



18.50043628

ENGINEERS
PLANNERS
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August 23, 2018

Mr. Mike Hamm, P.E.
State of North Carolina
Department of Insurance
Manufactured Building Division
322 Chapanoke RD.
Suite 200
Raleigh, NC 27603

RE: Clayton Homes #958

Model: SN250252-NC

Dear Mr. Hamm,

Enclosed, you will find one (1) copy of the above mentioned project for your files.

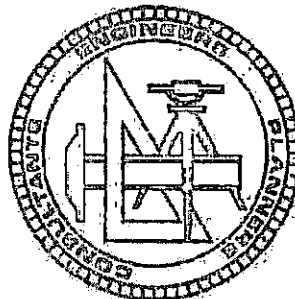
Should you have any questions or comments, please contact me at your earliest convenience.

Sincerely,


David Richter

David Richter
Account Manager

Enclosures



CMH
Manufacturing, Inc.
engineering department - modular

APPROVED BY

 8/23/2018
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 David Richter

Date:
 8/16/2018

TYPE : MODULAR

MODEL PLAN INDEX

Model #	SN250252	State
Manufacturer	CMH Manufacturing, Inc.	NC
Brand Name	CLAYTON	
Unit Size	29'-8"x68'-0"	
Description	3 BEDROOM / 2 BATH	

Category	Document Description	Page or Sheet #
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<i>Technical Sheet</i>	<i>Light & Vent</i>	TS-1
<i>Technical Sheet</i>	<i>Heat Loss Calc</i>	ATTACHED
<i>Technical Sheet</i>	<i>HVAC System Calc</i>	ATTACHED
<i>Technical Sheet</i>	<i>Electrical Load Calc</i>	TS-5
<i>Model Plan</i>	<i>Cover Sheet</i>	1-0
<i>Model Plan</i>	<i>Cross Section / Fastening Schedule</i>	1-0.2
<i>Model Plan</i>	<i>Master Plan</i>	1-1
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<i>Model Plan</i>	<i>Exterior Elevations - Front & Right</i>	20-1
<i>Model Plan</i>	<i>Exterior Elevations - Rear & Left</i>	20-2
<i>Model Plan</i>	<i>OFF Frame Foundation</i>	21-30PSF
<i>Technical Sheet</i>	<i>OFF-Frame Foundation Calculations</i>	ATTACHED
<i>Model Plan</i>	<i>Dryer Installation Details</i>	4-1
<i>Model Plan</i>	<i>Electrical Legend</i>	TS-6
<i>Technical Sheet</i>	PLUMBING PLAN	PLN-1.8
<i>Technical Sheet</i>	TRUSSES	ATTACHED
SEE APPROVED MODULAR MANUAL FOR ;		
1. SECTIONS		2. TYPICAL DETAILS
3. REQUIRED CONSTRUCTION METHODS		4. MATERIALS

CMH


Manufacturing, Inc.
engineering department - modular

REVISIONS		
DATE :	REVISION BY :	DAC
August 16, 2018	REVISION DATE :	

TECHNICAL SHEET FOR LIGHT / VENT DATA

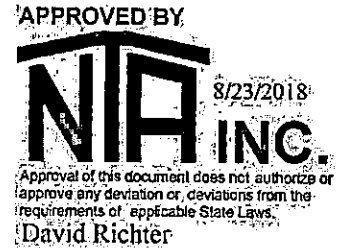
MODEL NUMBER	SN250252
SIZE OF UNIT	29'-8"x68'-0"
WINDOW SQ. FTG. STD.	
WINDOW SQ. FTG. W/ OPT.	
FIGURED FOR :	CLAYTON WINDOWS
PERCENTAGE OF LIGHT REQ'D.	8%
PERCENTAGE OF VENT REQ'D.	4%

Room	Area	Square Footage Installed		Required		Percentage of Installed		Artificial Light	Artificial Vent
		Light	Vent	Light	Vent	Light	Vent		
MASTER BEDROOM	255.7	29.8	15.2	20.5	10.2	11.7%	5.9%		
LIVING ROOM	351.9	44.7	22.8	28.2	14.1	12.7%	6.5%		
BEDROOM 2	143.2	29.8	15.2	11.5	5.7	20.8%	10.6%		
BEDROOM 3	143.8	12.2	6.2	11.5	5.8	8.5%	4.3%		
KITCHEN	209.4	10.1	2.2	16.8	8.4	4.8%	1.1%	YES	YES
DINING ROOM	112.7	31.3	12.4	9.0	4.5	27.8%	11.0%		

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REScheck Software Version 4.6.3 Compliance Certificate



Project Title: SN250252

Energy Code: North Carolina Energy Conservation Code
Location: Harnett County, North Carolina
Construction Type: Single Family
Project Type: New construction
Glazing Area Percentage: 14%
Heating Degree Days: 3499
Climate Zone: 4

Construction Site:

Owner/Agent:
FINK

Designer/Contractor:

Dale Clodfelter
 CMH Manufacturing Inc.
 304 E. Church St.
 Richfield, NC 28137
 704-463-7333
 dale.clodfelter@schulthomes.com

Compliance: Passes using UA trade-off

Compliance: 4.1% Better Than Code **Maximum UA: 362** **Your UA: 347** **Maximum SHGC: 0.30** **Your SHGC: 0.29**
 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.

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Glazing or Door U-Factor	UA
Ceiling 1: Flat Ceiling or Scissor Truss	2017	38.0	0.0		61
Wall 1: Wood Frame, 16" o.c.	1758	15.0	0.0		115
Window: 3654: Vinyl/Fiberglass Frame, Double Pane with Low-E SHGC: 0.28	14			0.340	5
Window: 3660: Vinyl/Fiberglass Frame, Double Pane with Low-E SHGC: 0.30	45			0.350	16
Window: 3672: Vinyl/Fiberglass Frame, Double Pane with Low-E SHGC: 0.28	144			0.340	49
Window: 5835: Vinyl/Fiberglass Frame, Double Pane with Low-E SHGC: 0.33	14			0.340	5
Window: 7218 ARCH TOP: Vinyl/Fiberglass Frame, Double Pane with Low-E SHGC: 0.30	6			0.350	2
Door: glass: Glass SHGC: 0.29	20			0.320	6
Door: solid: Solid	18			0.140	3
Floor 1: All-Wood Joist/Truss, Over Unconditioned Space	2017	22.0	0.0		85

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 North Carolina Energy Conservation Code requirements in REScheck Version 4.6.3 and to comply with the mandatory requirements listed in the REScheck Inspection Checklist.

DALE CLODFELTER

Name - Title

Signature

Date

Project Notes:

TS-2.0



REScheck Software Version 4.6.3 Inspection Checklist

Energy Code: North Carolina Energy Conservation Code
Location: Harnett County, North Carolina
Construction Type: Single Family
Project Type: New construction
Glazing Area Percentage: 14%
Heating Degree Days: 3499
Climate Zone: 4

Ceilings:

- Ceiling 1: Flat Ceiling or Scissor Truss, R-38.0 cavity insulation

Comments:

Above-Grade Walls:

- Wall 1: Wood Frame, 16" o.c., R-15.0 cavity insulation

Comments:

Windows:

- Window: 3654: Vinyl/Fiberglass Frame, Double Pane with Low-E, U-factor: 0.340, SHGC: 0.28,
For windows without labeled U-factors, describe features:

#Panels ____ Frame Type _____ Thermal Break? ____ Yes ____ No

Comments:

- Window: 3660: Vinyl/Fiberglass Frame, Double Pane with Low-E, U-factor: 0.350, SHGC: 0.30,
For windows without labeled U-factors, describe features:

#Panels ____ Frame Type _____ Thermal Break? ____ Yes ____ No

Comments:

- Window: 3672: Vinyl/Fiberglass Frame, Double Pane with Low-E, U-factor: 0.340, SHGC: 0.28,
For windows without labeled U-factors, describe features:

#Panels ____ Frame Type _____ Thermal Break? ____ Yes ____ No

Comments:

- Window: 5835: Vinyl/Fiberglass Frame, Double Pane with Low-E, U-factor: 0.340, SHGC: 0.33,
For windows without labeled U-factors, describe features:

#Panels ____ Frame Type _____ Thermal Break? ____ Yes ____ No

Comments:

- Window: 7218 ARCH TOP: Vinyl/Fiberglass Frame, Double Pane with Low-E, U-factor: 0.350, SHGC: 0.30,
For windows without labeled U-factors, describe features:

#Panels ____ Frame Type _____ Thermal Break? ____ Yes ____ No

Comments:

Doors:

- Door: glass: Glass, U-factor: 0.320, SHGC: 0.29,

Comments:

- Door: solid: Solid, U-factor: 0.140

Comments:

Floors:

- Floor 1: All-Wood Joist/Truss, Over Unconditioned Space, R-22.0 cavity insulation

Comments:

Floor insulation is installed to maintain permanent continuous contact with the underside of the subfloor decking, and insulation ends are blocked. Insulation supports that are noncontinuous (i.e., tension support wires) are spaced no more than 18 inches apart and are within 6 inches from each end of the insulation.

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Solar Heat Gain Coefficient:

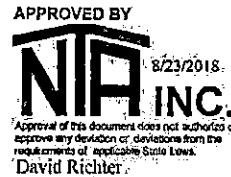
- Solar Heat Gain Coefficient (SHGC) values are determined in accordance with the NFRC test procedure or taken from the default table.

Air Leakage:

- Joints (including rim joist junctions), attic access openings, penetrations, and all other such openings in the building envelope that are sources of air leakage are sealed with caulk, gasketed, weatherstripped or otherwise sealed with an air barrier material, suitable film or solid material.
- Air barrier and sealing exists on common walls between dwelling units, on exterior walls behind tubs/showers, and in openings between window/door jambs and framing.
- Recessed lights in the building thermal envelope are 1) type IC rated and ASTM E283 labeled and 2) sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.
- Access doors separating conditioned from unconditioned space (e.g., attic, unconditioned basements and crawlspaces) are weather-stripped and insulated (without insulation compression or damage). Where loose fill insulation exists, a wood framed or equivalent baffle is installed to maintain insulation application. Required insulation values are as follows:
 - (1) Hinged vertical doors have a minimum of R-5 insulation.
 - (2) Hatches/scuttle hole covers have a minimum of R-10 insulation.
 - (3) Pull down stairs have a minimum of R-5 rigid insulation.
- Site-built masonry fireplaces have doors and comply with Section R1006 of the North Carolina Residential Code for combustion air.

Air Sealing and Insulation:

- Building envelope air tightness and insulation installation complies with one of the following (mark the method that was applied):
 - (1) ___ Post rough-in blower door test result of less than or equal to 5 ACH at 50 pascals.
 - (2) ___ Post rough-in blower door test result of less than or equal to 0.30 CFM50/square foot of surface area.
 - (3) ___ Visual inspection. The following items, along with all other air leakage requirements in this report, are certified by the builder, permit holder or registered design professional as completed.
 - (a) Ceiling/attic: Sealants or gaskets provide a continuous air barrier system joining the top plate of framed walls with either the ceiling drywall or the top edge of wall drywall to prevent air leakage. Top plate penetrations are sealed.
 - (b) Ceiling/attic: For ceiling finishes that are not air barrier systems such as tongue-and-groove planks, air barrier systems (e.g., taped house wrap) are used above the finish.
 - (c) Above Grade Walls: Sill plate is gasketed or sealed to subfloor or slab.
 - (d) Windows/doors: Space between window and door jambs and framing are sealed.
 - (e) Floors: Air barrier system is installed at any exposed edge of insulation.



Sunrooms:

- Sunrooms that are thermally isolated from the building envelope have a maximum fenestration U-factor of 0.40 and the maximum skylight U-factor of 0.75.
- Sunrooms with cooling systems shall have a maximum fenestration SHGC or 0.40 for all glazing.

Materials Identification and Installation:

- Materials and equipment are installed in accordance with the manufacturer's installation instructions.
- Materials and equipment are identified so that compliance can be determined.
- Manufacturer manuals for all installed heating and cooling equipment and service water heating equipment have been provided.
- Insulation R-values and glazing U-factors are clearly marked on the building plans or specifications.

Duct Insulation:

- Supply and return ducts in unconditioned space and outdoors are insulated to R-8. Supply ducts inside semi-conditioned space are insulated to R-4.

Duct Construction and Testing:

- Building framing cavities are not used as supply ducts.
- All joints and seams of air ducts, air handlers, filter boxes, and building cavities used as return ducts are sealed. Joints and seams comply with Part V - Mechanical, Section 603.9 of the North Carolina Residential Code.
- Postconstruction total duct leakage test (including air handler enclosure) has been performed and results are less than or equal to 121.0 cfm (6 cfm per 100 ft2 of conditioned floor area) pressure differential of 0.1 inches w.g. Tests are performed according to North Carolina Energy Conservation Code guidelines (Section 403.2.2).

Temperature Controls:

- Where the primary heating system is a forced air-furnace, at least one programmable thermostat is installed to control the primary heating system and has set-points initialized at 70 degree F for the heating cycle and 78 degree F for the cooling cycle.

- Heat pumps having supplementary electric-resistance heat have controls that prevent supplemental heat operation when the compressor can meet the heating load.

Heating and Cooling Equipment Sizing:

- Heating and cooling equipment shall be sized in accordance with the North Carolina Mechanical Code.
- For systems serving multiple dwelling units documentation has been submitted demonstrating compliance with 2009 IECC Commercial Building Mechanical and/or Service Water Heating (Sections 503 and 504).

Circulating Service Hot Water Systems:

- Circulating service hot water pipes are insulated to R-2.
- Circulating service hot water systems include an automatic or accessible manual switch to turn off the circulating pump when the system is not in use.

Heating and Cooling Piping Insulation:

- HVAC piping conveying fluids above 105 degrees F or chilled fluids below 55 degrees F are insulated to R-3.

Swimming Pools:

- Heated swimming pools have an on/off heater switch.
- Pool heaters operating on natural gas or LPG have an electronic pilot light.
- Timer switches on pool heaters and pumps are present.

Exceptions:

Where public health standards require continuous pump operation.

Where pumps operate within solar- and/or waste-heat-recovery systems.

- Heated swimming pools and in-ground permanently installed spas have a vapor-retardent cover.

Exceptions:

Covers are not required when 70% of the heating energy is from site-recovered energy or solar energy source.

Lighting Requirements:

- A minimum of 75 percent of the lamps in permanently installed lighting fixtures can be categorized as one of the following:
 - (a) Compact fluorescent
 - (b) T-8 or smaller diameter linear fluorescent
 - (c) 40 lumens per watt for lamp wattage <= 15
 - (d) 50 lumens per watt for lamp wattage > 15 and <= 40
 - (e) 60 lumens per watt for lamp wattage > 40

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Other Requirements:

- Snow- and ice-melting systems with energy supplied from the service to a building shall include automatic controls capable of shutting off the system when a) the pavement temperature is above 50 degrees F, b) no precipitation is falling, and c) the outdoor temperature is above 40 degrees F (a manual shutoff control is also permitted to satisfy requirement 'c').

Certificate:

- A permanent certificate is provided on or in the electrical distribution panel listing the predominant insulation R-values; window U-factors; type and efficiency of space-conditioning and water heating equipment. The certificate does not cover or obstruct the visibility of the circuit directory label, service disconnect label or other required labels.

NOTES TO FIELD: (Building Department Use Only)



North Carolina Energy Efficiency Certificate

Insulation Rating

	R-Value
Ceiling / Roof	38.00
Above-Grade Wall	15.00
Below-Grade Wall	0.00
Floor	22.00
Ductwork (unconditioned spaces):	_____

Glass & Door Rating

	U-Factor	SHGC
Window	0.34	0.28
Door	0.32	0.29

Heating & Cooling Equipment

	Efficiency
Heating System: _____	_____
Cooling System: _____	_____
Water Heater: _____	_____

Building Air Leakage and Duct Test Results

Air Leakage Compliance Method: Visual Inspection
 Air Leakage Test

Building Air Leakage Test Results _____
 Name of Air Leakage Tester _____
 Duct Tightness Test Results _____
 Name of Duct Tester _____

Name: _____ Date: _____

Comments:

VISUAL INSPECTION

_____ PLANT

_____ FIELD

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APPLICATION ENGINEERING FOR HEATING AND COOLING

CMH Mfg., Inc.
2225 South Holden Road
Richfield, NC 27417-0386

Manufacturer's Model #: SN250252-3545
HVAC System Type: INFLOOR STRAIGHT ALUM. WITH PER REG - **CMH DESIGN** -

Prepared By LaSalle Air Systems 8/22/2018 (Method & Output © 2018)
All rights reserved: this information proprietary to LaSalle Bristol Co. and CMH Mfg., Inc.

Calculations on this page are based on design standards set forth in ASHRAE and ACCA Manuals J Rev 8.2 and D Rev 1.1. System registers are located for best distribution based on Manual T. Design calculations are based on worst case orientation. Room loads may vary based on actual conditions.

ENTIRE HOUSE VALUES - DESIGN ZONE: NC, Region 4A NCECC (2012)/IECC (2009) 36N Latitude

COOLING LOAD: 31,096 Btuh for Outside Temp/Humidity of 92 ° F (33 C)/ 48% and Inside reduced to 75 ° F (23 C)/ 50%
HEATING LOAD: 32,706 Btuh based on outside temp of 16 ° F (-9 C) with inside temp raised to 72 ° F (22 C)
Crawlspace is not heated by the primary air handler. Actual UA = 332 Max UA (Table R402.1.2) = 362.1
Use net wall area, not gross wall

CONSTRUCTION DETAILS & U / SHGC VALUES: (22+Non-ins Rim - 15 - 38)

Total Cond. Floor Area:	2017.33 s.f.	TRUE Outside Perimeter:	195.33 ft		
Level 1 Ceiling:	108 to 108 in.	Level 2 Ceiling:	0 to 0 in.	Level 3 Ceiling:	0 to 0 in.
Primary Wall Area:	1494.63 s.f. (Net)	Dark Roof(U):	0.027	FLOOR DUCTS (U):	0.0444 Duct TEL
Secondary Wall Area:	0.00 s.f. (Net)	Prim Wall (U):	0.070	ATTIC DUCTS (U):	0.125 441.6 ft
TOTAL Low-E window	225.60 s.f.	Sec Wall (U):	0.035	EXT. DUCTS (U):	0.125
TOTAL Patio Door	0.00 s.f.	Exp Floor(U):	0.044	INFLOOR DUCT AREA:	373.67 S.F. @ 51.2 TD/ 26.6 TD
TOTAL Glass Block	0.00 s.f.	Low-E wi 0.350 / 0.28		ATTIC DUCT AREA:	0 S.F.(return) @ 96 TD/ 88.2 TD
TOTAL Skylite	0.00 s.f.	Patio Doc 0.330 / 0.27		EXT. DUCT AREA:	69.115 S.F. @ 96 TD/ 45 TD
TOTAL Door1 Area:	37.78 s.f.	Glass Blc 0.510 / 0.41		PEOPLE:	4 4540.1 Btuh Total Appliances
TOTAL Door2 Area:	0.00 s.f.	Skylite 0.790 / 0.64		FIREPLACES:	0
All Glass % of Floor:	11.18 %	Door 1: 0.140		DUCT GAIN: @ Semi-Tight	1548 Btuh
All Glass % of Wall:	12.83 %	Door 2: 0.670		DUCT LOSS:	4044 Btuh
LATENT GAIN:	6157 Btuh			Summer Infiltr (7.5 mph):	35.3 cfm
Mech. Ventilation :	102.91 cf (48.5 L/s)	Altitude: 1000 ft		Winter Infiltration (15 mph):	66.6 cfm @ Semi-Tight

ROOM BY ROOM VALUES:

Heat Exiting Furnace:	92 deg	A/C Exiting :	50 deg	1192.3 FPM, max velocity in trunk #: 3						
Actual heating and cooling required in each room and flow set to maximum of either heating or cooling				0.26 Max pressure at A/H						
ROOM NAME		HEATING LOSS (Btu)	COOLING GAIN (Btu)	CFM DIST	Cooling Air Values for 3 ton unit		Heating Air Values for 40 10.0 KW 90 % Gas/Oil Elec			Maximum A/C capacity Calibrated Blower Test Btuh (alt adj)
					CFM	Btuh	CFM	Btuh E	Btuh	
Living Room	h	4,629	5,069	174	173	4,714	164	4,589	4,349	5,635
Foyer	h	1,073	874	40	-	-	-	-	-	-
W.I.C.	h	2,196	2,223	83	55	1,485	52	1,446	1,370	1,775
M. Bedroom	h	4,446	4,366	167	180	4,898	170	4,768	4,519	5,856
M. Bath	h	3,716	3,113	140	167	4,543	158	4,422	4,191	5,430
Utility	h	1,472	1,075	55	91	2,493	87	2,427	2,300	2,981
Kitchen	h	3,541	3,078	133	170	4,626	160	4,503	4,268	5,530
Dining Room	h	3,196	3,580	120	130	3,551	123	3,457	3,276	4,244
Bath #2	h	1,001	637	38	87	2,359	82	2,296	2,176	2,819
Bedroom #3	h	3,488	3,080	131	111	3,023	105	2,943	2,789	3,614
Bedroom #2	h	3,947	4,002	148	145	3,958	137	3,853	3,651	4,731
TOTALS		32,706	31,096	1,230	1,308	35,650	1,237	34,704	32,892	42,615

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APPLICATION ENGINEERING DUCT AIR FLOW AND SIZING WORKSHEET (MANUAL D)

Manufacturer: CMH Mfg., Inc.
2225 South Holden Road
Richfield, NC 27417-0386

Model #: SN250252-3545
HVAC System Type: INFLOOR STRAIGHT ALUM. WITH PER REG - CMH DESIGN -
Design Zone: NC, Region 4A NCECC (2012)/IECC (2009)

Prepared by LaSalle Air Systems 8/22/2018 All rights reserved. This information proprietary to LaSalle Bristol Co. and CMH Mfg., Inc.
Calculations include factors for duct air temperature change and pressure drops through ducts. All joints are tightly fitted or sealed.

Blower CFM 1323 @ 0.8 E.S.P. TEL= 502.6371 FR= 0.0975 (A/C Coil included)
Altitude = 1,000 ft

BR #	Trunk #	Metal (ft)	F. G. (ft)	Flex (ft)	Bends/ Fittings(ft)	Total Eq. Length	Heat Btuh	Cool Btuh	Elec Heat cfm	(Altitude Adj.)			User Input		Final Round Size	Final Velocity fpm
										Cool cfm	Design cfm	Round Size (i.d.)	Rectangle Size (i.d.) x (i.d.)			
1 Living Room	6	27	0	28	377.7	432.7	2,290	2,508	96	90	96	6.33		6.0	488.0	
2 Living Room	6	27	0	28	367.7	422.7	2,339	2,561	98	92	98	6.32		6.0	498.3	
3 W.I.C.	5	30	0	28	367.6	425.6	2,196	2,223	92	80	92	6.19		5.0	673.9	
4 M. Bedroom	5	30	0	28	347.6	405.6	2,249	2,209	94	79	94	6.13		6.0	479.3	
5 M. Bedroom	5	30	0	28	357.6	415.6	2,196	2,157	92	77	92	6.13		6.0	468.0	
6 M. Bath	2	55	0	8	264.7	327.7	1,550	1,298	65	46	65	4.96		5.0	475.5	
7 M. Bath	2	55	0	5	318.2	378.2	2,166	1,815	91	65	91	5.86		6.0	461.6	
8 Utility	2	55	0	5	343	403.0	1,472	1,075	62	38	62	5.20		6.0	313.6	
9 Kitchen	3	90	0	5	346.6	441.6	1,751	1,522	73	54	73	5.74		6.0	373.2	
10 Kitchen	3	90	0	5	336.6	431.6	1,789	1,555	75	56	75	5.73		6.0	381.2	
11 Dining Room	3	90	0	5	262.2	357.2	1,577	1,766	66	63	66	5.12		5.0	483.7	
12 Dining Room	3	90	0	5	252.2	347.2	1,620	1,814	68	65	68	5.12		5.0	496.9	
13 Bath #2	3	90	0	5	332.3	427.3	1,001	637	42	23	42	4.55		6.0	213.3	
14 Bedroom #3	3	90	0	5	232.2	327.2	3,488	3,080	146	110	146	6.76		6.0	743.3	
15 Bedroom #2	6	27	0	28	357.7	412.7	1,525	1,546	64	55	64	5.31		5.0	467.9	
16 Bedroom #2	6	27	0	29	358.1	414.1	2,422	2,456	101	88	101	6.36		6.0	516.0	
N/A Other Rooms							1,441	1,015								
							32,706	31,096	1,323	1,081	1,323					

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TRUNK DUCT LISTING ANALYSIS

TRUNK # 1	42	55	97.0	32,706	31,096	1323	12.28	12	14	14.2	1134.3
TRUNK # 2	13	144.921	157.9	5,188	4,188	217	6.50	5	14	8.9	446.5
TRUNK # 3	48	144.921	192.9	11,226	10,375	470	9.16	5	14	8.9	966.2
TRUNK # 4		22	220.739	242.7	15,218	15,660	637	10.79		12.0	810.6
TRUNK # 5	30	242.739	272.7	6,642	6,589	278	8.16	5	14	8.9	571.6
TRUNK # 6	27	242.739	269.7	8,576	9,071	359	9.00	5	14	8.9	738.1
TRUNK # 7				-	-	0		0		0	
TRUNK # 8				-	-	0		0		0	
TRUNK # 9				-	-	0		0		0	
TRUNK # 10				-	-	0		0		0	
TRUNK # 11				-	-	0		0		0	
TRUNK # 12				-	-	0		0		0	
TRUNK # 13				-	-	0		0		0	
TRUNK # 14		17		-	-	0		0		0	
TRUNK # 15		41		-	-	0		0		0	
LONGEST RETURN DUCT		41	20	61		1323	11.86	18	24	22.7	441.1

APPLICATION ENGINEERING EQUIPMENT SELECTION AND SIZING WORKSHEET (MANUAL S)

Manufacturer: CMH Mfg., Inc.
2225 South Holden Road
Richtfield, NC 27417-0386

Model #: SN250252-3545
HVAC System Type: INFLOOR STRAIGHT ALUM. WITH PER REG - CMH DESIGN -
Design Zone: NC, Region 4A NCECC (2012)/IECC (2009)

Prepared by LaSalle Air Systems 8/22/2018 All rights reserved. This information proprietary to LaSalle Bristol Co. and CMH Mfg., Inc.

RESULTS FROM MANUAL-J CALCULATIONS: Worst Case Orientation

HEATING LOAD:	32,706 Btuh at 16 °	REQ'D BLOWER CFM:	1,308 cfm at altitude of 1,000 ft
SENSIBLE CLG LOAD:	24,939 Btuh at 92 °	Entering Air DRY Bulb:	76.3 ° Mech. Ventilation: 103
LATENT CLG LOAD:	6,157 Btuh at 92 °	Entering Air WET Bulb:	61.3 ° Entering Air RH: 53 %
GRAINS DIFFERENCE:	46	Outside wet bulb:	72.0 ° outside RH: 48.2 %

FILL IN BLANKS IN EACH SECTION FROM THE H.V.A.C. EQUIPMENT DATA CHARTS: (Do not use ARI Ratings!)

Air handler model #: _____ Condenser model #: _____

Blower Data Select blower speed in COOLING mode: _____

Blower CFM is between 1125 > _____ < 1522 for Total (External) Static Pressure between 0.7 > _____ < 0.9

Electric, Gas or Oil Furnace Select blower speed in HEATING mode: _____

Output Btuh is between 34341 > _____ < 45788

Blower CFM is between 593 > _____ < 700 for Temp. rise of 55-65

Blower CFM is between 700 > _____ < 856 for Temp. rise of 45-55

Blower CFM is between 856 > _____ < 1101 for Temp. rise of 35-45

Cooling Equipment S/T Ratio = 0.8

Leaving Temp = 50.4 °

TD = 24.6 °

At 92F outside, Total A/C output from 31718 btuh _____ to 35760 btuh Is GOOD.

At 92F outside, Total A/C output from 35760 btuh _____ to 37315 btuh Is MARGINAL.

Sensible Capacity is from 21860 btuh _____ to 28017 btuh

Latent Capacity is from 6033 btuh _____ to 9235 btuh

APPROVED BY

NIA INC.
8/23/2018

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David Richter

Mechanical Ventilation is 7.7 % of blower cfm.

Dry bulb increases by: 1.3 °

Wet bulb increases by: 0.7 °

Heat Pump with Supplemental Heating Coils

Data from performance charts

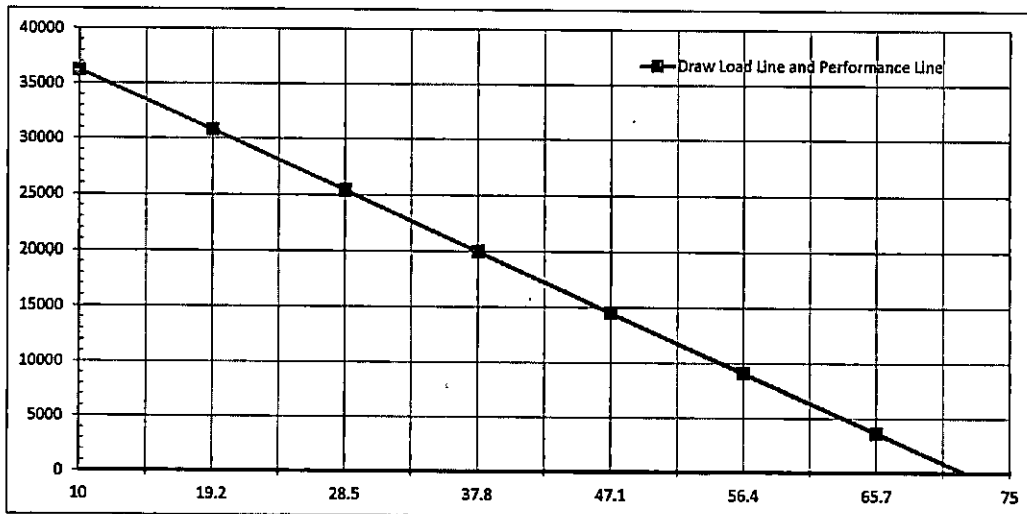
Data from load calculation

_____ btuh at _____ F outside

0 btuh at 72 F outside

_____ btuh at _____ F outside

32,706 btuh at 16 F outside



At winter design temperature of 16 F outside, the distance between the lines is _____ btuh

which is the Supplemental Heat divided by 3400 = _____ KW.

APPLICATION ENGINEERING INTERNATIONAL MECHANICAL CODE - Chapter 4 Ventilation Worsheel

Manufacturer: CMH Mfg., Inc.
2225 South Holden Road
Richfield, NC 27417-0386

Model #: SN250252-3545
HVAC System Type: INFLOOR STRAIGHT ALUM. WITH PER REG - CMH DESIGN -
Design Zone: NC, Region 4A NCECC (2012)/IECC (2009)

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RESULTS FROM MANUAL-J CALCULATIONS: Worst Case Orientation

HEATING LOAD:	32,706 Btuh at 16 °	REQ'D BLOWER CFM:	1,308 cfm at altitude of 1000 ft
SENSIBLE CLG LOAD:	24,939 Btuh at 92 °	Entering Air DRY Bulb:	76.3 ° Mech. Ventilation : 103
LATENT CLG LOAD:	6,157 Btuh at 92 °	Entering Air WET Bulb:	61.3 ° Entering Air RH: 53 %
GRAINS DIFFERENCE:	46	Outside wet bulb:	72.0 ° outside RH: 48 %

Natural or Mechanical: Test the infiltration at 50 Pa should result in 513.9 CFM infiltration being 1.698 ACH (to be confirmed by testing)
(5 ACH = 1513 CFM) (3 ACH = 907 CFM)

Mechanical ventilation is required

To Meet Natural Ventilation: Increase Openable Area by 194 %

ROOM NAME	Room Area	Openable Area		ROOM NAME	Room Area	Openable Area	
		Required	Built			Require	Built
Living Room	297.9	11.9	27.00	Bedroom #3	187.9	7.5	7.50
Foyer	90.2	3.6	0.00	Bedroom #2	208.9	8.3	18.00
W.I.C.	147.1	5.8	9.00		0.0	0.0	0.00
M. Bedroom	234.9	9.3	18.00		0.0	0.0	0.00
M. Bath	220.0	8.8	6.75		0.0	0.0	0.00
Utility	107.5	4.3	0.00		0.0	0.0	0.00
Kitchen	257.1	10.2	7.05		0.0	0.0	0.00
Dining Room	185.4	7.4	19.50		0.0	0.0	0.00
Bath #2	80.3	3.2	0.00		0.0	0.0	0.00
TOTAL					2017.3	80.3	112.80

Mechanical Ventilation is Required In These Areas To Meet IMC 2012/2015 Per Table 403.3.1.1:

SPACE CLASSIFICATIONS	Occupancy	Area	Outdoor Exhaust		ZONE AIR DISTRIBUTION	Air
			Air	Air		Flow
Private Living Area	3.9	1459.8	102.9	0.0	Floor Supply of Warm Air/Floor Return	885
Private Kitchen	0.0	257.1	0.0	25.0	Floor Supply of Warm Air/Floor Return	169.8
Private Baths	0.0	300.4	0.0	80.0	Floor Supply of Warm Air/Floor Return	253.2
	0.0	0.0	0.0	0.0		0
	0.0	0.0	0.0	0.0		0
	0.0	0.0	0.0	0.0		0
Total	3.9	2,017.3	102.9	105.0		1,308

System Ventilation Efficiency:

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ELECTRICAL FEEDER CALCULATION

CMH

Manufacturing, Inc.
engineering department - modular

PAGE:	1 of 1
DATE:	16-Aug-18
BY:	DAC

MODEL NO.	SN250252	Per NEC 220-30
-----------	----------	----------------

1. LIGHTING LOAD:					
1st floor			2nd floor		
length =	68.00	FT.	length =	0.00	FT.
width =	29.67	FT.	width =	0.00	FT.
Total area =	2017	SQ. FT.	Minimum number of 15 Amp circuits =	4	
X	3	VA			
TOTAL	6051	VA			


2. SMALL APPLIANCE LOAD:			3. LAUNDRY LOAD:		
Number of circuits	3		Number of circuits	1	
X	1500	VA	X	1500	VA
TOTAL	4500	VA	TOTAL	1500	VA

4. APPLIANCE LOAD:		
Electric Range =		12100 VA
Electric Water Heater =		5000 VA
Electric Clothes Dryer =		5600 VA
Cooktop =		0 VA
Wall Oven =		0 VA
Freezer =		1200 VA
Dishwasher & Disposal =		2376 VA
Gas furnace motor =		0 VA
Micro-wave oven		1200 VA

5. TOTAL OF OTHER LOADS (1, 2 & 3)		
	LEG A	
Lighting load =	6051	
Small appliance load =	4500	
Laundry =	1500	
Appliance load =	27476	
Sub-Total =	39527	
10000 VA @ 100% =	10000	
Remainder @ 40% =	11811	
Total =	21811	VA
	90.88	AMPS


6. HVAC LOAD:			
Lineal feet of baseboard heaters =		0	
Number of baseboard heater circuits =		0	
Total baseboard heater load =		0.0	Amps
Use 65% w/ less than 4 or 40% w/ 4 or more circuits (*)			
Electric furnace @ 65% (*)			
Circuit 1 =	60	Amps	39.00 Amps
Circuit 2 =	0	Amps	0.00 Amps
Air conditioner (*)			Amps
Total HVAC load (*- Use largest of these only) =		39.00	Amps

7. TOTAL OF ALL LOADS =	129.88	Amps
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 8/23/2018
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 David Richter

FURN SIZE
10KW

TS-5

DOOR AND WINDOW SCHEDULE				CODE COMPLIANCE	MODULAR MANUAL REFERENCES																																																																								
NOTE: FLOOR PLAN WINDOW SIZES WITH AN "SG" DESIGNATION REPRESENTS SAFETY GLAZING REQUIRED PER IRC SECTION R308.4				ALL PLANS MEET OR EXCEED THE FOLLOWING: North Carolina State Building Code Compliance: - NC Residential Code - 2012 Edition - NC Electrical Code - 2017	ITEMS BELOW ARE REFERENCED FOR NON PRESCRIPTIVE USE																																																																								
<table border="1"> <thead> <tr> <th>SIZES</th> <th>U-Value</th> <th>LIGHT (@ 6%)</th> <th>VENT (@ 4%)</th> </tr> </thead> <tbody> <tr><td>72 X 18 WDW.</td><td>0.35</td><td>6.90</td><td>-</td></tr> <tr><td>24 X35 WDW.</td><td>0.35</td><td>4.10</td><td>2.10</td></tr> <tr><td>24 X54 WDW.</td><td>0.35</td><td>6.80</td><td>3.50</td></tr> <tr><td>36 X 08 WDW.</td><td>0.35</td><td>0.50</td><td>-</td></tr> <tr><td>30 X 40 WDW.</td><td>0.35</td><td>6.30</td><td>3.20</td></tr> <tr><td>30 X 64 WDW.</td><td>0.35</td><td>8.80</td><td>4.50</td></tr> <tr><td>30 X 60 WDW.</td><td>0.35</td><td>9.90</td><td>5.10</td></tr> <tr><td>36 X 35 WDW.</td><td>0.35</td><td>6.60</td><td>3.30</td></tr> <tr><td>36 X 54 WDW.</td><td>0.35</td><td>10.80</td><td>5.50</td></tr> <tr><td>36 X 60 WDW.</td><td>0.35</td><td>12.20</td><td>6.20</td></tr> <tr><td>36 X 72 WDW.</td><td>0.35</td><td>14.90</td><td>7.60</td></tr> <tr><td>68 X 35 WDW.</td><td>0.35</td><td>10.10</td><td>2.20</td></tr> <tr><td>36 X 12 WDW.</td><td>0.35</td><td>1.50</td><td>-</td></tr> <tr><td>2-8 X 6-8 DOOR</td><td>0.35</td><td>-</td><td>-</td></tr> <tr><td>3-9 X 6-8 DOOR</td><td>0.35</td><td>-</td><td>-</td></tr> <tr><td>PATIO DOOR</td><td>0.35</td><td>DOOR IS OPT.</td><td>-</td></tr> <tr><td>ATRIUM DOOR</td><td>0.35</td><td>DOOR IS OPT.</td><td>-</td></tr> </tbody> </table>	SIZES	U-Value	LIGHT (@ 6%)	VENT (@ 4%)	72 X 18 WDW.	0.35	6.90	-	24 X35 WDW.	0.35	4.10	2.10	24 X54 WDW.	0.35	6.80	3.50	36 X 08 WDW.	0.35	0.50	-	30 X 40 WDW.	0.35	6.30	3.20	30 X 64 WDW.	0.35	8.80	4.50	30 X 60 WDW.	0.35	9.90	5.10	36 X 35 WDW.	0.35	6.60	3.30	36 X 54 WDW.	0.35	10.80	5.50	36 X 60 WDW.	0.35	12.20	6.20	36 X 72 WDW.	0.35	14.90	7.60	68 X 35 WDW.	0.35	10.10	2.20	36 X 12 WDW.	0.35	1.50	-	2-8 X 6-8 DOOR	0.35	-	-	3-9 X 6-8 DOOR	0.35	-	-	PATIO DOOR	0.35	DOOR IS OPT.	-	ATRIUM DOOR	0.35	DOOR IS OPT.	-		ELECTRICAL APPLIANCES AND LOADS ELECTRICAL - SEE PAGES PLN - 1.0 THRU PLN - 1.7 CALCULATION - SEE TECHNICAL SHEET ATTACHED FOR MODEL SPECIFIC ELECTRICAL PANEL LOAD CALC FOR 200 AMP SERVICE ANCHORAGE REQUIREMENTS FOUNDATION SECTIONS FOR PERIMETER ON FRAME: PER SETUP MANUAL FOUNDATION SECTIONS FOR PIER SET ON FRAME: PER SETUP MANUAL FOUNDATION SECTIONS FOR PERIMETER OFF FRAME: PER SETUP MANUAL TRUSSES - DETAILS / CALCULATIONS PER TRUSS PRINTS			
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FASTENING REQUIREMENTS: FOR DOORS AND WINDOWS, USE EITHER # 6 X 1" SCREWS, 7/16" X 1 1/2" X 16 GA. STAPLES, OR .092 X 2 1/4" PD NAILS, AT 12" ON CENTER MAXIMUM.				APPROVED BY  8/23/2018 David Richter Approval of this document does not authorize or approve any deviation or deviations from the requirements of applicable State Laws.	FLOOR: OFF FRAME CONSTRUCTION DETAILS - SECTIONS ON FLOORS FOR OFF FRAME: FL - 100 MARRIAGE WALLS - 2x CONSTRUCTION DETAILS - MW-20.0, MW-30.0, MW-40.0 CALCULATIONS - SEE CMW SECTION PLUMBING FIXTURES SEE PAGE PLN - 1.8 ALL MODELS ARE AVAILABLE WITH FLOOR PLAN REVERSED FROM LEFT TO RIGHT AND / OR FRONT TO BACK,																																																																								
DESIGN CRITERIA - FLOOR LIVE LOAD = 40 PSF - GROUND SNOW LOAD = 20 PSF - ATTIC LIVE LOAD = 10 PSF - OUTSIDE DESIGN TEMP. = 27 F - INSIDE TEMP. = 72 F - SEISMIC DESIGN CATEGORY "C" - WIND EXPOSURE - "C" - WIND LOAD = 100 MPH		CLASSIFICATION: - USE GROUP = R R3 RESIDENTIAL (NON-TRANSIENT) VA R5 RESIDENTIAL (NON-TRANSIENT) - CONSTRUCTION TYPE IS V-B (UNPROTECTED) - SOIL PROFILE CATEGORY "D" - ROOF MEAN HT 22'-0"		MARRIAGE WALL COLUMNS SPAN CHART DETAIL - SEE MATING WALL COLUMNS (PAGE MW-20.0) CALCULATIONS - SEE CMW SECTION																																																																									
ATTENTION LOCAL INSPECTION DEPARTMENT SET-UP INSTRUCTIONS FOR THIS MODULAR UNIT ARE INCLUDED BY ATTACHMENT TO THESE PLANS. ANY PLAN SET WHICH DOES NOT INCLUDE AN ATTACHMENT ENTITLED "SET UP MANUAL" IS INCOMPLETE SET-UP INSTRUCTIONS SEE SETUP MANUAL SENT WITH HOME				RIDGE BEAMS-SIZES AND MAX. SPAN CHART RIDGE BM. CHART-SEE MATING WALL PG., RC-60.0 FOR MAX. CALCULATIONS-SEE MATING WALL PGS. CRC SECTION	INSTRUCTIONS ON FILLING OUT PLAN SET BEFORE CONSTRUCTION YOU MUST CHECK THE APPROPRIATE BOX OF WHAT THE STRUCTURE IS TO BE BUILT TO BEFORE PRODUCTION BEGINS. THE MARK SET MUST ACCOMPANY THE UNIT THROUGH THE PRODUCTION PROCESS.																																																																								
REQUIREMENTS FOR FIRESTOPPING INSTALLATION OF NON-COMBUSTIBLE MATERIALS AROUND ALL OPENINGS THAT ARE VERTICAL PENETRATIONS IN THE FLR. AND CLG. ATTENTION LOCAL INSPECTION DEPARTMENT THE FOLLOWING ITEMS LISTED HAVE NOT BEEN COMPLETED BY CMH MFG, Inc., HAVE NOT BEEN INSPECTED BY NTA, INC AND ARE NOT CERTIFIED BY THE STATE OF NORTH CAROLINA MODULAR LABEL CODE COMPLIANCES MUST BE DETERMINED BY THE LOCAL JURISDICTION FOR THE FOLLOWING: - HVAC SYSTEM (SITE INSTALLATION AND CONNECTIONS) - THIS UNIT MUST BE CONNECTED TO A PUBLIC WATER SUPPLY AND SEWER SYSTEM, IF THESE ARE AVAILABLE.				THERMAL ZONE REQUIREMENT -THIS BUILDING DESIGN COMPLIES WITH OR EXCEEDS MINIMUM REQUIREMENTS FOR NORTH CAROLINA THERMAL ZONE 4 -MODEL IS DESIGNED TO MEET THERMAL ZONE 4 AND BELOW PER TABLE N1101.2 REFERENCED IN THE NORTH CAROLINA RESIDENTIAL CODE, 2012 EDITION FOR ONE & TWO FAMILY DWELLINGS. RESCHECK ANALYSIS AND COMPLIANCE REPORT FOR THERMAL ZONE CALCULATION IS PROVIDED FOR EACH SPECIFIC MODEL AND IS ATTACHED IN THE SUBMITTED MODEL APPROVAL PACKAGE.	EXTERIOR SIDEWALL HEADERS - SIZES AND MAXIMUM SPAN CHART HEADER CHART - SEE EXTERIOR WALL PAGE EW - 20.0 CALCULATIONS - CEW SECTION																																																																								
ATTENTION LOCAL INSPECTION DEPARTMENT: IF THIS STRUCTURE IS IN A THERMAL ZONE MORE STRINGENT THAN THAT LISTED ON THESE PLANS, IS SET ON PILINGS, OR IS INSTALLED AT A MOUNTAIN REGION OR COASTAL HIGH HAZARD SITE SUCH THAT WIND OR OTHER DESIGN PARAMETERS ARE INCREASED, THE DESIGN MUST BE DETERMINED TO BE ADEQUATE FOR ACTUAL SITE CONDITIONS. ALTERATIONS MAY BE REQUIRED TO BRING THE HOME INTO COMPLIANCE WITH THE MORE STRINGENT CONDITIONS.				FURNACE BTU'S PER ATTACHED HVAC CALCS INSULATION PACKAGES PER ATTACHED RESCHECK(S)	Service entrance conductors routed from their point of entrance into the structure, to their point of attachment to the service enclosure a distance horizontally not more than twice the nominal width of the service enclosure and vertically not more than the greater of 5 feet or twice the nominal height of the service enclosure shall be considered to be in compliance with the requirements of 230-70(a) of the current National Electrical Code. Service entrance conductors may be routed in the most direct route or at right angles. Service entrance conductors in excess of these specified limits will not be allowed unless specifically authorized by special permission from the electrical inspector having jurisdiction to accommodate adverse site conditions which would not reasonably allow installation within this criteria.																																																																								
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TYPICAL FASTENING SCHEDULE:

FLOOR FASTENING

RIM JOIST TO JOIST
FLOOR BLOCKING TO JOIST
MULTIPLE JOIST
DECKING TO FLOOR FRAMING

REFERENCE 'OFL' - FLOOR CONSTRUCTION CALCULATIONS OF THE MANUAL

PER FL-110 OR FL-510.0 IN APPROVED MANUAL
PER FL-100.0 IN APPROVED MANUAL
.131 x 3" NAILS @ 10" O.C., W/ GLUE BOX
PER FL-10 IN APPROVED MANUAL

EXTERIOR WALL FASTENING

LOWER TOP PLATE & BOTTOM PLATE TO STUD
DOUBLE TOP PLATES
HEADER TO STUDS
HEADER COMPONENTS
STUDS TO SILLS
EXTERIOR SIDING
BOTTOM PLATE TO FLOOR
SIDEWALL TO ENDWALL
WALL WALL TO WALL TOP PLATES
EXTERIOR WALL SHEATHING

REFERENCE 'CEW' - EXTERIOR WALL CONSTRUCTION CALCULATIONS OF THE MANUAL

PER EW-25 IN APPROVED MANUAL DOUBLE STUDS 7/16" x 2-1/2" x 15 GA. STAPLES @ 6" O.C.
PER EW-1 IN APPROVED MANUAL
PER EW-20 CHARTS IN APPROVED MANUAL
PER EW-20 IN APPROVED MANUAL
PER EW-20 IN APPROVED MANUAL
PER THE MANUFACTURER'S SPECIFICATIONS
PER EW-31 IN APPROVED MANUAL
PER EW-30 FOR NON-SHEARWALL OR PER SW-40 FOR SHEARWALL OR PER EW-0.0 IN APPROVED MANUAL
3" x 6" x .036" (20 GA.) GALVANIZED STEEL PLATE W/ (8) .131 x 3" NAILS AT EACH SIDE AT EACH
FOR APA RATED SHEATHING: 7/16" x 1-3/4" x 15 GA. STAPLES AT 6" O.C. AT ALL EDGES & 12" O.C. FIELD. FOR COMPOSITE WALLS, FASTEN PER EW-40. FOR SHEARWALL, FASTEN PER SW-40 OR ATTACHED PAGES (IF ATTACHED). ALL OTHER SHEATHING FASTENED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

MATING WALL FASTENING

LOWER TOP PLATE TO STUD
BOTTOM PLATE TO STUD
MULTIPLE STUDS
STANDARD COLUMN
DOUBLE TOP PLATES
BOTTOM PLATE TO FLOOR
MATING WALL TO ENDWALL
WALL TO WALL TOP PLATES

REFERENCE 'CMW' - MARRIAGE WALL CALCULATIONS OF THE MANUAL

PER MW-40 IN APPROVED MANUAL
PER MW-40 IN APPROVED MANUAL
7/16" x 2-1/2" x 15 GA. STAPLES OR .131 x 3" NAILS @ 16" O.C. TO EACH MEMBER
PER MW-20 IN APPROVED MANUAL
PER MW-40 IN APPROVED MANUAL
PER MW-31 IN APPROVED MANUAL
PER EW-30 IN APPROVED MANUAL
3" x 6" x .036" (20 GA.) GALVANIZED STEEL PLATE W/ (8) .131 x 3" NAILS AT EACH SIDE AT EACH WALL OR OVERLAPPED PLATE PER EW-0.

INTERIOR WALL FASTENING

BOTTOM PLATE TO STUDS
TOP PLATE TO STUD
DOUBLE STUDS
FLAT HEADER TO STUDS
WALL TO FLOOR
WALL TO WALL
TOP PLATE TO ROOF SYSTEM
GYPSUM TO WALL FRAMING

PER PT-40 IN APPROVED MANUAL
PER PT-40 IN APPROVED MANUAL
7/16" x 2-1/2" x 15 GA. STAPLES @ 16" O.C.
PER PT-20 IN APPROVED MANUAL
PER PT-40 IN APPROVED MANUAL
PER PT-30 IN APPROVED MANUAL
PER PT-40 IN APPROVED MANUAL
PER THE RESIDENTIAL BUILDING CODE TABLES

ROOF FASTENING

CEILING BOARD TO TRUSS
BLOCKING TO TRUSS
TRUSS TO SIDEWALL TOP PLATE
TRUSS TO RIDGE BEAM
TRUSS TO EDGE RAIL
EDGE RAIL TO MATING WALL
TRUSS TO ENDWALL TOP PLATE
ROOF DECKING TO TRUSS
SHINGLE TO ROOF DECKING
OUTLOOKER TO TRUSS

REFERENCE 'ORC' - ROOF CONSTRUCTION CALCULATIONS OF THE MANUAL
FOAM-SEAL 2100 SPRAY ADHESIVE PER THE MANUFACTURER'S SPECIFICATIONS

(2) 7/16" x 2-1/2" x 15 GA. STAPLES DIRECT
PER RC-30 IN APPROVED MANUAL
PER RC-65 IN APPROVED MANUAL
PER MW-31 CHARTS IN APPROVED MANUAL
PER MW-31 CHARTS IN APPROVED MANUAL
PER SW-40 IN APPROVED MANUAL FOR SHEARWALLS AND RC-33.0 FOR NON-SHEARWALLS
PER SW20.0 THRU SW-389E.2 (IF NOT ATTACHED) IN APPROVED MANUAL
PER THE MANUFACTURER'S OR ARMA SPECIFICATIONS
PER RC-70 IN APPROVED MANUAL

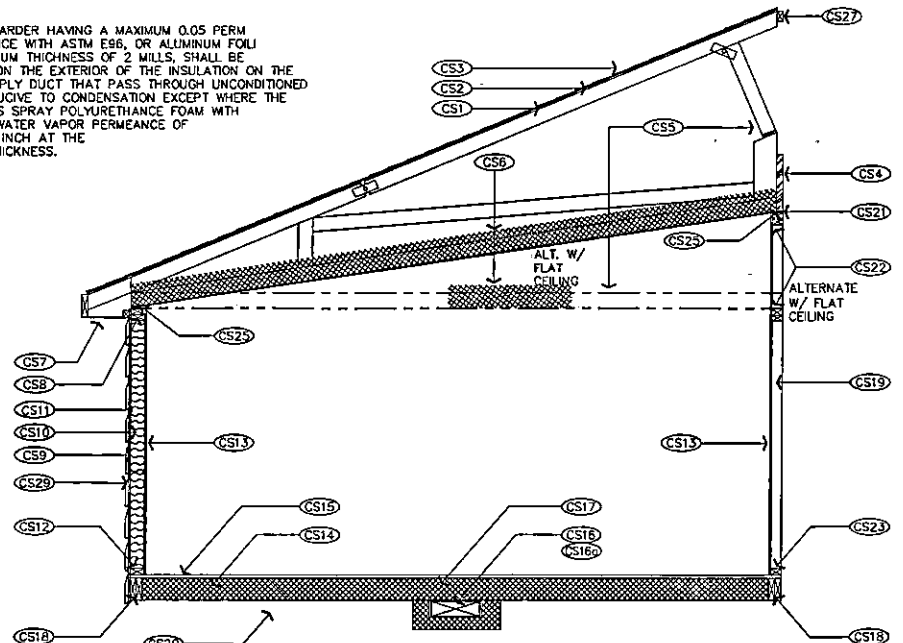
INSTALLATION FASTENING

REFERENCE INSTALLATION PAGES PROVIDED IN EACH APPROVAL

- (CS1) 7/16" APA RATED ROOF DECKING 24/16 SPAN RATING.
- (CS2) 15# MIN. ROOF UNDERLAYMENT; SINGLE LAYER W/ GREATER THAN 4:12 ROOF PITCH; DOUBLE LAYER W/ 4:12 OR LESS
- (CS3) MIN. 20 YEAR SHINGLES.
- (CS4) 1 1/2" WIDE ENGINEERED WOOD BEAM, EACH HALF IN OPEN SPAN AREAS GREATER THAN 48'.
- (CS5) ENGINEERED WOOD TRUSSES: COMPONENTS & SPACING PER TRUSS PRINT
* FOR CONNECTION AND SET-UP OF ROOF:
SEE MODULAR SET-UP PAGES ATTACHED TO APPROVAL
- (CS6) CEILING INSULATION, BLOWN OR BATT.(R-VALUE PER RESCHECK)
- (CS7) CONTINUOUS VENTED SOFFIT.
- (CS8) DOUBLE 2x4 TOP PLATE (MIN.).
- (CS9) 2x4 STUDS @ 16" O.C. STUD GRADE SPF (MIN.).
- (CS10) WALL INSULATION (BATT) (R-VALUE PER RESCHECK).
- (CS11) 5/8" OSB SHEATHING WITH WATER RESISTIVE BARRIER BELOW ALL EXT. FINISH MATERIAL. CORROSION-RESISTANT FLASHING REQUIRED AT ALL LOCATIONS AS SHOWN ON APPROVED MANUAL DETAILS
- (CS12) SINGLE 2x4 BOTTOM PLATE SPF #3 (MIN.).
- (CS13) 3/8" (MIN.) GYPSUM WALL BOARD.
- (CS14) FLOOR INSULATION (BATT.) (R-VALUE PER RESCHECK).
- (CS15) MIN. 19/32" RATED DECKING 16" O.C. OR 32/16 SPAN RATING.
- (CS16)
- (CS17) 1/2" SHIM FOR COMPRESSION STRIP.
- (CS18) MAIN HEAT DUCT. (MAY BE SITE INSTALLED BY OTHERS)
- (CS19) OFF FRAME PER FL-110.0
- (CS20) 2x3 (MIN.) MARRIAGE WALL STUDS @ 16" O.C.
- (CS21) LISTED BOTTOM BOARD, WHERE OCCURS.
- (CS22) DOUBLE 2x3 (MIN.) TOP PLATE.
- (CS23) 2x3 (MIN.) BOTTOM PLATE.
- (CS24) 1/2" (MIN.) GYPSUM BOARD CEILING.
- (CS25) WEDGE SUPPORT AT CATHEDRAL CEILING, EACH END OF TRUSS.
- (CS26) CONTINUOUS 2x3 SPF #3 MINIMUM FOR TRUSS TOP RAIL FOR RIDGE CONNECTION
- (CS27) 2x FULL DEPTH BLOCKING 24" O.C. (2) JOIST BAY MIN. ENDWALL LOCATION ONLY.
- (CS28) LAP BOARD, WOOD OR VINYL SIDING, HARDI SIDING, OR EXPOSED SHEATHING FOR ON SITE EXTERIOR FINISH INSTALLATION.
- (CS29)

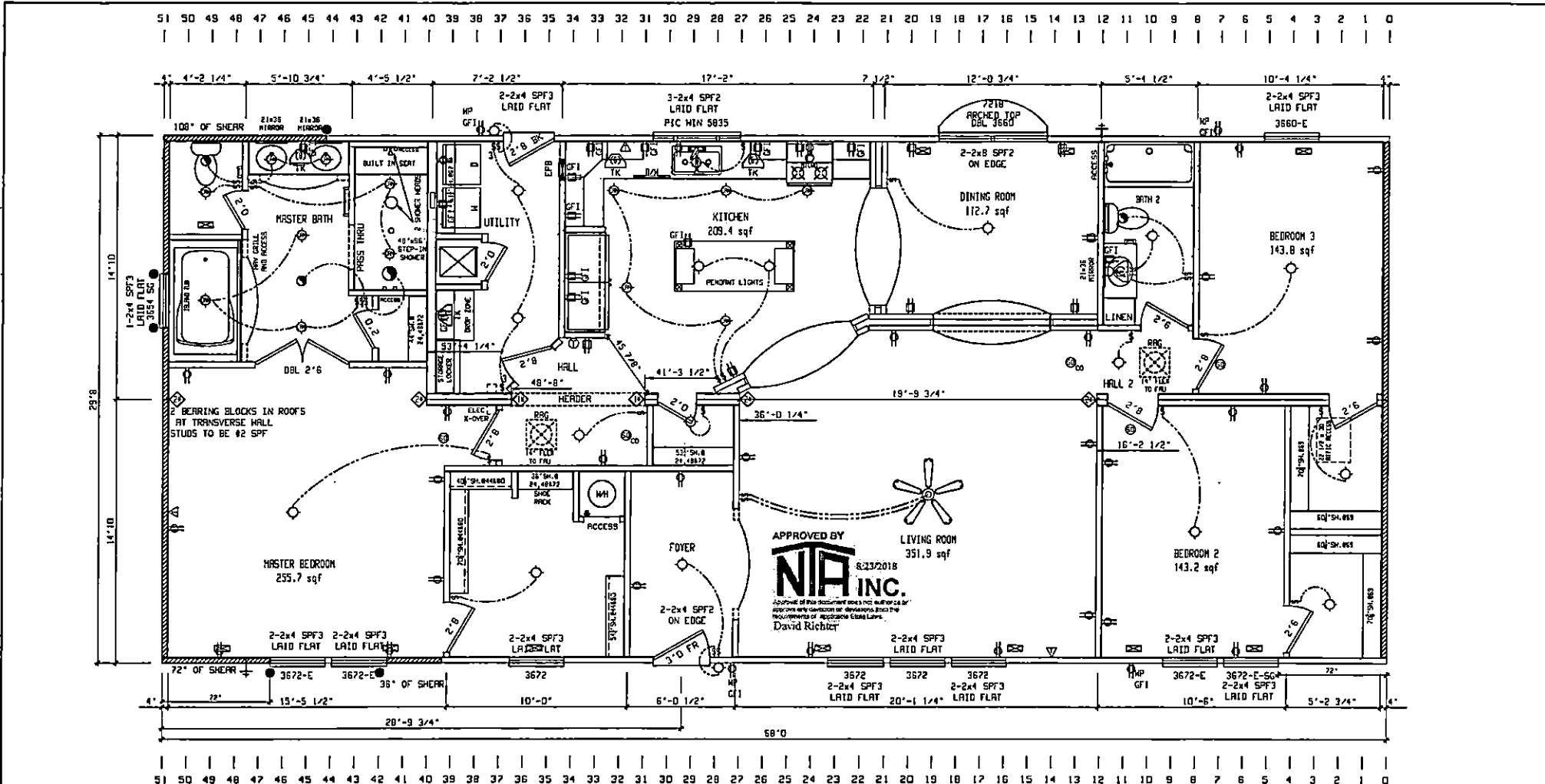
Duct Insulation:

- 1 - Min R-8
- 2 - A VAPOR RETARDER HAVING A MAXIMUM 0.05 PERM IN ACCORDANCE WITH ASTM E93, OR ALUMINUM FOIL WITH A MINIMUM THICKNESS OF 2 MILLS, SHALL BE INSTALLED ON THE EXTERIOR OF THE INSULATION ON THE COOLING SUPPLY DUCT THAT PASS THROUGH UNCONDITIONED SPACE CONDUCTIVE TO CONDENSATION EXCEPT WHERE THE INSULATION IS SPRAY POLYURETHANE FOAM WITH A MAXIMUM WATER VAPOR PERMEANCE OF 3 PERM PER INCH AT THE INSTALLED THICKNESS.



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CMH MANUFACTURING, INC	TYPICAL CROSS SECTION & FASTENING SCHEDULE		BRAND:	SERIES:	MODEL NO.:	
			NC/SC/DE MODULAR		ALL	
			PLANT:	DESCRIPTION:		
			#958	OFF FRAME HINGED ROOF		
		DRAWN BY/DATE DRAWN:	DATE PRINTED:	SHEET:		
		DRR 10-21-15	5-24-17	1-0.2		



241PLF EFFECTIVE LENGTHS
 BASED ON SW-31.10. N.E.17. 78.1-2
 ENGINEERED METHOD.
 UNBLOCKED DIAPHRAGM SW-20-237B.1

EXTERIOR WALL HEADERS PER
 EW-20.3.R.K.E.22.20
 MATEWALL BEAMS PER
 RC-6D.3.R.K.M. 20

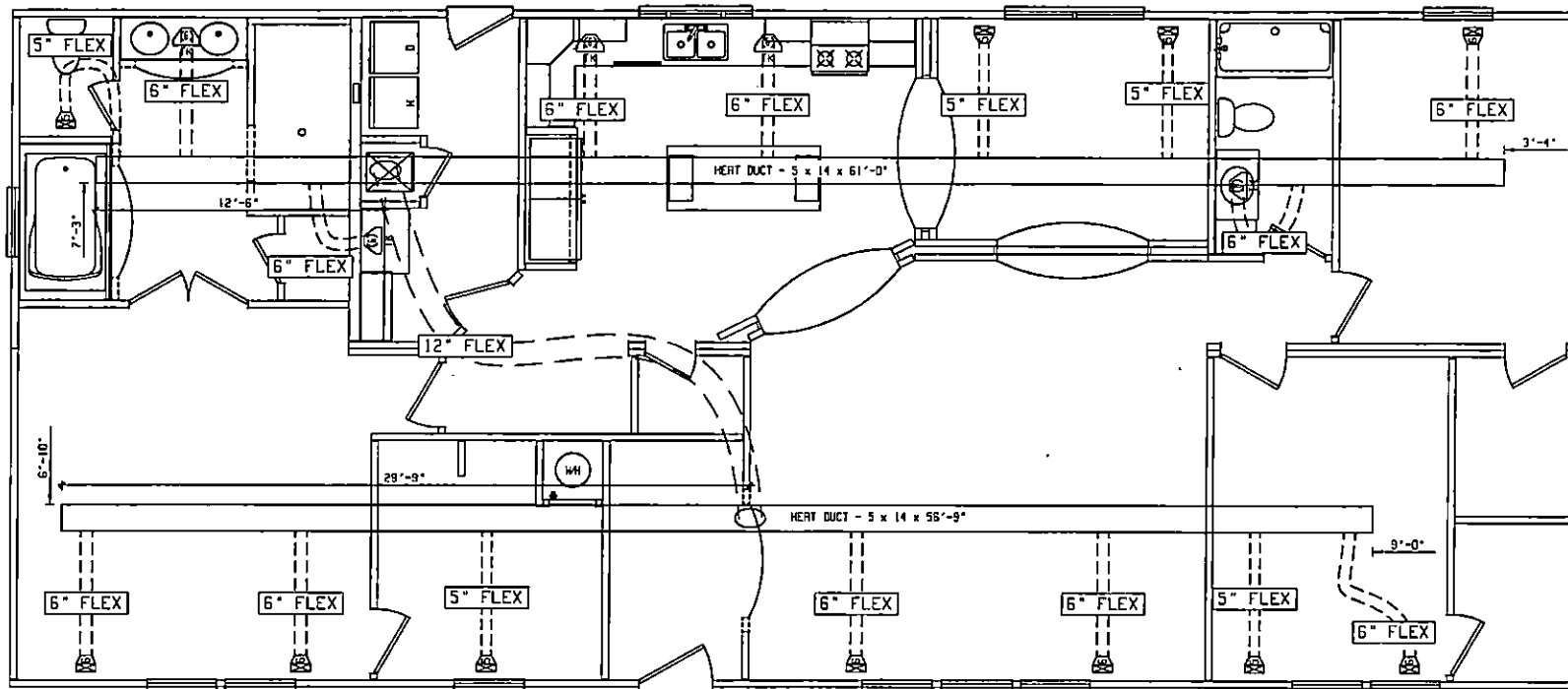
BRAND	SCHULT	SERIES	MD32
CLAYTON HOME BUILDING GROUP			

REVISIONS	BY	DATE

GENERAL NOTES
CEILING HEIGHT = 108.0
FLOOR FRAMING SPACING = 16
TOTAL WINDOW SQFT = ENTER TOTAL CALCULATED

DRAWING TITLE	MASTER PLAN
---------------	--------------------

DESIGN LOADS	RETURN AIR REQUIREMENTS	INDICATES FREE END SHEAR WALL WITH BLOCKING THE # SPECIFIES THAT THERE CAN BE NO HOLES IN STUDS IN COLLING
20'-30' 10'-30' 120'-10' 132'-30'	① 20"x16" GRILL REQUIRED ② 4"x10" GRILL W/ 2 1/2" DOOR UNDERCUT ③ DOOR(S) MUST BE UNDERCUT 2 1/2" MIN. ④ 1"x24" OR 6"x14" GRILL REQUIRED	
MODEL NAME	3545	SQ. FT.
958	DESCRIPTION 32X68 3BR-2BR	2017
DRAWN BY DAC	ORIG. DATE 08/16/2018	DATE PRINTED 08/22/2018
	MODEL NO. SN250252	SHEET NO. 1-1



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BRAND SCHULT	SERIES MD32	REVISIONS	BY	DATE	GENERAL NOTES	DRAWING TITLE PERIMETER LOOP HVAC	MODEL NAME 3545	SQ. FT. 2017
CLAYTON HOME BUILDING GROUP							PLANT 958	DESCRIPTION 32X68 3BR-2BR
							MODEL NO. SN250252	
							DRAWN BY BRC	ORIG. DATE 08/16/2018
							DATE PRINTED 08/16/2018	SHEET NO. 4-4

NOTE
 DASHED LINES REPRESENT BELOW
 FLOOR DWY PIPE TO BE FIELD INSTALLED
 BY OTHERS. LAYOUT MAY VARY
 DUE TO SITE CONDITIONS.
 BUILDER IS RESPONSIBLE TO
 ASSURE THAT FINAL SYSTEM
 CONFORMS TO ALL APPLICABLE CODES.

PIPING AND FITTING MATERIAL TYPE TO BE:
 ABS (ACRYLONITRILE-BUTADIENE-STYRENE)
 OR PVC (POLYVINYL CHLORIDE)

PIPE LEGEND

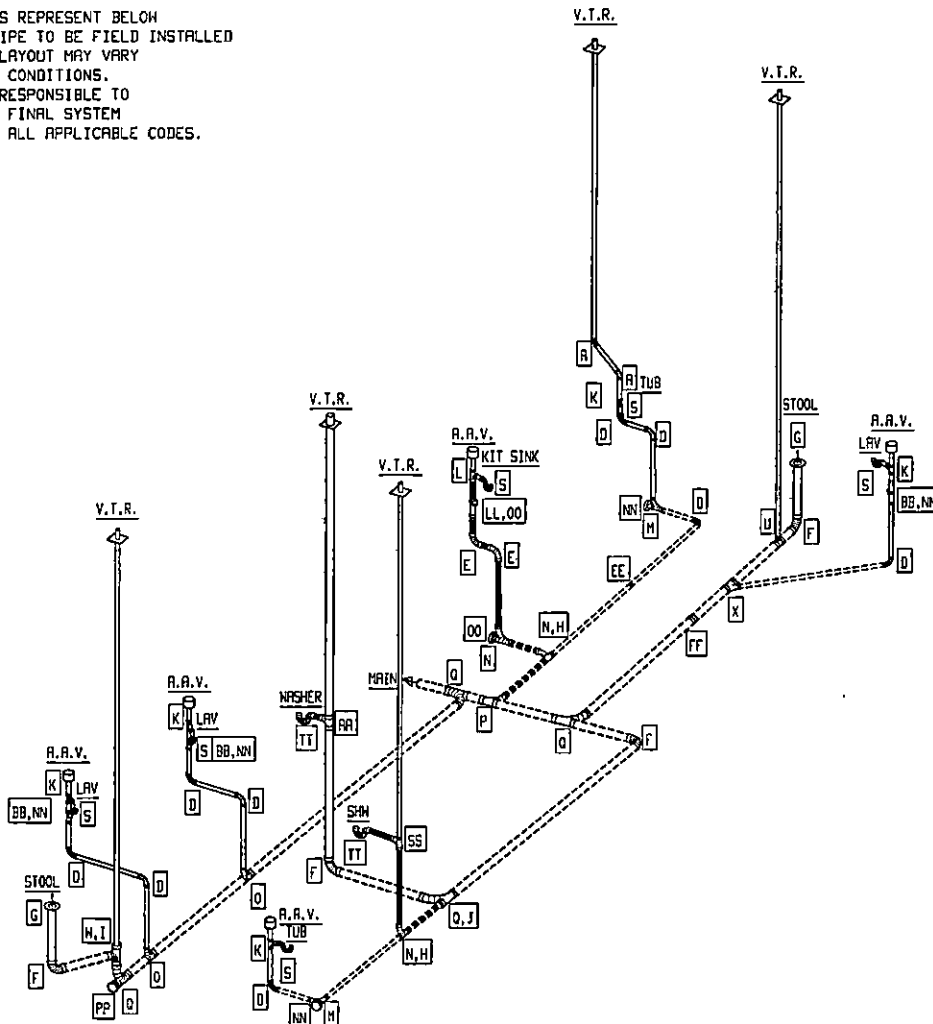
	1 1/2"
	2"
	3"

STANDARD SHIP LOOSE

D	3
EE	1
F	4
FF	1
M	2
N	1
N,H	2
NN	2
O	2
OO	1
P	1
PP	1
Q	2
Q,J	1
U	1
W,I	1
X	1
1.5" PIPE	45 FT
2" PIPE	10 FT
3" PIPE	70 FT

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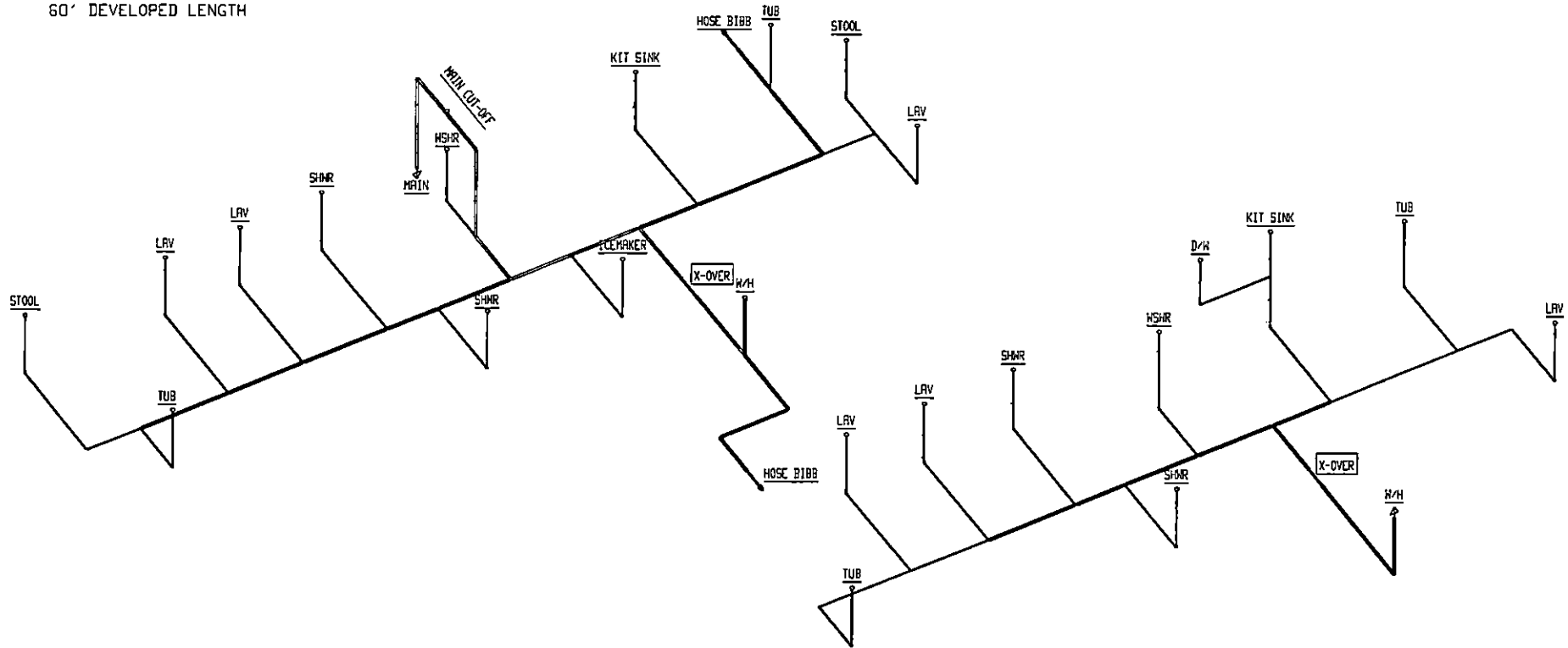


NOTE:
 ACCESS SHALL BE PROVIDED TO ALL AIR ADMITTANCE VALVES. THE VALVE SHALL
 BE LOCATED WITHIN A VENTILATED SPACE THAT ALLOWS AIR TO ENTER THE VALVE

LET	DESCRIPTION	LET	DESCRIPTION	LET	DESCRIPTION	LET	DESCRIPTION
A	1.5" x 45° 1/2" BEND	B	2" x 45° 1/2" BEND	C	3" x 45° 1/2" BEND	D	1.5" x 90° LONG SWEEP 1/4" BEND
E	2" x 90° SWEEP 1/4" BEND	F	3" x 90° SWEEP 1/4" BEND	G	4" x 90° SWEEP 1/4" BEND	H	2" x 1.5" FLUSH BUSHING
I	3" x 1.5" FLUSH BUSHING	J	3" x 2" FLUSH BUSHING	K	1.5" SANITARY TEE	L	2" x 1.5" x 1.5" SAN TEE
M	1.5" TEE	N	2" TEE	O	3" x 1.5" TEE	P	1.5" x 2" TEE
Q	3" TEE	R	3" x 3" ELBOW	S	1.5" x 1.5" P-TRAP	T	3" x 2" x 1.5" DBL SAN TEE
U	3" x 3" x 1.5" SAN TEE	V	1.5" x 90° LONG SWEEP STREET	W	3" SANITARY TEE	X	3" x 3" x 1.5" NTE
Y	2" x 3" 90° ELBOW	Z	2" x 2" x 1.5" TEE	AA	3" x 3" x 2" SAN TEE	AB	1.5" x 45° NTE
CC	2" x 90° SWEEP STREET	DD	1.5" x 45° 1/2" BEND STREET	EE	1.5" COUPLING	FF	3" COUPLING
GG	1.5" P-TRAP & WASHER	HH	1.5" SAN TEE STREET	II	2" x 1.5" x 1.5" TEE	JJ	2" x 1.5" x 2" TEE
KK	2" x 1/4" BEND STREET	LL	2" x 45° NTE	MM	3" DBL SAN TEE	NN	1.5" C.O. W/PLUG
OO	2" C.O. W/PLUG	PP	3" C.O. W/PLUG	QQ	2" x 2" x 1.5" NTE REDUCING	RR	1.5" x 45° NTE
SS	2" x 1.5" x 2" SAN TEE	TT	2" P-TRAP	UU	2" x 45° 1/2" BEND STREET	VV	2" COUPLING
MM	3" x 45° 1/2" BEND STREET	XX	2" SANITARY TEE	YY	4" CLOSE FLANGE	ZZ	4" COUPLING
BB	1.5" CONT WASTE	AC	1.5" x 22 1/2" ELBOW STREET	AD	2" x 22 1/2" ELBOW STREET	AE	3" x 3" x 2" DBL SAN TEE
AF	2" x 1.5" x 1.5" SAN TEE STREET	AG	2" x 1.5" x 1.5" 3-WAY ELBOW	AH	3" x 22 1/2" 1/2" BEND ELBOW	AI	1.5" 3-WAY ELBOW
AJ	2" x 22 1/2" 1/2" BEND ELBOW	AK	4" x 3" CLOSEST BEND STR (DOWN 1.5")	AL	3" x 2" x 2" NTE	AM	3" 1/4" BEND
AN	2" x 3" PIPE INCREASER	AO	3" x 3" x 2" NTE	AP	2" 1/4" BEND	AQ	2" x 2" x 2" DBL SAN TEE
AR	1.5" x 3" PIPE INCREASER	AS	1.5" x 1.5" x 1.5" x 1.5" DBL SAN TEE	AT	3" DOUBLE FITTURE TEE	AU	2" x 2" x 1.5" x 1.5" DBL SAN TEE
AV	3" x 3" x 2" SAN TEE (S1) LEFT	AW	3" x 3" x 2" SAN TEE (S1) LEFT	AX	3" x 3" x 2" SAN TEE (S1) LEFT	AY	3" x 3" x 2" SAN TEE (S1) RIGHT
AZ	3" x 3" x 2" SAN TEE (S1) RIGHT	BA	3" x 3" x 2" SAN TEE (S1) RIGHT	BC	3" x 3" x 2" SAN TEE (S1) RIGHT	BD	3" x 3" x 3" x 1.5" x 1.5" SAN TEE (S1) RIGHT
BE	1.5" x 2" PIPE INCREASER	BF	3" x 3" x 1.5" 90° SWEEP LOW WHEEL INLET	BG	3" x 3" x 2" 90° SWEEP LOW WHEEL INLET	BH	1.5" x 22 1/2" 1/2" BEND ELBOW
BI	4" x 3" CLOSEST BEND STREET	BJ		BK		BL	

BRAND	SCHULT	SERIES	MD32	REVISIONS	BY	DATE	GENERAL NOTES	DRAWING TITLE	DWY SCHEMATIC	MODEL NO.	3545	SO. FT.	1017				
CLAYTON HOME BUILDING GROUP										PLANT	958	DESCRIPTION	32X68 3BR-2BR	MODEL NO.	SN250252		
										DRAWN BY	DAC	DATE PRINTED	08/16/2018	DATE PRINTED	08/16/2018	SHEET NO.	8-1

PIPING AND FITTING MATERIAL TYPE TO BE:
 PEX TYPE BY QUEST, CPVC OR COPPER
 PRESSURE RANGE 40-49 PSI
 60' DEVELOPED LENGTH






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COLD WATER SUPPLY PLUMBING

HOT WATER SUPPLY PLUMBING

PIPE LEGEND	
	1"
	3/4"
	1/2"

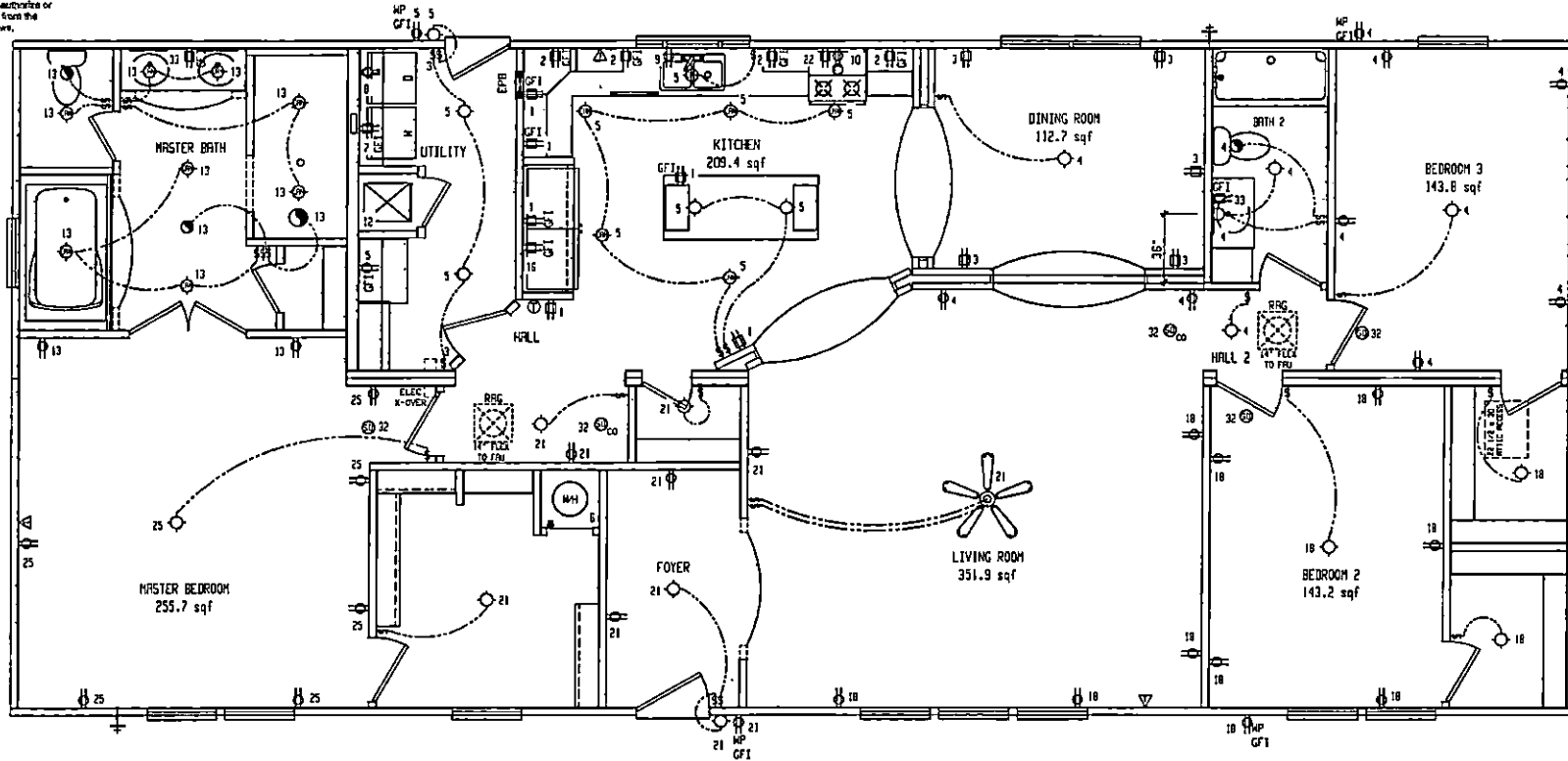
BRAND SCHULT	SERIES MD32	REVISIONS	BY	DATE	GENERAL NOTES HOSE BIBBS PER SPECS	DRAWING TITLE SUPPLY PLUMBING	MODEL NAME 3545	SO. FT. 2017
CLAYTON HOME BUILDING GROUP							PLANT 958	DESCRIPTION 32X68 3BR-2BA
							MODEL NO. SN250252	
							DRAWN BY DAC	ORIG. DATE 08/16/2018
							DATE PRINTED 08/22/2018	SHEET NO. 9-1

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NOTE: ALL FAMILY, DINING, LIVING, PARLOR, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS OR SIMILAR ROOMS OR SPACES SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER IN ACCORDANCE WITH SECTION 210.12 OF THE NEC.

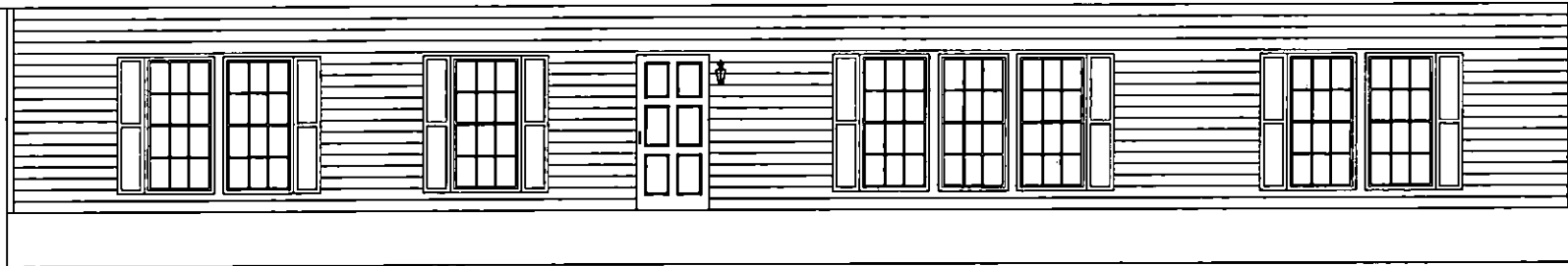
ELECTRICAL SCHEDULE																													
NO.	DESCRIPTION	AMP.	VOLTS	CIRCUIT	NO.	DESCRIPTION	AMP.	VOLTS	CIRCUIT	NO.	DESCRIPTION	AMP.	VOLTS	CIRCUIT	NO.	DESCRIPTION	AMP.	VOLTS	CIRCUIT	NO.	DESCRIPTION	AMP.	VOLTS	CIRCUIT					
1	PORTABLE APPLIANCES	20	120	12	3	GEN. LIGHTING/RECEPT.	15	120	14	8	DRYER RECEPT.	30	240	19	12	ELECTRIC FURNACE	CIRCUITS VARY, SEE	15	120	14	24	ELECT. BUILT-IN OVEN	20	240	12/2				
2	PORTABLE APPLIANCES	20	120	12	6	ELECC. WATER HEATER	CIRCUITS VARY, SEE	9	OPT. DISHWASHER	15	120	14	12	OPT. RANGE PLUM-3.3 FOR HLD., PLUM-1.5 FOR HOOD	15	120	12	16	FREEZER	20	120	12	25	GEN. LIGHTING/RECEPT.	15	120	14		
3	PORTABLE APPLIANCES	20	120	12	10	OPT. RANGE/TOP	40	240	8	13	GEN. LIGHTING/RECEPT.	15	120	14	17	OPT. WTR/POOL	20	120	12	18	GEN. LIGHTING/RECEPT.	15	120	14	26	GEN. LIGHTING/RECEPT.	15	120	14
4	GEN. LIGHTING/RECEPT.	15	120	14	7	WASHER RECEPT.	20	120	12	11	ELECT. RANGE/TOP	40	240	8	14	OPT. COOLER BOX	15	120	14	18	GEN. LIGHTING/RECEPT.	15	120	14	27	GEN. LIGHTING/RECEPT.	15	120	14
					(1)	GEN FURNACE	15	120	14	14	OPT. COOLER BOX	15	120	14	18	OPT. MICROWAVE	20	120	12/2	22	OPT. MICROWAVE	20	120	12/2	27	GEN. LIGHTING/RECEPT.	15	120	14

BRAND		SERIES		REVISIONS				GENERAL NOTES				DRAWING TITLE		MODEL NAME		SQ. FT.			
SCHULT		MD32						LOOK-OUT BREAKER ON CIRCUIT #5				ELECTRICAL PLAN		3545		2017			
CLAYTON HOME BUILDING GROUP														PLANT 958		32X68 3BR-2BA			
														MODEL NO. SN250252					
														DRAWN BY DRC		DATE PRINTED 08/16/2018		SHEET NO. 11-1	

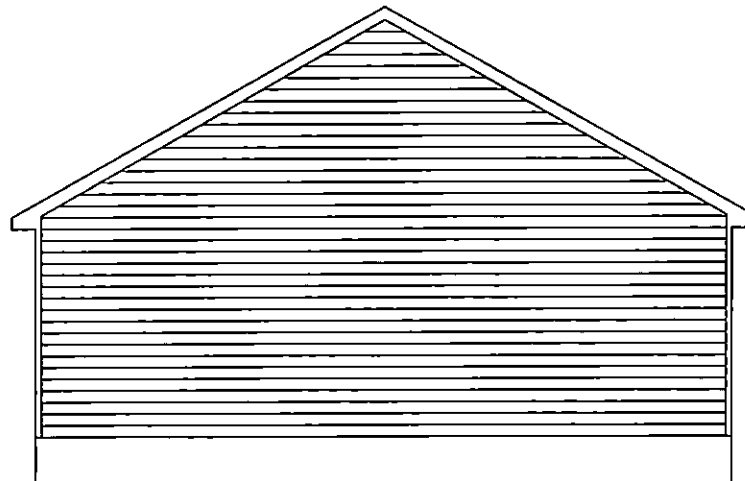
2017 SQ. FT. ATTIC AREA
 368 SQ. IN. REQUIRED
 VENTED SOFFIT - 7.38 SQ. IN. VENT/FT
 62 FT RIDGE CAP/VENT-18.00 SQ. IN. VENT/FT
 1003 SQ. IN. PROVIDED FOR SOFFIT
 1116 SQ. IN. PROVIDED FOR RIDGE VENT

6:12

VINYL LAP SIDING/SHINGLE ROOF



FRONT ELEVATION



RIGHT SIDE ELEVATION

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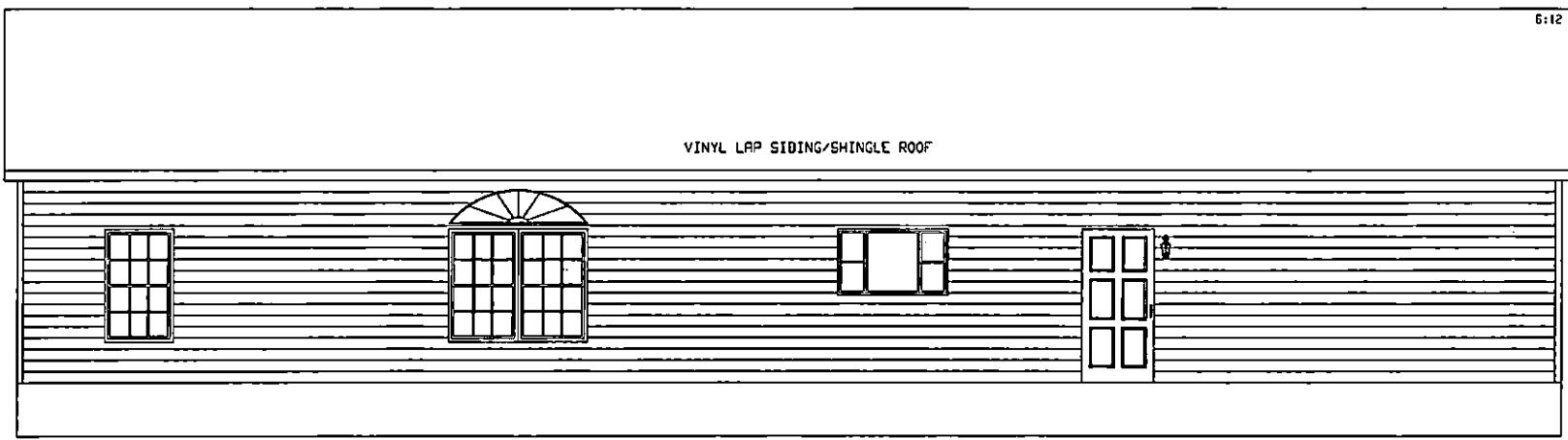
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BRAND SCHULT	SERIES HD32	REVISIONS	BY	DATE	GENERAL NOTES	DRAWING TITLE EXTERIOR ELEVATION FRONT & RIGHT SIDE	MODEL NAME 3545	SQ. FT. 2017
CLAYTON HOME BUILDING GROUP							PLANT 958	DESCRIPTION 32X68 3BR-2BR
							MODEL NO. SN250252	
							DRAWN BY DRC	ORIG. DATE 08/16/2018
							DATE PRINTED 08/22/2018	SHEET NO. 20-1

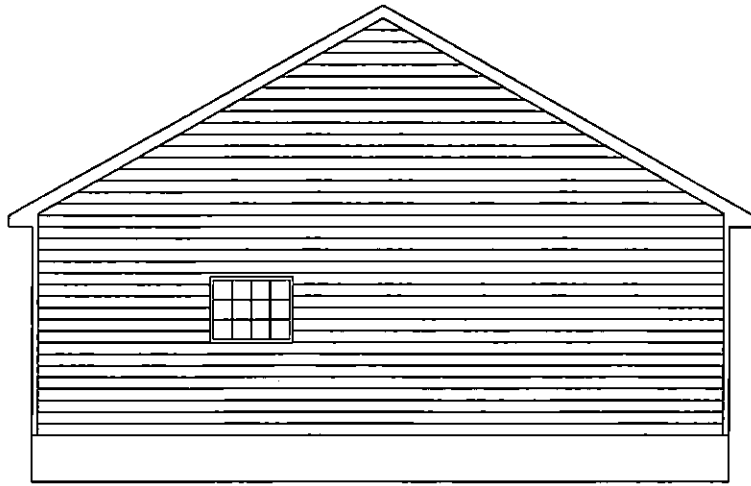
6:12

VINYL LAP SIDING/SHINGLE ROOF



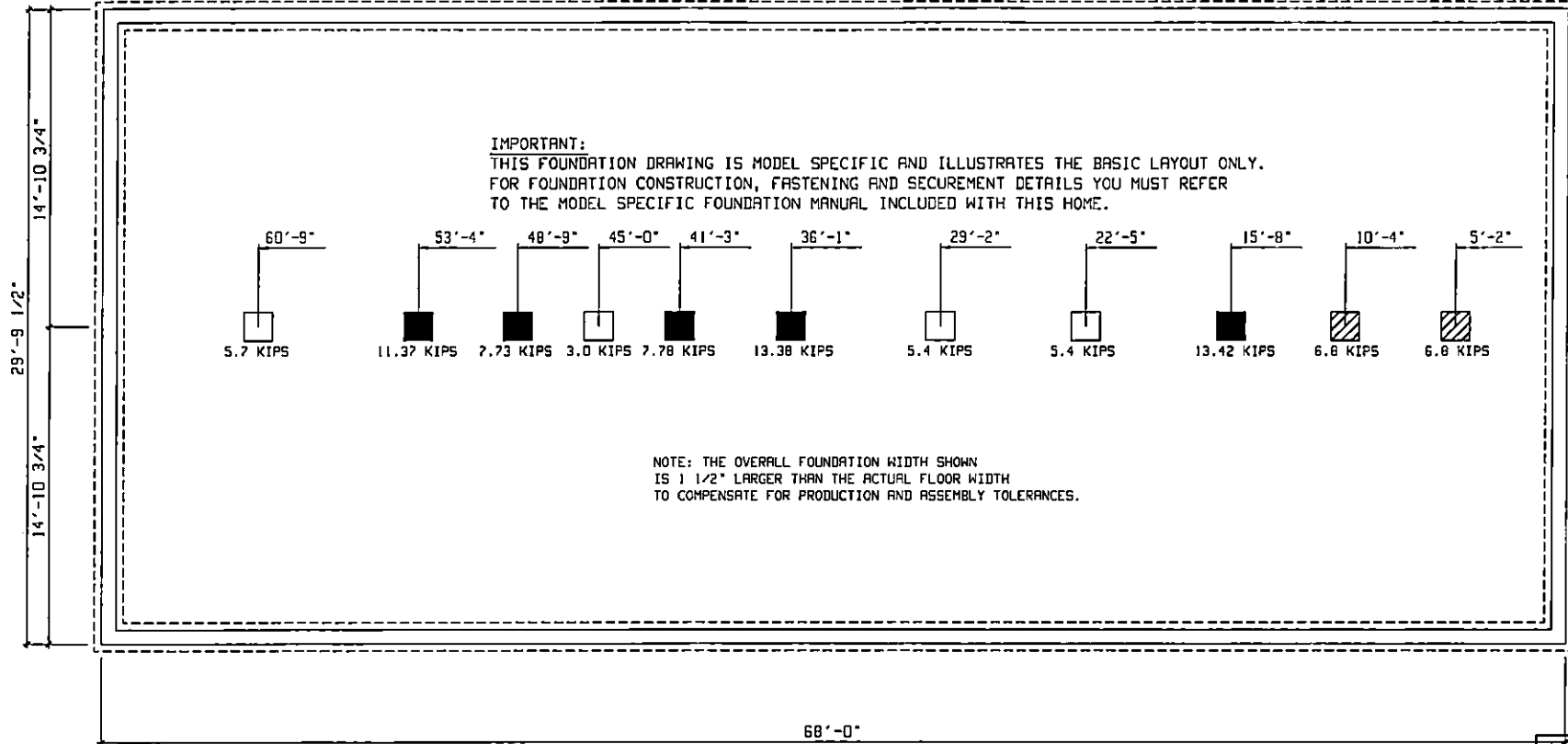
BACK ELEVATION

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LEFT SIDE ELEVATION

BRAND SCHULT	SERIES MD32	CLAYTON HOME BUILDING GROUP	<table border="1"> <thead> <tr> <th>REVISIONS</th> <th>BY</th> <th>DATE</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	REVISIONS	BY	DATE										<table border="1"> <thead> <tr> <th>GENERAL NOTES</th> </tr> </thead> <tbody> <tr><td> </td></tr> <tr><td> </td></tr> </tbody> </table>	GENERAL NOTES			<table border="1"> <thead> <tr> <th>DRAWING TITLE</th> </tr> </thead> <tbody> <tr> <td>EXTERIOR ELEVATION BACK & LEFT SIDE</td> </tr> </tbody> </table>	DRAWING TITLE	EXTERIOR ELEVATION BACK & LEFT SIDE	<table border="1"> <thead> <tr> <th>MODEL NAME</th> <th>SO. FT.</th> </tr> </thead> <tbody> <tr> <td>3545</td> <td>2017</td> </tr> </tbody> </table>	MODEL NAME	SO. FT.	3545	2017
REVISIONS	BY	DATE																									
GENERAL NOTES																											
DRAWING TITLE																											
EXTERIOR ELEVATION BACK & LEFT SIDE																											
MODEL NAME	SO. FT.																										
3545	2017																										
PLANT 958	DESCRIPTION 32X68 3BR-2BA	MODEL NO. SN250252																									
DRAWN BY DRC	ORIG. DATE 08/16/2018	DATE PRINTED 08/16/2018	SHEET NO. 20-2																								



IMPORTANT:
 THIS FOUNDATION DRAWING IS MODEL SPECIFIC AND ILLUSTRATES THE BASIC LAYOUT ONLY.
 FOR FOUNDATION CONSTRUCTION, FASTENING AND SECUREMENT DETAILS YOU MUST REFER
 TO THE MODEL SPECIFIC FOUNDATION MANUAL INCLUDED WITH THIS HOME.

NOTE: THE OVERALL FOUNDATION WIDTH SHOWN
 IS 1/2" LARGER THAN THE ACTUAL FLOOR WIDTH
 TO COMPENSATE FOR PRODUCTION AND ASSEMBLY TOLERANCES.

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PIER LEGEND	
	SUPPORT AT WATING COLUMN
	SUPPORT UNDER WATING WALL
	SUPPORT UNDER WATING OPENING
	SUPPORT AT PORCH/RECESSED ENTRY
	SUPPORT UNDER MAIN I-BEAM
	SUPPORT UNDER PERIMETER WALL
	SUPPORT AT CROSS I-BEAM BRISMENT

CORAL SPACE VENTILATION VENTILATION IS BASED ON 144 SQ. IN. OF VENT FOR EVERY 150 SQ. FT. OF CORALSPACE AREA WITH APPROVED VAPOR RETARDER MATERIAL. ONE SUCH VENT MUST BE WITHIN 3 FT. OF EACH CORNER.		2017 SQ. FT. OF CORALSPACE AREA 1937 SQ. IN. OF VENT REQUIRED 38 VENTS NEEDED @ 52 SQ. IN. EACH 1976 SQ. IN. VENTILATION INSTALLED MINIMUM		CORAL SPACE 18" MIN CLEARANCE BELOW BOTTOM OF FLOOR JOIST, GROUND TO BE COVERED WITH APPROVED VAPOR RETARDER MATERIAL.		INSTALL SWITCHED LIGHT AND GFCI RECEPT AT CORAL SPACE ENTRANCE FOR SERVICE OF MECHANICAL EQUIPMENT PER NEC - 210-70 (C)		N O T E : PRECAST UNITS FOR STAND ALONE PIERS SHALL BE LAID IN TYPE "M" OR "S" MORTAR OR SHALL BE COVERED WITH SURFACE BONDING CEMENT COMPLYING WITH ASTM C 807. SURFACE BONDING CEMENT SHALL BE APPLIED IN STRICT COMPLIANCE WITH THE CEMENT MANUFACTURERS INSTRUCTIONS. BOTTOM COURSE SHALL BE LAID IN TYPES "M" OR "S" MORTAR OR SURFACE BONDING MORTAR (CEMENT).														
BRAND	SCHULT	SERIES	HD32	REVISIONS <table border="1"> <thead> <tr> <th>NO.</th> <th>BY</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>				NO.	BY	DATE	DESCRIPTION					GENERAL NOTES SEE INSTALLATION MANUAL FOR FOUNDATION GENERAL NOTES & TIE-DOWN REQUIREMENTS FOUNDATION VENT LOCATIONS ARE SHOWN TYPICAL & ARE SUBJECT TO CHANGE DUE TO PIER LOCATION, CHASSIS MEMBERS & EXTERIOR DECK INSTALLATION () - DIMENSIONS DENOTES 2X6 WALLS OPTION		DRAWING TITLE <h1>20130 PSF FOUNDATION</h1>		MODEL NAME 3545		SQ. FT. 2017
NO.	BY	DATE	DESCRIPTION																			
CLAYTON HOME BUILDING GROUP				PLANT 958		DESCRIPTION 32X68 3BR-2BA		MODEL NO. SN250252		SHEET NO. 21-30PSF												
DRAWN BY DAC				ORIG. DATE 08/16/2018		DATE PRINTED 08/22/2018																

OFF FRAME BASEMENT & CRAWL FOUNDATION DESIGN FOR:

29' - 8 " 2-SECTION MODULAR

1 STORY- W.O ATTIC

Attic without storage where the maximum clear height between joist and rafter is less than 42 inches or req'd insulation depth exceeds the depth of the bottom chord.

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

SIDEWALLS ARE SUPPORTED (PERIMETER BLOCKED)

BUILDING CODE INFORMATION:

IRC (2009)

ASCE 7-05

2012 NORTH CAROLINA RESIDENTIAL CODE

BUILDING SITE INFORMATION:

MAXIMUM WIND SPEED & EXPOSURE: 100 MPH EXPOSURE C-enclosed

MINIMUM SOIL BEARING CAPACITY: 2000

MAXIMUM GROUND SNOW(S): 30 PSF,

Flat roof snow load (Pg)=23.1 PSF

SEISMIC DESIGN CATEGORY: C

DESIGN SPECTRAL RESPONSE (S_{DS}): 0.49

SEISMIC SOIL SITE CLASS: D

HOME INFORMATION:

UNIT WIDTH: 29' - 8 "

MAX. UNIT LENGTH: 68 ft.

ROOF PITCH: 6/12 to 6/12

DESIGN LOADS: 40 PSF FL. LL., 7PSF T.C.D.L., 8PSF B.C.

D.L., 13PSF FL. DL. &, 10PSF B.C.L.L

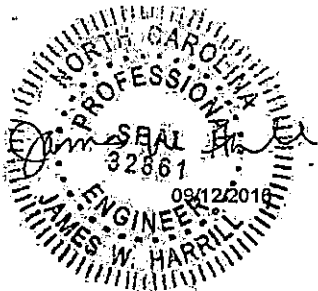
MAX. SIDEWALL HEIGHT: 108 INCHES

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

RIM JOIST SPLICES: 6" X 8" MiTek MT20 metal plates each side

OFF FRAME FLOOR

PLANT NUMBER: 958



program version: 16.8

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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.

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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.

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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.


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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.

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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 arcylic 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. RESERVED
42. Reserved.

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SOIL CLASSIFICATION

TABLE R405.1 W/ NC admendments						
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	5000
	GP	Poorly graded gravel or gravels sand mixtures, little or no fines	Good	Low	Low	5000
	SW	Well-graded gravels, gravelly sands, little or no fines	Good	Low	Low	3000
	SP	Poorly graded sand, or gravelly sands, little or no fines	Good	Low	Low	3000
45 psf LATERAL SOIL LOAD	GM	Silty gravels, gravel-sand-silt mixtures	Good	Medium	Low	3000
	SM	Silty sand, sand-silt mixtures	Good	Medium	Low	3000
	GC	Clayey gravels, gravel-sand-clay mixtures	Medium	Medium	Low	3000
60 psf LATERAL SOIL LOAD	SC	Clayey sands, sand-clay mixture	Medium	Medium	Low	3000
	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	Medium	High	Low	2000*
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	Medium	Medium	Medium to Low	2000*
	CH	Inorganic clays of high plasticity, fat clays	Poor	Medium	High	2000*
	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	Poor	High	High	2000*
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.

* Where the building official determines that in place soils with an allowable bearing capacity of less than 2000 psf are likely to be present at the site, the allowable bearing capacity shall be determined by a soils investigation.

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TABLE R404.1.1:IRC (2009) 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 @ 32 in. 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.
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)	#8 @ 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)

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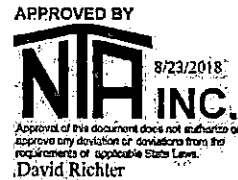
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Maximum Aspect Ratio, L/W for Unbalanced Foundations

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
	8	1.4	1.0	0.7
9 feet	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.

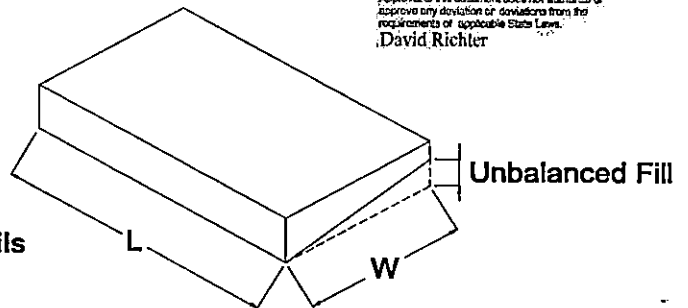
Basement Wall Height = 8'-0"

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**

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 Homes

UNBALANCED FOUNDATIONS (TABLE L)

DATE: 3/27/07	FILENAME: 9581-8.R.J.E.22.3.210()
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"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

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

GROUND SNOW		30				# of Uplift Ties
MAXIMUM MATING LINE SPAN BETWEEN MATING WALL COLUMN SUPPORTS	4'	(S) 26"x26"x9" OR 30" Dia. X 11"				0
	6'	(D) 34"x34"x9" OR 40" Dia. X 16"				0
	8'	(D) 34"x34"x9" OR 40" Dia. X 16"				1
	10'	(D) 34"x34"x9" OR 40" Dia. X 16"				1
	12'	(D) 34"x34"x9" OR 40" Dia. X 16"				1
	14'	(D) 34"x34"x9" OR 40" Dia. X 16"				1
	16'	(D) 34"x34"x9" OR 40" Dia. X 16"				1
	18'	(D) 34"x34"x9" OR 40" Dia. X 16"				1
	20'	(D) 34"x34"x9" OR 40" Dia. X 16"				1
	22'	(D) 34"x34"x9" OR 40" Dia. X 16"				1
	24'	(D) 34"x34"x9" OR 40" Dia. X 16"				1
	26'	(T) 42"x42"x13" OR 48" Dia. X 20"				1
	28'	(T) 42"x42"x13" OR 48" Dia. X 20"				1
	30'	(T) 42"x42"x13" OR 48" Dia. X 20"				1
	32'	(T) 42"x42"x13" OR 48" Dia. X 20"				1
34'	(T) 42"x42"x13" OR 48" Dia. X 20"				1	
36'	(T) 42"x42"x13" OR 48" Dia. X 20"				1	
46'	(T) 42"x42"x15" OR 48" Dia. X 20"				1	
SUPPORTS UNDER MATING OPENING AS CLEARSPANS IN FEET						
PIER SPACING	7.9'					
PIER CONFIG.	(S) 26"x26"x9" OR 24" Dia.					
SUPPORTS UNDER MATING WALLS- CLEARSPANS IN FEET						
PIER SPACING	6.7'					
PIER CONFIG.	(D) 34"x34"x9" OR 29" Dia.					

Girder beams construction to be (4) 2X10 #2 SPF joists. Splices 6" X 8" 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.

1E. For 30 psf 178" box with 14" opening: Double stack pier on a 34"x 34" sq. footer 9" deep footing.

30' 1 STORY- W.O ATTIC OFF FRAME BASEMENT & CRAWL With Roof Pitch of 6/12 Min. to 6/12 Max.

NOTES: 1 DESIGNED FOR 100 MPH MAX. WIND SPEED.

2 DESIGNED FOR 2000 PSF MIN. ALLOWABLE SOIL BEARING CAPACITY.

3 & ASCE 7-05 & 2012 NORTH CAROLINA RESIDENTIAL CODE

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.

7.Round footers or Round Piles with diameter as required above may be used as alternate to square footing or square footing and block piers.

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FILENAME:9581-8.R.J.E.22.3.210()

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

GROUND SNOW		30				Uplift force
MAXIMUM MATING LINE SPAN BETWEEN MATING WALL COLUMN SUPPORTS	4'	(9k) 26"x26"X11"				0 #
	6'	(9k) 26"x26"X11"				0 #
	8'	(14k) 32"x32"X13"				7.98555 #
	10'	(14k) 32"x32"X13"				131.467 #
	12'	(14k) 32"x32"X13"				254.948 #
	14'	(14k) 32"x32"X13"				378.43 #
	16'	(14k) 32"x32"X13"				501.911 #
	18'	(14k) 32"x32"X13"				625.392 #
	20'	(14k) 32"x32"X13"				748.874 #
	22'	(20k) 38"x38"X14"				872.355 #
	24'	(20k) 38"x38"X14"				995.837 #
	26'	(20k) 38"x38"X14"				1119.32 #
	28'	(20k) 38"x38"X14"				1242.8 #
	30'	(20k) 38"x38"X14"				1366.28 #
	32'	(20k) 38"x38"X14"				1489.76 #
	34'	(20k) 38"x38"X14"				1613.24 #
36'	(20k) 38"x38"X14"				1736.72 #	
46'	(30k) 48"x48"X17"				2354.13 #	
SUPPORTS UNDER MATING OPENING - CLEARSPANS IN FEET						
POST SPACING	7.9'					Girder beams construction to be (4) 2X10 #2 SPF joists. Splices 6" X 8" MiTek MT20 metal plates each side
FOOTER SIZE	(9k) 26"x26"X11"					
SUPPORTS UNDER MATING WALLS- CLEARSPANS IN FEET						
POST SPACING	6.7'					
FOOTER SIZE	(9k) 26"x26"X11"					

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
26"x26"	3	38"x38"	5
32"x32"	4	48"x48"	8



30' 1 STORY- W.O ATTIC OFF FRAME BASEMENT & CRAWL With Roof Pitch of 6/12 Min. to 6/12 Max.

NOTES: 1 DESIGNED FOR 100 MPH MAX. WIND SPEED.

2 DESIGNED FOR 2000 PSF MIN. ALLOWABLE SOIL BEARING CAPACITY.

3 & ASCE 7-05 & 2012 NORTH CAROLINA RESIDENTIAL CODE

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).

FILENAME:9581-8.R.J.E.22.3.210(L)

Support and anchorage for 48" 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			30 #		0 #		0 #		0 #		0 #	
Max. span ³	UPLIFT LOAD ¹⁰	# 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	-81.992913 #	-1	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"
6	-122.98937 #	-1	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"
8	-163.98583 #	-1	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"
10	-204.98228 #	-1	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"
12	-245.97874 #	-1	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"

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			30 #		0 #		0 #		0 #		0 #	
Max. span ³	UPLIFT LOAD ¹⁰	# 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	-44.557906 #	-1	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"
6	-66.83686 #	-1	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"
8	-89.115813 #	-1	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"
10	-111.39477 #	-1	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"
12	-133.67372 #	-1	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"

Support and anchorage for 48" 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			30 #		0 #		0 #		0 #		0 #	
Max. span ³	UPLIFT LOAD ¹⁰	# 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	-81.992913 #	-1	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"
6	-122.98937 #	-1	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"
8	-163.98583 #	-1	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"
10	-204.98228 #	-1	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"
12	-245.97874 #	-1	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"

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			30 #		0 #		0 #		0 #		0 #	
Max. span ³	UPLIFT LOAD ¹⁰	# 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	-44.557906 #	-1	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"
6	-66.83686 #	-1	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"
8	-89.115813 #	-1	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"
10	-111.39477 #	-1	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"	(S) 26"x26"X9"
12	-133.67372 #	-1	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"	(D) 34"x34"X9"

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)Double (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 29' - 8" 2-section modular
- designed for 100 mph max. wind speed.
- Design for 2000 psf min. allowable soil bearing capacity.
- Designed to the & ASCE 7-05

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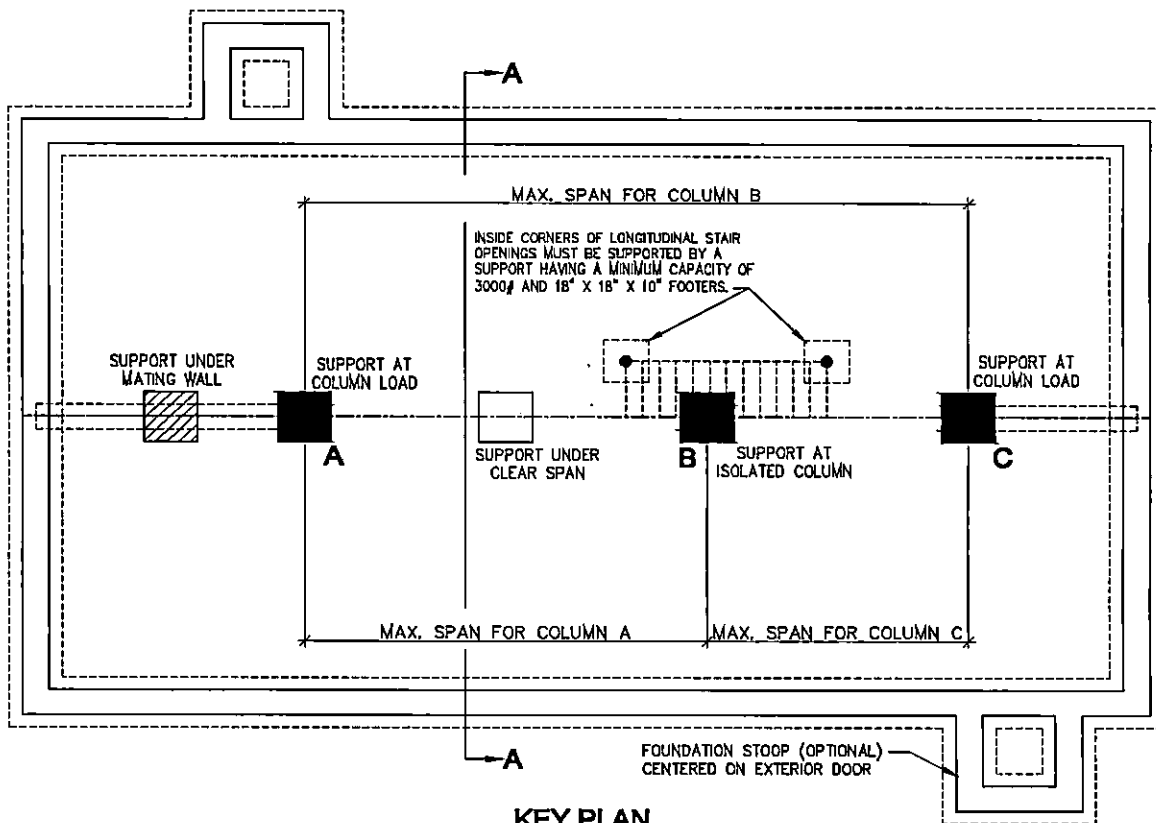
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PORCH & RECESS
(TABLE P)**

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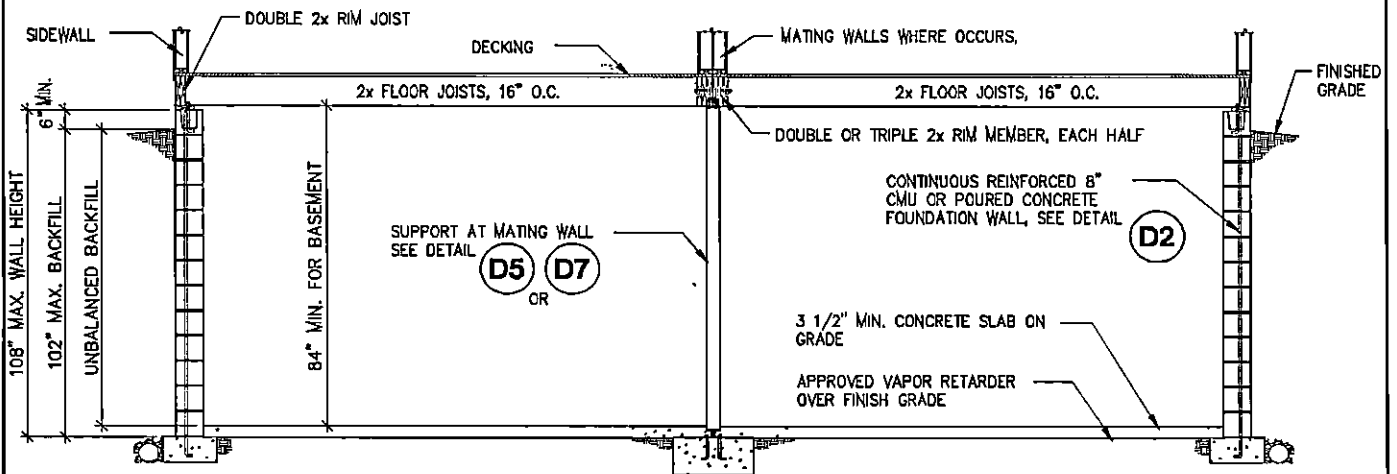
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KEY PLAN
OFF-FRAME BASEMENT - 2 SECTION
 NOT TO SCALE



CROSS SECTION A-A

NOTES:

1. MARRIAGE LINE POSTS SHALL SUPPORT THE MARRIAGE WALL, COLUMNS 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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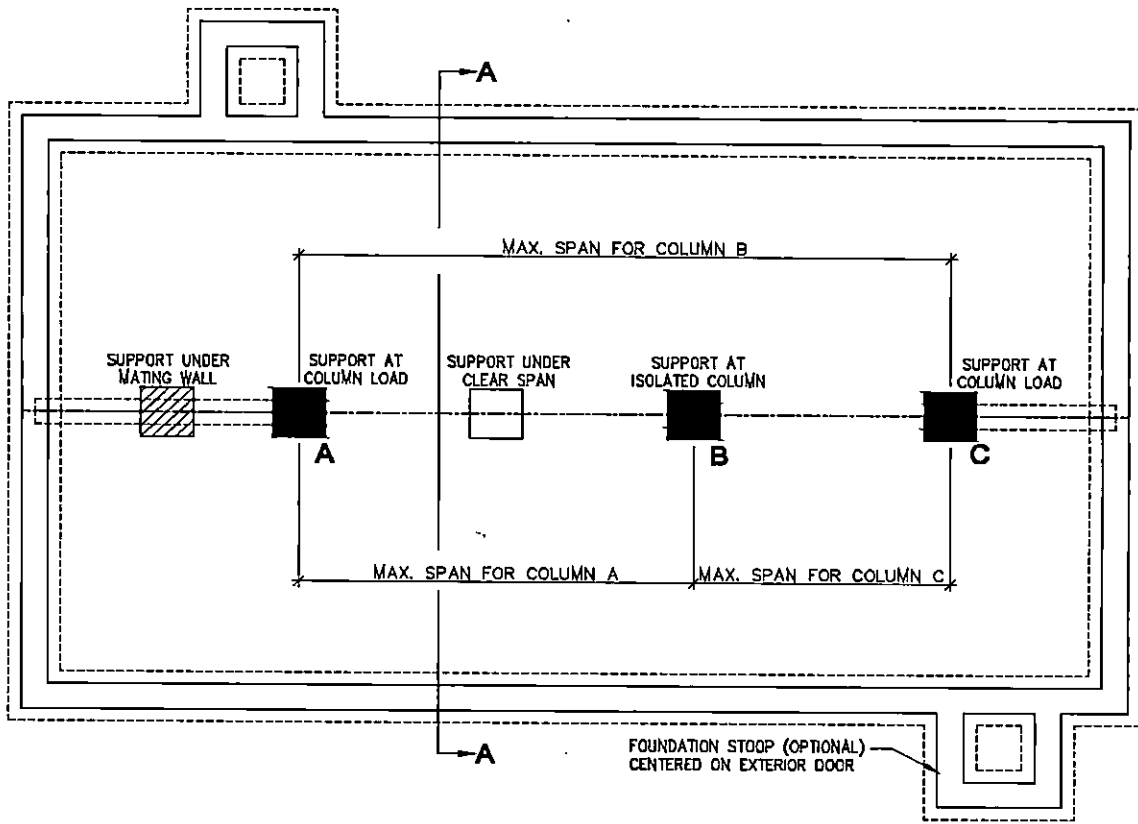
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 BASEMENT / 2 SECTION**

DATE: 05/25/07

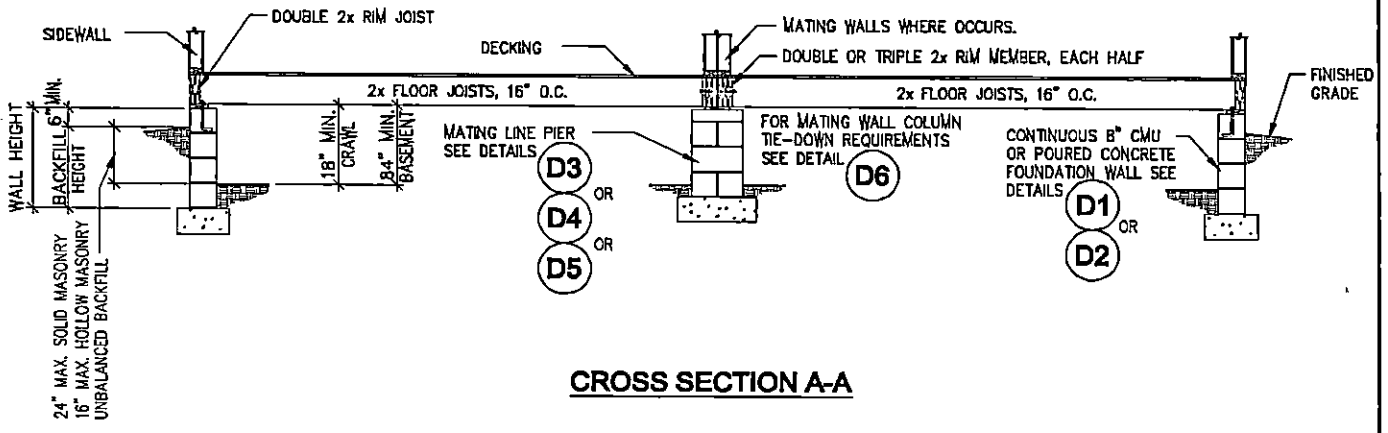
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KEY PLAN
OFF-FRAME CRAWL SPACE - 2 SECTION
 NOT TO SCALE



CROSS SECTION A-A

NOTES:

1. MARRIAGE LINE POSTS SHALL SUPPORT THE MARRIAGE WALL, COLUMNS 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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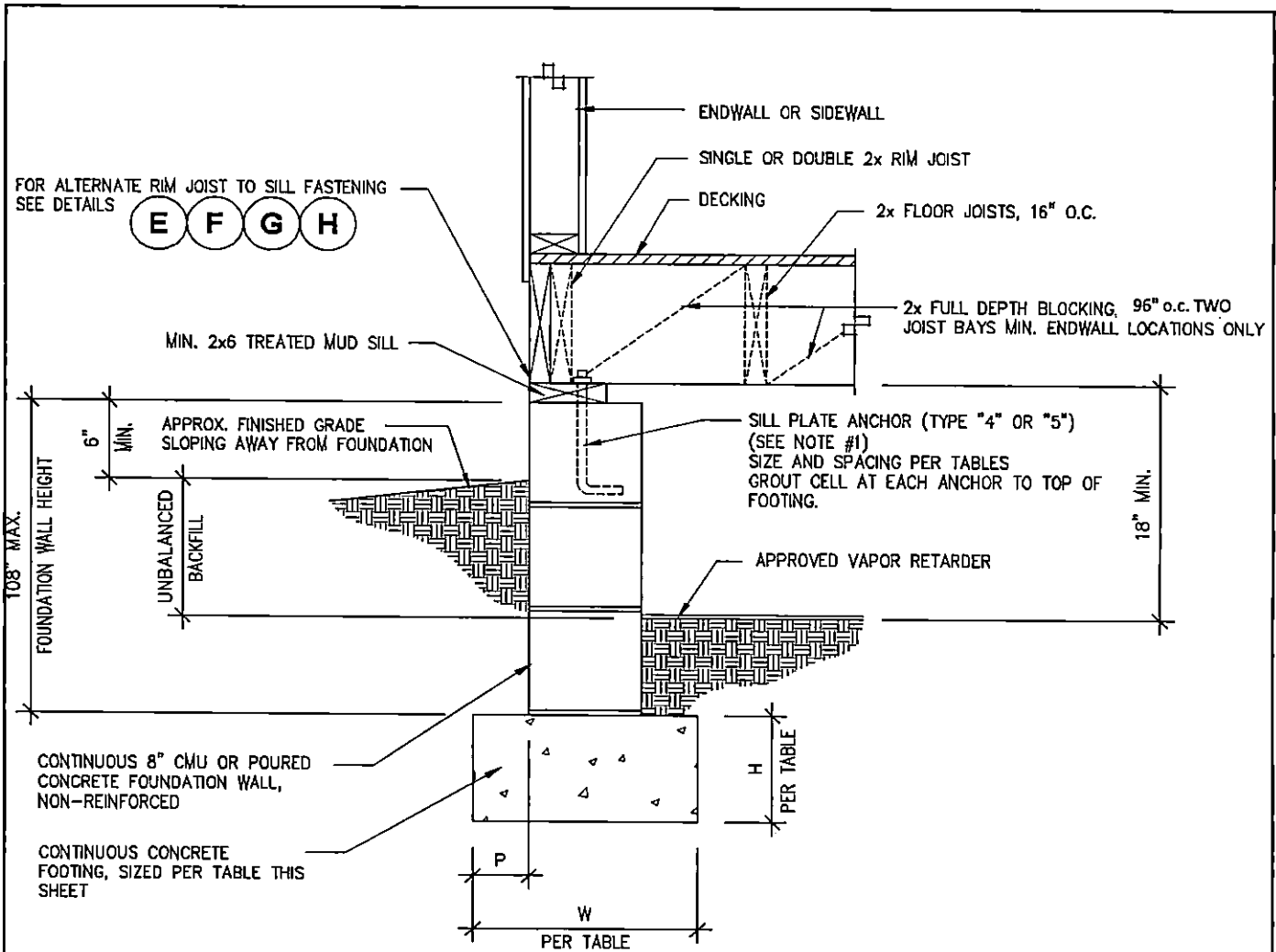
**KEY PLAN 8 - OFF-FRAME /
 CRAWL SPACE / 2 SECTION**

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FOOTER SIZE TABLE

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

**NON-REINFORCED PERIMETER FOUNDATION WALL
 BASEMENT OR CRAWLSPACE
 MAX. 100 MPH WIND SPEED & SEISMIC ZONE C
 30' WIDE 1 STORY- W.O ATTIC**

NOTES:

- 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.
- 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.
- 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).
- 2000 PSF MIN. ALLOWABLE SOIL BEARING CAPACITY.

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NON-REINFORCED PERIMETER FOUNDATION WALL - DETAIL - D1

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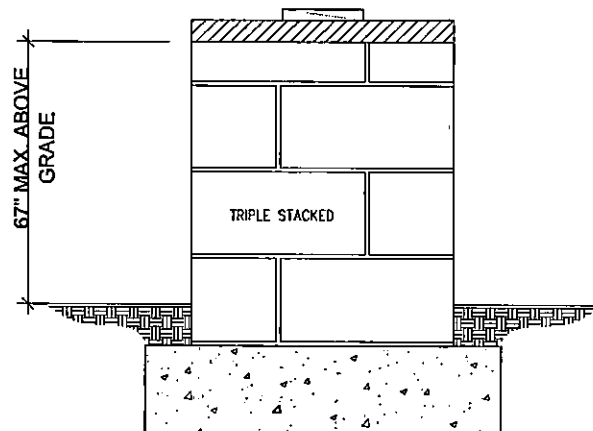
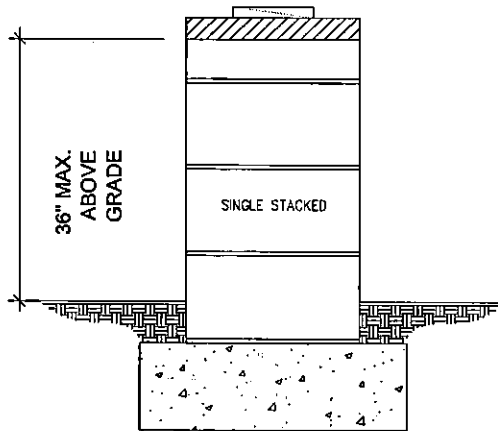
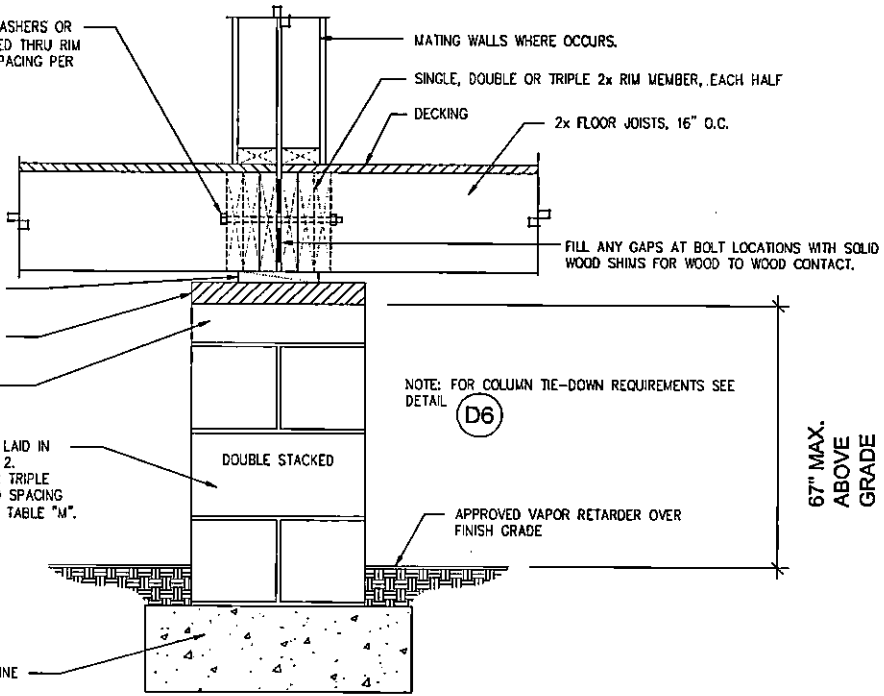
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1/2" BOLTS, NUTS, AND WASHERS OR 3/8" LAG SCREWS REQUIRED THRU RIM JOIST GIRDER. SIZE AND SPACING PER HOME SETUP MANUAL.



**NON-REINFORCED MATING WALL OR COLUMN SUPPORT PIER
CRAWL SPACE ONLY**

NOTES:

- 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.
- 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 OR APPROVED ALTERNATE (SEE GENERAL NOTE 12). 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.
- 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.
- 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.
- MARRIAGE LINE PIERS SHALL SUPPORT THE MARRIAGE WALL AND COLUMNS WHERE OCCURS PER MODEL SPECIFIC FOUNDATION PLAN. MAXIMUM PIER SPACING PER TABLE "M".
- SEE GENERAL NOTES FOR DRAINAGE AND OTHER FOUNDATION REQUIREMENTS.

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NON-REINFORCED MATING WALL COLUMN SUPPORT PIER - CRAWLSPACE ONLY - DETAIL - D3

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1/2" BOLTS, NUTS, AND WASHERS OR 3/8" LAG SCREWS REQUIRED THRU RIM JOIST GIRDER. SIZE AND SPACING PER HOME SETUP MANUAL.

MATING WALLS WHERE OCCURS.

SINGLE, DOUBLE OR TRIPLE 2x RIM MEMBER, EACH HALF.

DECKING

2x FLOOR JOISTS, 16" O.C.

108" MAX. ABOVE GRADE

SHIM AS NEEDED PER NOTE 4

OPTIONAL FILLER PER NOTE 3

CAP BLOCK PER NOTE 3

MATING LINE DOUBLE STACKED PIER PER NOTE 2. REINFORCE PIER WITH (4) #4 VERTICAL REBAR. GROUT CELLS SOLID TO FOOTING. SIZE AND SPACING PER TABLE "M".

FINISH GRADE AT CRAWL SPACE APPLICATION

APPROVED VAPOR RETARDER OVER FINISH GRADE

FILL ANY GAPS AT BOLT LOCATIONS WITH SOLID WOOD SHIMS FOR WOOD TO WOOD CONTACT.

NOTE: FOR COLUMN TIE-DOWN REQUIREMENTS SEE DETAIL **(D6)**

MASONRY JOINT TYPE M OR S MORTAR

3 1/2" MIN. CONCRETE SLAB ON GRADE FOR BASEMENT APPLICATION

APPROVED VAPOR RETARDER

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CONCRETE FOOTING BELOW FROST LINE. REINFORCED WITH (3) #4 REBAR EACH WAY. SIZE PER TABLE "M".

MIN. DIAMETER OF BEND SHALL BE 3" AS MEASURED FROM INSIDE OF REINFORCING BARS WITH A 6" LONG MIN. LEG.

6" MIN.

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

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.

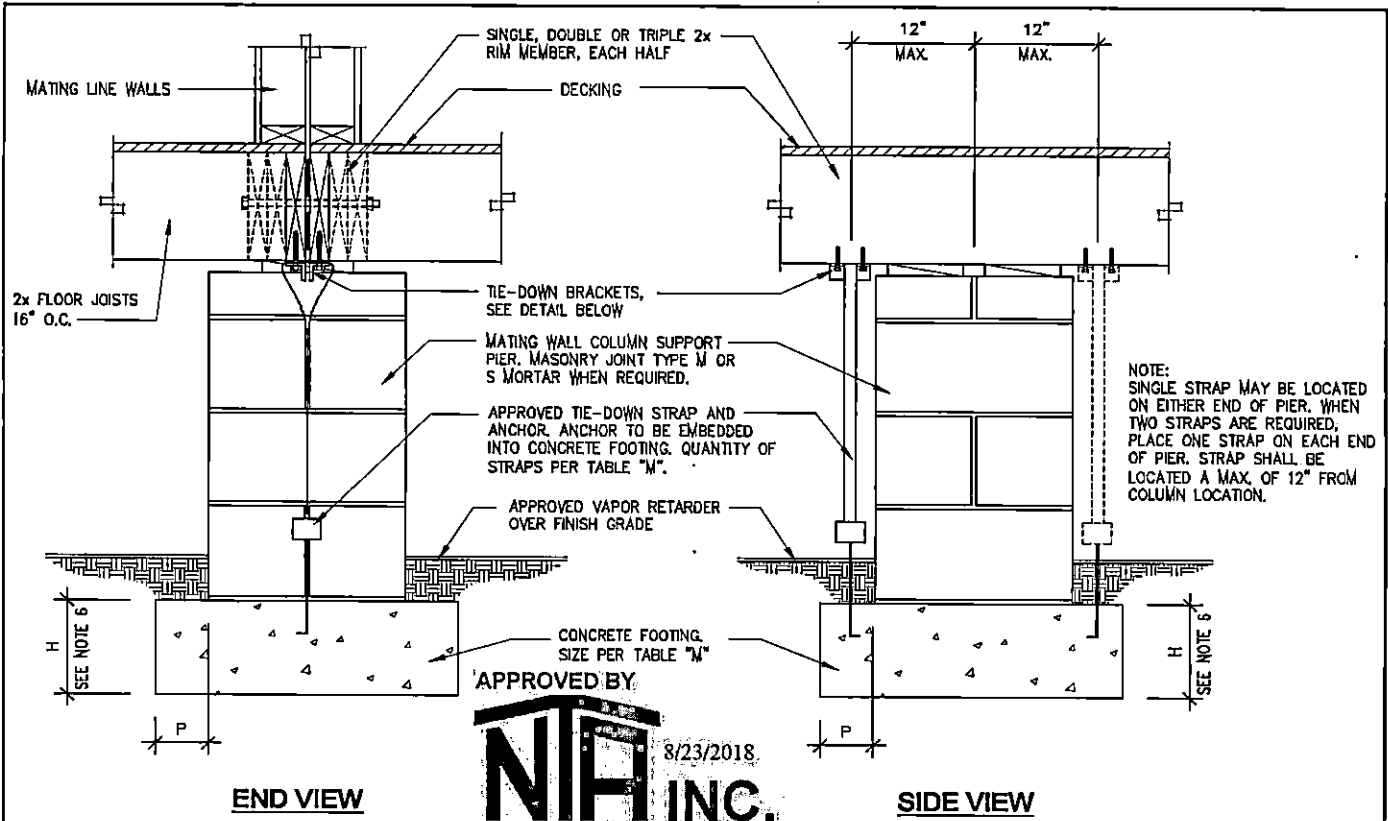
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**REINFORCED MATING WALL OR
COLUMN SUPPORT PIER -
BASEMENT OR CRAWL SPACE
DETAIL - D5**

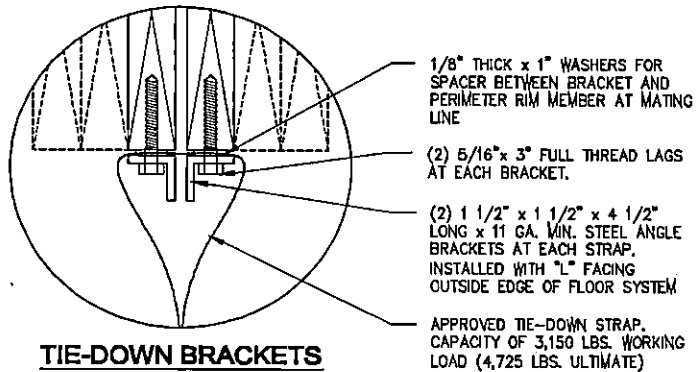
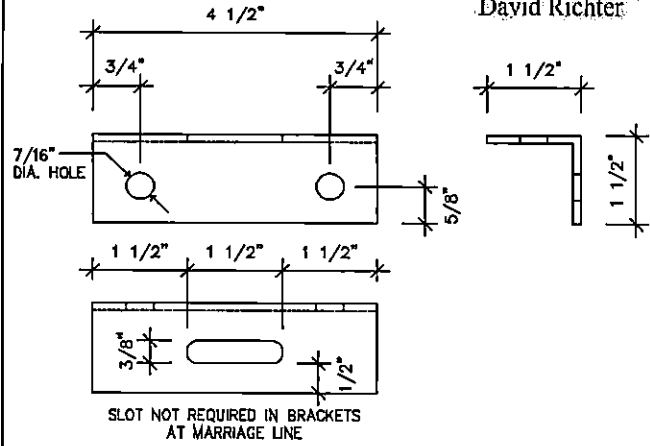
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MATING WALL COLUMN TIE DOWN

- 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 8".

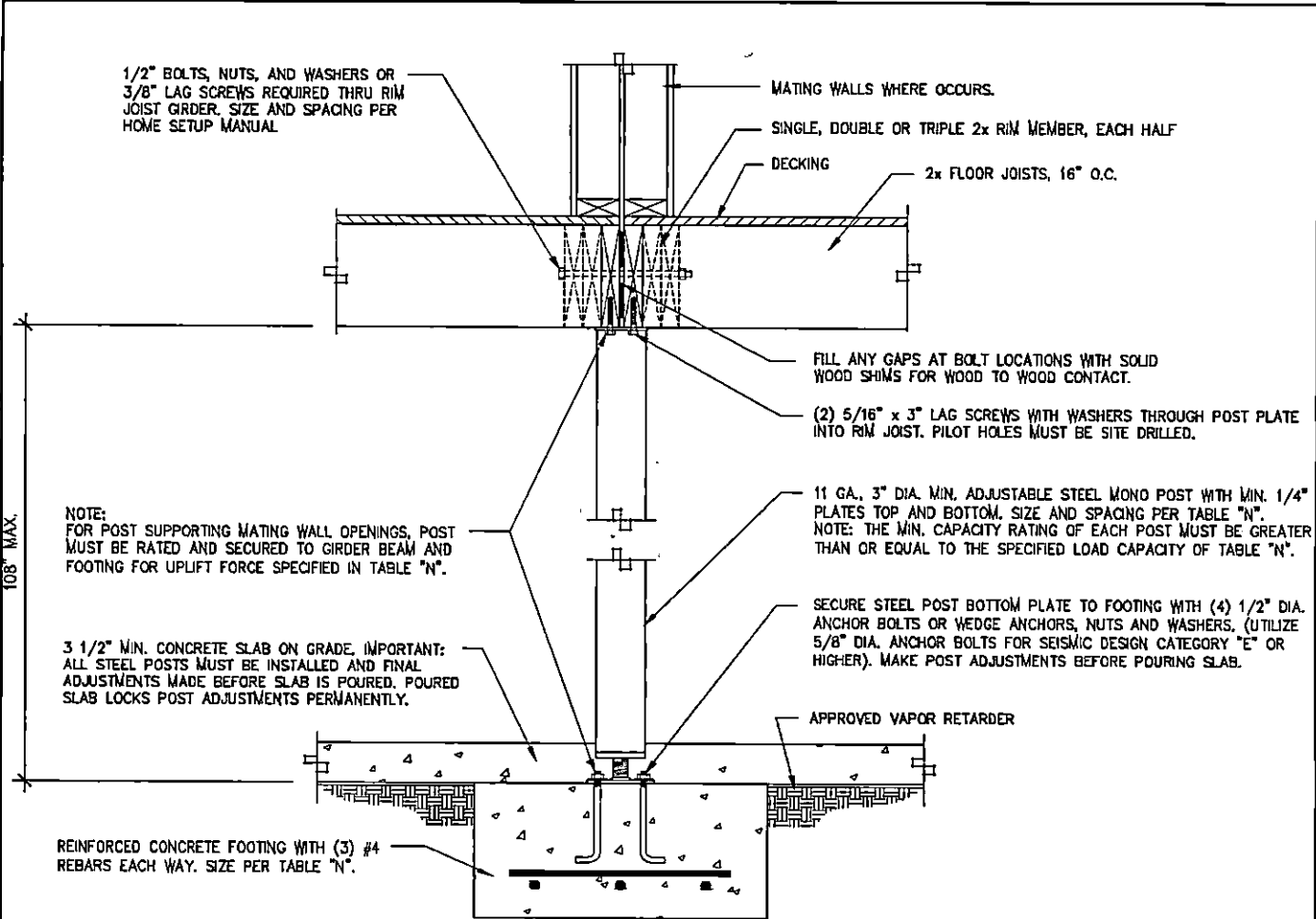
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MATING WALL COLUMN TIE DOWN - DETAIL - D6

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1/2" BOLTS, NUTS, AND WASHERS OR 3/8" LAG SCREWS REQUIRED THRU RIM JOIST GIRDER. SIZE AND SPACING PER HOME SETUP MANUAL

MATING WALLS WHERE OCCURS.
SINGLE, DOUBLE OR TRIPLE 2x RIM MEMBER, EACH HALF
DECKING
2x FLOOR JOISTS, 16" O.C.

FILL ANY GAPS AT BOLT LOCATIONS WITH SOLID WOOD SHIMS FOR WOOD TO WOOD CONTACT.

(2) 5/16" x 3" LAG SCREWS WITH WASHERS THROUGH POST PLATE INTO RIM JOIST. PILOT HOLES MUST BE SITE DRILLED.

11 GA., 3" DIA. MIN. ADJUSTABLE STEEL MONO POST WITH MIN. 1/4" PLATES TOP AND BOTTOM. SIZE AND SPACING PER TABLE "N".
NOTE: THE MIN. CAPACITY RATING OF EACH POST MUST BE GREATER THAN OR EQUAL TO THE SPECIFIED LOAD CAPACITY OF TABLE "N".

SECURE STEEL POST BOTTOM PLATE TO FOOTING WITH (4) 1/2" DIA. ANCHOR BOLTS OR WEDGE ANCHORS, NUTS AND WASHERS. (UTILIZE 5/8" DIA. ANCHOR BOLTS FOR SEISMIC DESIGN CATEGORY "E" OR HIGHER). MAKE POST ADJUSTMENTS BEFORE POURING SLAB.

NOTE:
FOR POST SUPPORTING MATING WALL OPENINGS, POST MUST BE RATED AND SECURED TO GIRDER BEAM AND FOOTING FOR UPLIFT FORCE SPECIFIED IN TABLE "N".

3 1/2" MIN. CONCRETE SLAB ON GRADE. IMPORTANT: ALL STEEL POSTS MUST BE INSTALLED AND FINAL ADJUSTMENTS MADE BEFORE SLAB IS POURED. POURED SLAB LOCKS POST ADJUSTMENTS PERMANENTLY.

REINFORCED CONCRETE FOOTING WITH (3) #4 REBARS EACH WAY. SIZE PER TABLE "N".

108" MAX.

ALTERNATE POST INSTALLATION: STEEL POSTS MAY BE INSTALLED WITH SCREW JACK ASSEMBLY AT THE TOP OR BOTTOM. STEEL POSTS INSTALLED WITHOUT THE SCREW JACK ASSEMBLY AT THE BOTTOM AND ENCASED IN CONCRETE ARE SUBJECT TO LOAD REDUCTIONS. VERIFY THE CAPACITY OF THE STEEL POST BASED ON THE INSTALLATION METHOD PRIOR TO INSTALLATION OF THE POST.

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**ADJUSTABLE STEEL COLUMN POST
BASEMENT OR CRAWL SPACE
(MAXIMUM POST SPACING PER TABLE N)**

NOTES:

1. FOOTINGS MUST BE LEVEL IN ALL DIRECTIONS. STEEL POSTS ARE TO BE PLACED CENTERED ON THE FOOTING SO THAT THE FOOTING PROJECTION FROM THE POST IS EQUAL FROM SIDE-TO-SIDE AND FRONT-TO-BACK. COLUMN POSTS MUST BE LEVEL VERTICALLY ON ALL SIDES AND SQUARE WITH THE FOOTING.
2. MARRIAGE LINE STEEL POSTS SHALL SUPPORT THE MARRIAGE WALL AND COLUMNS WHERE OCCURS PER
3. SEE GENERAL NOTES FOR DRAINAGE AND OTHER FOUNDATION REQUIREMENTS.

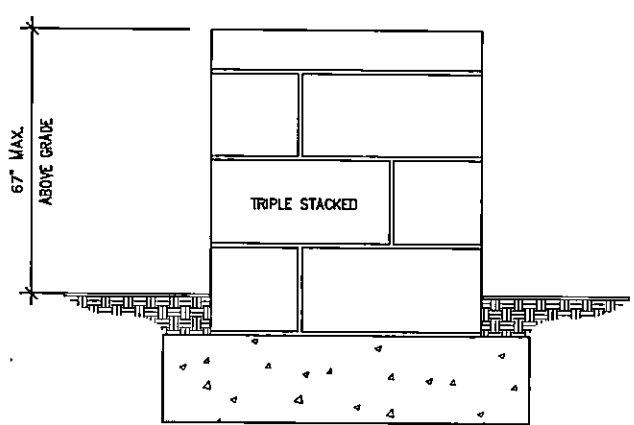
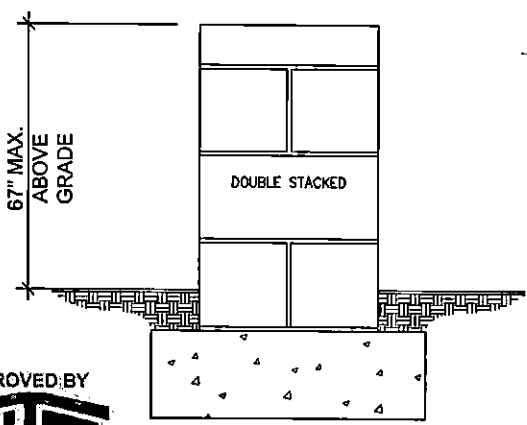
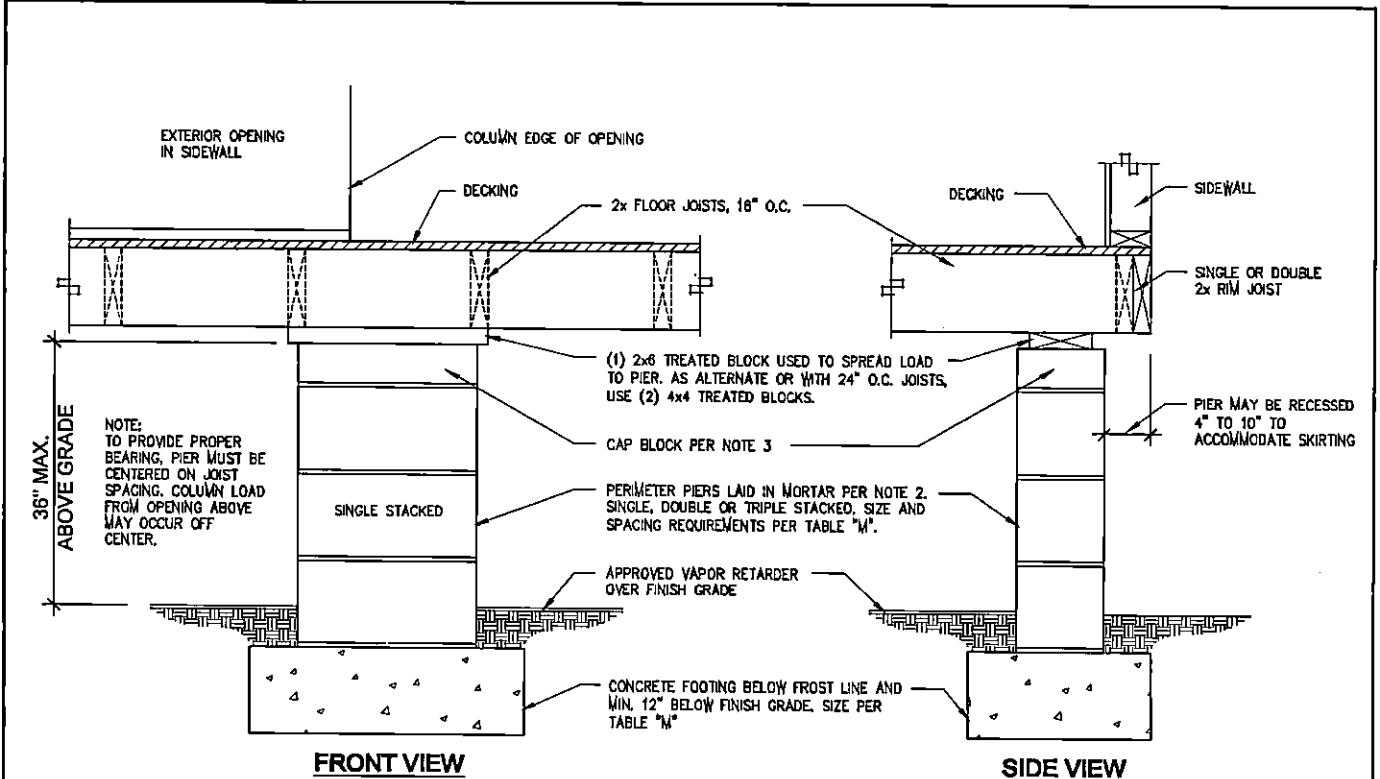
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**ADJUSTABLE STEEL COLUMN
POST - BASEMENT OR CRAWL
SPACE - DETAIL - D7**

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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 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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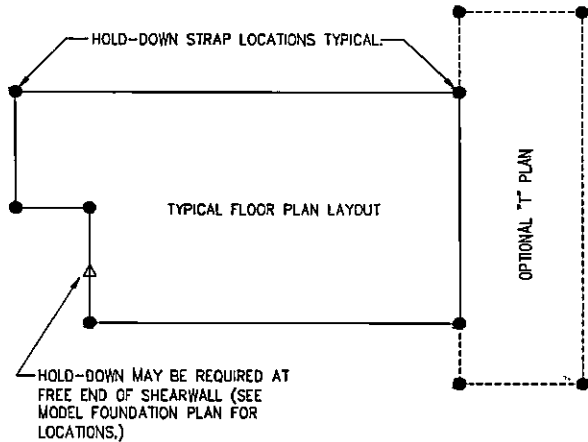
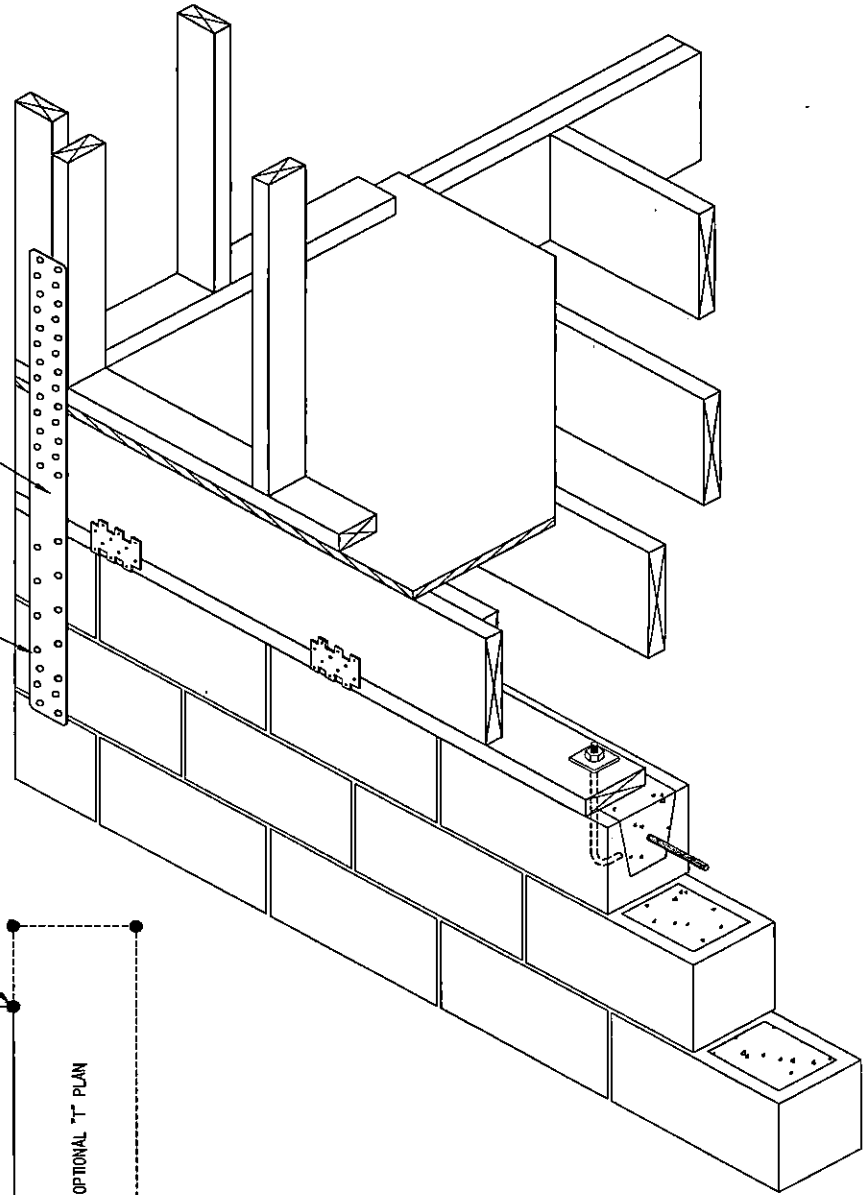
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SIMPSON MSTCM40 STRAP OR STHD14 STRAP IS IN ADDITION TO REQUIRED ANCHOR BOLTS AND RIM TO MUD SILL FASTENING REQUIREMENTS. (SEE HOME FLOOR TO SILL PLATE AND SILL PLATE TO FOUNDATION CHARTS FOR NUMBER OF STRAPS REQUIRED AT EACH HOLD-DOWN LOCATION.)

NOTE:
STRAP MUST BE POSITIONED A MINIMUM OF 1 1/2" FROM EDGE OF FOUNDATION WALL.



SHEARWALL FOUNDATION HOLD-DOWN

NOTES:

1. WHERE REQUIRED AT FREE-END HOLD-DOWNS (AS LOCATED ON THE FOUNDATION LAYOUT) OR AT BUILDING CORNERS PER THE FASTENING TABLES INCLUDED WITHIN THIS FOUNDATION DESIGN PACKAGE, THE FOUNDATION HOLD-DOWN STRAPS ARE THE RESPONSIBILITY OF OTHERS AND ARE NOT PROVIDED BY CLAYTON HOME BUILDING GROUP OR SUBSIDIARIES.
2. SIMPSON MSTCM40 SHALL BE FASTENED TO WALL STUD WITH (26) 16d NAILS AND TO FOUNDATION WALL WITH (14) 1/4" x 2 1/4" TITAN SCREWS.
3. SIMPSON MSTCM40 OR STHD14 STRAP MAY BE PLACED ON ENDWALL OR SIDEWALL. MINIMUM EDGE DISTANCE OF TITAN SCREW TO CONCRETE OR MASONRY BLOCK CORNER OF 1 1/2" MUST BE MAINTAINED.
4. SIMPSON MSTCM40 STRAP IS IN ADDITION TO THE REQUIRED ANCHOR BOLTS AND RIM TO MUD SILL FASTENING REQUIREMENTS.
5. SIMPSON STHD14 STRAP (POURED WALLS) MUST BE FASTENED TO WALL STUD WITH (38) .148X 3 1/4" NAILS.)
6. DESIGN STRAP CAPACITY: MSTCM40=4250# AND STHD14= 5025#

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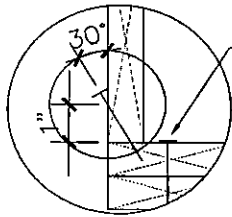
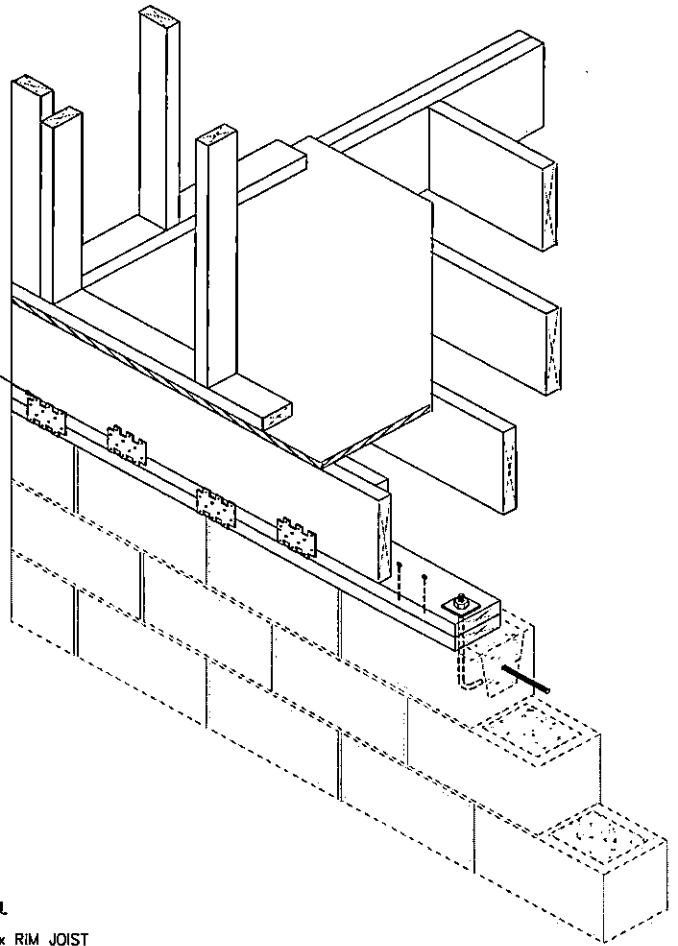
SHEARWALL FOUNDATION HOLD-DOWN - DETAIL - D18

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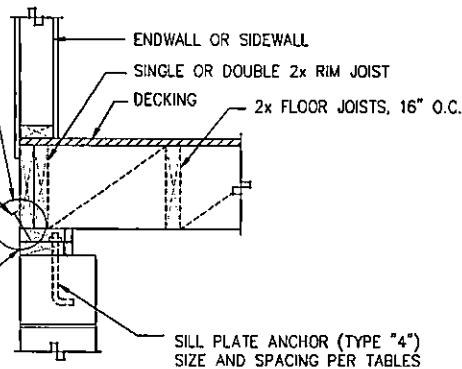
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WHEN FASTENING TABLES WITH H PLATES ARE USED SIMPSON LPT4 SHALL BE INSTALLED PER DETAIL H. TO BOTH BOTTOM MUD SILL TO UPPER MUD SILL & TOP MUD SILL TO RIM JOIST. SPACING PER HOME FLOOR TO SILL PLATE & SILL WITH H PLATE TABLES.



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.

SILL PLATE ANCHOR (TYPE "4") SIZE AND SPACING PER TABLES

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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.

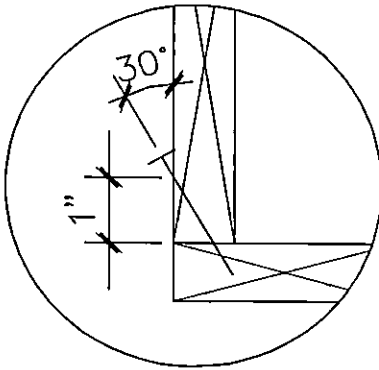
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DOUBLE MUD SILL FOUNDATION WALL DETAIL - D34

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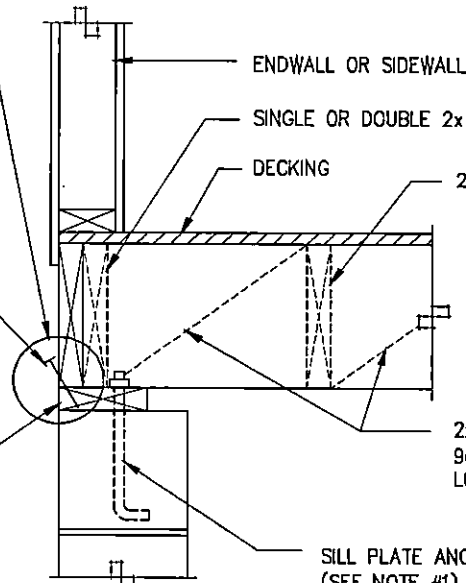
ALTERNATE FASTENER:

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

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 **(H)**

MIN. 2x6 TREATED MUD SILL



2x FULL DEPTH BLOCKING 96" O.C., TWO JOIST BAYS MIN. ENDWALL LOCATIONS ONLY

SILL PLATE ANCHOR (TYPE "4" OR "5") (SEE NOTE #1) SIZE AND SPACING PER TABLES

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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.

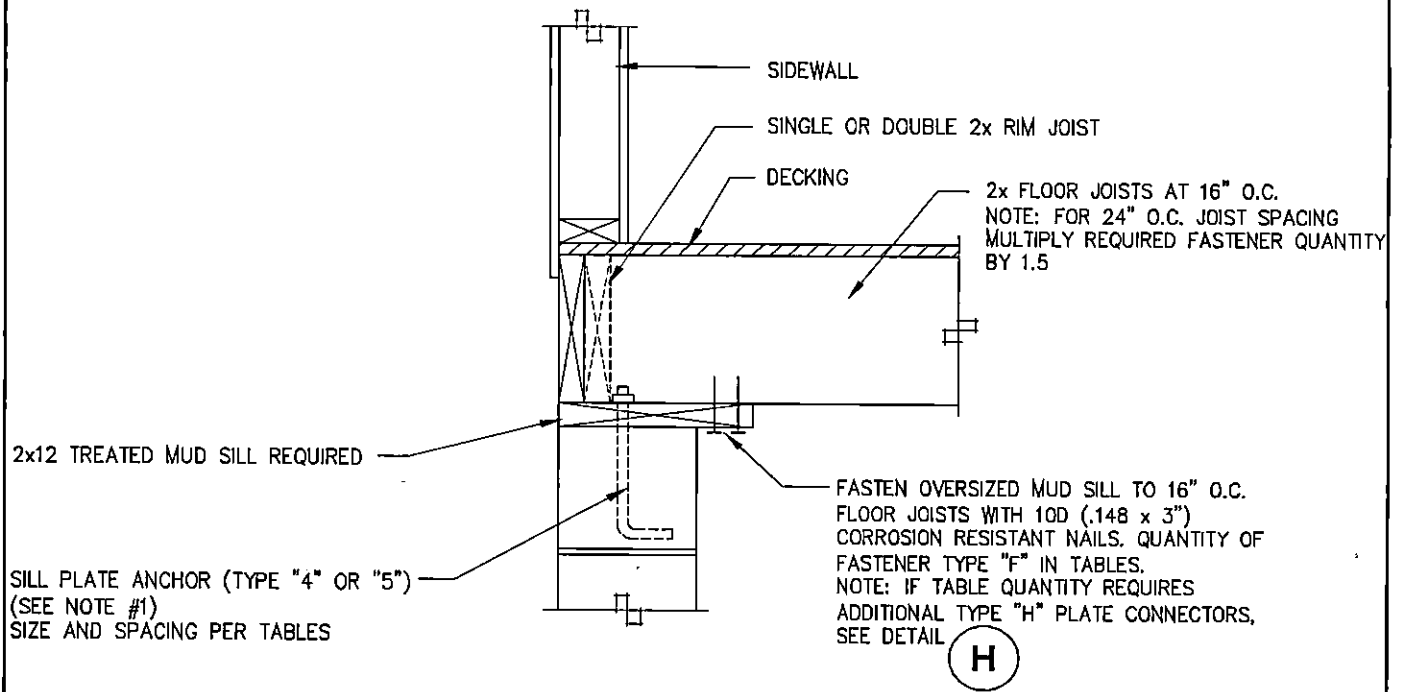
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FLOOR TO SILL PLATE FASTENING - ENDWALL OR SIDEWALL - DETAIL - E

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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

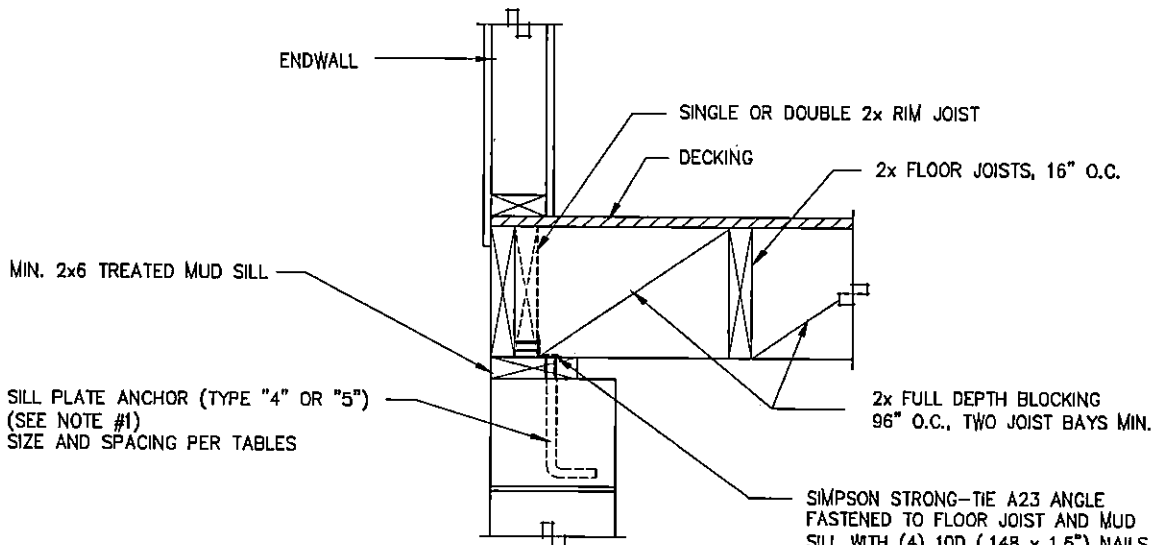
NOTE: THIS DETAIL FOR TYPE "F" FASTENING IS APPLICABLE TO SIDEWALL CONNECTIONS ONLY AND CAN NOT BE USED FOR ENDWALLS. SEE FASTENING TYPE "E" OR TYPE "G" FOR ENDWALL APPLICATION.

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

NOTES:

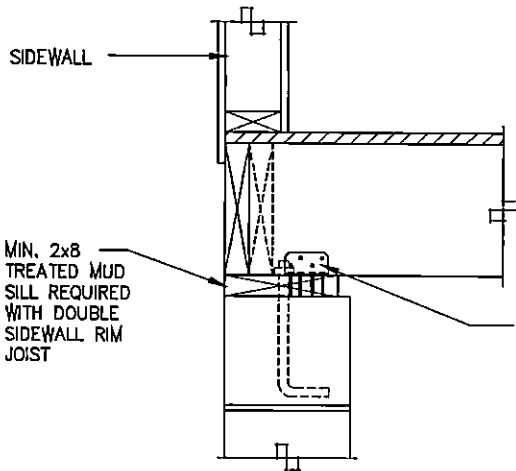
- 1) MUD SILL TO FOUNDATION ANCHORS:
 TYPE 4: DIAMETER STEEL ANCHOR BOLTS EMBEDDED 7" MIN. INTO CONCRETE FOUNDATION WALL OR CLOSE CELL CMU WITH WASHERS AND NUTS. BOLT HEADS SHALL NOT BE RECESSED INTO SINGLE SILL PLATE.
 TYPE 5: SIMPSON MAB OR MASA MUD SILL ANCHOR INSTALLED PER INSTALLATION INSTRUCTIONS
- 2) RIM TO MUD SILL FASTENING AND SILL TO FOUNDATION ANCHOR SPACING SHALL BE THE MINIMUM OF:
 - 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.

Clayton Homes	
FLOOR TO SILL PLATE FASTENING - SIDEWALL ONLY DETAIL - F	
DATE: 04/17/07	9581-8.R.J.E.22.3.210()
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ENDWALL DETAIL

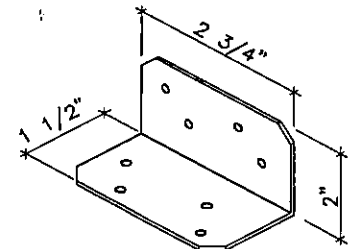
SIMPSON STRONG-TIE A23 ANGLE FASTENED TO FLOOR JOIST AND MUD SILL WITH (4) 10D (.148 x 1.5") NAILS. (CORROSION RESISTANT NAIL REQUIRED INTO P.T. MUD SILL) O.C. SPACING PER FASTENER TYPE "G" IN TABLES. NOTE: IF SPACING REQUIRES ADDITIONAL TYPE "H" PLATE CONNECTORS, SEE DETAIL (H)



SIDEWALL DETAIL

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NA INC. 8/23/2018
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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

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.

Clayton Homes

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

DATE: 05/25/07

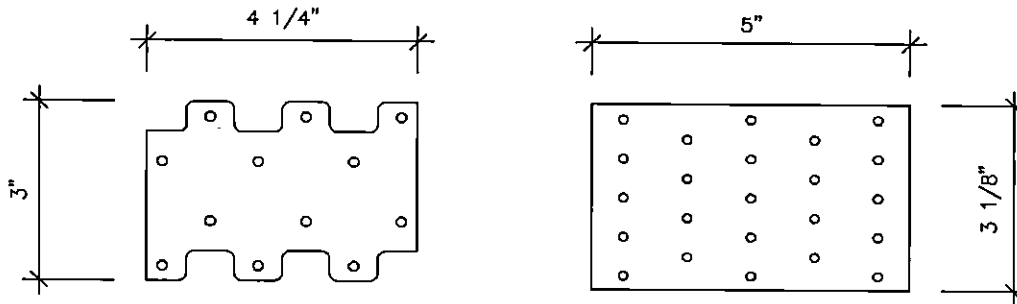
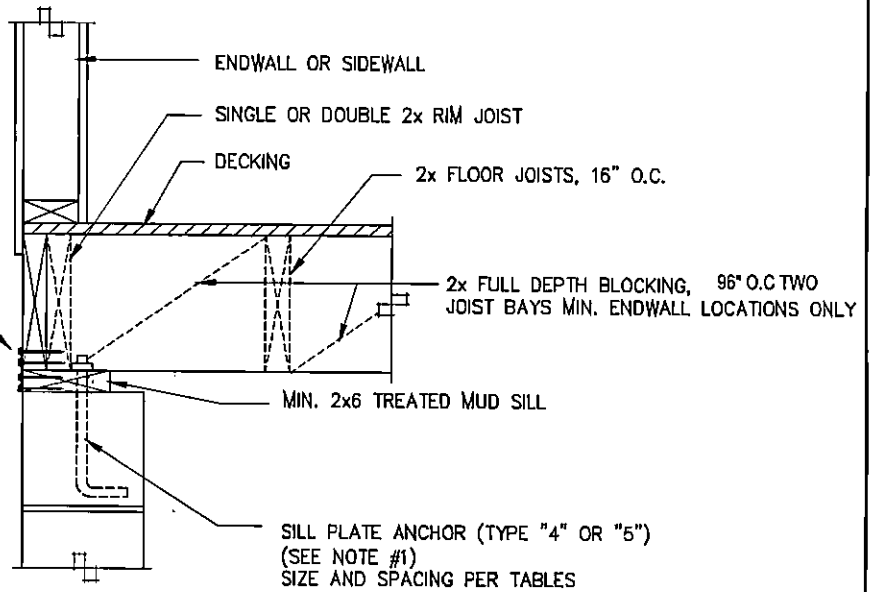
958I-8.R.J.E.22.3.210(L)

PAGE #:

SIMPSON STRONG-TIE LPT4 OR TP35 TIE PLATE FASTENED TO RIM JOIST AND MUD SILL WITH (12) 8D (.131 x 1.5") NAILS. CORROSION RESISTANT NAILS REQUIRED INTO P.T. MUD SILL.

QUANTITY, LOCATION AND O.C. SPACING PER NOTES 6 OR 7 IN TABLES.

NOTE: USE OF TIE PLATES IS FOR WIND LOAD ONLY AND MUST BE IN ADDITION TO FASTENING REQUIRED FOR BACKFILL PRESSURE PER DETAILS



SIMPSON STRONG-TIE "LPT4" TIE PLATE

SIMPSON STRONG-TIE "TP35" TIE PLATE

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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:
 - 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.

Clayton Homes

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

DATE: 04/17/07

9581-8.R.J.E.22.3.210(L)

PAGE #:

Home Floor to Sill Plate & Sill Plate to Foundation WITH TYPE H PLATE CONNECTORS (See note 6 & 7) SOIL CLASSES GW, GP, SW AND SP SOILS

Unit Width: 29.67' to 29.67' Max.

Unit Length: 68' Max.

Roof Pitch: 6/12 to 6/12

Max. Roof Overhang: 12 "

Max. Sidewall Height: 9 '

Max. Wind Speed 100 MPH

Seismic Zone C

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8/23/2018
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David Richter

Foundation Wall ¹⁰		MAXIMUM FASTENER SPACING OR FASTENERS PER JOIST SPACING ^{2,3 & 5}										# REQ'D SW HDS SEE D18 /CORNER
		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 "	9.6" o.c.	1	1	72" o.c.	72" o.c.	80" o.c.	269" o.c.	57" o.c.	30" o.c.	0	
32 "	24 "	15.3" o.c.	1	1	72" o.c.	72" o.c.	32" o.c.	106" o.c.	56" o.c.	30" o.c.	0	
40 "	32 "	15.3" o.c.	1	1	72" o.c.	72" o.c.	17" o.c.	56" o.c.	54" o.c.	30" o.c.	0	
5'	4'	7.4" o.c.	2	1	64" o.c.	70" o.c.	7" o.c.	25" o.c.	46" o.c.	28" o.c.	0	
7'	4'	10.4" o.c.	1	1	72" o.c.	72" o.c.	10" o.c.	35" o.c.	51" o.c.	29" o.c.	0	
7'	5'	5.3" o.c.	2	1	46" o.c.	51" o.c.	5" o.c.	18" o.c.	40" o.c.	26" o.c.	0	
7'	6'	3.1" o.c.	3	1	26" o.c.	29" o.c.	3" o.c.	10" o.c.	26" o.c.	21" o.c.	0	
8'	4'	11.9" o.c.	1	1	72" o.c.	72" o.c.	12" o.c.	40" o.c.	52" o.c.	29" o.c.	0	
8'	5'	6.1" o.c.	2	1	52" o.c.	58" o.c.	6" o.c.	20" o.c.	43" o.c.	27" o.c.	0	
8'	6'	3.5" o.c.	3	1	30" o.c.	33" o.c.	4" o.c.	12" o.c.	30" o.c.	23" o.c.	0	
8'	7'	NA	5	1	19" o.c.	21" o.c.	NA	7" o.c.	19" o.c.	17" o.c.	0	
9'	3'	15.3" o.c.	1	1	72" o.c.	72" o.c.	32" o.c.	106" o.c.	56" o.c.	30" o.c.	0	
9'	4'	13.4" o.c.	1	1	72" o.c.	72" o.c.	13" o.c.	45" o.c.	53" o.c.	29" o.c.	0	
9'	5'	6.8" o.c.	2	1	59" o.c.	65" o.c.	7" o.c.	23" o.c.	45" o.c.	27" o.c.	0	
9'	6'	4.0" o.c.	3	1	34" o.c.	38" o.c.	4" o.c.	13" o.c.	33" o.c.	24" o.c.	0	
9'	7'	NA	4	1	21" o.c.	24" o.c.	NA	8" o.c.	21" o.c.	19" o.c.	0	
9'	8'	NA	6	2	14" o.c.	16" o.c.	NA	6" o.c.	14" o.c.	14" o.c.	0	

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.

958I-8.R.J.E.22.3.210(L)

Home Floor to Sill Plate & Sill Plate to Foundation WITH TYPE H PLATE CONNECTORS (See note 6 & 7) SOIL CLASSES GM, GC, SM, SM-SC AND ML SOILS

Unit Width: 29.67' to 29.67' Max.

Unit Length: 68' Max.

Roof Pitch: 6/12 to 6/12

Max. Roof Overhang: 12"

Max. Sidewall Height: 9'

Max. Wind Speed 100 MPH

Seismic Zone C

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David Richter

Foundation Wall ¹⁰		MAXIMUM FASTENER SPACING OR FASTENERS PER JOIST SPACING ^{2,3 & 5}										# REQ'D S/W HDS SEE D18 /CORNER
		SIDEWALL FASTENING SPACING ¹					END WALL FASTENING					
Wall Height	Backfill Depth	Rim to Sill ⁶			Sill to Fnd. Wall		Rim to Sill ⁷		Sill to Fnd. Wall			
		Fastener Type			Anchor Spacing		Fastener Type		Anchor Spacing			
		E	F ⁴	G ⁴	4	5	E	G	4	5		
24"	16"	15.3" o.c.	1	1	72" o.c.	72" o.c.	53" o.c.	656" o.c.	56" o.c.	30" o.c.	0	
32"	24"	15.3" o.c.	1	1	72" o.c.	72" o.c.	21" o.c.	259" o.c.	55" o.c.	30" o.c.	0	
40"	32"	11.1" o.c.	1	1	72" o.c.	72" o.c.	11" o.c.	137" o.c.	51" o.c.	29" o.c.	0	
5'	4'	5.0" o.c.	2	1	43" o.c.	47" o.c.	5" o.c.	61" o.c.	38" o.c.	25" o.c.	0	
7'	4'	6.9" o.c.	2	1	60" o.c.	66" o.c.	7" o.c.	85" o.c.	45" o.c.	27" o.c.	0	
7'	5'	3.5" o.c.	3	1	30" o.c.	34" o.c.	4" o.c.	44" o.c.	30" o.c.	23" o.c.	0	
7'	6'	NA	5	1	18" o.c.	19" o.c.	NA	25" o.c.	18" o.c.	16" o.c.	0	
8'	4'	7.9" o.c.	2	1	68" o.c.	72" o.c.	8" o.c.	97" o.c.	47" o.c.	28" o.c.	0	
8'	5'	4.1" o.c.	3	1	35" o.c.	38" o.c.	4" o.c.	50" o.c.	34" o.c.	24" o.c.	0	
8'	6'	NA	4	1	20" o.c.	22" o.c.	NA	29" o.c.	20" o.c.	18" o.c.	0	
8'	7'	NA	7	2	13" o.c.	14" o.c.	NA	18" o.c.	13" o.c.	13" o.c.	0	
9'	3'	15.3" o.c.	1	1	72" o.c.	72" o.c.	21" o.c.	259" o.c.	55" o.c.	30" o.c.	0	
9'	4'	8.9" o.c.	2	1	72" o.c.	72" o.c.	9" o.c.	109" o.c.	49" o.c.	28" o.c.	0	
9'	5'	4.6" o.c.	2	1	39" o.c.	43" o.c.	5" o.c.	56" o.c.	36" o.c.	25" o.c.	0	
9'	6'	NA	4	1	23" o.c.	25" o.c.	NA	32" o.c.	23" o.c.	19" o.c.	0	
9'	7'	NA	6	2	14" o.c.	16" o.c.	NA	20" o.c.	14" o.c.	14" o.c.	0	
9'	8'	NA	9	0	10" o.c.	11" o.c.	NA	14" o.c.	10" o.c.	10" o.c.	0	

NOTES:

- Fastener Types A,B,C & D are not reflected in charts and are available prescriptively per table R404.1(1) in 2006 IRC.
- See details for additional fastener options.
- All fastener spacing must start within 12" maximum of each corner or half specified spacing (lesser of two).
- Type F & G connectors are qty. per 16" oc. Joist spacing.
- 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.

9581-8.R.J.E.22.3.210()

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

Unit Width: 29.67' to 29.67' Max.

Unit Length: 68' Max.

Roof Pitch: 6/12 to 6/12

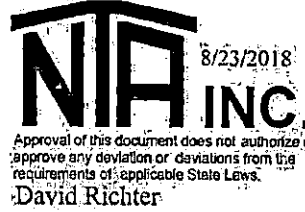
Max. Roof Overhang: 12"

Max. Sidewall Height: 9'

Max. Wind Speed 100 MPH

Seismic Zone C

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Foundation Wall ¹⁰		MAXIMUM FASTENER SPACING OR FASTENERS PER JOIST SPACING ^{2,3 & 5}										# REQ'D S/W HDS SEE D18 /CORNER
		SIDEWALL FASTENING SPACING ¹					END WALL FASTENING					
		Rim to Sill ^b			Sill to Fnd. Wall		Rim to Sill ^f		Sill to Fnd. Wall			
Wall Height	Backfill Depth	Fastener Type			Anchor Spacing		Fastener Type		Anchor Spacing			
		E	F ^a	G ^a	4	5	E	G	4	5		
24"	16"	15.3" o.c.	1	1	72" o.c.	72" o.c.	40" o.c.	492" o.c.	56" o.c.	30" o.c.	0	
32"	24"	15.3" o.c.	1	1	72" o.c.	72" o.c.	16" o.c.	194" o.c.	54" o.c.	29" o.c.	0	
40"	32"	8.4" o.c.	2	1	72" o.c.	72" o.c.	8" o.c.	102" o.c.	48" o.c.	28" o.c.	0	
5'	4'	3.7" o.c.	3	1	32" o.c.	35" o.c.	4" o.c.	46" o.c.	31" o.c.	23" o.c.	0	
7'	4'	5.2" o.c.	2	1	45" o.c.	49" o.c.	5" o.c.	64" o.c.	39" o.c.	26" o.c.	0	
7'	5'	NA	4	1	23" o.c.	25" o.c.	NA	33" o.c.	23" o.c.	20" o.c.	0	
7'	6'	NA	6	2	13" o.c.	15" o.c.	NA	19" o.c.	13" o.c.	13" o.c.	0	
8'	4'	5.9" o.c.	2	1	51" o.c.	56" o.c.	6" o.c.	73" o.c.	42" o.c.	27" o.c.	0	
8'	5'	3.0" o.c.	3	1	26" o.c.	29" o.c.	3" o.c.	37" o.c.	26" o.c.	21" o.c.	0	
8'	6'	NA	6	2	15" o.c.	17" o.c.	NA	22" o.c.	15" o.c.	15" o.c.	0	
8'	7'	NA	9	2	10" o.c.	11" o.c.	NA	14" o.c.	10" o.c.	10" o.c.	0	
9'	3'	15.3" o.c.	1	1	72" o.c.	72" o.c.	16" o.c.	194" o.c.	54" o.c.	29" o.c.	0	
9'	4'	6.7" o.c.	2	1	57" o.c.	63" o.c.	7" o.c.	82" o.c.	44" o.c.	27" o.c.	0	
9'	5'	3.4" o.c.	3	1	29" o.c.	32" o.c.	3" o.c.	42" o.c.	29" o.c.	22" o.c.	0	
9'	6'	NA	5	2	17" o.c.	19" o.c.	NA	24" o.c.	17" o.c.	16" o.c.	0	
9'	7'	NA	8	2	11" o.c.	12" o.c.	NA	15" o.c.	11" o.c.	11" o.c.	0	
9'	8'	NA	11	NA	7" o.c.	8" o.c.	NA	10" o.c.	7" o.c.	8" o.c.	0	

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.

958I-8.R.J.E.22.3.210()

**Home Floor to Sill Plate & Sill Plate to Foundation
WITHOUT TYPE H PLATE CONNECTORS (See note 6 & 7)
SOIL CLASSES GW, GP, SW AND SP SOILS**

Unit Width: 29.67' to 29.67' Max.

Unit Length: 68' Max.

Roof Pitch: 6/12 to 6/12

Max. Roof Overhang: 12 "

Max. Sidewall Height: 9'

Max. Wind Speed 100 MPH

Selsmic Zone C

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David Richter

Foundation Wall ¹⁰		MAXIMUM FASTENER SPACING OR FASTENERS PER JOIST SPACING ^{2,3 & 5}										# REQ'D SW HDS SEE D18 /CORNER
		SIDEWALL FASTENING SPACING ¹					END WALL FASTENING					
		Rim to Sill ^b			Sill to Fnd. Wall		Rim to Sill ^f		Sill to Fnd. Wall			
Wall Height	Backfill Depth	Fastener Type			Anchor Spacing		Fastener Type		Anchor Spacing			
		E	F ^a	G ^a	4	5	E	G	4	5		
24 "	16 "	9.6" o.c.	1	1	72" o.c.	72" o.c.	8" o.c.	30" o.c.	57" o.c.	30" o.c.	1	
32 "	24 "	9.6" o.c.	1	1	72" o.c.	72" o.c.	8" o.c.	30" o.c.	56" o.c.	30" o.c.	1	
40 "	32 "	9.6" o.c.	1	1	72" o.c.	72" o.c.	8" o.c.	28" o.c.	54" o.c.	30" o.c.	1	
5'	4'	7.4" o.c.	2	1	64" o.c.	70" o.c.	6" o.c.	23" o.c.	46" o.c.	28" o.c.	1	
7'	4'	9.6" o.c.	1	1	72" o.c.	72" o.c.	7" o.c.	26" o.c.	51" o.c.	29" o.c.	1	
7'	5'	5.3" o.c.	2	1	46" o.c.	51" o.c.	5" o.c.	19" o.c.	40" o.c.	26" o.c.	1	
7'	6'	3.1" o.c.	3	1	26" o.c.	29" o.c.	3" o.c.	12" o.c.	26" o.c.	21" o.c.	1	
8'	4'	9.6" o.c.	1	1	72" o.c.	72" o.c.	7" o.c.	27" o.c.	52" o.c.	29" o.c.	1	
8'	5'	6.1" o.c.	2	1	52" o.c.	58" o.c.	6" o.c.	21" o.c.	43" o.c.	27" o.c.	1	
8'	6'	3.5" o.c.	3	1	30" o.c.	33" o.c.	4" o.c.	13" o.c.	30" o.c.	23" o.c.	1	
8'	7'	NA	5	1	19" o.c.	21" o.c.	NA	8" o.c.	19" o.c.	17" o.c.	0	
9'	3'	9.6" o.c.	1	1	72" o.c.	72" o.c.	8" o.c.	30" o.c.	56" o.c.	30" o.c.	1	
9'	4'	9.6" o.c.	1	1	72" o.c.	72" o.c.	7" o.c.	27" o.c.	53" o.c.	29" o.c.	1	
9'	5'	6.8" o.c.	2	1	59" o.c.	65" o.c.	6" o.c.	22" o.c.	45" o.c.	27" o.c.	1	
9'	6'	4.0" o.c.	3	1	34" o.c.	38" o.c.	4" o.c.	15" o.c.	33" o.c.	24" o.c.	1	
9'	7'	NA	4	1	21" o.c.	24" o.c.	NA	9" o.c.	21" o.c.	19" o.c.	0	
9'	8'	NA	6	2	14" o.c.	16" o.c.	NA	6" o.c.	14" o.c.	14" o.c.	0	

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.

9581-8.R.J.E.22.3.210(L)

Home Floor to Sill Plate & Sill Plate to Foundation WITHOUT TYPE H PLATE CONNECTORS (See note 6 & 7) SOIL CLASSES GM, GC, SM, SM-SC AND ML SOILS

Unit Width: 29.67' to 29.67' Max.

Unit Length: 68' Max.

Roof Pitch: 6/12 to 6/12

Max. Roof Overhang: 12 "

Max. Sidewall Height: 9'

Max. Wind Speed 100 MPH

Seismic Zone C

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David Richter

Foundation Wall ¹⁰		MAXIMUM FASTENER SPACING OR FASTENERS PER JOIST SPACING ^{2,3 & 5}										# REQ'D S/W HDS SEE D18 /CORNER
		SIDEWALL FASTENING SPACING ¹					END WALL FASTENING					
		Rim to Sill ⁹			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 ⁹	F ⁹	G ⁹	4	5	E	G	4	5		
24 "	16 "	9.6" o.c.	1	1	72" o.c.	72" o.c.	8" o.c.	30" o.c.	56" o.c.	30" o.c.	1	
32 "	24 "	9.6" o.c.	1	1	72" o.c.	72" o.c.	8" o.c.	29" o.c.	55" o.c.	30" o.c.	1	
40 "	32 "	9.6" o.c.	1	1	72" o.c.	72" o.c.	7" o.c.	26" o.c.	51" o.c.	29" o.c.	1	
5'	4'	5.0" o.c.	2	1	43" o.c.	47" o.c.	5" o.c.	18" o.c.	38" o.c.	25" o.c.	1	
7'	4'	6.9" o.c.	2	1	60" o.c.	66" o.c.	6" o.c.	22" o.c.	45" o.c.	27" o.c.	1	
7'	5'	3.5" o.c.	3	1	30" o.c.	34" o.c.	4" o.c.	13" o.c.	30" o.c.	23" o.c.	1	
7'	6'	NA	5	1	18" o.c.	19" o.c.	NA	8" o.c.	18" o.c.	16" o.c.	0	
8'	4'	7.9" o.c.	2	1	68" o.c.	72" o.c.	6" o.c.	23" o.c.	47" o.c.	28" o.c.	1	
8'	5'	4.1" o.c.	3	1	35" o.c.	38" o.c.	4" o.c.	15" o.c.	34" o.c.	24" o.c.	1	
8'	6'	NA	4	1	20" o.c.	22" o.c.	NA	9" o.c.	20" o.c.	18" o.c.	0	
8'	7'	NA	7	2	13" o.c.	14" o.c.	NA	5" o.c.	13" o.c.	13" o.c.	0	
9'	3'	9.6" o.c.	1	1	72" o.c.	72" o.c.	8" o.c.	29" o.c.	55" o.c.	30" o.c.	1	
9'	4'	8.9" o.c.	2	1	72" o.c.	72" o.c.	7" o.c.	25" o.c.	49" o.c.	28" o.c.	1	
9'	5'	4.6" o.c.	2	1	39" o.c.	43" o.c.	5" o.c.	17" o.c.	36" o.c.	25" o.c.	1	
9'	6'	NA	4	1	23" o.c.	25" o.c.	NA	10" o.c.	23" o.c.	19" o.c.	0	
9'	7'	NA	6	2	14" o.c.	16" o.c.	NA	6" o.c.	14" o.c.	14" o.c.	0	
9'	8'	NA	9	2	10" o.c.	11" o.c.	NA	4" o.c.	10" o.c.	10" o.c.	0	

NOTES:

- RESERVED
- See details for additional fastener options.
- All fastener spacing must start within 12" maximum of each corner or half specified spacing (lesser of two).
- Type F & G connectors are qty. per 16" oc. Joist spacing.
- Fastener Type Key:
 - *Type E⁹- Fasteners toe-nailed through rim joist into sill plate (Refer to Detail E)
 - *Type F⁹- Fasteners direct nailed from sill plate into each floor joist (Applicable at Sidewalls only) (Refer to Detail F)
 - *Type G⁹- Number of Simpson A23 angles fastened to sill plate and each 16" OC. (2x8 min. sill plate) (Refer to Detail G)
 - *Type H⁹- 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 4⁹- 1/2" x10" Anchor Bolt with 2"x2"x1/8" Washer between plate and nut.
 - *Type 5⁹- Simpson MAB15 (concrete) or MAB23 (concrete block) or MASA
- Fasteners reflected in chart do NOT require "H type" connector plates to be installed along sidewall.
- Fasteners reflected in chart do NOT require "H type" connector plates to be installed along endwall.
- 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.
- 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.
- Maximum foundation wall height and maximum unbalanced backfill.

9581-8.R.J.E.22.3.210(L)

**Home Floor to Sill Plate & Sill Plate to Foundation
WITHOUT TYPE H PLATE CONNECTORS (See note 6 & 7)
SOIL CLASSES SC, MH, ML-CL AND INORGANIC CL SOILS**

Unit Width: 29.67' to 29.67' Max.

Unit Length: 68' Max.

Roof Pitch: 6/12 to 6/12

Max. Roof Overhang: 12 "

Max. Sidewall Height: 9'

Max. Wind Speed 100 MPH

Seismic Zone C

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David Richter

Foundation Wall ¹⁰		MAXIMUM FASTENER SPACING OR FASTENERS PER JOIST SPACING ^{2,3&5}										# REQ'D S/W HDS SEE D18 /CORNER
Wall Height	Backfill Depth	SIDEWALL FASTENING SPACING ¹					END WALL FASTENING					
		Rim to Sill ⁶			Sill to Fnd. Wall		Rim to Sill ⁷		Sill to Fnd. Wall			
		Fastener Type			Anchor Spacing		Fastener Type		Anchor Spacing			
		E ⁹	F ⁴	G ⁴	4	5	E	G	4	5		
24 "	16 "	9.6" o.c.	1	1	72" o.c.	72" o.c.	8" o.c.	30" o.c.	56" o.c.	30" o.c.	1	
32 "	24 "	9.6" o.c.	1	1	72" o.c.	72" o.c.	7" o.c.	28" o.c.	54" o.c.	29" o.c.	1	
40 "	32 "	8.4" o.c.	2	1	72" o.c.	72" o.c.	7" o.c.	24" o.c.	48" o.c.	28" o.c.	1	
5'	4'	3.7" o.c.	3	1	32" o.c.	35" o.c.	4" o.c.	14" o.c.	31" o.c.	23" o.c.	1	
7'	4'	5.2" o.c.	2	1	45" o.c.	49" o.c.	5" o.c.	19" o.c.	39" o.c.	26" o.c.	1	
7'	5'	NA	4	1	23" o.c.	25" o.c.	NA	10" o.c.	23" o.c.	20" o.c.	0	
7'	6'	NA	6	2	13" o.c.	15" o.c.	NA	6" o.c.	13" o.c.	13" o.c.	0	
8'	4'	5.9" o.c.	2	1	51" o.c.	56" o.c.	6" o.c.	20" o.c.	42" o.c.	27" o.c.	1	
8'	5'	3.0" o.c.	3	1	26" o.c.	29" o.c.	3" o.c.	12" o.c.	26" o.c.	21" o.c.	1	
8'	6'	NA	6	2	15" o.c.	17" o.c.	NA	6" o.c.	15" o.c.	15" o.c.	0	
8'	7'	NA	9	2	10" o.c.	11" o.c.	NA	4" o.c.	10" o.c.	10" o.c.	0	
9'	3'	9.6" o.c.	1	1	72" o.c.	72" o.c.	7" o.c.	28" o.c.	54" o.c.	29" o.c.	1	
9'	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.	1	
9'	5'	3.4" o.c.	3	1	29" o.c.	32" o.c.	4" o.c.	13" o.c.	29" o.c.	22" o.c.	1	
9'	6'	NA	5	2	17" o.c.	19" o.c.	NA	7" o.c.	17" o.c.	16" o.c.	0	
9'	7'	NA	8	2	11" o.c.	12" o.c.	NA	4" o.c.	11" o.c.	11" o.c.	0	
9'	8'	NA	11	NA	7" o.c.	8" o.c.	NA	3" o.c.	7" o.c.	8" o.c.	0	

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)

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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.

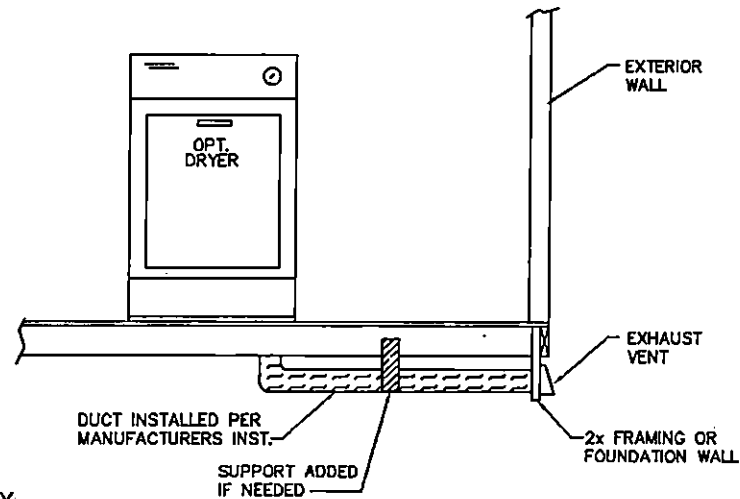
8. Three options (E,F,& G) for rim to sill fastening and two options (4 & 5) for sill plate to foundation anchorage have been provided in chart. Any combination of rim sill connectors and mud sill anchors may be used.

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.

9581-8.R.J.E.22.3.210(L)

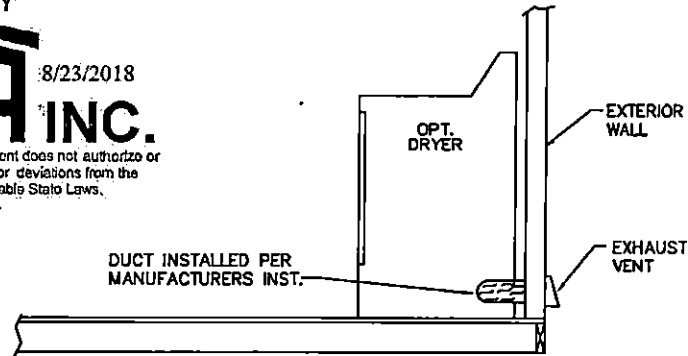
GENERAL NOTES:



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8/23/2018

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INSTALLATION INSTRUCTIONS:

EXHAUST DUCTS FOR DOMESTIC CLOTHES DRYERS SHALL BE CONSTRUCTED OF METAL OR NONCOMBUSTIBLE MATERIAL OF EQUAL STRENGTH AND CORROSION RESISTANCE AND SHALL HAVE A SMOOTH INTERIOR FINISH. NO PART OF THE DRYER DUCT TO BE IN CONTACT WITH THE GROUND. THE DUCT TO RUN TO THE OUTSIDE OF THE UNIT AND SHALL NOT TERMINATE UNDERNEATH THE UNIT. A APPROVED DAMPER TO BE INSTALLED ON THE END OF THE DUCT.

APPROVAL SEAL:

GMH Engineering

TITLE:
DRYER VENT INSTALLATION

Drawn by: **O'Neal**


Date: 4/11/07/bug #:

ELECTRICAL FURNACE DESCRIPTION CHART

Nortek Model E Series	Supply Circuit	Total Amperes	Max Over- Current Rating	Min. Circuit Ampacity	Recommended Wire Sizes		Low Voltage Thermostat Wire Size
					NM-B 60°C Copper	SEU* 60°C Copper	
					010	Single	
012	Single	51.2	70	64	4-2	4-4-6	2-Wire
	Dual	"A" 27.1 "B" 24.2	40 30	34 30	8-2 10-2	6-6-10 8-8-10	system max wire lengths:
015	Single	N/A	N/A	N/A			24 Ga. = 55'
	Dual	"A" 44.6 "B" 20.8	60 30	56 26	4-2 10-2	4-4-6 8-8-10	22 Ga. = 90' 20 Ga. = 140'
							24 Ga. = 55'
017	Single	N/A	N/A	N/A			24 Ga. = 55'
	Dual	"A" 47.9 "B" 22.5	60 30	60 28	4-2 10-2	4-4-6 8-8-10	22 Ga. = 90' 20 Ga. = 140'
							24 Ga. = 55'
020	Single	N/A	N/A	N/A			18 Ga. = 225'
	Dual	"A" 44.6 "B" 41.7	60 60	56 52	4-2 4-2	4-4-6 4-4-6	4 or more-Wire
							system max wire
023	Single	N/A	N/A	N/A			system max wire
	Dual	"A" 45.5 "B" 48.0	60 60	57 60	4-2 4-2	4-4-6 4-4-6	lengths: 24 Ga. = 25' 22 Ga. = 45' 20 Ga. = 70' 18 Ga. = 110'

ELECTRIC FURNACE MODEL NUMBER	OUTPUT CAPACITY (BTU)
E#EB-010H	35,000
E#EB-012H	41,000
E#EB-015H	53,000
E#EB-017H	57,000
E#EB-020H	70,000
E#EB-023H	75,000
# = Series Version	

*- NEC Section 338.10(B)(4)(a)

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ELECTRICAL LEGEND (NOT TO SCALE)			
	LIGHT		PANEL BOX
	CAN LIGHT		THERMOSTAT
	PULL CHAIN LIGHT		SWITCH
	BATH FAN		3-WAY SWITCH
	FLUORESCENT LIGHT		PHONE JACK
	CABLE JACK		CEILING MOUNT C.O. & SMOKE DETECTOR
	15 AMP RECEPT FLOOR LEVEL		CEILING MOUNT C.O. DETECTOR
	15 AMP RECEPT CABINET LEVEL		WALL MOUNT SMOKE DETECTOR
	15 AMP RECEPT SIDWAYS		CEILING MOUNT SMOKE DETECTOR
	20 AMP RECEPT FLOOR LEVEL		SWITCH LEG
	20 AMP RECEPT CABINET LEVEL		JUNCTION BOX
	20 AMP RECEPT SIDWAYS		CEILING FAN
	240 VOLT RECEPT		
	15 AMP WATERPROOF RECEPT		POT & PAN RACK
	20 AMP WATERPROOF RECEPT		HEAT TAPE RECEPT
	FURNACE		WATER HEATER
A DASHED SYMBOL REPRESENTS AN OPTION			
GFI-INDICATES A GROUND FAULT PROTECTED RECEPT			

PLUMBING FIXTURE DESCRIPTION CHART

APPLIANCE	MANUFACTURER	MODEL #	ANSI/ASME STANDARD
TOILET	BRISTOL BAY	VCEFB-03B	
SINKS	LYONS EL MUSTICE & SON PREMIUM FLOW CORESTONE & TEKA REVERE	KS01P4-TB #610 UTILITY SINGLE BOWL DOUBLE BOWL BAR SINK	
LAVATORIES	BRISTOL BAY	VCL-10	
TUB SHOWER	BAYMONT BATHWARE	5118 5100 5109	UL
SHOWER	BAYMONT BATHWARE.	3309 3308 3304	UL
TUB	BAYMONT BATHWARE	2205 2272	UL

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Trenco
818 Soundside Rd
Edenton, NC 27932

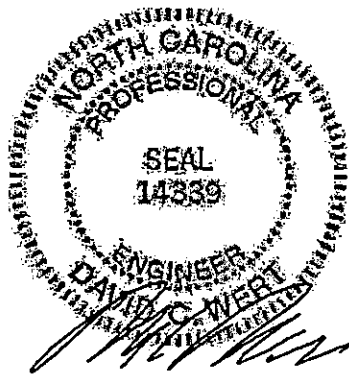
Re: WPL-913-0315-014_(16W)
CMH MANUFACTURING, INC. - SCHULT (R-NC)

The truss drawing(s) referenced below have been prepared by Truss Engineering Co. under my direct supervision based on the parameters provided by Wood Perfect, Ltd.

Pages or sheets covered by this seal: I29190831 thru I29190844

My license renewal date for the state of North Carolina is December 31, 2017.

North Carolina COA: C-0844



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NIA INC. 8/23/2018
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David Richter

March 6, 2017

Wert, David

IMPORTANT NOTE: Truss Engineer's responsibility is solely for design of individual trusses based upon design parameters shown on referenced truss drawings. Parameters have not been verified as appropriate for any use. Any location identification specified is for file reference only and has not been used in preparing design. Suitability of truss designs for any particular building is the responsibility of the building designer, not the Truss Engineer, per ANSI/TPI-1, Chapter 2.

Job WPL-013-0315-014_(16W)	Truss 0520-09B	Truss Type HINGED TRUSS	Qty 1	Ply 1	CMH MANUFACTURING, INC. - SCHULT (R-NC) M8529 : 6/12 32 WIDE MOD/HUD Job Reference (optional)	120100331
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WoodPerfect, Guin, AL 33563

7.840 s Apr 22 2018 Mitek Industries, Inc. Mon Mar 06 08:44:41 2017 Page 1
ID:7DsdCzXbX3z0puliq7cj47z75_A-aa6p_BE9b5dFQLuP180207xCHbvGPyXG_H77r7zdgsk

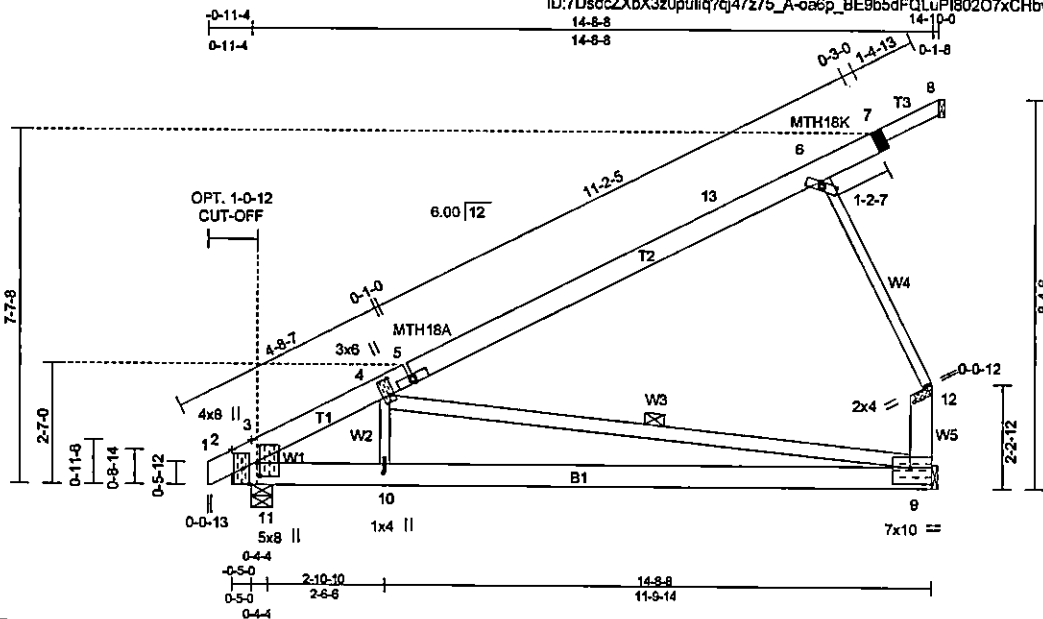


Plate Offsets (X,Y)-		[2:0-4-0,0-1-12], [4:0-4-4,0-1-4], [5:0-0-5,0-1-2], [6:0-0-11,0-1-2], [9:0-8-5,1-2-12], [9:Edge,0-4-4], [10:0-2-4,0-0-8], [11:0-3-6,0-0-12]				
SPACING:- 2-0-0	SPACING:- 1-4-0	SPACING- 2-0-0	CSI.	DEFL.	PLATES	GRIP
LOADING (psf)	LOADING (psf)	Plate Grip DOL	TC 0.80	in (loc) / l/defl	MT20	197/144
TCLL 23.1	TCLL 34.7	Lumber DOL 1.15	BC 0.55	Vert(LL) -0.17 9-10 >999 240	MT18HS	197/144
(Ground Snow=30.0)	(Ground Snow=45.0)	Rep Stress Incr YES	WB 0.64	Vert(TL) -0.39 9-10 >446 180		
TCDL 11.0	TCDL 16.5	Code IBC2009/TPI2007	(Matrix)	Horz(TL) 0.02 9 n/a n/a		
BCLL 0.0 *	BCLL 0.0 *					
BCDL 10.0	BCDL 15.0					
						Weight: 80 lb FT = 0%

LUMBER-
TOP CHORD 2x6 SPF No.2 *Except*
 7-8: 2x4 SPF No.2
BOT CHORD 2x6 SPF No.2
WEBS 2x3 SPF Stud *Except*
 4-9: 2x4 SPF No.2, 9-12: 2x6 SPF Stud, 3-11: 2x6 SP No.2

REACTIONS. (lb/size) 9=663/Mechanical, 8=0/Mechanical, 2=735/0-5-8 (min. 0-1-8)
 Max Horz 8=108(LC 9), 2=564(LC 9)
 Max Uplift 9=-642(LC 9), 2=-455(LC 9)
 Max Grav 9=730(LC 14), 2=771(LC 14)

BRACING-
TOP CHORD Structural wood sheathing directly applied or 4-8-6 oc purlins, except end verticals.
BOT CHORD Rigid ceiling directly applied or 5-11-2 oc bracing.
WEBS 1 Row at midpt 4-9
JOINTS 1 Brace at Jt(s): 12

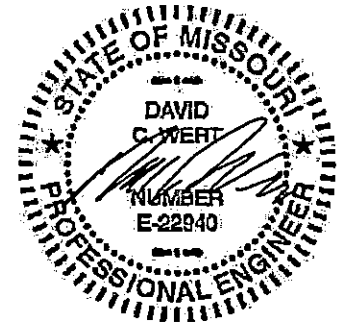
FORCES. (lb) - Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.
TOP CHORD 2-3=-1340/700, 3-4=-1188/485, 4-5=-503/41, 5-13=-474/59, 6-13=-279/74, 9-12=-463/611
BOT CHORD 2-11=-1010/929, 10-11=-1010/929, 9-10=-1010/929
WEBS 4-10=0/439, 4-9=-779/734, 6-12=-511/674, 3-11=-337/252

APPROVED BY:

 8/23/2018
 Approval of this document does not authorize or approve any deviation or deviations from the requirements of applicable State Laws.
 David Richter

REQUIRED FIELD JOINT CONNECTIONS - Maximum Compression (lb)/ Maximum Tension (lb)/ Maximum Shear (lb)/ Maximum Moment (lb-in)
 7=148/105/70/0, 12=511/676/0/0

- NOTES-**
- 1) Wind: ASCE 7-05; 130mph @24in o.c.; TCDL=4.4psf; BCDL=4.0psf; (Alt. 150mph @16in o.c.; TCDL=6.6psf; BCDL=6.0psf); h=22ft; Cat. II; Exp C; enclosed; MWFRS (low-rise) gable end zone and C-C Exterior(2) zone; cantilever left exposed ;C-C for members and forces & MWFRS for reactions shown; Lumber DOL=1.60 plate grip DOL=1.60
 - 2) TCLL: ASCE 7-05; Pg=30.0 psf (ground snow); Ps=23.1 psf (roof snow); Category II; Exp C; Partially Exp.; Ct=1.1
 - 3) Roof design snow load has been reduced to account for slope.
 - 4) Unbalanced snow loads have been considered for this design.
 - 5) This truss has been designed for greater of min roof live load of 18.0 psf or 2.00 times flat roof load of 23.1 psf on overhangs non-concurrent with other live loads.
 - 6) This truss has been designed for basic load combinations, which include cases with reductions for multiple concurrent live loads.
 - 7) As requested, plates have not been designed to provide for placement tolerances or rough handling and erection conditions. It is the responsibility of the fabricator to increase plate sizes to account for these factors.
 - 8) All plates are MT20 plates unless otherwise indicated.
 - 9) See HINGE PLATE DETAILS for plate placement.
 - 10) Provisions must be made to prevent lateral movement of hinged member(s) during transportation.
 - 11) All additional member connections shall be provided by others for forces as indicated.
 - 12) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
 - 13) * This truss has been designed for a live load of 20.0psf on the bottom chord in all areas where a rectangle 3-6-0 tall by 2-0-0 wide will fit between the bottom chord and any other members.



March 6, 2017

Continued on page 2

WARNING - Verify design parameters and READ NOTES ON THIS AND INCLUDED MITEK REFERENCE PAGE MI-7473 rev. 10/03/2015 BEFORE USE.
 Design valid for use only with MITEK® connectors. This design is based only upon parameters shown, and is for an individual building component, not a truss system. Before use, the building designer must verify the applicability of design parameters and properly incorporate this design into the overall building design. Bracing indicated is to prevent buckling of individual truss web and/or chord members only. Additional temporary and permanent bracing is always required for stability and to prevent collapse with possible personal injury and property damage. For general guidance regarding the fabrication, storage, delivery, erection and bracing of trusses and truss systems, see ANSITPM Quality Criteria, DSB-69 and BCS1 Building Component Safety Information available from Truss Plate Institute, 218 N. Lee Street, Suite 312, Alexandria, VA 22314.

ENGINEERING BY
TRENCO
 A Mitek Affiliate
 818 Soundside Road
 Edenton, NC 27932

Job	Truss	Truss Type	Qty	Ply	CMH MANUFACTURING, INC. - SCHULT (R-NC)	129190831
WPL-013-0315-014_(16W)	9529-09B	HINGED TRUSS	1	1	M8529 : 6/12 32 WIDE MOO/HUD Job Reference (optional)	

WoodPerfect, Guin, AL 33563

7,840 s Apr 22 2018 MiTek Industries, Inc. Mon Mar 06 09:44:41 2017 Page 2
ID:7DsdCZXbX3z0puliq7qj47z75_A-0a6p_BE8b5dFQLuPi80207xCHbvGPyXG_H77r7zdgK

NOTES-

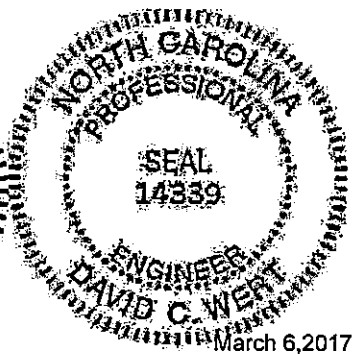
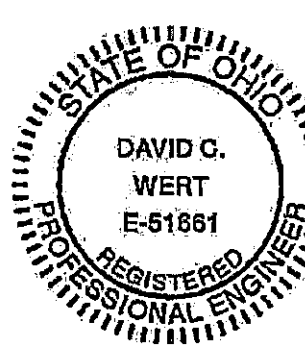
- 14) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 642 lb uplift at joint 9 and 455 lb uplift at joint 2.
- 15) "Semi-rigid pitchbreaks including heels" Member end fixity model was used in the analysis and design of this truss.
- 16) Graphical purlin representation does not depict the size or the orientation of the purlin along the top and/or bottom chord.

APPROVED BY



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David Richter



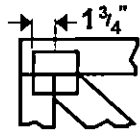
March 6, 2017

WARNING - Verify design parameters and READ NOTES ON THIS AND INCLUDED MITEK REFERENCE PAGE MIF-7473 rev. 10/03/2015 BEFORE USE.
 Design valid for use only with MiTek® connectors. This design is based only upon parameters shown, and is for an individual building component, not a truss system. Before use, the building designer must verify the applicability of design parameters and properly incorporate this design into the overall building design. Bracing indicated is to prevent buckling of individual truss web and/or chord members only. Additional temporary and permanent bracing is always required for stability and to prevent collapse with possible personal injury and property damage. For general guidance regarding the fabrication, storage, delivery, erection and bracing of trusses and truss systems, see ANS/TPM Quality Criteria, DSB-39 and BCS Building Component Safety Information available from Truss Plate Institute, 219 N. Lee Street, Suite 312, Alexandria, VA 22314.

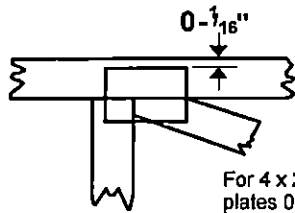
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 Edenton, NC 27832

Symbols

PLATE LOCATION AND ORIENTATION



Center plate on joint unless x, y offsets are indicated. Dimensions are in ft-in-sixteenths. Apply plates to both sides of truss and fully embed teeth.



For 4 x 2 orientation, locate plates 0- 1/16" from outside edge of truss.



This symbol indicates the required direction of slots in connector plates.

* Plate location details available in MiTek 20/20 software or upon request.

PLATE SIZE

4 x 4

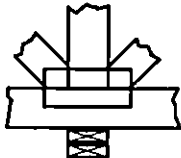
The first dimension is the plate width measured perpendicular to slots. Second dimension is the length parallel to slots.

LATERAL BRACING LOCATION



Indicated by symbol shown and/or by text in the bracing section of the output. Use T or I bracing if indicated.

BEARING

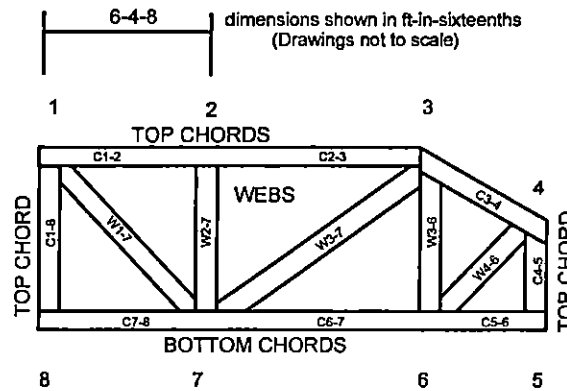


Indicates location where bearings (supports) occur. Icons vary but reaction section indicates joint number where bearings occur. Min size shown is for crushing only.

Industry Standards:

- ANSI/TPI1: National Design Specification for Metal Plate Connected Wood Truss Construction.
- DSB-89: Design Standard for Bracing.
- BCSI: Building Component Safety Information, Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses.

Numbering System



JOINTS ARE GENERALLY NUMBERED/LETTERED CLOCKWISE AROUND THE TRUSS STARTING AT THE JOINT FARTHEST TO THE LEFT.

CHORDS AND WEBS ARE IDENTIFIED BY END JOINT NUMBERS/LETTERS.

PRODUCT CODE APPROVALS

ICC-ES Reports:

ESR-1311, ESR-1352, ESR1988
ER-3907, ESR-2362, ESR-1397, ESR-3282

Trusses are designed for wind loads in the plane of the truss unless otherwise shown.

Lumber design values are in accordance with ANSI/TPI 1 section 6.3 These truss designs rely on lumber values established by others.

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MiTek Engineering Reference Sheet: MII-7473 rev. 10/03/2015

General Safety Notes

Failure to Follow Could Cause Property Damage or Personal Injury

1. Additional stability bracing for truss system, e.g. diagonal or X-bracing, is always required. See BCSI.
2. Truss bracing must be designed by an engineer. For wide truss spacing, individual lateral braces themselves may require bracing, or alternative Tor I bracing should be considered.
3. Never exceed the design loading shown and never stack materials on inadequately braced trusses.
4. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
5. Cut members to bear tightly against each other.
6. Place plates on each face of truss at each joint and embed fully. Knots and wane at joint locations are regulated by ANSI/TPI 1.
7. Design assumes trusses will be suitably protected from the environment in accord with ANSI/TPI 1.
8. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
9. Unless expressly noted, this design is not applicable for use with fire retardant, preservative treated, or green lumber.
10. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
11. Plate type, size, orientation and location dimensions indicated are minimum plating requirements.
12. Lumber used shall be of the species and size, and in all respects, equal to or better than that specified.
13. Top chords must be sheathed or purlins provided at spacing indicated on design.
14. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
15. Connections not shown are the responsibility of others.
16. Do not cut or alter truss member or plate without prior approval of an engineer.
17. Install and load vertically unless indicated otherwise.
18. Use of green or treated lumber may pose unacceptable environmental, health or performance risks. Consult with project engineer before use.
19. Review all portions of this design (front, back, words and pictures) before use. Reviewing pictures alone is not sufficient.
20. Design assumes manufacture in accordance with ANSI/TPI 1 Quality Criteria.

NORTH CAROLINA		
MODULAR PLANS REVIEW CHECKLIST		
	PAGE 1 of 3	revised May 2011
Manufacturer	CMH MANUFACTURING INC.	
Model number/name	SN250252	
3rd Party	NTA INC.	
Review Date	<i>1/10/11</i>	
Reviewer	DAVID RICHTER	
	Plan Sheet Page # and NOTES	
<u>QC MANUAL</u> (current and complete)		
<u>APPENDIX B</u> (required and attached)	single family dwelling - not required	
<u>PLAN SHEETS</u>		
Each plan sheet third-party stamped with approver's name		
Each plan sheet is numbered and/or indexed	IX-1	
<u>GENERAL (cover sheet)</u>		
Code References	1-0	
Statement regarding connection to public utilities	1-0	
Statement regarding bathrooms if not included	1-0	
Construction type	1-0	
Occupancy classification	1-0	
Fire resistance ratings (if required)	1-0	
Floor live load	1-0	
Roof live load	1-0	
Design wind velocity	1-0	
Seismic information (commercial projects)	1-0	
Thermal zones	1-0, HDD on REScheck (attached)	
Notice to Inspections department regarding items to be site installed	1-0	
<u>FLOOR PLANS</u>		
Interior and exterior wall layouts	1-1	
Door and window schedule	1-0.2	
Light and Ventilation requirements	TS-1	
Attic access (size and location)	1-1	
Non-prescriptive headers	Charts on 1-0, calc ref on 1-0	
Safety glazing requirements	1-1	
Fire rating of Exterior walls (if applicable)		
<u>EXTERIOR ELEVATIONS</u>		
Exterior materials	20-1, 20-2, 1-0.2	
Attic ventilation requirements	20-1, 20-2	
<u>PLUMBING</u>		
Plan	locations on floor plan 1-1	
All fixtures furnished by mfg. shown on plans	1-1	
Materials (water supply & distribution, DWV, storm drainage)	DWV: 8-1; Supply: 9-1	
Supply and waste risers, including DWV system (generic), beneath the building	DWV: 8-1; Supply: 9-1	
Water heater (type and capacity)	ref to electrical appliances on 1-0	

NORTH CAROLINA		
MODULAR PLANS REVIEW CHECKLIST		
	PAGE 2 of 3	revised May 2011
		Plan Sheet Page # and NOTES
MECHANICAL		
Design calculations		attached
Installed unit capacity		attached
Supply and returns (locations and sizes)		4-4
Duct sizes		4-4
Specifications (units, ducts)		1-1, 4-4
All appliances furnished by mfg. shown on plans		1-1, exhaust fans 11-1
ELECTRICAL		
Plan		11-1
Location of all electrical boxes		11-1
Electrical panel location		11-1
Note regarding main disconnect (if applicable)		
Exterior lighting and receptacles		11-1
Ground level receptacles (if applicable)		11-1
Smoke detector location(s)		11-1
Electrical load calculations		TS-5
Electrical panel layout (breaker and wire sizes, circuit schedule)		11-1
Panel and service entrance sizes		Panel: 1-0a, SE ref in set-up on 1-0
All fixtures furnished by mfg. shown on plans		11-1
ACCESSIBILITY		
<i>(for other than 1 & 2 family dwellings)</i>		
Entrances and means of egress		
Doors, doorways, and door hardware		
Stairs and handrails		
Toilet rooms, plumbing fixtures, grab bars, etc		
Bathrooms and shower rooms		
Occupancy specific requirements		
Multi-family dwellings: Type A and B units		
FLOOR X-SECTION		
Joist and beam sizes and spacing		1-0.2
Materials species and grade		1-0.2
Sheathing, decking, and concrete as applicable		1-0.2
Fastening instructions		1-0.2
Insulation		1-0.2
Details as required for clarification		1-0.2, other details ref manual on 1-0.2
WALL X-SECTION		
Stud and column sizes and spacing		studs: 1-0.2; column charts: 1-0.2
Materials species and grade		1-0.2
Sheathing and bracing		1-0.2
Headers and lintels		header charts: 1-0.2
Finishes		1-0.2
Fastening instructions		1-0.2
Insulation		1-0.2
Details as required for clarification		Ref manual on 1-0.2

NORTH CAROLINA		
MODULAR PLANS REVIEW CHECKLIST		
	PAGE 3 of 3	revised May 2011
	Plan Sheet Page # and NOTES	
CEILING/ROOF X-SECTION		
Truss, rafter, and beam spacing	1-0.2	
Lumber species and grade	1-0.2	
Sheathing and decking	1-0.2	
Finishes	1-0.2	
Fastening instructions	1-0.2	
Insulation	1-0.2	
Details including NC sealed truss designs or manual reference	man ref to trusses 1-0.2, other details man ref 1-0.2	
FOUNDATION PLAN		
Footings, pier, and curtain wall locations and specifications	21-30 PSF (OFF FRAME)	
X-sections with dimensions	21-30 PSF (OFF FRAME)	
Anchorage - sill plate to piers and curtain wall	21-30 PSF (OFF FRAME)	
Anchorage - building to sill plate	21-30 PSF (OFF FRAME)	
Anchorage - tie downs (lateral and longitudinal)	21-30 PSF (OFF FRAME)	
Soil bearing capacity	21-30 PSF (OFF FRAME)	
Minimum concrete compressive strength	21-30 PSF (OFF FRAME)	
Mortar type	21-30 PSF (OFF FRAME)	
Ventilation requirements (with and without vapor barrier)	21-30 PSF (OFF FRAME)	
Crawl space access requirements	21-30 PSF (OFF FRAME)	
ENERGY COMPLIANCE		
Demonstrate compliance	ATTACHED	
SET-UP INSTRUCTIONS		
Floor and ceiling connections	ref to set-up manual on 1-0.2	
Marriage wall connections	ref to set-up manual on 1-0.2	
Roof set-up connections	ref to set-up manual on 1-0.2	
Plumbing connections	ref to set-up manual on 1-0.2	
Mechanical connections	ref to set-up manual on 1-0.2	
Electrical connections	ref to set-up manual on 1-0.2	
Fire stopping	1-0.2	
Air infiltration elimination	ref to set-up manual on 1-0.2	
Notice to inspections department attachment if set-up instructions are by attachment	1-0.2	
ITEMS NOT INSPECTED IN PLANT		
List of items not inspected by 3rd. Party	1-0.2	
Notice to Inspections department	1-0.2	