 3-9=-51/254, 4-8=-1339/297, 5-7=-1891/415

- NOTES-**
- 1) Wind: ASCE 7-10; Vult=146mph (3-second gust) Vasd=115mph; TCDL=6.0psf; BCDL=6.0psf; h=20ft; Cat. II; Exp C; enclosed; MWFRS (envelope) gable end zone and C-C Exterior(2) zone; C-C for members and forces & MWFRS for reactions shown; Lumber DOL=1.60 plate grip DOL=1.60
 - 2) TCLL: ASCE 7-10; Pg= 103.9 psf (ground snow); Pf=80.0 psf (flat roof snow); Category II; Exp C; Partially Exp.; Ct=1.1
 - 3) Unbalanced snow loads have been considered for this design.
 - 4) This truss has been designed for greater of min roof live load of 20.0 psf or 2.00 times flat roof load of 80.0 psf on overhangs non-concurrent with other live loads.
 - 5) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
 - 6) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 211 lb uplift at joint 2 and 179 lb uplift at joint 7.
 - 7) This truss is designed in accordance with the 2012 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
 - 8) "Fix heels only" Member end fixity model was used in the analysis and design of this truss.
 - 9) Revision to M917101-85008; revised plates.

E-signed by Stuart Walter



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WARNING - Verify design parameters and READ NOTES

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UNIVERSAL FOREST PRODUCTS, INC.

Job	Truss	Customer	MFG
85465	M917102	KARSTEN	223

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REScheck Software Version 4.6.2 Compliance Certificate

Project RC4068A STANKO

Energy Code: **2009 IECC**
Location: **Steamboat Springs, Colorado**
Construction Type: **Single-family**
Project Type: **New Construction**
Conditioned Floor Area: **2,754 ft²**
Glazing Area: **23%**
Climate Zone: **7 (9779 HDD)**
Permit Date:
Permit Number:

Construction Site:

Owner/Agent:

Designer/Contractor:

Brecken Sorge
Clayton Albuquerque
2700 Karsten Ct. SE
Albuquerque, NM 87102
505-242-5580
brecken.sorge@karstenhomes.com

Compliance: Passes using UA trade-off

Compliance: **8.7% Better Than Code** Maximum UA: **413** Your UA: **377**

The % Better or Worse Than Code Index reflects how close to compliance the house is based on code trade-off rules.
It DOES NOT provide an estimate of energy use or cost relative to a minimum-code home.

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	U-Factor	UA
Ceiling 1: Flat Ceiling or Scissor Truss	2,754	50.0	0.0	0.026	72
Wall 1: Wood Frame, 16" o.c.	1,844	17.3	0.0	0.063	87
Window: w-002: Vinyl/Fiberglass Frame, Double Pane with Low-E	4			0.340	2
Window: w-003: Vinyl/Fiberglass Frame, Double Pane with Low-E	3			0.340	1
Window: w-128: Vinyl/Fiberglass Frame, Double Pane with Low-E	3			0.340	1
Window: w-130: Vinyl/Fiberglass Frame, Double Pane with Low-E	3			0.330	1
Window: w-138: Vinyl/Fiberglass Frame, Double Pane with Low-E	220			0.340	75
Window: w-141: Vinyl/Fiberglass Frame, Double Pane with Low-E	4			0.330	1
Window: w-156: Vinyl/Fiberglass Frame, Double Pane with Low-E	153			0.340	52
Window: w-160: Vinyl/Fiberglass Frame, Double Pane with Low-E	11			0.340	4
Door: d-001/d-002: Solid	20			0.140	3
Door: d-004: Solid	20			0.140	3
Door: d-017: Glass	20			0.280	6
Crawl 1: Solid Concrete or Masonry Wall height: 4.0' Depth below grade: 3.5' Insulation depth: 4.0'	2,466	0.0	19.0	0.045	69

Compliance Statement: The proposed building design described here is consistent with the building plans, specifications, and other calculations submitted with the permit application. The proposed building has been designed to meet the 2009 IECC requirements in REScheck Version 4.6.2 and to comply with the mandatory requirements listed in the REScheck Inspection Checklist.

Brecken Sorge
Name - Title

Brecken Sorge
Signature

Date



Inspection Checklist

Energy Code: 2009 IECC

Requirements: 0.0% were addressed directly in the REScheck software

Text in the "Comments/Assumptions" column is provided by the user in the REScheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Pre-Inspection/Plan Review	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
103.2 [PR1] ¹ 	Construction drawings and documentation demonstrate energy code compliance for the building envelope.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
103.2, 403.7 [PR3] ¹ 	Construction drawings and documentation demonstrate energy code compliance for lighting and mechanical systems. Systems serving multiple dwelling units must demonstrate compliance with the commercial code.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
403.6 [PR2] ² 	Heating and cooling equipment is sized per ACCA Manual S based on loads per ACCA Manual J or other approved methods.	Heating: Btu/hr____ Cooling: Btu/hr____	Heating: Btu/hr____ Cooling: Btu/hr____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	

Additional Comments/Assumptions:

Section # & Req.ID	Foundation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
402.2.9 [FO7] ¹ 	Unvented crawl space wall insulation R-value.	R-____ R-____	R-____ R-____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
303.2 [FO8] ¹ 	Unvented crawl space wall insulation installed per manufacturer's instructions.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
402.2.9 [FO9] ¹ 	Unvented crawl space continuous vapor retarder installed over exposed earth, joints overlapped by 6 in. and sealed, extending at least 6 in. up and attached to the wall.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
402.2.9 [FO10] ¹ 	Unvented crawl space wall insulation depth of burial or distance from top of wall.	____ in.	____ in.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
303.2.1 [FO11] ² 	A protective covering is installed to protect exposed exterior insulation and extends a minimum of 6 in. below grade.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
403.8 [FO12] ² 	Snow- and ice-melting system controls installed.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	

Additional Comments/Assumptions:

Section # & Req.ID	Framing / Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
402.1.1, 402.3.4 [FR1] ¹ 	Door U-factor.	U- _____	U- _____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
402.1.1, 402.3.1, 402.3.3, 402.5 [FR2] ¹ 	Glazing U-factor (area-weighted average).	U- _____	U- _____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
303.1.3 [FR4] ¹ 	U-factors of fenestration products are determined in accordance with the NFRC test procedure or taken from the default table.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
402.4.4 [FR20] ¹ 	Fenestration that is not site built is listed and labeled as meeting AAMA/WDMA/CSA 101/I.S.2/A440 or has infiltration rates per NFRC 400 that do not exceed code limits.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
402.4.5 [FR16] ² 	IC-rated recessed lighting fixtures sealed at housing/interior finish and labeled to indicate ≤2.0 cfm leakage at 75 Pa.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
403.2.1 [FR12] ¹ 	Supply ducts in attics are insulated to ≥R-8. All other ducts in unconditioned spaces or outside the building envelope are insulated to ≥R-6.	R- _____ R- _____	R- _____ R- _____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
403.2.2 [FR13] ¹ 	All joints and seams of air ducts, air handlers, filter boxes, and building cavities used as return ducts are sealed.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
403.2.3 [FR15] ³ 	Building cavities are not used for supply ducts.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
403.3 [FR17] ² 	HVAC piping conveying fluids above 105 °F or chilled fluids below 55 °F are insulated to ≥R-3.	R- _____	R- _____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
403.4 [FR18] ² 	Circulating service hot water pipes are insulated to R-2.	R- _____	R- _____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
403.5 [FR19] ² 	Automatic or gravity dampers are installed on all outdoor air intakes and exhausts.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Insulation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
303.1 [IN13] ² 	All installed insulation is labeled or the installed R-values provided.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
402.1.1, 402.2.4, 402.2.5 [IN3] ¹ 	Wall insulation R-value. If this is a mass wall with at least ½ of the wall insulation on the wall exterior, the exterior insulation requirement applies.	R-_____ ☐ Wood ☐ Mass ☐ Steel	R-_____ ☐ Wood ☐ Mass ☐ Steel	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
303.2 [IN4] ¹ 	Wall insulation is installed per manufacturer's instructions.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	

Additional Comments/Assumptions:

Section # & Req.ID	Final Inspection Provisions	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
402.1.1, 402.2.1, 402.2.2 [FI1] ¹ 	Ceiling insulation R-value. Where > R-30 is required, R-30 can be used if insulation is not compressed at eaves. R-30 may be used for 500 ft ² or 20% (whichever is less) where sufficient space is not available.	R-____ ☐ Wood ☐ Steel	R-____ ☐ Wood ☐ Steel	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Envelope Assemblies table for values.
303.1.1.1, 303.2 [FI2] ¹ 	Ceiling insulation installed per manufacturer's instructions. Blown insulation marked every 300 ft ² .			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
402.2.3 [FI3] ¹ 	Attic access hatch and door insulation ≥ R-value of the adjacent assembly.	R-____	R-____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
402.4.2, 402.4.2.1 [FI17] ¹ 	Building envelope tightness verified by blower door test result of <7 ACH at 50 Pa. This requirement may instead be met via visual inspection, in which case verification may need to occur during Insulation Inspection.	ACH 50 = ____	ACH 50 = ____	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
403.2.2 [FI4] ¹ 	Post construction duct tightness test result of ≤8 cfm to outdoors, or ≤12 cfm across systems. Or, rough-in test result of ≤6 cfm across systems or ≤4 cfm without air handler. Rough-in test verification may need to occur during Framing Inspection.	____ cfm	____ cfm	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
403.1.1 [FI9] ² 	Programmable thermostats installed on forced air furnaces.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
403.1.2 [FI10] ² 	Heat pump thermostat installed on heat pumps.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
403.4 [FI11] ² 	Circulating service hot water systems have automatic or accessible manual controls.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
404.1 [FI6] ¹ 	50% of lamps in permanent fixtures are high efficacy lamps.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
401.3 [FI7] ² 	Compliance certificate posted.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
303.3 [FI18] ³ 	Manufacturer manuals for mechanical and water heating equipment have been provided.			☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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2009 IECC Energy Efficiency Certificate

Insulation Rating	R-Value
Above-Grade Wall	17.30
Below-Grade Wall	19.00
Floor	0.00
Ceiling / Roof	50.00
Supply ducts in attics Min. R-8 All other ducts Min. R-6	
Ductwork (unconditioned spaces):	_____

Glass & Door Rating	U-Factor	SHGC
Window	0.34	
Door	0.14	

Heating & Cooling Equipment	Efficiency
Heating System: _____ Furnace	95.1% afue
Cooling System: _____	_____
Water Heater: _____ 50 gallon electric	.91 EF

Name: Brecken Sarge Date: _____

Comments

DUCT AIR FLOW AND SIZING WORKSHEET (MANUAL J)

This design is the property of Karsten Homes - 993 and cannot be used without authorization. This design is exclusively for use with new homes built by Karsten Homes - 993. Use with homes built by other companies is strictly prohibited.

Model Number: RC4068A STANKO				Date: 10/26/16			Insulation: 19 crawl-19-50				
1		Name of Room Fort Collins, Colorado						Entire House			
2		Running Feet of Exposed Wall						217.0			
3		Ceiling Height at Walls (Ft) and Gross Wall Area (SqFt)						8.5 ft	1845	sq. ft	
4		Floor Plan Area (SqFt)							2466	sq. ft	
5		Gross Ceiling Area							2466	sq. ft	
Type of Exposure			Const. Number	Panel Faces	HTM		Area or Length	Btuh			
					Htg.	Clg.		Heating	S-Clg.	L-Clg.	
6a	Windows and Glass Doors	a	1E	W	24.85	33.88	382.10	9496	12945		
		b									
		c									
6b	Skylights	a									
7	Metal Door	a	11		35.5	11	60	2130	660		
		b									
		c									
8	Above Grade Walls	a	12B		3.76	0.71	1403	5280	997		
		b	12B		3.76	0.71	868	3267	617		
		c									
9	Below Grade Walls	a									
		b									
		c									
10	Ceiling	a	16B		1.42	0.92	2466	3502	2269		
11a	Passive Floors	a									
		b									
12	Infiltration	Heat Loss				8041	Btuh	WAR 1.0	8041		
		Sensible Gain				1812	Btuh			1812	
		Latent Gain				-2451	Btuh				-2451
13	Internal	a	Occupants at 230 and 200 Btuh				4		920	800	
		b	Scenario Number 1						2400		
		c	Default Adjustments						0		
		d	Individual Appliances								
		e	Plants								
14	Subtotals	Sum Lines 6 through 11a + line 12 + line 13						31716	22620	-1651	
15	Duct Loads	ELF-Loss and ELF-Gain		0.217	0.099		6871	2250			
		Latent Gain							623		
16	Ventilation Loads	Vent CFM	122.27	Exh	122.27		8041	1812	-2451		
17	Winter Humidification Load				Gal / Day	6.78		2492			
18	Piping Load										
19	Blower Heat										
20	Total Load	Sum Lines 11b + lines 14 through 19						49,120	26,682	-3,479	

DUCT AIR FLOW AND SIZING WORKSHEET (MANUAL J)

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1	Dining				Kitchen/Utility				Living Room			
2	112.4 sq. ft				200.7 sq. ft				531.0 sq. ft			
3	8.5 ft	70.8 sq. ft			8.5 ft	0.0 sq. ft			8.5 ft	396.7 sq. ft		
4		112 sq. ft				201 sq. ft				531 sq. ft		
5		112.4 sq. ft				200.7 sq. ft				531.0 sq. ft		
6a	Area or Length	Btuh			Area or Length	Btuh			Area or Length	Btuh		
		Heating	S-Clg.	L-Clg.		Heating	S-Clg.	L-Clg.		Heating	S-Clg.	L-Clg.
	25.60	637	868		0.00	0	0		128.00	3181	4337	
6b												
7									20.00	710	220	
8	45.2	171	33		0.0	0	0		248.7	936	177	
	33.3	126	24		0.0	0	0		186.7	703	133	
9												
10	112.4	160	104		200.7	285	185		531.0	755	489	
11a												
12	WAR	309			WAR	0			WAR	1729		
	0.04		70		0.00		0		0.22		390	
				-94			0					-527
13	0		0	0	0		0	0	1		230	200
			0				1500				900	
			0				0				0	
14		1403	1099	-94		285	1685	0		8014	6876	-327
15		304	109			62	168			1736	684	
16												
17												
18												
19			0				0				0	
20		1,707	1,208	-94		347	1,853	0		9,751	7,560	-327

DUCT AIR FLOW AND SIZING WORKSHEET (MANUAL J)

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1	Utility				Master Bedroom				Master Bath			
2	396.0 sq. ft				234.0 sq. ft				301.4 sq. ft			
3	8.5 ft	364.1 sq. ft			8.5 ft	352.8 sq. ft			8.5 ft	189.8 sq. ft		
4		396 sq. ft				234 sq. ft				301 sq. ft		
5		396.0 sq. ft				234.0 sq. ft				301.4 sq. ft		
6a	Area or Length	Btuh			Area or Length	Btuh			Area or Length	Btuh		
		Heating	S-Clg.	L-Clg.		Heating	S-Clg.	L-Clg.		Heating	S-Clg.	L-Clg.
	20.00	497	678		80.00	1988	2711		22.90	570	776	
6b												
7	20.00	710	220									
8												
9												
10	396.0	563	365		234.0	333	216		301.4	429	278	
11a												
12	WAR	1587			WAR	1538			WAR	827		
	0.20		358		0.19		347		0.10		186	
				-484				-469				-252
13	2		460	400	0		0	0	0		0	0
			500				0				0	
			0				0				0	
14		5222	2934	-84		5511	3586	-469		2792	1423	-252
15		1131	292			1194	357			605	142	
16												
17												
18												
19			0				0				0	
20		6,353	3,225	-84		6,705	3,942	-469		3,397	1,565	-252

DUCT AIR FLOW AND SIZING WORKSHEET (MANUAL J)

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1	Bedroom #2				Guest Bath				Bedroom #3			
2	157.4 sq. ft				72.0 sq. ft				153.0 sq. ft			
3	8.5 ft	99.2	sq. ft		8.5 ft	45.3	sq. ft		8.5 ft	211.1	sq. ft	
4		157	sq. ft			72	sq. ft			153	sq. ft	
5		157.4	sq. ft			72.0	sq. ft			153.0	sq. ft	
6a	Area or Length	Btuh			Area or Length	Btuh			Area or Length	Btuh		
		Heating	S-Clg.	L-Clg.		Heating	S-Clg.	L-Clg.		Heating	S-Clg.	L-Clg.
	20.00	497	678		2.60	65	89		40.00	994	1356	
6b												
7												
8	79.2	299	57		42.7	161	31		171.1	644	122	
	46.7	176	34		21.3	81	16		99.3	374	71	
9												
10	157.4	224	145		72.0	103	67		153.0	218	141	
11a												
12	WAR	432			WAR	198			WAR	920		
	0.05		97		0.02		45		0.11		207	
				-132				-60				-280
13	0		0	0	0		0	0	1		230	200
			0				0				0	
			0				0				0	
14		1628	1011	-132		608	248	-60		3150	2127	-80
15		353	101			132	25			682	212	
16												
17												
18												
19			0				0				0	
20		1,981	1,112	-132		739	272	-60		3,833	2,339	-80

DUCT AIR FLOW AND SIZING WORKSHEET (MANUAL J)

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1	Office				0				0			
2	308.4 sq. ft				0.0 sq. ft				0.0 sq. ft			
3	8.5 ft	114.8	sq. ft		8.5 ft	0.0	sq. ft		8.5 ft	0.0	sq. ft	
4		308	sq. ft			0	sq. ft			0	sq. ft	
5		308.4	sq. ft			0.0	sq. ft			0.0	sq. ft	
6a	Area or Length	Btuh			Area or Length	Btuh			Area or Length	Btuh		
		Heating	S-Clg.	L-Clg.		Heating	S-Clg.	L-Clg.		Heating	S-Clg.	L-Clg.
	43.00	1069	1457		0.00	0	0		0.00	0	0	
6b												
7	20.00	710	220									
8	51.8	195	37		0.0	0	0		0.0	0	0	
	54.0	204	39		0.0	0	0		0.0	0	0	
9												
10	308.4	438	284		0.0	0	0		0.0	0	0	
11a												
12	WAR	500			WAR	0			WAR	0		
	0.06		113		0.00		0		0.00		0	
				-152			0				0	
13	0		0	0	0		0	0	0		0	0
			0				0				0	
			0				0				0	
14		3116	2150	-152		0	0	0		0	0	0
15		675	214			0	0			0	0	
16												
17												
18												
19			0				0				0	
20		3,791	2,364	-152		0	0	0		0	0	0

DUCT AIR FLOW AND SIZING WORKSHEET (MANUAL D)

Manufacturer: Karsten Homes - 993
2700 Karsten Ct SE
Albuquerque, NM

Model: RC4068A STANKO
System Type: Perimeter Registers w/ Flex crossovers
Design Location: Fort Collins, Colorado
Trunk Material: Metal
System Location: Floor
Blower CFM: 1220 @ 0.5 E.S.P
Duct Design CFM: 1427
System FR: 0.080

Date: 10/26/16

49,120 btuh Total Heat Loss
23,203 btuh Total Heat Gain

Equipment: 15 kw
Fan Setting:

Design Conditions	99% DB =	1 F	1% DB =	91 F
			WB =	59 F

Room - by - Room Analysis

Unvented Crawl Space Design per R408.3= 49 cfm 5in round 3 x 9 6 251 fpm

Room	Trunk / Crossover	Total Eq. Length	Heat Btuh	Cool Btuh	Heat cfm	Cool cfm	Design cfm	Round Size	Rect (i.d.)	x	Size (i.d.)	Round Size	Velocity fpm
Master Bedroom	1 / 1	294	3352	1971	83	90	90	6				6	459
Master Bedroom	1 / 1	302	3352	1971	83	90	90	6				6	459
Master Bath	1 / 1	243	1699	783	42	36	42	5				6	215
Master Bath	1 / 1	248	1699	783	42	36	42	5				6	215
Bedroom #2	2 / 1	286	1981	1112	49	51	51	5				6	259
Guest Bath	2 / 1	251	739	272	18	12	18	3				6	93
Bedroom #3	2 / 1	302	3833	2339	95	107	107	7				6	545
Living Room	3 / 2	272	3250	2520	81	115	115	7				6	587
Kitchen/Utility	3 / 2	219	173	926	4	42	42	5				6	216
Kitchen/Utility	4 / 2	218	173	926	4	42	42	5				6	216
Office	4 / 2	266	1896	1182	47	54	54	5				6	275
Office	4 / 2	272	1896	1182	47	54	54	5				6	275
Living Room	5 / 3	262	3250	2520	81	115	115	7				6	587
Living Room	5 / 3	270	3250	2520	81	115	115	7				6	587
Dining	6 / 3	255	1707	1208	42	55	55	5				6	281
Utility	6 / 3	271	6353	3225	158	147	158	8				6	804

		38604	25439	959	1163	1192				
Trunk #	Room(s)				Design cfm	Square Duct Size	Round Duct Size	Final Square Duct Size	Final Round Size	Final Velocity fpm
Main Trunk #1	Master BedroomMaster BedroomMaster Bath	265			265	5x14	8	5x14	9	599
Main Trunk #2	Bedroom #2Guest BathBedroom #3	176			176	5x14	7	5x14	9	399
Main Trunk #3	Living RoomKitchen/Utility	158			158	5x14	7	5x14	9	357
Main Trunk #4	Kitchen/UtilityOfficeOffice	150			150	5x14	7	5x14	9	340
Main Trunk #5	Living RoomLiving Room	230			230	5x14	8	5x14	9	522
Main Trunk #6	DiningUtility	213			213	5x14	8	5x14	9	482
Main Trunk #7										
Crossover #1	Master BedroomMaster BedroomMaster Bath	441			441		12		12	561
Crossover #2	Living RoomKitchen/UtilityKitchen/UtilityOffice	308			308		10		12	392
Crossover #3	Living RoomLiving RoomDiningUtility	443			443		12		12	565
Crossover #4										

2 Return(s) @ a length of	17 ft	and	x	Return Grill in Door	1220	For Duct(s)	13in each	5x14	14	571
				Max CFMs for Door Grill					#DIV/0!	#DIV/0!

Equivalent lengths - 90s=50ft, Toe-Kick=95ft, In-line=80ft, Perimeter Boots=80ft, Crossovers=50ft
Registers - 4x10 will carry 120cfm max.
0 Fiberglass is equal to 0in round size
0 Fiberglass is equal to 0in round size
0 Fiberglass is equal to 0in round size
5x14 Metal is equal to 9" round size
3x9 in-line is equal to 5" round size

Maximum Overage

Maximum Total Cooling per Manual S:	26,683	btuh	15%	
Maximum Sensible Cooling per Manual S:	30,684	btuh	15%	
Maximum Heating per Manual S:	68,768	btuh	40%	or 20kw

Note: According to Manual S, if year-round comfort is desired, and if the cooling load is large in comparison to the heating load, a significantly oversized furnace may be required to obtain blower performance that is compatible with the size of the cooling coil.

This design is the property of Karsten Homes - 993 and cannot be used without authorization. This design is exclusively for use with new homes built by Karsten Homes - 993. Use with homes built by other companies is strictly prohibited.

Friction Rate Worksheet															
Step #1	Manufacturer's Blower Data														
	ESP =	0.50													
	CFM =	1220													
Step #2	Device Pressure Losses														
	Direct expansion refrigerant coil =	0.1													
	Electric resistance heating coil =	0													
	Hot water coil =	0													
	Heat exchanger =	0													
	Low efficiency filter =	0.1													
	High or mid-efficiency filter =	0													
	Electronic filter =	0													
	Humidifier =	0													
	Supply outlet =	0.03													
	Return grille =	0.03													
	Balancing damper =	0													
	Other device =	0													
	Total DPL =	0.26													
Step #3	Available Static Pressure														
	ASP =	0.24	IWC												
	ASP = (ESP - DPL)														
Step #4	Total Effective Length (TEL)														
	TEL =	319	ft												
	Supply-side TEL + Return-side TEL														
Step #5	Friction Rate Design Value (FR)														
	FR =	0.08													
	FR = IWC per 100ft														
	<table border="1"> <thead> <tr> <th colspan="3">EQUIPMENT INFORMATION</th> </tr> <tr> <td></td> <td>Med-Hi</td> <td>ESP</td> </tr> <tr> <th colspan="3">NUMBERS INCLUDE COIL</th> </tr> <tr> <td>M7RL</td> <td>1220</td> <td>0.5</td> </tr> </thead></table>			EQUIPMENT INFORMATION				Med-Hi	ESP	NUMBERS INCLUDE COIL			M7RL	1220	0.5
EQUIPMENT INFORMATION															
	Med-Hi	ESP													
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OFF FRAME BASEMENT & CRAWL FOUNDATION DESIGN FOR:

40' - 0 " MIN. TO 41' - 0 " MAX. 3-SECTION MODULAR
1 STORY- 30 PSF ATTIC LIVE

30 psf live load habitable attic and attic served with fixed stairs

**PERIMETER ANCHORED SYSTEM- BUILDING IS SECURED TO FOUNDATION WALLS TO SUPPORT WIND
AND SEISMIC FORCES.**

SIDEWALLS ARE SUPPORTED (PERIMETER BLOCKED)

BUILDING CODE INFORMATION:

IRC (2012)
ASCE 7-10

BUILDING SITE INFORMATION:

*MAXIMUM ULTIMATE/DESIGN WIND SPEED & EXPOSURE: 117/ 90 MPH EXPOSURE C-enclosed

MINIMUM SOIL BEARING CAPACITY: 1500

MAXIMUM GROUND SNOW(S): 119.5 PSF,

Flat roof snow load (Pg)=80.0* PSF

SEISMIC DESIGN CATEGORY: C

DESIGN SPECTRAL RESPONSE (S_{DS}): 0.49

SEISMIC SOIL SITE CLASS: D

HOME INFORMATION:

UNIT WIDTH: 40' - 0 " MIN. TO 41' - 0 " MAX.

MAX. UNIT LENGTH: 68 ft.

ROOF PITCH: 2/12 to 3/12

DESIGN LOADS: 40 PSF FL. LL., 10PSF T.C.D.L., 10PSF B.C.
D.L., 13PSF FL. DL. &, 30PSF B.C.L.L

MAX. SIDEWALL HEIGHT: 108 INCHES

TOTAL MATING WALL RIM JOIST BEAMS: (4) 2X10 #2 SPF

RIM JOIST SPLICES: 6" X 6" MiTek MT20 metal plates each side

MODEL #: RC4068A

OFF FRAME FLOOR

PLANT NUMBER: 993

**Ultimate wind speed Vult. Per ASCE 7-10/ allowable stress design wind speed Vasd*

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be used without authorization. This design is exclusively for
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Model: RC4068A
Customer: STANKO

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Preface

This foundation design manual is dedicated to the ever-growing trend to place homes over basements and permanent foundations. CMH Manufacturing, Inc. has attempted to address the more common installation configurations. These may or may not be the only acceptable designs for basements or permanent foundations. If deviations are made from these details, it is the homeowner's and/or installation contractor's responsibility to obtain proper documentation and engineer's details of construction acceptable to the local authority having jurisdictions. CMH Manufacturing, Inc. will not supply any details other than what is contained in the following design manual. If an alternate design is requested it must be provided by an independent engineer subject to local approval. The owner/contractor is responsible for any additional construction details, permits, inspections and fees associated with these items.

Setting a home over a basement or permanent foundation requires special knowledge, experience and equipment to accomplish a safe and proper set. Contractors performing this type of installation must be licensed, bonded and insured to protect all aspects of this type of work.

Instructions

1. Determine site soil classification, (see table R405.1).
2. The provided foundation and anchorage designs are not applicable for the following conditions. In all these cases a complete geotechnical evaluation must be performed and foundation must be designed by a professional engineer in accordance with section 1805.8 (IBC) for site specific conditions.
 - Site contains OL, OH or Pt class soils.
 - Site contains compressible or shifting soils.
 - Site contains expansive soils per IRC (R403.1.8.1) or per local authority and adopted code.
 - Site contains soils which do not provide the minimum allowable soil bearing strength as specified per the provided designs.
 - Foundation walls support unbalanced loads on opposite sides of building, such as a daylight basement or walk out basement where the building aspect ratio, L/W, exceeds the values specified in Table L.
 - Site with soils subject to liquefaction or soil containing high concentration of sulfate.
3. Determine foundation wall height for each wall of foundation. Reference **Detail – D1 or D2** for wall height.
4. Determine height of backfill for each wall of foundation. Reference **Table L** when backfill heights along the foundation wall are unbalanced. Reference **Detail – D1 or D2** for perimeter foundation wall construction.
5. Determine what type of mateline supports will be used. Reference **Detail - D3, D4, D5 or D7** for mateline columns and **Detail – D14** for cross beams.
6. Determine if type H connector plates will be used around the perimeter of the building. Fastening and anchoring tables have been provided with and without the use of the H connectors.
7. Find the **Floor to Sill Plate & Sill Plate to Foundation** table for site soil classification.
8. Find site wall height and backfill height line and follow this line across. Heights are listed as maximums, therefore any line beneath (greater height) may be utilized for items 10 ,11 & 12 below.
9. If type H connectors will be installed the table labeled **With Type H Plate Connectors** can be utilized. Note (6) will specify spacing for H plates along sidewalls and Note (7) will specify spacing for H plates along each endwall.
10. Select desired rim to sill connection from line in table (E, F or G for sidewalls and E or G for endwalls).
11. Select desired anchor type (4 or 5) for sill to foundation wall connection and determine anchor spacing for sidewall and endwall under corresponding column.
12. Determine if shearwall foundation holddowns are required by checking far right column within selected row. See **Shearwall Foundation Holddown Detail (Detail D18)** for connection requirements .

The above process may be repeated as desired for different foundation wall and backfill combinations.

General Notes

1. Foundation plans and details developed by CMH Manufacturing, Inc. are provided to our company owned sales centers and wholesale distribution partners. Alternate foundation systems may be used in lieu of these plans provided they are designed by a local professional Engineer or Architect familiar with the local soil and climate conditions, and are approved by the local authority having jurisdiction.
2. All notes stating "in field" or "by owner" are obligations pertaining to owner/contractor.
3. Owner /Contractor shall provide complete foundation, including footing drains, vapor barrier, sill plate, anchor bolts, stair area, slab and footing reinforcement along with damp proofing, waterproofing, backfill, and all finish work per Chapter 4 of IRC or per adopted local building code.
4. Owner/Contractor shall be responsible for performing all work in accordance with previously approved construction details and obtaining all necessary inspections as required by local or state authorities.
5. Not designed for areas likely to have expansive, compressible, shifting, liquefaction, soil containing high concentration of sulfate or other unknown soil characteristics. In these conditions a local engineer must provide foundation design and the building official shall determine whether to require a soil test to determine the soil characteristics. This soil test shall be made by an approved testing agency using an approved method.
6. Pier spacing is dimensioned to centerline unless otherwise noted.
7. The foundation dimensions shown are nominal. An increase in module width should be expected due to module expansion, setting tolerances, etc. The foundation contractor should consult with the manufacturer of the modules prior to construction of the foundation to determine the actual width of the home and placement of anchors.
8. All steel support columns shall have protective coating and a load capacity equal to or greater than specified on foundation plan (k=1000 pounds).
9. All foundation construction materials and installation shall be in accordance with all state and local codes.
10. Backfill shall not be placed against the wall until the wall has sufficient strength and has been anchored to the floor above or has been sufficiently braced to prevent damage by the backfill. Heavy-equipment must be restricted to a minimum distance to the foundation at least equal to the depth of the foundation.
11. Solid cap block or cement fill required at top courses of all masonry piers or pilasters.
12. The foundation design has been designed to be placed in the seismic zone indicated on the cover of this document. Please note that all CMH structures have been designed for seismic (zone/category) A, B, or C only, unless otherwise noted on floor plan and cover page of these instructions.
13. All piers shall be constructed of 8"x8"x16" concrete masonry units conforming to ASTM C90 with a minimum compressive strength of 700 psi. Masonry foundation walls must be laid in type m or s mortar. When required per tables or details, piers of masonry units shall be laid in type m or s mortar. All dry stack masonry should be surfaced bonded with an approved adhesive product.

14. All reinforcing steel shall be Grade 60 minimum. All splices shall be lapped 24" minimum and splices shall be offset 30" minimum within same footer.
15. All concrete grout shall be 3000 psi at 28 days.
16. Reference the model plan drawing for specific foundation layout.
17. Concrete footings shall have a minimum compressive strength of 5000 psi at 28 days. Except may be 2500 psi with approved admixture that provides a water & vapor resistance at least equivalent to 5000 psi. Concrete foundation walls and other concrete exposed to weather shall have a minimum compressive strength of 3000 psi at 28 days and in moderate and severe weather areas the concrete shall be air entrained no less than 5 percent and not more than 7 percent. See table R301.2(1) and R402.2 of IRC
18. All exterior footings shall be placed at least 12" below the undisturbed ground surface. All exterior footings shall extend below the frost line or otherwise frost protected in accordance with Sections R403.1.4.1 through R403.1.4.2 of IRC or per adopted local building code.
19. Top of foundation walls shall extend a minimum of 6" above finished adjacent grade. Wood framing members, including wood sheathing, that rest on exterior foundation walls and are less than 8" from exposed earth shall be of naturally durable or preservative-treated wood. Wood floor joist shall not be closer than 18" from exposed ground in under floor space.
20. Contractor shall verify all site conditions and dimensions prior to starting foundation. Notify home manufacturer of any discrepancies immediately.
21. The foundation must be designed and built to local codes and ordinances and must be approved and inspected by local building officials.
22. Access shall be to all under floor spaces. Access shall be a minimum of 18" by 24". If mechanical equipment is installed in this area, please refer to the Mechanical Code for minimum access opening. Through wall access openings shall not be located under an exterior door.
23. Under floor space shall be ventilated with a net area ratio not less than 1 square foot for each 150 square feet of under floor space area placed in accordance with local codes. Ratio may be reduced to 1/1,500 where ground is covered with Class I vapor material.
24. Field installed wiring in basement is subject to local inspection. Basement smoke alarms must be installed at foot of stairs and interconnected with home smoke alarms and tested on site. Smoke alarms must be located, installed, and tested in conformance with local building requirements.
25. Large clear spans along mating wall require a column or pier at each end. See model specific foundation plan for required capacity and additional column requirements.
26. Basement stairs (widths, handrails, clearances, headroom, landings, fire protection, etc.) are the responsibility of the owner/contractor and must be constructed to comply with local building codes.
27. Owner/contractor shall not alter basement stair opening without written approval from CMH Manufacturing, Inc.

28. Lighting and receptacles in basement are the responsibility of owner/contractor.
29. Termite protection shall be provided per the building code and local requirements and are responsibility of owner/contractor.
30. Ground snow load is indicated on foundation plans. Snow load must be verified per locality.
31. This structure has not been designed to be located within flood hazard locations. When site is located in a flood hazard area as determined by the local authority having jurisdiction or flood hazard maps. The unit shall have lowest floor elevated above the design floor elevation. Foundation and anchorage designs shall be provided by a local engineer in conformance with locally adopted building code and ASCE-24-05.
32. All connection hardware, anchor bolts, straps, hold-downs, washers and fasteners shall be minimum of ASTM A653 Type G185 zinc coated galvanized or stainless when in contact with pressure treated sill plates or other pressure treated lumber.
33. Radon control, when required by a local jurisdiction, shall be provided and installed by others in accordance with appendix F of the IRC.
34. Topographic wind effects have not been considered. Home has not been designed to be located in areas designated as having local historical data documenting structural damage to buildings caused by wind speed-up at isolated hills, ridges and escarpments.
35. Surface drainage shall be diverted to a storm sewer or other approved collection point. Lots shall be graded to drain surface water away from foundation walls. The grade shall fall a minimum of 6 inches within the first 10 feet.
- 36 A 6-mil-thick polyethylene moisture barrier shall be applied over the porous layer with the basement floor constructed over the polyethylene.
37. Concrete and Masonry Foundation walls that retain earth and enclose interior spaces and floors below grade shall be damp proofed from the top of the footing to the finished grade. Masonry walls shall have not less than 3/8" Portland cement parging applied to the exterior of the wall. The parging shall be damp proofed in accordance with one of the following.
- a. Bituminous coating, b. 3 pound per sq. yard of acrylic modified cement, c. 1/8" coat of surface-bonding cement complying with ASTM C887, d. Material permitted for waterproofing per Section R406.2, e. Other approved methods or materials.
38. Concrete and masonry foundation walls that retain earth and enclose interior spaces and floors below grade in areas of high water table or other severe soil-water conditions shall be waterproofed from the top of the footing to the finished grade in accordance with one of the following:
- a. 2-ply hot-mopped felts, b. 55 pound rolled roofing, c. 6-mil polyvinyl chloride, 6-mil polyethylene, d. 40-mil polymer-modified asphalt., e. 60-mil flexible polymer cement, f. 1/8" cement-based, fiber-reinforced, waterproof coating, g. 60-mil solvent-free liquid-applied synthetic rubber.
39. If building is located within a wind borne debris region glazed openings shall be protected from wind borne debris. Wind Borne debris protection is the responsibility of others.
40. When Geotechnical report is required or available, all recommendations shall be followed and geotechnical engineer shall review all foundation plans to verify applicability with recommendations and engineer shall be present on regular basis during site preparation, fill placement and foundation excavation.
41. Self-closing rated doors shall be installed between garage and house (on-site by other).(R302.5.1)
42. The home has not been constructed to be placed over unprotected basements or crawl spaces intended for storage or containing fuel-fired appliances. It is the responsibility of other to provide 1/2" gypsum or equivalent on the underside of the floor when required by R501.3.

SOIL CLASSIFICATION

TABLE R405.1

LATERAL SOIL LOAD	UNIFIED SOIL CLASSIFICATION SYSTEM SYMBOL	SOIL DESCRIPTION	DRAINAGE CHARACTERISTICS ^a	FROST HEAVE POTENTIAL	VOL. CHANGE POTENTIAL EXPANSION ^b	ALLOWABLE SOIL PRESSURE
30 psf LATERAL SOIL LOAD	GW	Well-graded gravels, gravel sand mixtures, little or no fines	Good	Low	Low	3000
	GP	Poorly graded gravel or gravels sand mixtures, little or no fines	Good	Low	Low	3000
	SW	Well-graded gravels, gravelly sands, little or no fines	Good	Low	Low	2000
	SP	Poorly graded sand, or gravelly sands, little or no fines	Good	Low	Low	2000
45 psf LATERAL SOIL LOAD	GM	Silty gravels, gravel-sand-silt mixtures	Good	Medium	Low	2000
	SM	Silty sand, sand-silt mixtures	Good	Medium	Low	2000
	GC	Clayey gravels, gravel-sand-clay mixtures	Medium	Medium	Low	2000
60 psf LATERAL SOIL LOAD	SC	Clayey sands, sand-clay mixture	Medium	Medium	Low	2000
	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	Medium	High	Low	1500
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	Medium	Medium	Medium to Low	1500
	CH	Inorganic clays of high plasticity, fat clays	Poor	Medium	High	1500
	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	Poor	High	High	1500
SPECIAL INSPECTION REQUIRED	OL	Organic silts and organic silty clays of low plasticity	Poor	Medium	Medium	SPECIAL INSPECTION REQUIRED
	OL	Organic clays of medium to high plasticity, organic silts	Unsatisfactory	Medium	High	
	Pt	Peat and other highly organic soils	Unsatisfactory	Medium	High	

a. The percolation rate for good drainage is over 4 inches per hour, medium drainage is 2 inches to 4 inches per hour, and poor is less than 2 inches per hour.

b. Soils with low potential expansion typically have a plasticity index (PI) of 0 to 15, soils with a medium potential expansion have a PI of 10 to 35 and soils with a high potential expansion have PI greater than 20.

TABLE R404.1.1:IRC (2012) PERIMETER FOUNDATION WALL MINIMUM REQUIREMENTS [Seismic Seismic Zone: Design]

Max. Wall Height	Maximum Unbalanced Fill	GW, GP, SW, & SP Soil Class (30 PSF)			GM, GC, SM-SC, & ML Soil Class (45 PSF)			SC, MH, ML-CL, & Inorganic CL Soil Class (60 PSF)		
		Plain Masonry ^{1,8,9} Walls	8" Reinforced Masonry Walls ^{5,9}	8" Poured Concrete Walls ^{6, 7}	Plain Masonry ^{1,8,9} Walls	8" Reinforced Masonry Walls ^{5,9}	8" Poured Concrete Walls ^{6, 7}	Plain Masonry ^{1,8,9} Walls	8" Reinforced Masonry Walls ^{5,9}	8" Poured Concrete Walls ^{6, 7}
0 to 5 feet	4	6 in. solid (3) or 8 in.	-	PC	6 in. solid (3) or 8 in.	-	PC	6 in. solid (3) or 8 in.	-	PC
	5	6 in. solid (3) or 8 in.	-	PC	8 in.	-	PC	10 in.	-	PC
6 feet to 7 feet	4	6 in. solid (3) or 8 in.	#4 @ 48 in. o.c.	PC	8	#4 @ 48 in. o.c.	PC	8	#4 @ 48 in. o.c.	PC
	5	6 in. solid (3) or 8 in.	#4 @ 48 in. o.c.	PC	10 in.	#4 @ 48 in. o.c.	PC	10 in.	#4 @ 48 in. o.c.	PC
	6	10 in.	#4 @ 48 in. o.c.	PC	12 in.	#5 @ 48 in. o.c.	PC	10 in. solid (3)	#5 @ 48 in. o.c.	#5 @ 48 in. o.c.
	7	12 in.	#5 @ 48 in. o.c.	PC	10 in. solid (3)	#6 @ 48 in. o.c.	#5 @ 46 in. o.c.	12 in. solid (3)	#6 @ 40 in. o.c.	#6 @ 48 in. o.c.
8 feet	4	6 in. solid (3) or 8 in.	#4 @ 48 in. o.c.	PC	6 in. solid (3) or 8 in.	#4 @ 48 in. o.c.	PC	8	#4 @ 48 in. o.c.	PC
	5	6 in. solid (3) or 8 in.	#4 @ 48 in. o.c.	PC	10 in.	#4 @ 48 in. o.c.	PC	12 in.	#4 @ 48 in. o.c.	PC
	6	10 in.	#4 @ 48 in. o.c.	PC	12 in.	#5 @ 48 in. o.c.	PC	12 in. solid (3)	#5 @ 48 in. o.c.	#6@32in o.c.
	7	12 in.	#5 @ 48 in. o.c.	PC	12 in. solid (3)	#6 @ 48 in. o.c.	#5 @ 41 in. o.c.	Footnote (4)	#6 @ 40 in. o.c.	#6@32 in. o.c.
	8	10 in. solid (3)	#5 @ 48 in. o.c.	#6@41	12 in. solid (3)	#6 @ 48 in. o.c.	#6 @ 43 in. o.c.	Footnote (4)	#6 @ 32 in. o.c.	#6@18 in. o.c.
9 feet	4	6 in. solid (3) or 8 in.	#4 @ 48 in. o.c.	PC	6 in. solid (3) or 8 in.	#4 @ 48 in. o.c.	PC	8 in.	#4 @ 48 in. o.c.	PC
	5	8 in.	#4 @ 48 in. o.c.	PC	10 in.	#4 @ 48 in. o.c.	PC	12 in.	#5 @ 48 in. o.c.	PC
	6	10 in.	#4 @ 48 in. o.c.	PC	12 in.	#4 @ 48 in. o.c.	PC	12 in. solid (3)	#6 @ 48 in. o.c.	#6@35 in. o.c.
	7	12 in.	#5 @ 48 in. o.c.	PC	12 in. solid (3)	#6 @ 48 in. o.c.	#6@35 in. o.c.	Footnote (4)	#6 @ 40 in. o.c.	#6@32 in. o.c.
	8	12 in. solid (3)	#6 @ 48 in. o.c.	#6@36 in. o.c.	Footnote (4)	#6 @ 40 in. o.c.	#6@32 in. o.c.	Footnote (4)	#6 @ 24 in. o.c.	#6@28 in. o.c.
	9	Footnote (4)	#6 @ 40 in. o.c.	#6@35 in. o.c.	Footnote (4)	#6 @ 24 in. o.c.	#6@25 in. o.c.	Footnote (4)	#6 @ 16 in. o.c.	#6@24 in. o.c.
10 feet	8	NA	#6 @ 48 in. o.c.	#6 @ 35 in. o.c.	NA	#6 @ 32 in. o.c.	#6 @ 29 in. o.c.	NA	#6 @ 24 in. o.c.	#6 @ 21 in. o.c.
	9	NA	#6 @ 40 in. o.c.	#6@34 in. o.c.	NA	#6 @ 24 in. o.c.	#6@22 in. o.c.	NA	#6 @ 16 in. o.c.	#6@16 in. o.c.
	10	NA	#6 @ 32 in. o.c.	#6 @ 27 in. o.c.	NA	#6 @ 16 in. o.c.	#6 @ 17 in. o.c.	NA	#6 @ 16 in. o.c.	#6 @ 13 in. o.c.

Unbalanced backfill height is the difference in height between the exterior finish grade level and the top of the basement slab.

Backfill shall be placed only AFTER the home has been anchored to the foundation wall.

(1) - All block must conform to ASTM C90 (700 psi rated) and be laid in a running bond of Type M or S mortar with overlapping pattern .

UngROUTED hollow masonry units are permitted except where otherwise indicated.

(3) - Solid grouted hollow units or solid masonry units.

(4) - Wall construction per reinforced units or design required.

(5) - Vertical reinforcement shall be Grade 60 minimum. The distance from the face of the soil side of the wall to the center of vertical reinforcement shall be at least 5".

(6) - PC = Plain Concrete (Concrete with less reinforcement than minimum for reinforced concrete)

(7) - All reinforcement shall be Grade 60 minimum. The distance from the face of the soil side of the wall to the vertical reinforcement shall be at least 6 1/16", but not more than 6 11/16".

'All information above has been extracted from the 2009 IRC Tables R404.1.1(1), Tables R404.1.1(2) Tables R404.1.2(3)

(8)

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Maximum Aspect Ratio, L/W for Unbalanced Foundations

Maximum Wall Height	Maximum Unbalanced Fill	SOIL CLASS		
		GW, GP, SW, & SP (30 PSF)	GM, GC, SM-SC, & ML (45 PSF)	SC, MH, ML-CL, & Inorganic CL (60 PSF)
7 feet	4	4.0	4.0	4.0
	5	4.0	3.4	2.6
	6	3.0	2.0	1.5
	7	1.9	1.2	0.9
8 feet	4	4.0	4.0	4.0
	5	4.0	3.9	2.9
	6	3.4	2.3	1.7
	7	2.1	1.4	1.1
9 feet	8	1.4	1.0	0.7
	4	4.0	4.0	4.0
	5	4.0	4.0	3.3
	6	3.8	2.6	1.9
	7	2.4	1.6	1.2
	8	1.6	1.1	0.8
	9	1.1	0.8	0.6

Instructions:

- 1 - Determine foundation wall height, unbalanced fill depth, and soil class to determine aspect ratio from table above.
- 2 - Multiple "W" times aspect ratio.
- 3 - Result is equal to the maximum allowable building length on the exposed side.

Example 1 - check sidewall for 26'-8" x 60'-0" home.

Basement Wall Height = 8'-0"

Unbalanced backfill = 7'-0"

Soil Class = SP

Aspect Ratio from Table above = 2.1

$26.67 \times 2.1 = 56'-0"$ max. allowable length - **example fails**

Try again using 6'-0" max. unbalanced fill with an aspect ratio of 3.4.

$26.67 \times 3.4 = 90'-8"$ max. allowable length - **example passes**

Max. allowable backfill is 6'-0"

Example 2 - check endwall for 26'-8" x 60'-0" home.

Basement Wall Height = 8'-0"

Unbalanced backfill = 7'-0"

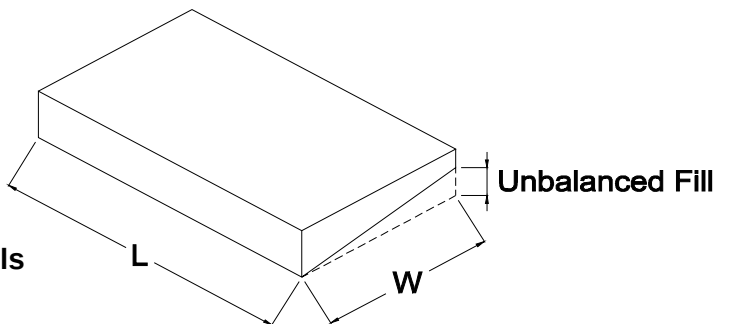
Soil Class = SP

Aspect Ratio from Table above = 2.1

$60 \times 2.1 = 126'-0"$ max. allowable length - **example passes**

"L" = total overall dimension of the building on the exposed side

"W" = the total overall dimension of the building on the side adjacent to the exposed side



Required Rim Joist to Sill Plate

Fastening at wall "L".

Use a 20 Gauge metal angle clip at 24" o.c. with (5) 8d nails per leg or an approved connector supplying 230 pounds per linear foot capacity.

Clayton home building group

UNBALANCED FOUNDATIONS (TABLE L)

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**TABLE M - MINIMUM CONCRETE BLOCK PIER AND FOOTER SIZE
AT MATING WALL COLUMNS (REF. DETAILS D3 OR D5)**

GROUND SNOW						# of Uplift Ties
MAXIMUM MATING LINE SPAN BETWEEN MATING WALL COLUMN SUPPORTS	4 '	(D) 40"x40"x12"				0
	6 '	(D) 40"x40"x12"				0
	8 '	(T) 48"x48"x16"				0
	10 '	(T) 48"x48"x16"				1
	12 '	(T) 48"x48"x16"				1
	14 '	(DR) 62"x62"x23"				1
	16 '	(DR) 62"x62"x23"				1
	18 '	(DR) 62"x62"x23"				1
	20 '	(DR) 62"x62"x23"				1
	22 '	(DR) 62"x62"x23"				1
	24 '	(DR) 62"x62"x23"				1
	26 '	(DR) 62"x62"x23"				1
	28 '	-964/+42,059				1
	30 '	-1,064/+44,373				1
	32 '	-1,164/+46,688				1
	34 '	-1,264/+49,003				1
	36 '	-1,364/+51,317				1
	46 '	-1,864/+62,891				1
SUPPORTS UNDER MATING OPENING AS CLEARSPANS IN FEET						
PIER SPACING		8.2 '				
PIER CONFIG.		(S) 28"x28"x10"				
SUPPORTS UNDER MATING WALLS- CLEARSPANS IN FEET						
PIER SPACING		4.5 '				
PIER CONFIG.		(D) 40"x40"x12"				

Girder beams construction to be (4) 2X10 #2 SPF joists.
Splices 6" X 6" MiTek MT20 metal plates each side

Chart Key:

(Pier Configuration) Min. footer width (inches) x Min. footer length (inches) x Min. footer depth (inches)

(S)= Single stack block configuration.

(D)= Double stack block configuration.

(T)= Triple stack block configuration.

(DR)=Double stack reinforced & fully grouted configuration.

IE. For 119.5 psf 160" box with 14' opening:Triple stack pier on a 62"x 62" sq. footer 23" deep footing.

41' 1 STORY- 30 PSF ATTIC LIVE OFF FRAME BASEMENT & CRAWL With Roof Pitch of 2/12 Min. to 3/12 Max.

NOTES: 1 DESIGNED FOR 90 MPH MAX. WIND SPEED.

2 DESIGNED FOR 1500 PSF MIN. ALLOWABLE SOIL BEARING CAPACITY.

3 *Ultimate wind speed Vult. Per ASCE 7-10/ allowable stress design wind speed Vasd & ASCE 7-10 &

4 MAX. MATING WALL OPENINGS LISTED IN CHART ASSUME OPENING IN BOTH HALVES. IF ANCHOR IS TIED TO ONLY ONE COLUMN (ONE HALF) THEN HALF THE OPENING SIZE CAN BE USED WHEN LOOKING UP VALUE IN TABLE ABOVE. PIERS SUPPORTS REQUIRED AT EACH SIDE OF DOOR OPENINGS AND ALL EXTERIOR WALL OPENINGS GREATER THAN 4'.

5 WHEN PIER CONFIGURATION IS NOT GIVEN IN CHART THE ACTUAL LOADS EXCEED ALL PREDESIGNED PIERS AND A LOCAL ENGINEER MUST DESIGN THE SUPPORTS FOR THE GIVEN LOADS (- UPLIFT/ + GRAVITY LOADS).

6 ALL PIERS SHALL BE EMBEDDED IN TYPE M OR S MORTAR.

Model: RC4068A
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**TABLE N - STRUCTURAL STEEL POST AND FOOTER SIZE AT
MATING WALL COLUMNS (REF. DETAIL D7)**

MATING WALL COLUMNS (REF. DETAIL D7)							Uplift force
GROUND SNOW		119.5					
MAXIMUM MATING LINE SPAN BETWEEN MATING WALL COLUMN SUPPORTS	4 '	(14k) 38"x38"X13"					0 #
	6 '	(20k) 44"x44"X14"					0 #
	8 '	(20k) 44"x44"X14"					0 #
	10 '	(20k) 44"x44"X14"					63.2 #
	12 '	(30k) 54"x54"X17"					163.2 #
	14 '	(30k) 54"x54"X17"					263.2 #
	16 '	(30k) 54"x54"X17"					363.2 #
	18 '	(30k) 54"x54"X17"					463.2 #
	20 '	-564/+32,450					563.2 #
	22 '	-664/+34,765					663.2 #
	24 '	-764/+37,079					763.2 #
	26 '	-864/+39,394					863.2 #
	28 '	-964/+41,709					963.2 #
	30 '	-1,064/+44,023					1063.2 #
	32 '	-1,164/+46,338					1163.2 #
	34 '	-1,264/+48,653					1263.2 #
	36 '	-1,364/+50,967					1363.2 #
	46 '	-1,864/+62,541					1863.2 #
SUPPORTS UNDER MATING OPENING -CLEARSPANS IN FEET							Girder bearing construction to be (4) 2X10 #2 SPS Splices 6" X 6" MiTek MT20 metal plates each side
POST SPACING	8.2 '						
FOOTER SIZE	(9k) 30"x30"X11"						
SUPPORTS UNDER MATING WALLS- CLEARSPANS IN FEET							
POST SPACING	4.5 '						
FOOTER SIZE	(14k) 38"x38"X13"						

Chart Key:

(Post Load)= Minimum allowable compression rating which post must be rated in kips (1000 lbs.).

(Post Capacity and Footer Size) Min. footer width (inches) x Min. footer length (inches) x Min. footer depth (inches)

Note: Steel piers must have a minimum steel base plate size of 4 inches x 5.5 inches which bears directly on footer sized per chart.

Minimum steel column top plate size of 4"x5.5"for 9000#; 6"x6"for 14000#; 6"x8"for 20000# & 6"x12"for 30000#

Minimum footer Reinforcement (Number of #4 bars each way):

Footer size	# of No. 4 bars	Footer size	# of No. 4 bars
30"x30"	3	44"x44"	6
38"x38"	5	54"x54"	9

41' 1 STORY- 30 PSF ATTIC LIVE OFF FRAME BASEMENT & CRAWL With Roof Pitch of 2/12 Min. to 3/12 Max.

NOTES: 1 DESIGNED FOR 90 MPH MAX. WIND SPEED.

2 DESIGNED FOR 1500 PSF MIN. ALLOWABLE SOIL BEARING CAPACITY.

3 *Ultimate wind speed Vult. Per ASCE 7-10/ allowable stress design wind speed Vasd & ASCE 7-10 &

4 MAX. MATING WALL OPENINGS LISTED IN CHART ASSUME OPENING IN BOTH HALVES. IF ANCHOR IS TIED TO ONLY ONE COLUMN (ONE HALF) THEN HALF THE OPENING SIZE CAN BE USED WHEN LOOKING UP VALUE IN TABLE ABOVE. PIERS SUPPORTS REQUIRED AT EACH SIDE OF DOOR OPENINGS AND ALL EXTERIOR WALL OPENINGS GREATER THAN 4'.

5 WHEN PIER CONFIGURATION IS NOT GIVEN IN CHART THE ACTUAL LOADS EXCEED ALL PREDESIGNED FOOTERS AND A LOCAL ENGINEER MUST DESIGN THE SUPPORTS FOR THE GIVEN LOADS (- UPLIFT/ + GRAVITY LOADS).

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Support and anchorage for 128" Max. Recess

NON CORNER- SPANS ARE NOT LOCATED WITH 6' OF END OF HOME

			PIER CONFIGURATION AND MINIMUM FOOTER SIZE UNDER SIDEWALL PORCH/ RECESS SUPPORT ^{1,4}									
GROUND SNOW			119.5 #		0 #		0 #		0 #		0 #	
Max. span ³	UPLIFT ¹⁰ LOAD	# Brk ²	w/ground anchors	w/concrete anchors	w/ground anchors	w/concrete anchors	w/ground anchors	w/concrete anchors	w/ground anchors	w/concrete anchors	w/ground anchors	w/concrete anchors
4	8.0332363 #	1	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"
6	12.049854 #	1	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"
8	16.066473 #	1	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"
10 **	20.083091 #	1	(D) 40"x40"x12"	(D) 40"x40"x12"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"
12 **	24.099709 #	1	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"

CORNER- SPANS ARE LOCATED WITH 6' OF END OF HOME

			PIER CONFIGURATION AND MINIMUM FOOTER SIZE UNDER SIDEWALL PORCH/ RECESS SUPPORT ^{1,4}									
GROUND SNOW			119.5 #		0 #		0 #		0 #		0 #	
Max. span ³	UPLIFT ¹⁰ LOAD	# Brk ²	w/ground anchors	w/concrete anchors	w/ground anchors	w/concrete anchors	w/ground anchors	w/concrete anchors	w/ground anchors	w/concrete anchors	w/ground anchors	w/concrete anchors
			(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)
4	104.27366 #	1	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"
			(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)
6	156.41049 #	1	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"
			(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)
8	208.54732 #	1	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"
			(D)	(D)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)
10 **	260.68414 #	1	40"x40"x12"	40"x40"x12"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"	28"x28"x10"
			(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
12 **	312.82097 #	1	40"x40"x12"	40"x40"x12"	40"x40"x12"	40"x40"x12"	40"x40"x12"	40"x40"x12"	40"x40"x12"	40"x40"x12"	40"x40"x12"	40"x40"x12"

Support and anchorage for 128" Max. Porch Depth

NON CORNER- SPANS ARE NOT LOCATED WITH 6' OF END OF HOME

			PIER CONFIGURATION AND MINIMUM FOOTER SIZE UNDER SIDEWALL PORCH/ RECESS SUPPORT ^{1,4}									
GROUND SNOW			119.5 #		0 #		0 #		0 #		0 #	
Max. span ³	UPLIFT ¹⁰ LOAD	# Brk ²	w/ground anchors	w/concrete anchors	w/ground anchors	w/concrete anchors	w/ground anchors	w/concrete anchors	w/ground anchors	w/concrete anchors	w/ground anchors	w/concrete anchors
4	8.0332363 #	1	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"
6	12.049854 #	1	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"
8	16.066473 #	1	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"
10 **	20.083091 #	1	(D) 40"x40"x12"	(D) 40"x40"x12"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"
12 **	24.099709 #	1	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"

CORNER- SPANS ARE LOCATED WITHIN 6' OF END OF HOME

			PIER CONFIGURATION AND MINIMUM FOOTER SIZE UNDER SIDEWALL PORCH/ RECESS SUPPORT ^{1,4}									
GROUND SNOW			119.5 #		0 #		0 #		0 #		0 #	
Max. span ³	UPLIFT ¹⁰ LOAD	# Brk ²	w/ground anchors	w/concrete anchors	w/ground anchors	w/concrete anchors	w/ground anchors	w/concrete anchors	w/ground anchors	w/concrete anchors	w/ground anchors	w/concrete anchors
4	104.27366 #	1	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"
6	156.41049 #	1	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"
8	208.54732 #	1	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"
10 **	260.68414 #	1	(D) 40"x40"x12"	(D) 40"x40"x12"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"	(S) 28"x28"x10"
12 **	312.82097 #	1	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"	(D) 40"x40"x12"

NOTES:

- Piers supports are required under all porch/ recess post and at intersection of sidewall (see key plan).
- # Brk- Number of uplift brackets required under the support column. Brackets per Detail D6. Brackets maybe installed individually or in pairs and must be tied to a ground anchor or concrete anchor with a minimum design capacity of 3150#. An alternate uplift connector may be used which has the required uplift load indicated above.
- NG- Indicates that uplift exceeds standard angle and tie down capacity and alternate design is require.
- Max. Span- Maximum distance between adjacent porch post or supports as measure parallel to box length.
- Piers- Indicates the minimum CMU block configuration (S)ingle, (D)ouble, (T)riple or (DR) (D)ouble (R)einforced and minimum footer size. See Detail D3 of D4 for pier configuration.
- w/ ground anchors- Minimum footer size for gravity load support at post. Uplift is taken to ground anchor anchors placed in soil.
- w/ concrete anchors- Minimum footer size based on gravity and uplift. Concrete anchors embedded into foot carry uplift load.
- off frame basement & crawl foundation design for: 40' - 0" min. to 41' - 0" max. 3-section modular
- designed for 90 mph max. wind speed.
- Desgin for 1500 psf min. allowable soil bearing capacity.
- Designed to the *Ultimate wind speed Vult. Per ASCE 7-10/ allowable stress design wind speed Vasd & ASCE 7-10
- ** :Intermediate supports are required along sidewall rim joist at 105.7" oc. max. & along mating wall rim joist at 98.7" oc. max.

Clayton home building
groupPORCH & RECESS
(TABLE P)

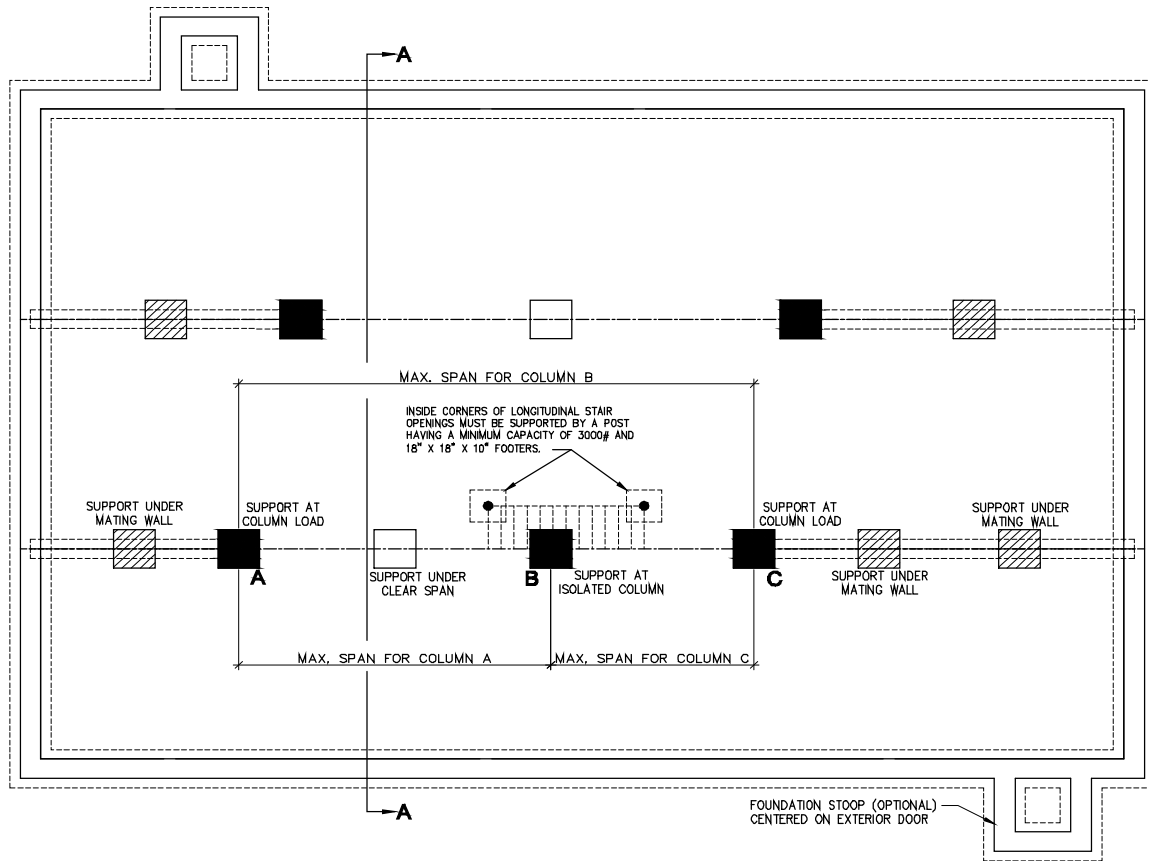
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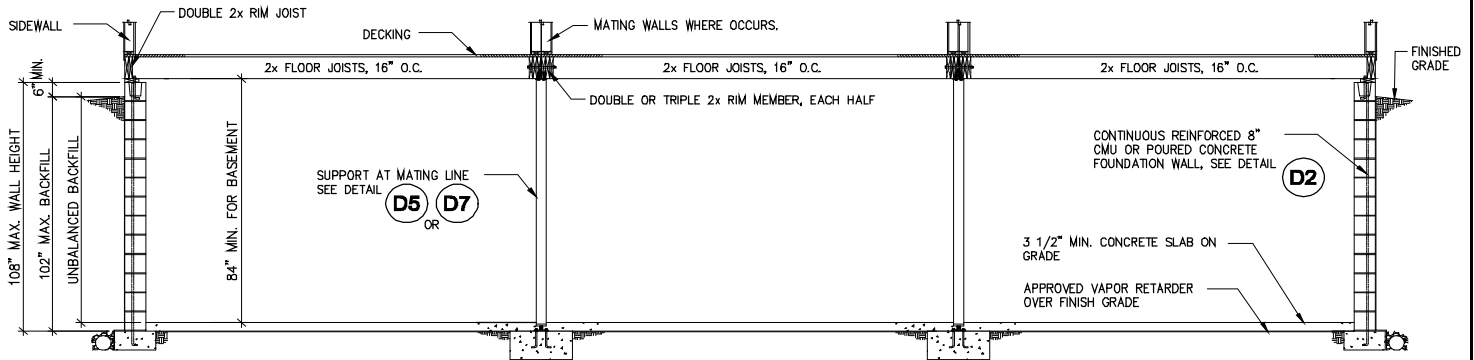
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Model: RC4068A
Customer: STANKO



KEY PLAN
OFF-FRAME BASEMENT - 3 SECTION
 NOT TO SCALE



CROSS SECTION A-A

NOTES:

1. MARRIAGE LINE SUPPORTS SHALL SUPPORT THE MARRIAGE WALL, COLUMNS, CROSSBEAMS AND STAIR LOADS WHERE OCCURS. REFER TO SPECIFIC FOUNDATION LAYOUT FOR LOCATION INFORMATION.
2. SEE GENERAL NOTES SECTION FOR VENTILATION, DRAINAGE AND OTHER FOUNDATION REQUIREMENTS.

Clayton home building group

KEY PLAN 13 - OFF-FRAME /
BASEMENT / 3 SECTION

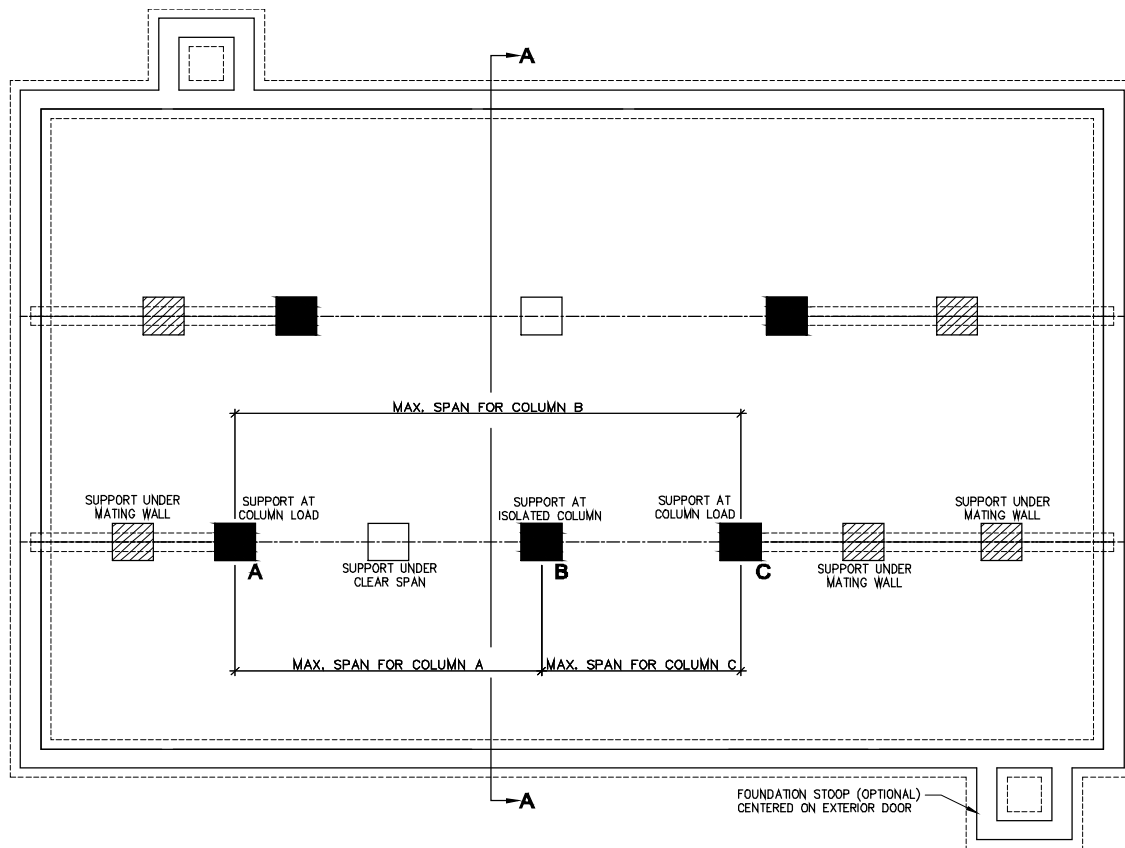
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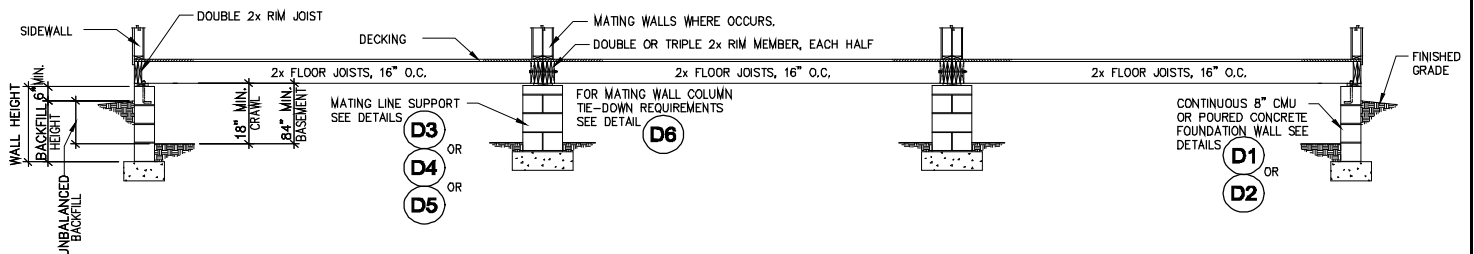
Model: RC4068A
 Customer: STANKO

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KEY PLAN
OFF-FRAME CRAWL SPACE - 3 SECTION
 NOT TO SCALE



CROSS SECTION A-A

NOTES:

1. MARRIAGE LINE SUPPORTS SHALL SUPPORT THE MARRIAGE WALL, COLUMNS, CROSSBEAMS AND STAIR LOADS WHERE OCCURS. REFER TO SPECIFIC FOUNDATION LAYOUT FOR LOCATION INFORMATION.
2. SEE GENERAL NOTES SECTION FOR VENTILATION, DRAINAGE AND OTHER FOUNDATION REQUIREMENTS.

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**KEY PLAN 14 - OFF-FRAME /
 CRAWL SPACE / 3 SECTION**

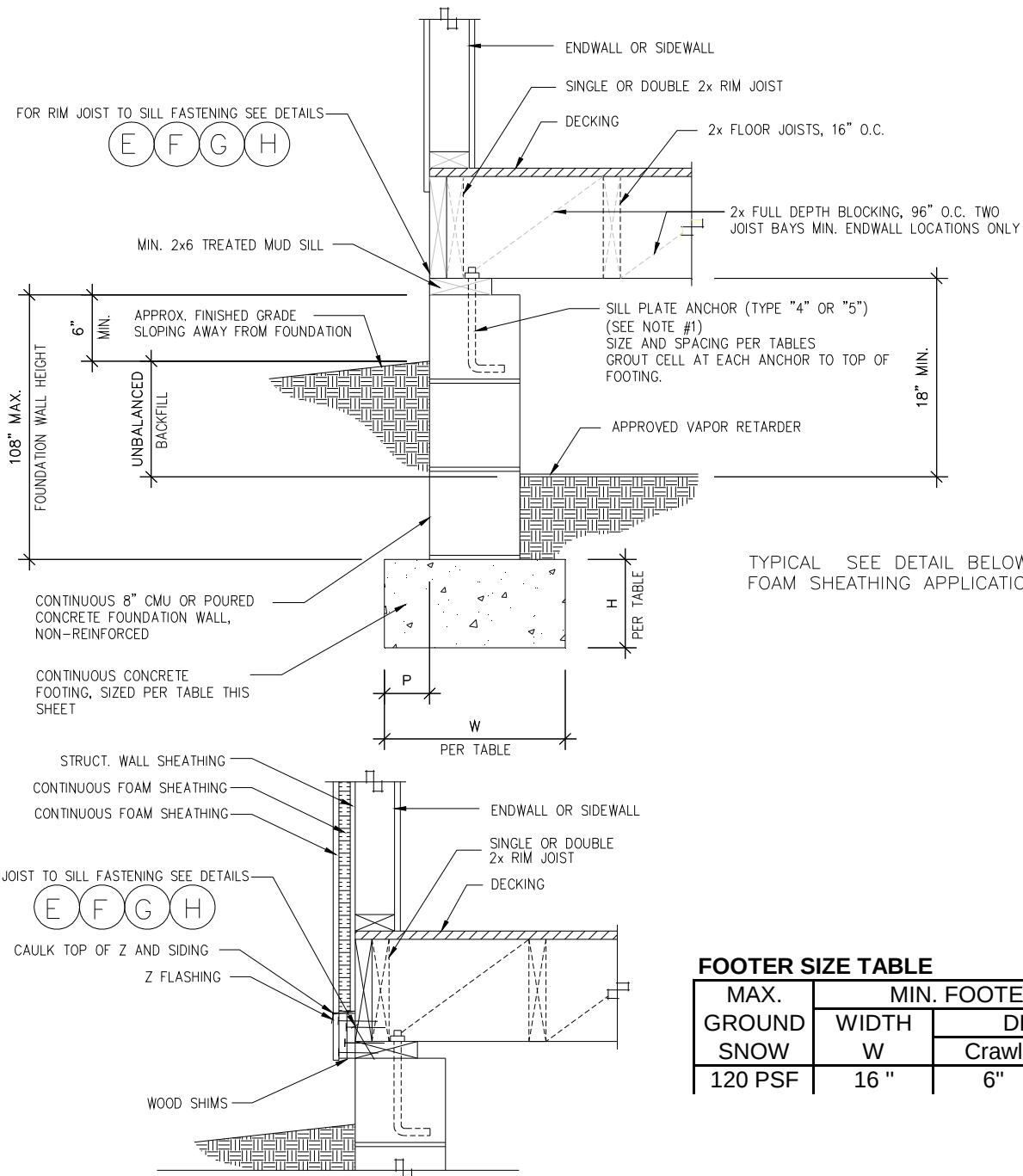
DATE: 05/25/07

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Model: RC4068A
 Customer: STANKO

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TYPICAL SEE DETAIL BELOW FOR FOAM SHEATHING APPLICATION.

FOOTER SIZE TABLE

MAX. GROUND SNOW	MIN. FOOTER SIZE		
	WIDTH W	DEPTH H	
		Crawl	Basement
120 PSF	16 "	6"	6"

NON-REINFORCED PERIMETER FOUNDATION WALL
BASEMENT OR CRAWLSPACE
MAX. 90 MPH WIND SPEED & SEISMIC ZONE C
41 ' WIDE 1 STORY- 30 PSF ATTIC LIVE

NOTES:

1) MUD SILL TO FOUNDATION ANCHORS:

TYPE 4: 1/2" DIAMETER STEEL ANCHOR BOLTS EMBEDDED 7" MIN. INTO CONCRETE FOUNDATION WALL OR CLOSE CELL CMU WITH 2"x2"x1/8" WASHERS AND NUTS. BOLT HEADS SHALL NOT BE RECESSED INTO SINGLE SILL PLATE.

TYPE 5: SIMPSON MAB OR MAS MUD SILL ANCHOR INSTALLED PER INSTALLATION INSTRUCTIONS.

2) RIM TO MUD SILL FASTENING AND SILL TO FOUNDATION ANCHOR SPACING SHALL BE THE MINIMUM OF:

- SPACING GIVEN IN APPLICABLE TABLES FOR UNIT CONFIGURATION AND WIND SPEED.
- SPACING GIVEN IN BACKFILL/ SIDEWALL TABLES FOR GIVEN UNIT CONFIGURATION, MAXIMUM BASEMENT WALL HEIGHT, BACKFILL DEPTH, AND LOCAL SOIL CLASSIFICATION.

3) DISTANCE FROM EDGE OF FOOTER TO FACE OF FOUNDATION WALL (P) SHALL NOT BE LESS THAN 2" AND SHALL NOT EXCEED THE FOOTER THICKNESS (H).

4) 1500 PSF MIN. ALLOWABLE SOIL BEARING CAPACITY.

Model: RC4068A Customer: STANKO

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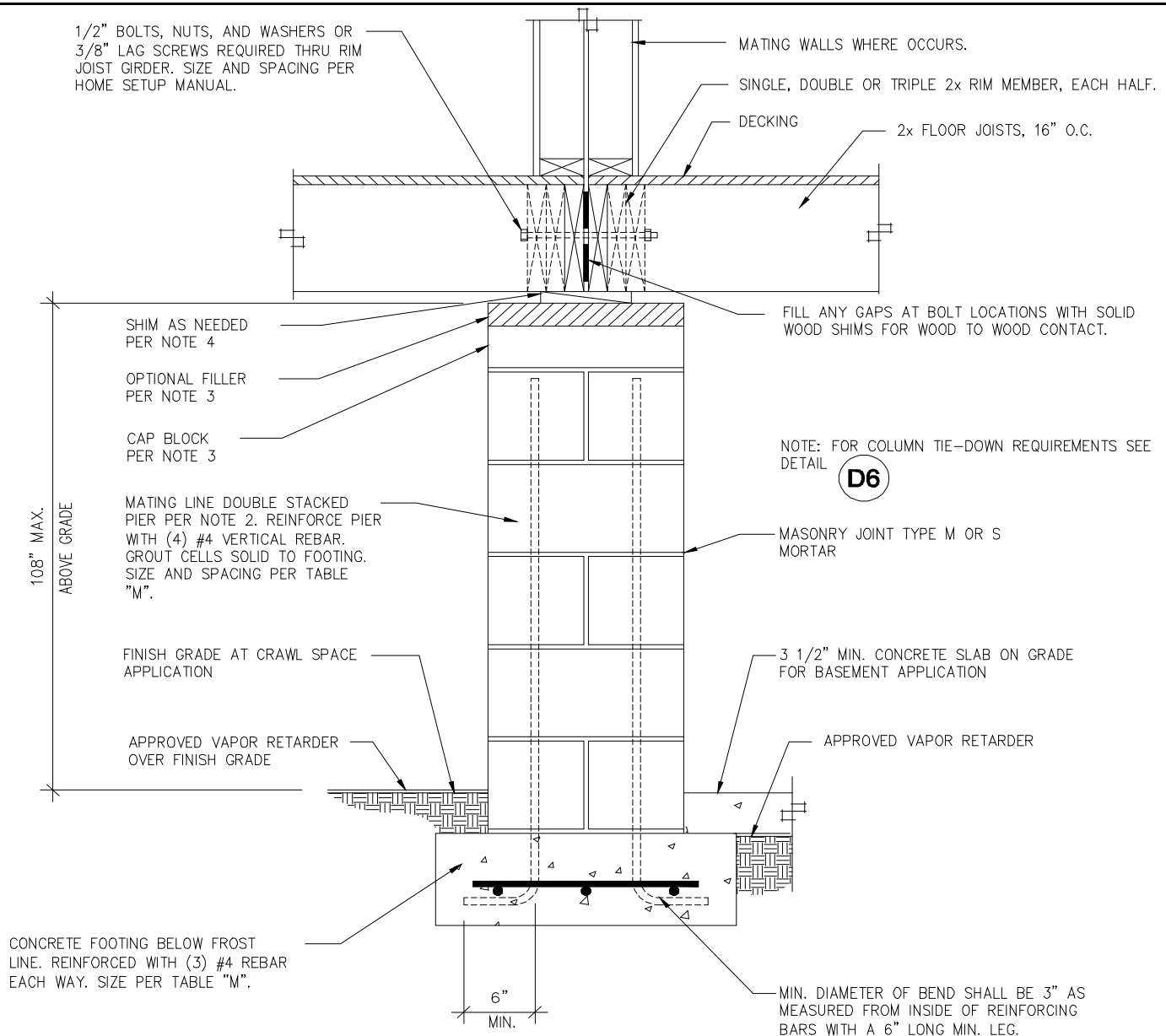
NON-REINFORCED PERIMETER
FOUNDATION WALL - DETAIL - D1

DATE: 07/17/07

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**REINFORCED MATING WALL OR COLUMN SUPPORT PIER
BASEMENT OR CRAWL SPACE
(PIER SPACING AND FOOTER SIZE PER TABLE M)**

Model: RC4068A

Customer: STANKO

NOTES:

1. FOOTINGS MUST BE LEVEL IN ALL DIRECTIONS. PIERS ARE TO BE PLACED CENTERED ON THE FOOTING 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.
2. CONCRETE BLOCKS FOR PIERS ARE 8" x 16" x 8" NOMINAL SIZE, HOLLOW CELL LOAD BEARING CMU'S MANUFACTURED IN CONFORMANCE WITH ASTM C90, GRADE "N". OPEN CELLS ARE ALIGNED VERTICALLY. THE PIERS SHALL BE LAID IN RUNNING BOND WITH TYPE M OR S MORTAR. SINGLE STACKED BLOCKS TO BE LAID WITH LONG SIDE PERPENDICULAR TO MATE LINE RIM JOISTS. DOUBLE STACKED BLOCK IS LAID WITH EACH LAYER AT A RIGHT ANGLE TO THE PREVIOUS LAYER. THE TOP COURSE OR THE CAP BLOCKS SHALL BE PERPENDICULAR TO THE MATE LINE RIM JOISTS.
3. CAP BLOCKS SHALL BE 4" SOLID CONCRETE OR MASONRY BLOCK. 2x NOMINAL HARDWOOD OR 1/2" STEEL MAY BE USED AS A CAP BLOCK IF THE TOP COURSE OF THE PIER IS SOLID MASONRY OR CONCRETE OR IF THE TOP COURSE OF A HOLLOW PIER IS FILLED WITH CONCRETE OR GROUT. OPTIONAL FILLER MATERIAL MAY BE 2x NOMINAL HARDWOOD OR 2" OR 4" NOMINAL SOLID CONCRETE BLOCK. ALL CAPS AND FILLER SHALL BE OF THE SAME NOMINAL DIMENSIONS AS THE PIERS THEY REST UPON. INDIVIDUAL LENGTHS OF CAP BLOCKS AND FILLER SHALL BE PERPENDICULAR TO THE MATE LINE RIM JOISTS.
4. SHIMS SHALL BE OF HARDWOOD, AT LEAST 3 1/2" WIDE AND 6" LONG AND ARE NOT TO EXCEED ONE INCH IN THICKNESS. SHIMS SHALL BE PERPENDICULAR TO MATE LINE, FITTED AND DRIVEN TIGHT BETWEEN CAP BLOCKS OR FILLER AND MATE LINE RIM JOISTS.
5. MARRIAGE LINE PIERS SHALL SUPPORT THE MARRIAGE WALL AND COLUMNS WHERE OCCURS PER MODEL SPECIFIC FOUNDATION PLAN. MAXIMUM PIER SPACING PER TABLE "M".
6. SEE GENERAL NOTES FOR DRAINAGE AND OTHER FOUNDATION REQUIREMENTS.

Clayton home building group

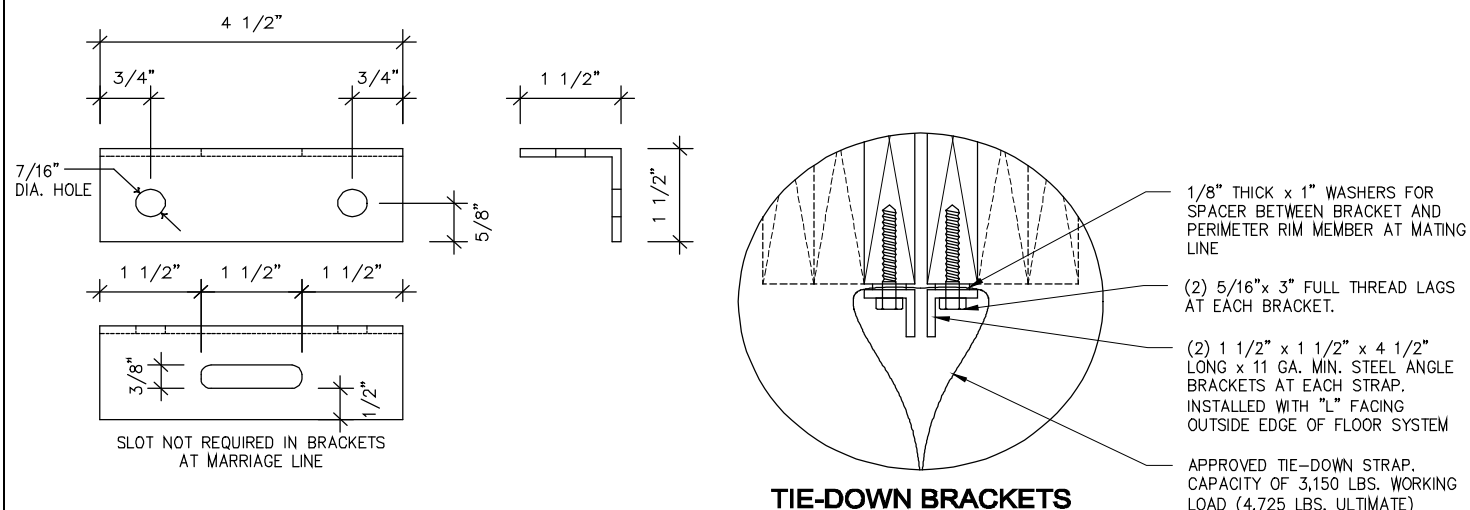
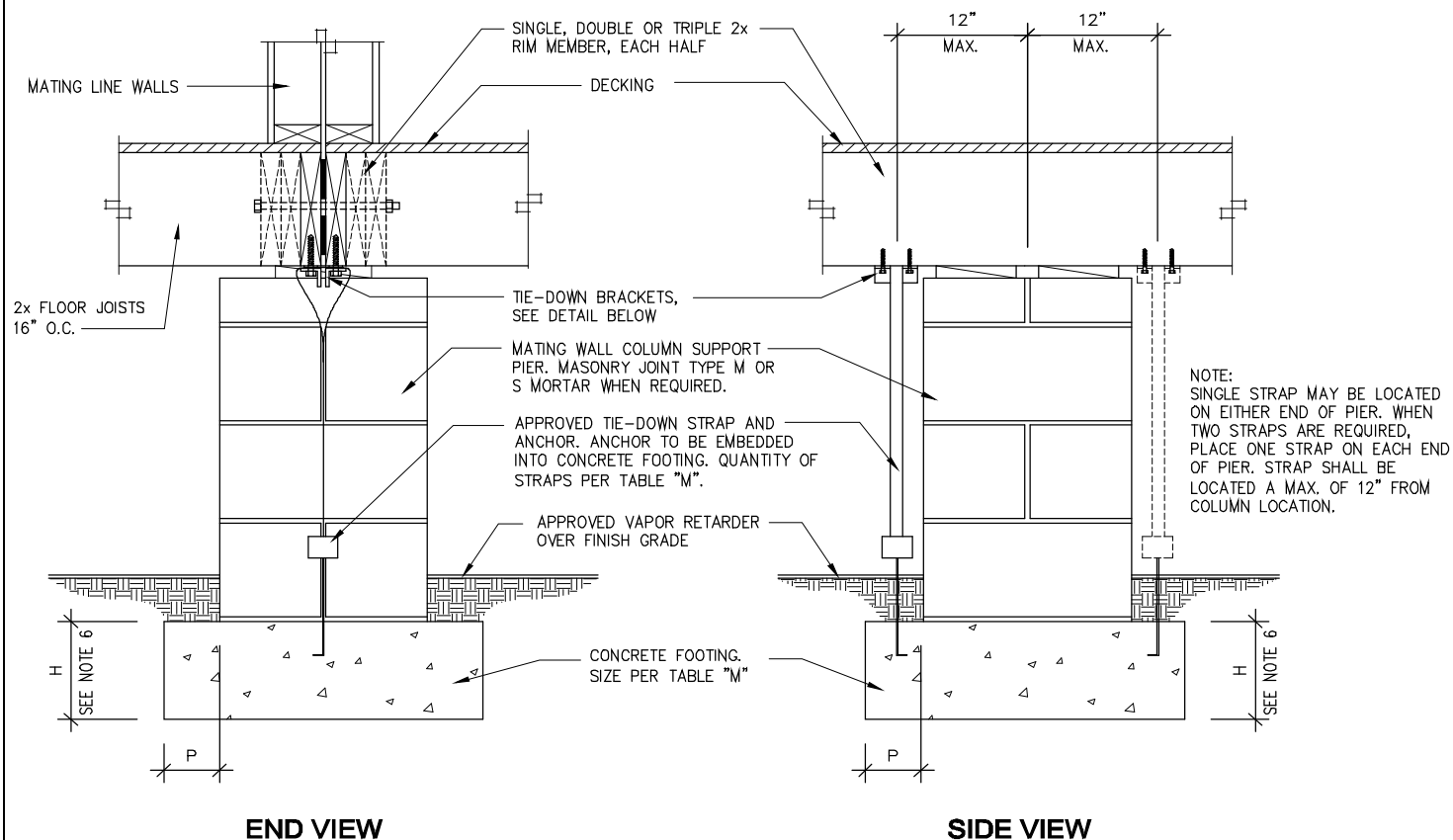
**REINFORCED MATING WALL OR
COLUMN SUPPORT PIER -
BASEMENT OR CRAWL SPACE
DETAIL - D5**

DATE: 06/04/07

993Q-
12.S.G.C.22.61.72()

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MATING WALL COLUMN TIE DOWN

NOTES:

1. ALL MARRIAGE WALL COLUMN LOCATIONS WITH OPENINGS 4 FEET OR GREATER MAY REQUIRE THE INSTALLATION OF COLUMN BRACKETS AND TIE-DOWNS. SEE TABLE "M" FOR REQUIREMENTS.
2. EACH BRACKET IS RATED FOR AN ALLOWABLE WORKING LOAD OF 1,719 LBS.
3. THE CAPACITY OF BOTH THE TIE-DOWN STRAP AND ANCHOR MUST BE 3,150 LBS. WORKING LOAD (4,725 LBS. ULTIMATE)
4. USE A RADIUS CLIP FOR ALL BRACKET APPLICATIONS BY THREADING A PIECE OF STRAP OVER THE BRACKETS BEFORE LOOPING THE TIE-DOWN STRAP AROUND THE BRACKET.
5. GROUND ANCHORS WHICH ARE LISTED FOR THE REQUIRED CAPACITY ABOVE MAY BE USED IN LIEU OF CONCRETE ANCHOR.
6. DISTANCE FROM EDGE OF FOOTING TO FACE OF FOUNDATION WALL (P) SHALL NOT BE LESS THAN 2" AND SHALL NOT EXCEED THE FOOTING THICKNESS (H). FOOTING THICKNESS MAY BE 10" IF GROUND ANCHORS WITH AN UPLIFT CAPACITY OF 3,150 LBS. ARE USED IN PLACE OF CONCRETE ANCHORS.
7. FOOTING SIZES PER TABLE "M" HAVE BEEN DESIGNED ASSUMING CONCRETE ANCHORS WILL BE UTILIZED. IF GROUND ANCHORS ARE UTILIZED TO TRANSMIT UPLIFT INTO GROUND SOIL, THE DEPTH OF THE FOOTING MAY BE REDUCED TO (P). WHERE (P) IS EQUAL TO THE GREATEST DISTANCE FROM EDGE OF FOOTING TO EDGE OF PIER. MINIMUM DEPTH IS 9".

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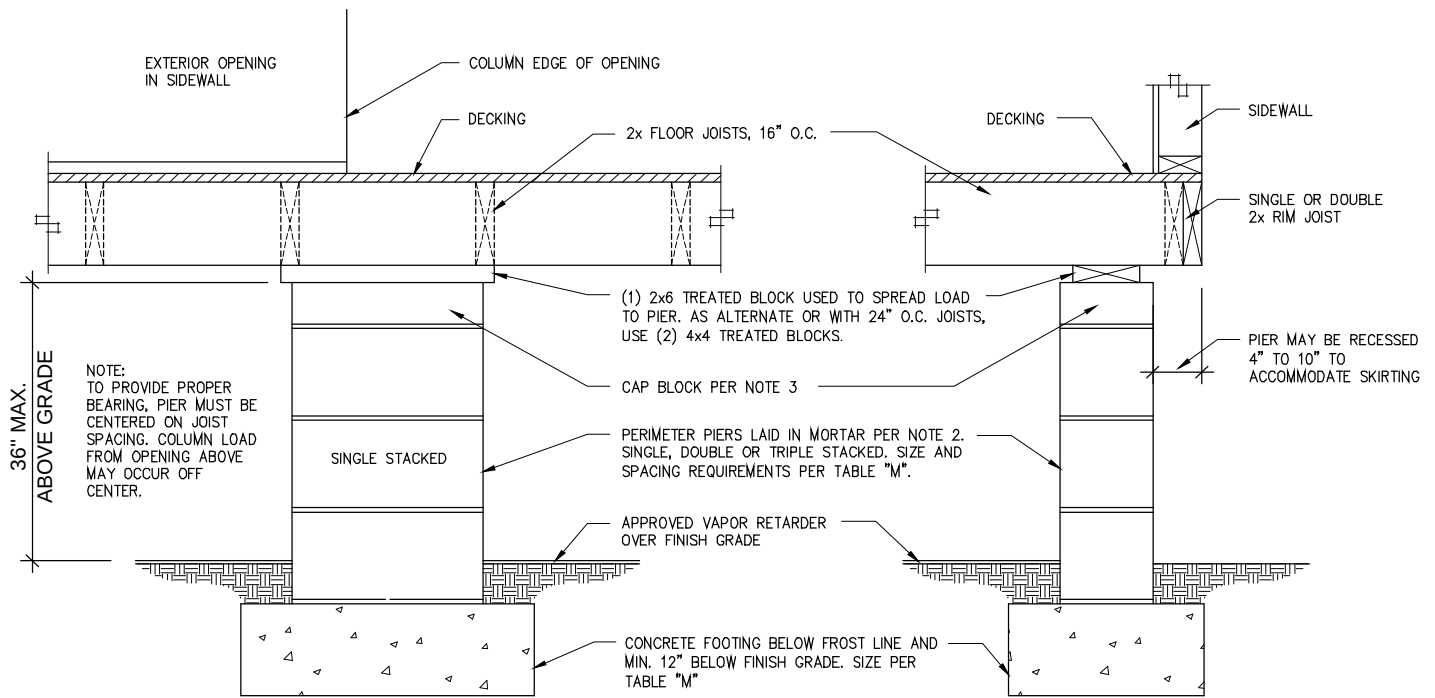
MATING WALL COLUMN TIE DOWN - DETAIL - D6

DATE: 06/29/07

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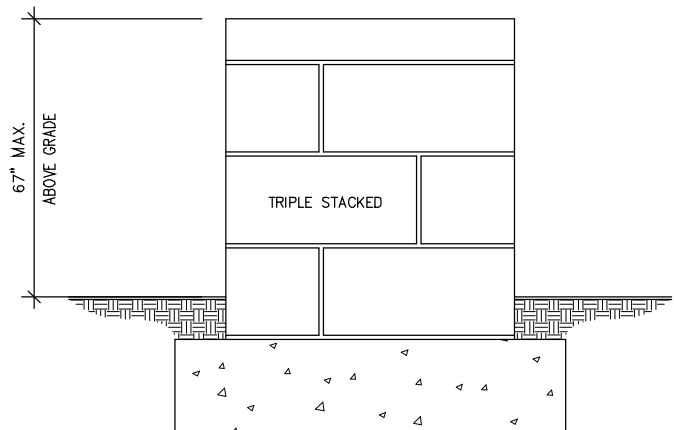
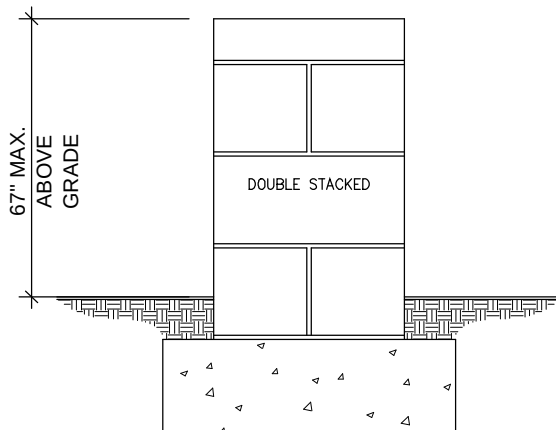
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FRONT VIEW

SIDE VIEW



NON-REINFORCED PERIMETER OR PORCH POST SUPPORT PIER

NOTES:

1. FOOTINGS MUST BE LEVEL IN ALL DIRECTIONS. PIERS ARE TO BE PLACED CENTERED ON THE FOOTING 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.
2. CONCRETE BLOCKS FOR PIERS ARE 8" x 16" x 8" NOMINAL SIZE, HOLLOW CELL LOAD BEARING CMU's MANUFACTURED IN CONFORMANCE WITH ASTM C90, GRADE "N". OPEN CELLS ARE ALIGNED VERTICALLY. SEE NOTE 7. FOR MORTAR REQUIREMENT. SINGLE STACKED BLOCKS TO BE LAID WITH LONG SIDE PERPENDICULAR TO MATE LINE RIM JOISTS. DOUBLE STACKED BLOCK IS LAID WITH EACH LAYER AT A RIGHT ANGLE TO THE PREVIOUS LAYER. THE TOP COURSE OR THE CAP BLOCKS SHALL BE PERPENDICULAR TO THE MATE LINE RIM JOISTS.
3. CAP BLOCKS SHALL BE 4" SOLID CONCRETE OR MASONRY BLOCK. 2x NOMINAL HARDWOOD OR 1/2" STEEL MAY BE USED AS A CAP BLOCK IF THE TOP COURSE OF THE PIER IS SOLID MASONRY OR CONCRETE OR IF THE TOP COURSE OF A HOLLOW PIER IS FILLED WITH CONCRETE OR GROUT. OPTIONAL FILLER MATERIAL MAY BE 2x NOMINAL HARDWOOD OR 2" OR 4" NOMINAL SOLID CONCRETE BLOCK. ALL CAPS AND FILLER SHALL BE OF THE SAME NOMINAL DIMENSIONS AS THE PIERS THEY REST UPON. INDIVIDUAL LENGTHS OF CAP BLOCKS AND FILLER SHALL BE PERPENDICULAR TO THE MATE LINE RIM JOISTS.
4. SHIMS SHALL BE OF HARDWOOD, AT LEAST 3 1/2" WIDE AND 6" LONG AND ARE NOT TO EXCEED ONE INCH IN THICKNESS. SHIMS SHALL BE PERPENDICULAR TO MATE LINE, FITTED AND DRIVEN TIGHT BETWEEN CAP BLOCKS OR FILLER AND MATE LINE RIM JOISTS.
5. MARRIAGE LINE PIERS SHALL SUPPORT THE MARRIAGE WALL AND COLUMNS WHERE OCCURS PER MODEL SPECIFIC FOUNDATION PLAN. MAXIMUM PIER SPACING PER TABLE "M".
6. SEE GENERAL NOTES FOR DRAINAGE AND OTHER FOUNDATION REQUIREMENTS.

7. THE PIERS SHALL BE LAID IN RUNNING BOND WITH TYPE M OR S MORTAR OR DRY STACKED ABOVE FIRST COARSE WITH SURFACE BONDING AGENT APPLIED THAT MEETS ASTM C887 WHEN ACCEPTABLE TO LOCAL AUTHORITY. BONDING AGENT MUST BE INTENDED FOR USE/APPLICATION AND SHALL BE INSTALLED PER MANUFACTURES SPECIFICATINS.

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**NON-REINFORCED PERIMETER/
PORCH POST SUPPORT PIER -
DETAIL - D15**

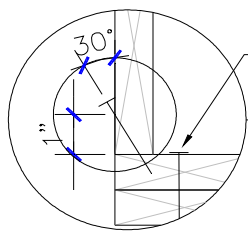
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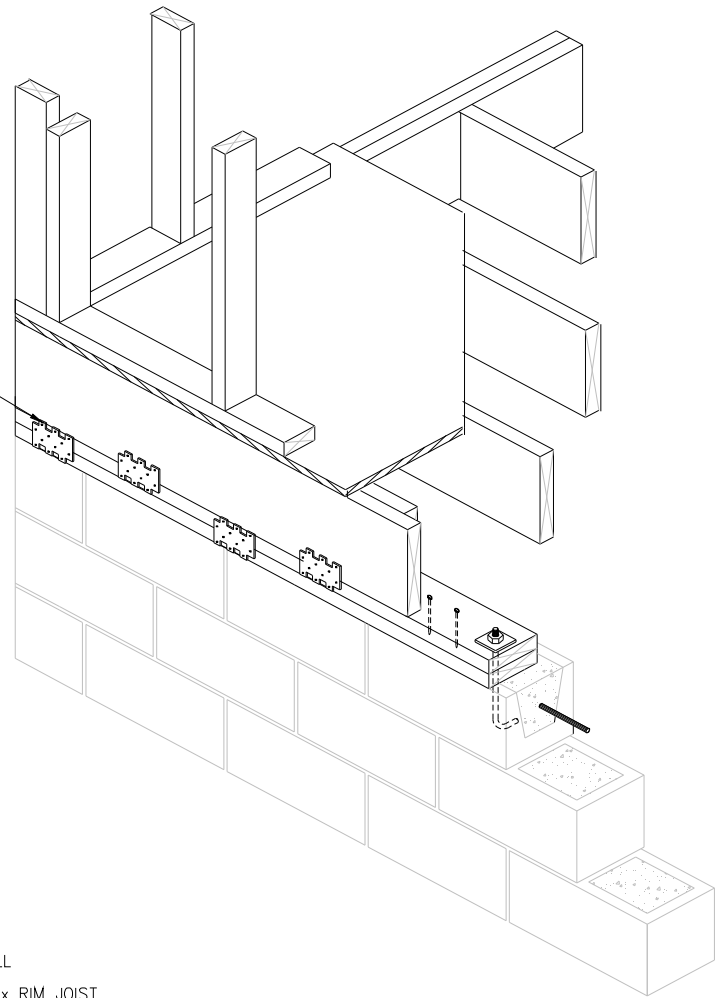
PAGE #:

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WHEN FASTENING TABLES WITH H PLATES ARE USED SIMPSON LTP4 SHALL BE INSTALLED PER DETAIL H. TO BOTH BOTTOM MUD SILL TO UPPER MUD SILL & TOP MUD SILL TO RIM JOIST. SPACING PER HOME FLOOR TO SILL PLATE & SILL WITH H PLATE TABLES.

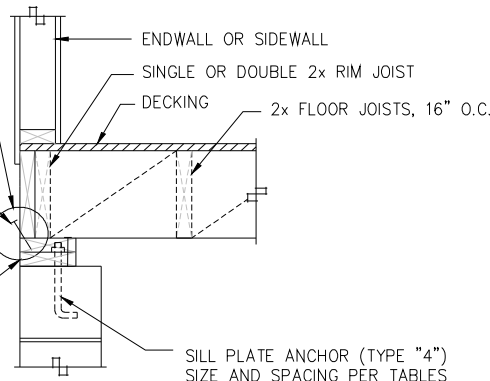


FASTEN UPPER TOP PLATE TO BOTTOM PLATE WITH 8D (.131 x 3") NAILS SPACED PER TYPE E FASTENER TYPE SPACING FOR RIM TO SILL



FASTEN RIM JOIST TO SILL WITH 10D (.148 x 3") CORROSION RESISTANT NAILS. ON CENTER SPACING OF FASTENER TYPE "E" IN TABLES. NOTE: IF SPACING REQUIRES ADDITIONAL TYPE "H" PLATE CONNECTORS, SEE DETAIL ABOVE AND DETAIL **H**

MIN. 2x6 TREATED MUD SILLS TOP PLATE ONLY MAY BE NOTCHED OR COUNTER SUNK. TO RECEIVE NUTS/ WASHERS.



Model: RC4068A
Customer: STANKO

DOUBLE MUD SILL OPTION

NOTES:

1. MUD SILL TO FOUNDATION ANCHORS:
TYPE 4: 1/2" DIAMETER STEEL ANCHOR BOLTS EMBEDDED 7" MIN. INTO CONCRETE FOUNDATION WALL OR CLOSE CELL CMU WITH 2"x2"x1/8" WASHERS AND NUTS. BOLT HEADS SHALL NOT BE RECESSED INTO BOTTOM MUD SILL PLATE.
2. UPPER MUD SILL MUST BE FASTENED TO LOWER MUD SILL WITH .131"x3" NAILS SPACED PER RIM JOIST TO MUD SILL SPACING TABLE FOR TYPE E FASTENERS.
4. WHEN FASTENING TABLES WITH H PLATES ARE USED, SIMPSON LPT4 PLATES MUST BE INSTALLED FROM LOWER MUD SILL TO UPPER MUD SILL AND FROM UPPER MUD SILL TO RIM JOIST PER FASTENING SPACED PER RIM TO MUD SILL SPACING TABLES.

Clayton home building group

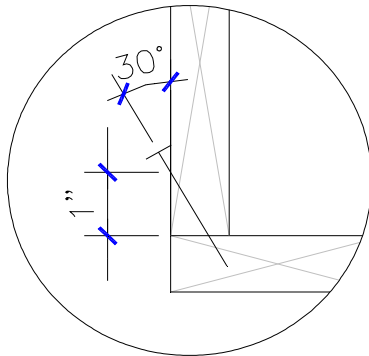
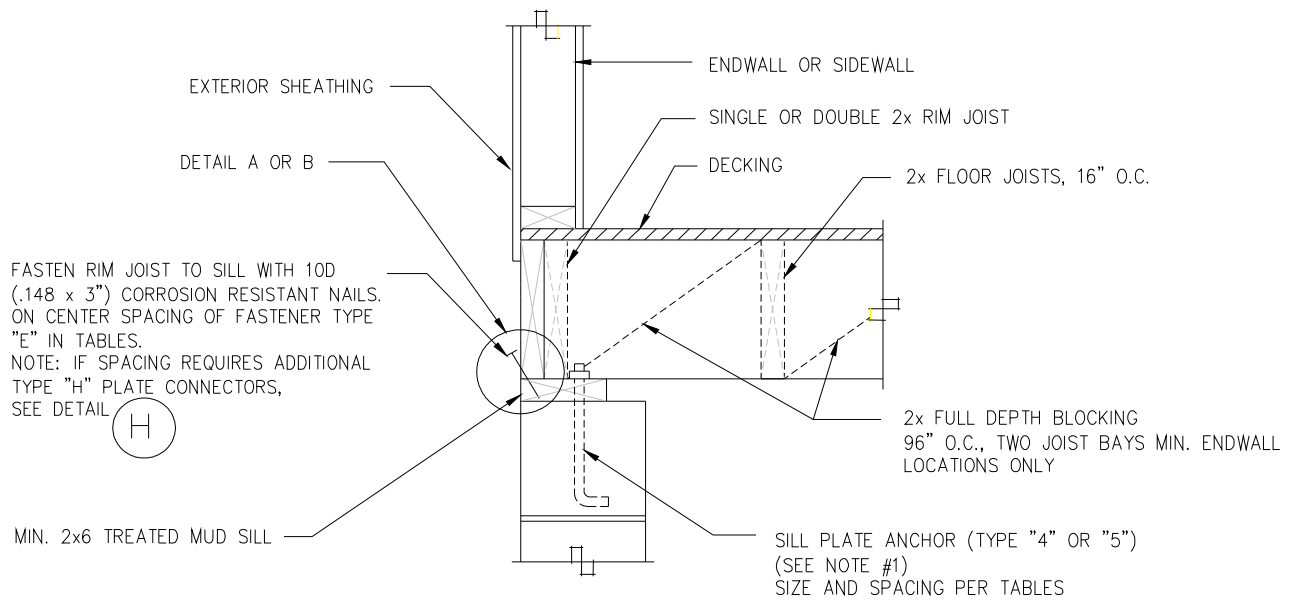
DOUBLE MUD SILL FOUNDATION WALL DETAIL - D34

DATE: 06/04/07

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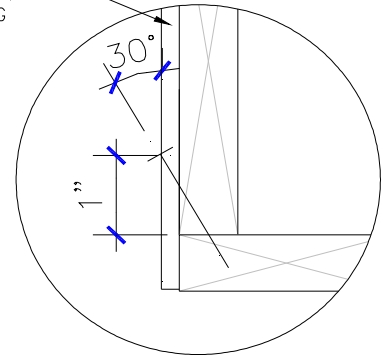


ALTERNATE FASTENER:

THE FOLLOWING ALTERNATE FASTENERS MAY BE USED WHEN SPACING IN CHART IS MULTIPLIED BY THE FOLLOWING FASTENER MULTIPLIER.

8D (.131 x 3") NAIL = .82
16D (.162 x 3 1/2") NAIL = 1.2
#8 x 3" WOOD SCREW = .78

FASTENED THRU $\frac{7}{16}$ " MAX. EXTERIOR SHEATHING



ALTERNATE FASTENER:

FASTENERS MAY BE INSTALLED THROUGH $\frac{7}{16}$ " MAXIMUM THICK WALL SHEATHING WHEN SPACING IN CHARTS ARE REDUCED BY MULTIPLYING BY THE FOLLOW:

10d (.148"x3") NAIL = .68
8D (.131 x 3") NAIL = .55
16D (.162 x 3 1/2") NAIL = .816
#8 x 3" WOOD SCREW = .53

DETAIL A- DIRECT RIM TO SILL FASTENING

DETAIL B- THRU SHEATHING RIM TO SILL FASTENING

FLOOR TO SILL PLATE FASTENING -TYPE "E" -ENDWALL OR SIDEWALL

NOTES:

1) MUD SILL TO FOUNDATION ANCHORS:

TYPE 4: DIAMETER STEEL ANCHOR BOLTS EMBEDDED 7" MIN. INTO CONCRETE FOUNDATION WALL OR CLOSE CELL CMU WITH WASHERS AND NUTS. BOLT HEADS SHALL NOT BE RECESSED INTO SINGLE SILL PLATE.

TYPE 5: SIMPSON MAB OR MASA MUD SILL ANCHOR INSTALLED PER INSTALLATION INSTRUCTIONS

2) RIM TO MUD SILL FASTENING AND SILL TO FOUNDATION ANCHOR SPACING SHALL BE THE MINIMUM OF:

- a) SPACING GIVEN IN APPLICABLE TABLES FOR UNIT CONFIGURATION AND WIND SPEED.
- b) SPACING GIVEN IN BACKFILL/ SIDEWALL TABLES FOR GIVEN UNIT CONFIGURATION, MAXIMUM BASEMENT WALL HEIGHT, BACKFILL DEPTH, AND LOCAL SOIL CLASSIFICATION.

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**FLOOR TO SILL PLATE
FASTENING - ENDWALL OR
SIDEWALL - DETAIL - E**

DATE: 04/17/07

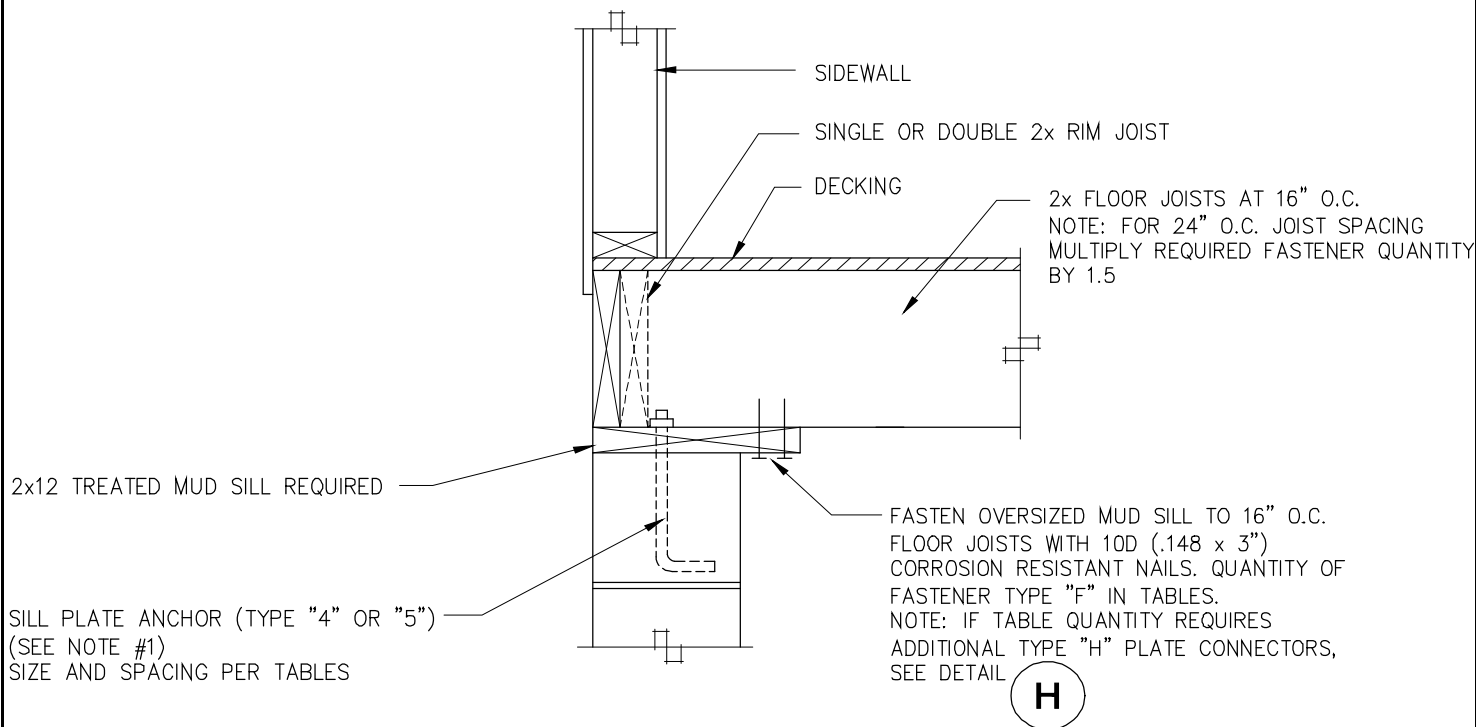
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Model: RC4068A

Customer: STANKO



ALTERNATE FASTENERS:

THE FOLLOWING ALTERNATE FASTENERS MAY BE USED WHEN QUANTITY IN TABLE IS MULTIPLIED BY THE FOLLOWING FASTENER MULTIPLIER.

8D (.131 x 3") NAIL = 1.21

16D (.162 x 3 1/2") NAIL = .83

#8 x 3" WOOD SCREW = 1.28

NOTE: THIS DETAIL FOR TYPE "F" FASTENING IS APPLICABLE TO SIDEWALL CONNECTIONS ONLY AND CAN NOT BE USED FOR ENDWALLS. SEE FASTENING TYPE "E" OR TYPE "G" FOR ENDWALL APPLICATION.

FLOOR TO SILL PLATE FASTENING - TYPE "F" - SIDEWALL ONLY

NOTES:

1) MUD SILL TO FOUNDATION ANCHORS:

TYPE 4: DIAMETER STEEL ANCHOR BOLTS EMBEDDED 7" MIN. INTO CONCRETE FOUNDATION WALL OR CLOSE CELL CMU WITH WASHERS AND NUTS. BOLT HEADS SHALL NOT BE RECESSED INTO SINGLE SILL PLATE.

TYPE 5: SIMPSON MAB OR MASA MUD SILL ANCHOR INSTALLED PER INSTALLATION INSTRUCTIONS

2) RIM TO MUD SILL FASTENING AND SILL TO FOUNDATION ANCHOR SPACING SHALL BE THE MINIMUM OF:

- SPACING GIVEN IN APPLICABLE TABLES FOR UNIT CONFIGURATION AND WIND SPEED.
- SPACING GIVEN IN BACKFILL/ SIDEWALL TABLES FOR GIVEN UNIT CONFIGURATION, MAXIMUM BASEMENT WALL HEIGHT, BACKFILL DEPTH, AND LOCAL SOIL CLASSIFICATION.

Model: RC4068A

Customer: STANKO

Clayton home building group

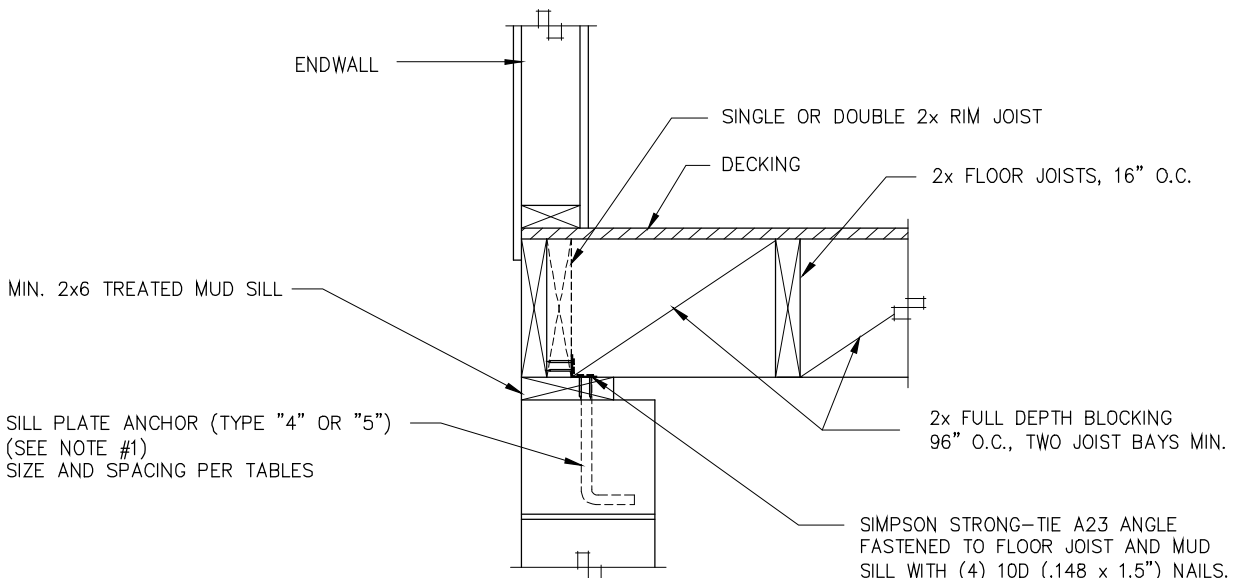
FLOOR TO SILL PLATE FASTENING - SIDEWALL ONLY DETAIL - F

DATE: 04/17/07

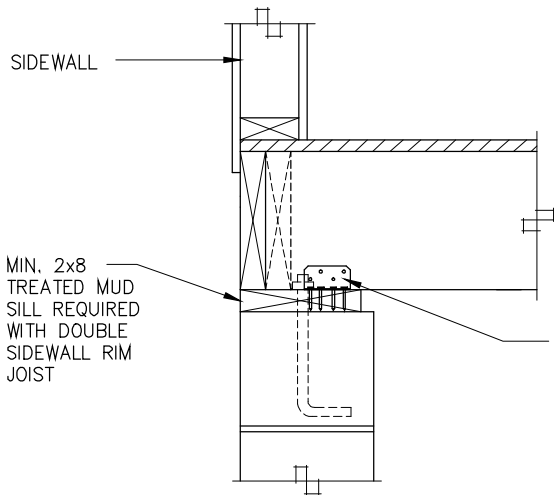
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ENDWALL DETAIL

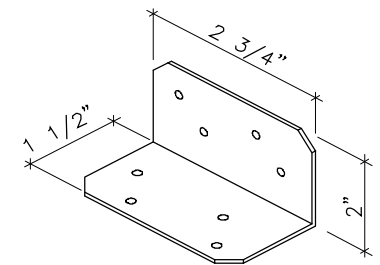


SIDEWALL DETAIL

SIMPSON STRONG-TIE A23 ANGLE FASTENED TO FLOOR JOIST AND MUD SILL WITH (4) 10D (.148 x 1.5") NAILS. (CORROSION RESISTANT NAIL REQUIRED INTO P.T. MUD SILL) USE (1) OR (2) ANGLES EA. JOIST PER FASTENER TYPE "G" IN TABLES. NOTE: IF SPACING REQUIRES ADDITIONAL TYPE "H" PLATE CONNECTORS, SEE DETAIL

H

SIMPSON STRONG-TIE A23 ANGLE FASTENED TO FLOOR JOIST AND MUD SILL WITH (4) 10D (.148 x 1.5") NAILS. (CORROSION RESISTANT NAIL REQUIRED INTO P.T. MUD SILL) O.C. SPACING PER FASTENER TYPE "G" IN TABLES. NOTE: IF SPACING REQUIRES ADDITIONAL TYPE "H" PLATE CONNECTORS, SEE DETAIL



SIMPSON STRONG-TIE 'A23' ANGLE

FLOOR TO SILL PLATE FASTENING - TYPE "G" -ENDWALL OR SIDEWALL

NOTES:

- 1) MUD SILL TO FOUNDATION ANCHORS:
 TYPE 4: DIAMETER STEEL ANCHOR BOLTS EMBEDDED 7" MIN. INTO CONCRETE FOUNDATION WALL OR CLOSE CELL CMU WITH WASHERS AND NUTS. BOLT HEADS SHALL NOT BE RECESSED INTO SINGLE SILL PLATE.
 TYPE 5: SIMPSON MAB OR MASA MUD SILL ANCHOR INSTALLED PER INSTALLATION INSTRUCTIONS
- 2) RIM TO MUD SILL FASTENING AND SILL TO FOUNDATION ANCHOR SPACING SHALL BE THE MINIMUM OF:
 - a) SPACING GIVEN IN APPLICABLE TABLES FOR UNIT CONFIGURATION AND WIND SPEED.
 - b) SPACING GIVEN IN BACKFILL/ SIDEWALL TABLES FOR GIVEN UNIT CONFIGURATION, MAXIMUM BASEMENT WALL HEIGHT, BACKFILL DEPTH, AND LOCAL SOIL CLASSIFICATION.

Model: RC4068A
Customer: S IANKU

Clayton home building group

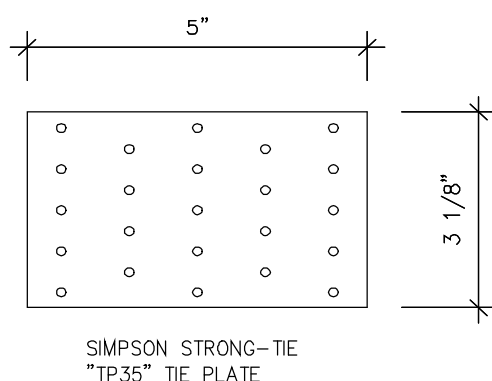
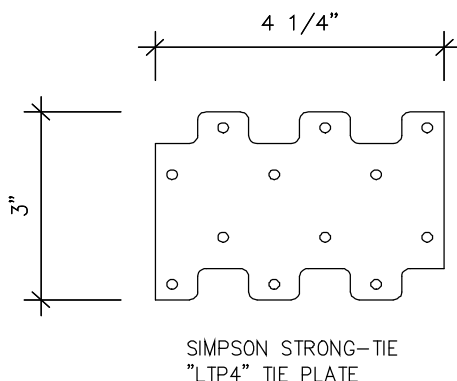
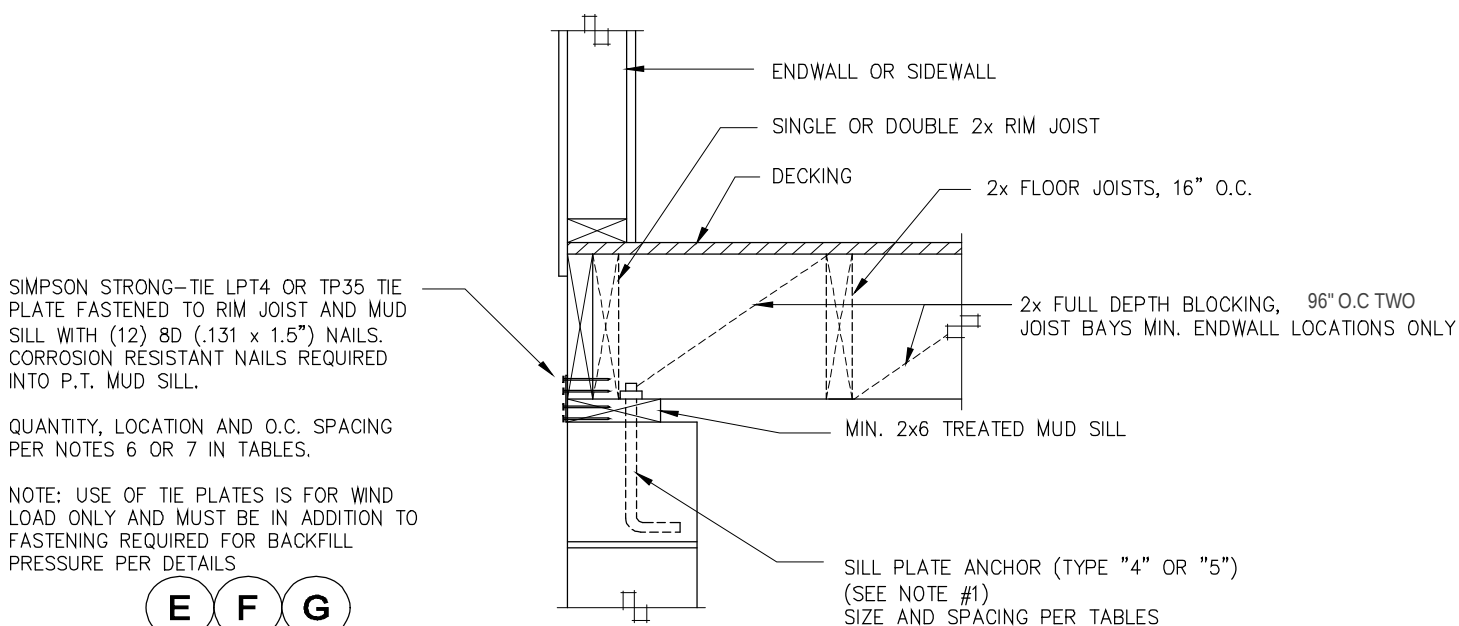
FLOOR TO SILL PLATE FASTENING - ENDWALL OR SIDEWALL - DETAIL - G

DATE: 05/25/07

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FLOOR TO SILL PLATE FASTENING - TYPE "H" - ENDWALL OR SIDEWALL

NOTES:

1) MUD SILL TO FOUNDATION ANCHORS:

TYPE 4: DIAMETER STEEL ANCHOR BOLTS EMBEDDED 7" MIN. INTO CONCRETE FOUNDATION WALL OR CLOSE CELL CMU WITH WASHERS AND NUTS. BOLT HEADS SHALL NOT BE RECESSED INTO SINGLE SILL PLATE.

TYPE 5: SIMPSON MAB OR MASA MUD SILL ANCHOR INSTALLED PER INSTALLATION INSTRUCTIONS

2) RIM TO MUD SILL FASTENING AND SILL TO FOUNDATION ANCHOR SPACING SHALL BE THE MINIMUM OF:

- SPACING GIVEN IN APPLICABLE TABLES FOR UNIT CONFIGURATION AND WIND SPEED.
- SPACING GIVEN IN BACKFILL/ SIDEWALL TABLES FOR GIVEN UNIT CONFIGURATION, MAXIMUM BASEMENT WALL HEIGHT, BACKFILL DEPTH, AND LOCAL SOIL CLASSIFICATION.

Clayton home building group

FLOOR TO SILL PLATE FASTENING - ENDWALL OR SIDEWALL - DETAIL - H

DATE: 04/17/07

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Model: RC4068A

Customer: STANKO

Home Floor to Sill Plate & Sill Plate to Foundation WITH TYPE H PLATE CONNECTORS (See note 6 & 7)

SOIL CLASSES SC, ML-CL AND INORGANIC CL SOILS [Allowable bearing capacity of 1500 psf or less]

Unit Width: 40' to 41' Max.

Unit Length: 68' Max.

Roof Pitch: 2/12 to 3/12

Max. Roof Overhang: 12 "

Max. Sidewall Height: 9 '

Max. Wind Speed 90 MPH

Seismic Zone C

Model: RC4068A

Customer: STANKO

MAXIMUM FASTENER SPACING OR FASTENERS PER JOIST SPACING ^{2,3 & 5}											
SIDEWALL FASTENING SPACING ¹						END WALL FASTENING					
Foundation Wall ¹⁰		Rim to Sill ⁶			Sill to Fnd. Wall		Rim to Sill ⁷		Sill to Fnd. Wall		
Wall Height	Backfill Depth	Fastener Type			Anchor Spacing		Fastener Type		Anchor Spacing		
		E	F ⁴	G ⁴	4	5	E	G	4	5	
24 "	16 "	14.4" o.c.	1	1	72" o.c.	72" o.c.	40" o.c.	492" o.c.	57" o.c.	30" o.c.	
32 "	24 "	14.4" o.c.	1	1	72" o.c.	72" o.c.	16" o.c.	194" o.c.	55" o.c.	30" o.c.	
40 "	32 "	8.4" o.c.	2	1	72" o.c.	72" o.c.	8" o.c.	102" o.c.	50" o.c.	29" o.c.	
5 '	4 '	3.7" o.c.	3	1	34" o.c.	38" o.c.	4" o.c.	46" o.c.	33" o.c.	24" o.c.	
7 '	4 '	5.2" o.c.	2	1	49" o.c.	55" o.c.	5" o.c.	64" o.c.	42" o.c.	26" o.c.	
7 '	5 '	NA	4	1	24" o.c.	27" o.c.	NA	33" o.c.	24" o.c.	20" o.c.	
7 '	6 '	NA	6	2	14" o.c.	15" o.c.	NA	19" o.c.	14" o.c.	14" o.c.	
8 '	4 '	5.9" o.c.	2	1	57" o.c.	63" o.c.	6" o.c.	73" o.c.	44" o.c.	27" o.c.	
8 '	5 '	3.0" o.c.	3	1	28" o.c.	31" o.c.	3" o.c.	37" o.c.	28" o.c.	22" o.c.	
8 '	6 '	NA	6	2	16" o.c.	17" o.c.	NA	22" o.c.	16" o.c.	15" o.c.	
8 '	7 '	NA	9	2	10" o.c.	11" o.c.	NA	14" o.c.	10" o.c.	10" o.c.	
9 '	3 '	14.4" o.c.	1	1	72" o.c.	72" o.c.	16" o.c.	194" o.c.	55" o.c.	30" o.c.	
9 '	4 '	6.7" o.c.	2	1	66" o.c.	72" o.c.	7" o.c.	82" o.c.	47" o.c.	28" o.c.	
9 '	5 '	3.4" o.c.	3	1	31" o.c.	35" o.c.	3" o.c.	42" o.c.	31" o.c.	23" o.c.	
9 '	6 '	NA	5	2	18" o.c.	20" o.c.	NA	24" o.c.	18" o.c.	17" o.c.	
9 '	7 '	NA	8	2	11" o.c.	12" o.c.	NA	15" o.c.	11" o.c.	11" o.c.	
9 '	8 '	NA	11	NA	7" o.c.	8" o.c.	NA	10" o.c.	7" o.c.	8" o.c.	

NOTES:

1. Fastener Types A,B,C & D are not reflected in charts and are available prescriptively per table R404.1(1) in 2006 IRC.
2. See details for additional fastener options.
3. All fastener spacing must start within 12" maximum of each corner or half specified spacing (lesser of two).
4. Type F & G connectors are qty. per 16" oc. Joist spacing.
5. Fastener Type Key:
 " Type E"- Fasteners toe-nailed through rim joist into sill plate (Refer to Detail E)
 "Type F"- Fasteners direct nailed from sill plate into each floor joist (Applicable at Sidewalls only) (Refer to Detail F)
 "Type G"- Number of Simpson A23 angles fastened to sill plate and each 16" OC. (2x8 min. sill plate) (Refer to Detail G)
 "Type H"- Simpson LPT4 or TP35 plate fastened to rim joist and mud sill with (12) 8dx1.5" treated nails. (Refer to Detail H)
- Anchor Types:
 "Type 4"- 1/2" x10" Anchor Bolt with 2"x2"x1/8" Washer between plate and nut.
 "Type 5"- Simpson MAB15 (concrete) or MAB23 (concrete block) or MASA
6. Fasteners are in addition to (2) Type H tie plates spaced within 6' of corners & 96" oc. elsewhere along sidewalls.(See note 3)
7. Fasteners are in addition to Type H tie plates spaced at 33" oc. along endwall.
8. Three options (E,F,& G) for rim to sill fastening and two options (4 & 5) for sill plate to foundation anchorage have been provided in chart. Any combination of rim sill connectors and mud sill anchors maybe used.
9. All connection hardware, anchor bolts, straps, hold-downs, washers and fasteners shall be galvanized or stainless when in contact with PT sill plates or other PT lumber.
10. Maximum foundation wall height and maximum unbalanced backfill.

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Home Floor to Sill Plate & Sill Plate to Foundation WITHOUT TYPE H PLATE CONNECTORS (See note 6 & 7)

SOIL CLASSES SC, ML-CL AND INORGANIC CL SOILS [Allowable bearing capacity of 1500 psf or less]

Unit Width: 40' to 41' Max.

Unit Length: 68' Max.

Roof Pitch: 2/12 to 3/12

Max. Roof Overhang: 12 "

Max. Sidewall Height: 9 '

Max. Wind Speed 90 MPH

Seismic Zone C

Model: RC4068A

Customer: STANKO

Foundation Wall ¹⁰		MAXIMUM FASTENER SPACING OR FASTENERS PER JOIST SPACING ^{2,3 & 5}									
		SIDEWALL FASTENING SPACING ¹					END WALL FASTENING				
		Rim to Sill ⁶			Sill to Fnd. Wall		Rim to Sill ⁷		Sill to Fnd. Wall		
Wall Height	Backfill Depth	Fastener Type			Anchor Spacing		Fastener Type		Anchor Spacing		
		E	F ⁴	G ⁴	4	5	E	G	4	5	
24 "	16 "	9.0" o.c.	2	1	72" o.c.	72" o.c.	8" o.c.	30" o.c.	57" o.c.	30" o.c.	
32 "	24 "	9.0" o.c.	2	1	72" o.c.	72" o.c.	8" o.c.	29" o.c.	55" o.c.	30" o.c.	
40 "	32 "	9.0" o.c.	2	1	72" o.c.	72" o.c.	7" o.c.	25" o.c.	50" o.c.	29" o.c.	
5 '	4 '	4.0" o.c.	3	1	34" o.c.	38" o.c.	4" o.c.	15" o.c.	33" o.c.	24" o.c.	
7 '	4 '	5.8" o.c.	2	1	49" o.c.	55" o.c.	5" o.c.	20" o.c.	42" o.c.	26" o.c.	
7 '	5 '	NA	4	1	24" o.c.	27" o.c.	3" o.c.	11" o.c.	24" o.c.	20" o.c.	
7 '	6 '	NA	6	2	14" o.c.	15" o.c.	NA	6" o.c.	14" o.c.	14" o.c.	
8 '	4 '	6.7" o.c.	2	1	57" o.c.	63" o.c.	6" o.c.	22" o.c.	44" o.c.	27" o.c.	
8 '	5 '	3.2" o.c.	3	1	28" o.c.	31" o.c.	4" o.c.	12" o.c.	28" o.c.	22" o.c.	
8 '	6 '	NA	5	2	16" o.c.	17" o.c.	NA	7" o.c.	16" o.c.	15" o.c.	
8 '	7 '	NA	8	2	10" o.c.	11" o.c.	NA	4" o.c.	10" o.c.	10" o.c.	
9 '	3 '	9.0" o.c.	2	1	72" o.c.	72" o.c.	8" o.c.	29" o.c.	55" o.c.	30" o.c.	
9 '	4 '	7.6" o.c.	2	1	66" o.c.	72" o.c.	6" o.c.	23" o.c.	47" o.c.	28" o.c.	
9 '	5 '	3.7" o.c.	3	1	31" o.c.	35" o.c.	4" o.c.	14" o.c.	31" o.c.	23" o.c.	
9 '	6 '	NA	5	1	18" o.c.	20" o.c.	NA	8" o.c.	18" o.c.	17" o.c.	
9 '	7 '	NA	8	2	11" o.c.	12" o.c.	NA	5" o.c.	11" o.c.	11" o.c.	
9 '	8 '	NA	11	NA	7" o.c.	8" o.c.	NA	3" o.c.	7" o.c.	8" o.c.	

NOTES:

1. RESERVED

2. See details for additional fastener options.

3. All fastener spacing must start within 12" maximum of each corner or half specified spacing (lesser of two).

4. Type F & G connectors are qty. per 16" oc. Joist spacing.

5. Fastener Type Key:

"Type E"- Fasteners toe-nailed through rim joist into sill plate (Refer to Detail E)

"Type F"- Fasteners direct nailed from sill plate into each floor joist (Applicable at Sidewalls only) (Refer to Detail F)

"Type G"- Number of Simpson A23 angles fastened to sill plate and each 16" OC. (2x8 min. sill plate) (Refer to Detail G)

"Type H"- Simpson LPT4 or TP35 plate fastened to rim joist and mud sill with (12) 8dx1.5" treated nails. (Refer to Detail H)

Anchor Types:

"Type 4"- 1/2" x10" Anchor Bolt with 2"x2"x1/8" Washer between plate and nut.

"Type 5"- Simpson MAB15 (concrete) or MAB23 (concrete block) or MASA

6. Fasteners reflected in chart do NOT require "H type" connector plates to be installed along sidewall.

7. Fasteners reflected in chart do NOT require "H type" connector plates to be installed along endwall.

8. Three options (E,F,& G) for rim to sill fastening and two options (4 & 5) for sill plate to foundation anchorage have been provided in chart. Any combination of rim sill connectors and mud sill anchors maybe used.

9. All connection hardware, anchor bolts, straps, hold-downs, washers and fasteners shall be galvanized or stainless when in contact with PT sill plates or other PT lumber.

10. Maximum foundation wall height and maximum unbalanced backfill.

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FOUNDATION DESIGN FOR: RC4068A

PIER SPACING AND KIPS BETWEEN (A/B) MATING COLUMN LOCATIONS:

CMH Manufacturing FOUND.xlsm F: Front wall, R: Rear endwall, k: 1000 lbs.

FOUNDATION DESIGN FOR: RC4068A

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Ver. 16.11

DESIGNER GUIDE FOR ALTERNATIVE FOUNDATIONS:
 *Ultimate wind speed Vult. Per ASCE 7-10/ allowable stress design wind speed Vasd
 STANKO

UNIT WIDTH: 164 in
 ROOF PITCH: 2/12 TO 3/12
 WIND: 117/ 90 MPH EXPOSURE C-encl
 1 STORY- 30 PSF ATTIC LIVE
 PLANT #: 993
 MODEL NUMBER: RC4068A
 MAX. STRUCTURE LENGTH: 68 ft.

Mating wall is a roof load bearing wall; therefore the column supports of all first floor mating wall opening must be supported for the concentrated gravity and uplift loads based on the opening span as provided in table A:

TABLE A: Mating wall column roof loads:

	Column ID	First Floor Span (ft.)	Location (Ft)	Roof Loads at 1st floor opening per Snow load (lbs.) ¹ :				Net Uplift
				119.5 psf				
THE FOLLOWING PIERS ARE LOCATED UNDER (A/B) MATING WALL COLUMNS	1	4'	12'	4629 #				200 #
	2	4'	16'	4629 #				200 #
	3	8.5'	28'	9837 #				425 #
	4	8.5'	36.5'	9837 #				425 #
THE FOLLOWING PIERS ARE LOCATED UNDER B-C MATING WALL COLUMNS	5	25'	0'	28933 #				1250 #
	6	25'	25'	28933 #				1250 #
	7	6'	29'	6944 #				300 #
	8	6'	35'	6944 #				300 #
	9	13'	38'	15045 #				650 #
	10	13'	51'	15045 #				650 #

1. Table A reflects roof load at mating wall opening supports from roof load only. To determine the load at a foundation adjacent floor and wall loads must be added per table B. In lue of using above load may be derived by multiplying half mating wall opening span times mating wall at 1st floor ceiling uniform load as specified in table B.

TABLE B: UNIFORM LOAD (PLF) AT FLOOR LINE AT:

	Floor Load Only ³	Uniform Load under wall per Ground Snow (lbs/ft.):				Net Uplift (lb/ft.)	
		119.5 psf				NC	Corner
SIDEWALL AT 1st FLOOR CEILING	362.2 plf	888.3 plf				54.9 plf	63.8 plf
SIDEWALL AT FLOOR TO SILL:	362.2 plf	1198.2 plf				. plf	. plf
MAX. SIDEWALL RIM RAIL SPANS (in.) ¹	55.3"	55.1"					
MATING WALL AT 1st FLOOR CEILING:	724.3 plf	2314.7 plf				100. plf	100. plf
MATING WALL AT FLOOR TO SILL:	724.3 plf	2789.1 plf				. plf	. plf
MAX. MATING RIM RAIL SPANS (in.) ²	98.8"	54."					

FOOTNOTES:

- SIDEWALL SPANS BASED ON RIM JOIST(S): (2) 2X10 #2 SPF WITH EACH RIM MEMBER SPLICED WITH 6" X 6" MiTek MT20 metal plates each side
- MATING GIRDER SPANS BASED ON RIM JOIST(S): (4) 2X10 #2 SPF WITH EACH RIM MEMBER SPLICED WITH 6" X 6" MiTek MT20 metal plates each side
- FLOOR ONLY- INDICATES LOAD OR ALLOWABLE SPANS UNDER MATING WALL OPENINGS (FLOOR LOAD ONLY).

- EACH ENDWALL SHALL BE ANCHORED TO FOUNDATION FOR SHEAR DUE TO HOR. WIND FOR 8000 Lbs. & EACH SIDEWALL SHALL BE ANCHORED TO FOUNDATION FOR SHEAR DUE TO HOR. WIND FOR 3039 Lbs.
- GRAVITY LOADS DO NOT INCLUDE WEIGHT OF FOUNDATION WALLS AND FOOTERS.
- INDICATES UNIFORM LOAD OR ALLOWABLE SPANS UNDER MATING WALLS (FLOOR + ROOF LOADS).
- UPLIFT LOAD AT SIDES OF FIRST FLOOR OPENINGS=(PLF)*OPENING/2

NOTES TO ALTERNATE FOUNDATION DESIGN PROFESSIONAL:

- THIS PACKAGE CONTAINS A COMPLETE RECOMMENDED FOUNDATION SUPPORT AND ANCHORAGE SYSTEM DESIGNED TO CARRY ALL IMPOSED LOADS ON THE STRUCTURE. ALTERNATIONS TO THESE DIRECTIONS MUST BE PREPARED BY A LICENSED PROFESSIONAL ENGINEER TO CARRY ALL IMPOSED LOADS IN A MANNER THAT DOES NOT OVERSTRESS THE HOME STRUCTURE.
- THE LOAD ON THIS PAGE HAS BEEN PREPARED TO COMMUNICATE THE IMPOSED LOAD REQUIREMENTS FOR THE HOME AND IS INTENDED TO BE UTILIZED BY A PROFESSIONAL ENGINEERING IN CONFORMANCE WITH LOCAL BUILDING CODES.
- FOUNDATION LOADS ABOVE REFLECTS THE FOLLOWING:
 - OFF FRAME BASEMENT & CRAWL FOUNDATION DESIGN FOR: 40' - 0" MIN. TO 41' - 0" MAX. 3-SECTION MODULAR 1 STORY- 30 PSF ATTIC LIVE
 - 117/ 90 MPH EXPOSURE C-enclosed
 - 119.5 PSF, MAX. GROUND SNOW LOAD.
 - 40 PSF FL. LL., 10PSF T.C.D.L., 10PSF B.C. D.L., 13PSF FL. DL. & 30PSF B.C.L.L MAX. GROUND SNOW LOAD.
 - SEISMIC DESIGN CATEGORY C SDS=0.49
- ALL DESIGN AND CONSTRUCTION IS SUBJECT TO THE AUTHORITY HAVING JURISDICTION. CONTACT LOCAL BUILDING DEPARTMENT FOR FROST LINE AND SOIL REQUIREMENTS.
- FLOOR OR FOUNDATION WALL MUST BE INSULATED TO MEET A CONDITION SPACE AS REQUIRED BY HVAC DESIGN AS APPROVED BY BUILDING JURISDICTION. FOUNDATION WALL INSULATION SHALL BE PROVIDED AND INSTALLED BY OTHERS ON-SITE.
- ALL FOUNDATION AND SITE WORK TO BE PERFORMED BY A LICENSED PROFESSIONAL CONTRACTOR.
- THIS IS NOT INTENDED FOR CONSTRUCTION DESIGN. FOUNDATION MUST BE DESIGNED TO CARRY ALL IMPOSED LOADS INCLUDING BUT NOT LIMITED TO FORCES INDICATED ABOVE FOR SPECIFIC STRUCTURE BY REGISTERED PROFESSIONAL ENGINEER IN ACCORDANCE WITH APPLICABLE BUILDING CODES.
- PLEASE REFER TO THE PROVIDED FOUNDATION DESIGN PACKAGE FOR ALL FOUNDATION CONSTRUCTION REQUIREMENTS.
- PLEASE CONTACT JOHN WELDY DIRECTOR OF ENGINEERING AT 574.825.7500 FOR ADDITIONAL INFORMATION. PLEASE PROVIDE FILENAME:993Q-12.S.G.C.22.61.72(_)