




ADDITIONAL OR MODIFIED ACCEPTANCE (MODULARS/PANELIZED)

This form is to be used only when the manufacturer is seeking acceptance of an additional model, modified model or model name change which uses a previously accepted building system.

Current PFS Building System Acceptance #: _____
 Model Name/ No. 23-3276-16 _____
 Manufacturer's Name: CHAMPION HOME BUILDERS _____
 Plant(s) at which model will be produced PLANT #23 LILLINGTON, NC _____

Check One: Y NEW MODEL _____ Revised Model* _____

TECHNICAL DATA		Conforms		
		Yes	No	N/A
Floor Plan Showing:				
Braced Wall Method or Shearwalls		Y		
Building Size (LxW Dimensions)		Y		
Room Sizes, Light & Ventilation Schedule		Y		
Exit Requirements		Y		
Electrical Outlet Spacing & Smoke Detector		Y		
Location of Labels & Data Plates		Y		
Use Group, Type Const., Total Sq.Ft. Area		Y		
Plumbing System Design or Reference No. (PROVIDED ON PP-101)		Y		
Heat Loss Calculations or Reference No. (PROVIDED ON RS-101)		Y		
HVAC/Furnace Size/Model No. (BY OTHERS)		Y		
Thermal Performance Calculations or Reference No. (PROVIDED ON RS-101)	Y			
Electrical Load Calculations or Reference No. (PROVIDED ON EP-101)	Y			
Service Size and Location (200A/UTILITY)	Y			
Applicable Building Codes SEE GE-101	Y			
Submit model to the following states: NC				
*Description of Modification: _____				
Requested by: JON TYNDALL/MICHAEL GOLLIVER Date: 11-18-19				
(designer)				

For PFS Use

Staff Plan Reviewer Sharron Barry IBC Certification #: _____ Date: 11-23-19

Structural Calculation(s) Reviewed By: _____ P.E. #: _____ Date: _____

Remarks: _____

**** (1) copy sent to IBC within 15 days of approval.**

VERBAL APPROVAL GIVEN By Whom: _____ To Whom: _____ Date: _____

MODEL WAS DEVIATED Revision Number: _____

THIS FORM SHALL BE FILLED OUT COMPLETELY WITH EACH MODEL ACCEPTANCE OR MODIFICATION PRIOR TO SUBMITTAL TO PFS.



Inspection Checklist

Energy Code: 2015 IECC

Requirements: 0.0% were addressed directly in the REScheck software



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

Section # & Req.ID	Pre-Inspection/Plan Review	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
103.1, 103.2 [PR1] ¹	Construction drawings and documentation demonstrate energy code compliance for the building envelope. Thermal envelope represented on construction documents.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	FACTORY
103.1, 103.2, 403.7 [PR3] ¹	Construction drawings and documentation demonstrate energy code compliance for lighting and mechanical systems. Systems serving multiple dwelling units must demonstrate compliance with the IECC Commercial Provisions.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	FACTORY
302.1, 403.7 [PR2] ²	Heating and cooling equipment is sized per ACCA Manual S based on loads calculated per ACCA Manual J or other methods approved by the code official.	Heating: Btu/hr _____ Cooling: Btu/hr _____	Heating: Btu/hr _____ Cooling: Btu/hr _____	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:



1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)
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Section # & Req.ID	Foundation Inspection	Complies?	Comments/Assumptions
303.2.1 [FO11] ² 	A protective covering is installed to protect exposed exterior insulation and extends a minimum of 6 in. below grade.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
403.9 [FO12] ² 	Snow- and ice-melting system controls installed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:



1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)
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Section # & Req.ID	Framing / Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
402.1.1, 402.3.4 [FR1] ¹	Door U-factor.	U-____	U-____	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Envelope Assemblies table for values. FACTORY
402.1.1, 402.3.1, 402.3.3, 402.5 [FR2] ¹	Glazing U-factor (area-weighted average).	U-____	U-____	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Envelope Assemblies table for values. FACTORY
303.1.3 [FR4] ¹	U-factors of fenestration products are determined in accordance with the NFRC test procedure or taken from the default table.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	FACTORY
402.4.1.1 [FR23] ¹	Air barrier and thermal barrier installed per manufacturer's instructions.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	FACTORY
402.4.3 [FR20] ¹	Fenestration that is not site built is listed and labeled as meeting AAMA /WDMA/CSA 101/I.S.2/A440 or has infiltration rates per NFRC 400 that do not exceed code limits.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
402.4.5 [FR16] ²	IC-rated recessed lighting fixtures sealed at housing/interior finish and labeled to indicate ≤2.0 cfm leakage at 75 Pa.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	FACTORY
405.2 [FR25] ¹	All ducts in unconditioned spaces or outside the building envelope are insulated to ≥R-6.	R-____	R-____	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
403.3.5 [FR15] ³	Building cavities are not used as ducts or plenums.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
403.4 [FR17] ²	HVAC piping conveying fluids above 105 °F or chilled fluids below 55 °F are insulated to ≥R-3.	R-____	R-____	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
403.4.1 [FR24] ¹	Protection of insulation on HVAC piping.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
403.6 [FR19] ²	Automatic or gravity dampers are installed on all outdoor air intakes and exhausts.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:



1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)
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Section # & Req.ID	Insulation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
303.1 [IN13] ²	All installed insulation is labeled or the installed R-values provided.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	FACTORY
402.1.1, 402.2.6 [IN1] ¹	Floor insulation R-value.	R-_____ <input type="checkbox"/> Wood <input type="checkbox"/> Steel	R-_____ <input type="checkbox"/> Wood <input type="checkbox"/> Steel	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<i>See the Envelope Assemblies table for values.</i> FACTORY
303.2, 402.2.7 [IN2] ¹	Floor insulation installed per manufacturer's instructions and in substantial contact with the underside of the subfloor, or floor framing cavity insulation is in contact with the top side of sheathing, or continuous insulation is installed on the underside of floor framing and extends from the bottom to the top of all perimeter floor framing members.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	FACTORY
402.1.1, 402.2.5, 402.2.6 [IN3] ¹	Wall insulation R-value. If this is a mass wall with at least ½ of the wall insulation on the wall exterior, the exterior insulation requirement applies (FR10).	R-_____ <input type="checkbox"/> Wood <input type="checkbox"/> Mass <input type="checkbox"/> Steel	R-_____ <input type="checkbox"/> Wood <input type="checkbox"/> Mass <input type="checkbox"/> Steel	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<i>See the Envelope Assemblies table for values.</i> FACTORY
303.2 [IN4] ¹	Wall insulation is installed per manufacturer's instructions.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	FACTORY

Additional Comments/Assumptions:



1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)
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Section # & Req.ID	Final Inspection Provisions	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
402.1.1, 402.2.1, 402.2.2, 402.2.6 [FI1] ¹	Ceiling insulation R-value.	R-____ <input type="checkbox"/> Wood <input type="checkbox"/> Steel	R-____ <input type="checkbox"/> Wood <input type="checkbox"/> Steel	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Envelope Assemblies table for values. FACTORY
303.1.1.1, 303.2 [FI2] ¹	Ceiling insulation installed per manufacturer's instructions. Blown insulation marked every 300 ft ² .			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	FACTORY
402.2.3 [FI22] ²	Vented attics with air permeable insulation include baffle adjacent to soffit and eave vents that extends over insulation.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
402.4.1.2 [FI17] ¹	Blower door test @ 50 Pa. <=5 ach in Climate Zones 1-2, and <=3 ach in Climate Zones 3-8.	ACH 50 = ____	ACH 50 = ____	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
403.3.4 [FI4] ¹	Duct tightness test result of <=4 cfm/100 ft ² across the system or <=3 cfm/100 ft ² without air handler @ 25 Pa. For rough-in tests, verification may need to occur during Framing Inspection.	____ cfm/100 ft ²	____ cfm/100 ft ²	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
403.3.3 [FI27] ¹	Ducts are pressure tested to determine air leakage with either: Rough-in test: Total leakage measured with a pressure differential of 0.1 inch w.g. across the system including the manufacturer's air handler enclosure if installed at time of test. Postconstruction test: Total leakage measured with a pressure differential of 0.1 inch w.g. across the entire system including the manufacturer's air handler enclosure.	____ cfm/100 ft ²	____ cfm/100 ft ²	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
403.3.2.1 [FI24] ¹	Air handler leakage designated by manufacturer at <=2% of design air flow.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
403.1.1 [FI9] ²	Programmable thermostats installed for control of primary heating and cooling systems and initially set by manufacturer to code specifications.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	FACTORY
403.1.2 [FI10] ²	Heat pump thermostat installed on heat pumps.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
403.5.1 [FI11] ²	Circulating service hot water systems have automatic or accessible manual controls.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
403.6.1 [FI25] ²	All mechanical ventilation system fans not part of tested and listed HVAC equipment meet efficacy and air flow limits.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	



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

Section # & Req.ID	Final Inspection Provisions	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
403.2 [FI26] ²	Hot water boilers supplying heat through one- or two-pipe heating systems have outdoor setback control to lower boiler water temperature based on outdoor temperature.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
403.5.1.1 [FI28] ²	Heated water circulation systems have a circulation pump. The system return pipe is a dedicated return pipe or a cold water supply pipe. Gravity and thermos-syphon circulation systems are not present. Controls for circulating hot water system pumps start the pump with signal for hot water demand within the occupancy. Controls automatically turn off the pump when water is in circulation loop is at set-point temperature and no demand for hot water exists.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
403.5.1.2 [FI29] ²	Electric heat trace systems comply with IEEE 515.1 or UL 515. Controls automatically adjust the energy input to the heat tracing to maintain the desired water temperature in the piping.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
403.5.2 [FI30] ²	Water distribution systems that have recirculation pumps that pump water from a heated water supply pipe back to the heated water source through a cold water supply pipe have a demand recirculation water system. Pumps have controls that manage operation of the pump and limit the temperature of the water entering the cold water piping to 104°F.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
					
403.5.4 [FI31] ²	Drain water heat recovery units tested in accordance with CSA B55.1. Potable water-side pressure loss of drain water heat recovery units < 3 psi for individual units connected to one or two showers. Potable water-side pressure loss of drain water heat recovery units < 2 psi for individual units connected to three or more showers.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
404.1 [FI6] ¹	75% of lamps in permanent fixtures or 75% of permanent fixtures have high efficacy lamps. Does not apply to low-voltage lighting.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
404.1.1 [FI23] ³	Fuel gas lighting systems have no continuous pilot light.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
401.3 [FI7] ²	Compliance certificate posted.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	FACTORY

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

Section # & Req.ID	Final Inspection Provisions	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
303.3 [FI18] ³	Manufacturer manuals for mechanical and water heating systems have been provided.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	FACTORY

Additional Comments/Assumptions:

All items checked off in the list above are to be installed, verified and inspected in the factory.
All items in the list that are applicable to this model and NOT checked off MUST be inspected in the field and Approved by the Local Build Official.



1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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**NORTH CAROLINA
MODULAR PLANS REVIEW CHECKLIST**

		PAGE 1 of 3	revised May 2011
Manufacturer	Champion Home Builders, Inc.		
Model number/name	23-3276-16		
3rd Party	PFS Corporation		
Review Date			
Reviewer			
		Plan Sheet Page # and NOTES	
<u>QC MANUAL</u> (current and complete)	8-15-19		
<u>APPENDIX B</u> (required and attached)	N/A	11/24/2019	
		Sharron Barry	
<u>PLAN SHEETS</u>		QA MANUAL	
Each plan sheet third-party stamped with approver's name		Current and complete	
Each plan sheet is numbered and/or indexed		PLAN SHEETS	
		3rd Party stamped	
		Numbered and/or indexed	
<u>GENERAL (cover sheet)</u>			
Code References	GE-101		
Statement regarding connection to public utilities	GE-101		
Statement regarding bathrooms if not included	N/A		
Construction type	GE-101		
Occupancy classification	GE-101		
Fire resistance ratings (if required)	GE-101		
Floor live load	GE-101		
Roof live load	GE-101		
Design wind velocity	GE-101		
Seismic information (commercial projects)	GE-101		
Thermal zones	RS-101/GE-101 UNDER GENERAL NOTES		
Notice to inspections department regarding items to be site installed	GE-101		
<u>FLOOR PLANS</u>			
Interior and exterior wall layouts	AP-101		
Door and window schedule	AP-101		
Light and Ventilation requirements	AP-101		
Attic access (size and locaiton)	AP-101		
Non-prescriptive headers	AP-101/Page 23-25 in Calculations		
Safety glazing requirements	ap-101		
Fire rating of Exterior walls (if applicable)	N/A		
<u>EXTERIOR ELEVATIONS</u>			
Exterior materials	EV-101-EV-104/SE-101		
Attic ventilation requirements	SE-101/AP-101/WORKSHEET 1		
<u>PLUMBING</u>			
Plan	PP-101/WP-101		
All fixtures furnished by mfg. shown on plans	PP-101/WP-101/GE-101		
Materials (water supply & distribution, DWV, storm drainage)	PP-101/WP-101		
Supply and waste risers, including DWV system (generic) beneath the building	PP-101/WP-101		
Water heater (type and capacity)	WP-101		



**NORTH CAROLINA
MODULAR PLANS REVIEW CHECKLIST**

PAGE 2 of 3

revised May 2011

Plan Sheet Page # and NOTES

MECHANICAL

Design calculations	BY OTHERS
Installed unit capacity	BY OTHERS
Supply and returns (locations and sizes)	AP-101
Duct sizes	BY OTHERS
Specifications (units, ducts)	BY OTHERS
All appliances furnished by mfg. shown on plans	AP-101/EP-101

ELECTRICAL

Plan	EP-101
Location of all electrical boxes	EP-101
Electrical panel location	EP-101
Note regarding main disconnect (if applicable)	GE-101
Exterior lighting and receptacles	EP-101
Ground level receptacles (if applicable)	BY OTHERS
Smoke detector location(s)	EP-101
Electrical load calculations	EP-101
Electrical panel layout (breaker and wire sizes, circuit schedule)	EP-101
Panel and service entrance sizes	GE-101/EP-101
All fixtures furnished by mfg. shown on plans	EP-101

ACCESSIBILITY

(for other than 1 & 2 family dwellings)

Entrances and means of egress	N/A
Doors, doorways, and door hardware	N/A
Stairs and handrails	N/A
Toilet rooms, plumbing fixtures, grab bars, etc	N/A
Bathrooms and shower rooms	N/A
Occupancy specific requirements	N/A
Multi-family dwellings: Type A and B units	N/A

FLOOR X-SECTION

Joist and beam sizes and spacing	SE-101/Calculation Page 31
Materials species and grade	SE-101/Calculation Page 31
Sheathing, decking, and concrete as applicable	SE-101
Fastening instructions	SE-101
Insulation	SE-101
Details as required for clarification	SE-101

WALL X-SECTION

Stud and column sizes and spacing	SE-101
Materials species and grade	SE-101/Calculation Page 28-29
Sheathing and bracing	AP-101/SE-101
Headers and lintels	AP-101/SE-101
Finishes	AP-101
Fastening instructions	AP-101
Insulation	AP-101
Details as required for clarificaiton	AP-101



**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	AP-101/TR-101
Lumber species and grade	SE-101/TR-101
Sheathing and decking	SE-101/TR-101
Finishes	SE-101
Fastening instructions	SE-101
Insulation	SE-101
Details including NC sealed truss designs or manual reference	TR-101

FOUNDATION PLAN

Footings, pier, and curtain wall locations and specifications	F-101
X-sections with dimensions	F-101
Anchorage - sill plate to piers and curtain wall	F-102-103
Anchorage - building to sill plate	F-102-103
Anchorage - tie downs (lateral and longitudinal)	N/A
Soil bearing capacity	F-103
Minimum concrete compressive strength	F-103
Mortar type	F-103
Ventilation requirements (with and without vapor barrier)	F-101
Crawl space access requirements	F-101

ENERGY COMPLIANCE

Demonstrate compliance	RS-101
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SET-UP INSTRUCTIONS

Floor and ceiling connections	GE-101/SE-101
Marriage wall connections	N/A
Roof set-up connections	GE-101/SE-101/SET UP MANUAL
Plumbing connections	GE-101/SE-101/SET UP MANUAL
Mechanical connections	GE-101/SE-101/SET UP MANUAL
Electrical connections	GE-101/SE-101/SET UP MANUAL
Fire stopping	GE-101/SE-101/SET UP MANUAL
Air infiltration elimination	GE-101/SE-101/SET UP MANUAL
Notice to inspections department attachment if set-up instructions are by attachment	GE-101/SE-101

ITEMS NOT INSPECTED IN PLANT

List of items not inspected by 3rd. Party	GE-101
Notice to inspections department	GE-101





4055 HIGHWAY 401 SOUTH
LILLINGTON, NC 27546

"23-3276-16"
4 BEDROOM 3 BATH
2176 SQ. FT.

A HOME DESIGNED FOR:

* ANY COUNTY THAT MEETS REQUIREMENTS
OF GE-101.

* SEE GE-101 FOR MAXIMUM WIND SPEED

SHEET INDEX

CP-101 COVER SHEET
GE-101 GENERAL NOTES
L-101 LITERATURE PLAN
EV-101 ELEVATIONS
EV-102 ELEVATIONS
EV-103 ELEVATIONS
EV-104 ELEVATIONS
AP-101 FLOOR PLAN
AP-201 STRUCTURAL BRACING
AP-202 STRUCTURAL BRACING DETAILS
EP-101 ELECTRICAL PLAN
PP-101 DWV PLAN OFF-FRAME

SHEET INDEX-CONT.

WP-101 WATER LINE PLAN
SE-101 SECTION PLAN OFF-FRAME
F-101 PERIMETER FOUNDATION PLAN
F-101A ALT PERIMETER FOUNDATION PLAN
F-102 PERIMETER FOUNDATION DETAILS
F-103 PERIMETER FOUNDATION DETAILS
PORCH DETAIL 3.6
RESCHECK
APPENDIX E
WORK SHEET 1 VENT CALCS
* SHEARWALL CALCULATIONS SHEETS BARLOW JOB #190568 (ATTACHED PAGES 1-68)

PFS
Approval Limited to Factory Built Portion Only

State: North Carolina
Signature: *Sharron Barry*
Title: Staff Plan Reviewer
Date: 12/4/19

CHAMPION

4055 HWY. 401 SOUTH LILLINGTON, NC 27546

PROJECT

*** THIS MODEL NOT DESIGNED FOR OCEAN HIGH HAZARD AREAS OR SPECIAL MOUNTAIN REGIONS OR FLOOD ZONES OR SPECIAL WIND REGIONS.**

TITLE:
COVER SHEET

MODEL:
23-3276-16
30'-4" x 76'-0" 4 BEDROOM 3 BATH

DATE: 01-13-16
SCALE:
DRAWN BY: STAFF
REVISED:

REVISIONS

SHEET NO:
CP-101

PAGE:

STATE	GENERAL:	ELECTRICAL:	PLUMBING:	MECHANICAL:	ENERGY:
NC CODES	✓ 2018 NC RESIDENTIAL CODE WITH CURRENT NC AMENDMENTS	✓ 2017 NC ELECTRICAL CODE WITH CURRENT NC AMENDMENTS	2018 NC PLUMBING CODE FROM 2012 NC RESIDENTIAL CODE	2018 NC MECHANICAL CODE FROM 2012 NC RESIDENTIAL CODE	✓ 2018 NORTH CAROLINA ENERGY CONSERVATION CODE WITH CURRENT NC AMENDMENTS
					* 2015 IECC for REScheck used for code compliance (with attic decking) N1102.1.2 and Appendix E used for code compliance (without attic decking)

GENERAL NOTES

- ALL GLAZING WITHIN 24 INCH ARC OF DOORS, WHOSE BOTTOM EDGE IS LESS THAN 60 INCHES ABOVE THE FLOOR, AND ALL GLAZING IN DOORS SHALL BE SAFETY, TEMPERED or ACRYLIC PLASTIC SHEET.
- OCCUPANT LOAD IS BASED ON 1 PERSON PER 200 SQUARE FEET OF FLOOR AREA.
- ALL STEEL STRAPS REFERENCED ON FLOOR PLAN SHALL BE 1.5 INCH x 26 GA. MIN.
- CEILING FANS SHALL BE 80 INCHES MIN. FROM BOTTOM OF BLADES TO FINISH FLOOR.
- MINIMUM CORRIDOR WIDTH IS 36 INCHES
- ALL WINDOWS SHALL BE DOUBLE GLAZED.
- EXTERIOR DOORS SHALL HAVE AN INSULATION VALUE OF R-1.66 MINIMUM.
- FIRE STOPPING AND AIR INFILTRATION BARRIER BETWEEN UNITS SHALL BE PROVIDED BY DRAFTSTOP BRAND NONCOMBUSTIBLE FILLER COMPOUND OR EQUAL MEETING ASTM-E136, R602.8
- HOMES GOING INTO RADON AREAS WILL HAVE A 3" VTR AND SWITCH LEG TO SWITCH LABELED "RADON" ON TRIM PLATE. LOCATION MAY VARY PER MODEL
- THIS HOME DESIGNED FOR ,UP TO, CLIMATE ZONE 4 FOR NC & SC AND CLIMATE ZONE 4A FOR VA THE MANUFACTURER MUST BE INFORMED IF HOME IS TO BE LOCATED IN HIGHER CLIMATE ZONE.
- THE MANUFACTURER MUST BE INFORMED IF THE HOME IS TO BE LOCATED IN THE CITY OF CHARLESTON, S.C.
- THE MANUFACTURER MUST BE INFORMED IF THE HOME IS TO BE LOCATED IN ANY SPECIAL MOUNTIAN REGION.
- THIS PLAN MAY BE FLIPPED END TO END AND/OR MIRRORRED

PLUMBING NOTES

- THIS UNIT MUST BE CONNECTED TO PUBLIC WATER SUPPLY AND SEWAGE SYSETM IF THESE SERVICES ARE AVAILABLE
- ALL PLUMBING FIXTURES SHALL HAVE SEPERATE SHUT-OFF VALVES.
- WATER HEATER SHALL HAVE A SAFETY PAN WITH 1 INCH DRAIN TO EXTERIOR.
- WATER PIPES INSTALLED IN A WALL EXPOSED TO THE EXTERIOR SHALL BE LOCATED ON THE HEATED SIDE OF THE WALL INSULATION. WATER PIPING INSTALLED IN AN UNCONDITIONED ATTIC SHALL BE INSULATED WITH AN INSULATION OF R-6.5 MINIMUM.
- DWV SYSTEM SHALL EITHER ABS or PVC -DWV
- WATER SUPPLY LINES SHALL BE POLYETHYLENE (PEX), CPVC, OR COPPER. WHEN POLYETHYLENE (PEX), SUPPLY LINES ARE INSTALLED THE MAXIMUM WATER HEATER SETTING IS 180 deg F. THE POLYETHYLENE PIPE SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURES LIMITATIONS AND INSTRUCTIONS.
- BUILDING DRAIN AND CLEANOUTS ARE DESIGNED AND SITE INSTALLED BY OTHERS, SUBJECT TO LOCAL JURISDICTION APPROVAL.
- TUB ACCESS PROVIDED UNDER HOME UNLESS OTHERWISE NOTED.
- SHOWER STALLS SHALL BE COVERED w/ NON-ABSORBANT MATERIAL TO A HEIGHT OF 72 INCHES ABOVE FINISH FLOOR.
- T&P RELIEF VALVE w/DRAIN TO EXTERIOR AND SHUT-OFF WITHIN 3' of WATER SUPPLY AT WATER HEATER
- WATER HAMMER ARRESTERS SHALL BE INSTALLED AT EACH QUICK CLOSING VALVE ie. ICE MAKERS, DISH WASHERS, AND CLOTHES WASHERS (WHEN REQUIRED).
- WATER HEATERS LIST ON Q.C. 04.01.01

- ALL PLUMBING FIXTURES/PIPING SHALL COMPLY WITH SECTIONS: P2608, P2701 & TABLES P2701.1, P2904.4.1 & P2904.6 OF INTERNATIONAL RESIDENTIAL CODE OR SECTIONS 303, 402 & TABLES 605.3, 605.4, 605.5 OF NORTH CAROLINA PLUMBING.
- ALL TUBS AND SHOWER SHALL HAVE TEMPERATURE LIMITING VALVES PER IRC AND NC PLUMBING.

ELECTRICAL NOTES

- ALL CIRCUITS AND EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH THE APPROPRIATE ARTICLES OF THE NATIONAL ELECTRIC CODE (NEC).
- WHEN LIGHT FIXTURES ARE INSTALLED IN CLOSETS THEY SHALL BE SURFACE MOUNTED OR RECESSED. INCANDESCENT FIXTURES SHALL HAVE COMPLETELY ENCLOSED LAMPS. SURFACE MOUNTED INCANDESENT FIXTURES SHALL HAVE A MINIMUM OF 12 INCHES AND ALL OTHER FIXTURES SHALL HAVE A CLEARANCE OF 6 INCHES FROM "STORAGE" AREA AS DEFINED BY NEC 410-16(C)
- WHEN WATER HEATERS, DISH WASHERS, AND WALL OVENS ARE INSTALLED, THEY SHALL BE PROVIDED WITH READILY ACCESSIBLE DISCONNECTS. THE BRANCH CIRCUIT SWITCH OR CIRCUIT BREAKER SHALL BE PERMITTED TO SERVE AS THE DISCONNECTING MEANS ONLY WHERE THE SWITCH OR CIRCUIT BREAKER IS WITHIN SIGHT FROM THE APPLIANCE OR IS CAPABLE OF BEING LOCKED IN THE OPEN POSITION.
- HVAC EQUIPMENT SHALL BE PROVIDED w/ READILY ACCESSIBLE DISCONNECTS ADJACENT TO THE EQUIPMENT SERVED. A UNIT SWITCH WITH A MARKED "OFF" POSITION THAT IS PART OF THE HVAC EQUIPMENT AND DISCONNECTS ALL UNGROUNDED CONDUCTORS SHALL BE PERMITTED AS THE DISCONNECTING MEANS WHERE OTHER DISCONNECTING MEANS ARE ALSO PROVIDED BY A READILY ACCESSIBLE CIRCUIT BREAKER.

- PRIOR TO ENERGIZING THE ELECTRICAL SYSTEM THE INTERRUPTING RATING OF THE MAIN BREAKER MUST BE DESIGNED AND VERIFIED AS BEING IN COMPLIANCE WITH SECTION 110-9 OF THE NEC BY LOCAL ELECTRICAL CONSULTANT.
- THE MAIN ELECTRICAL PANEL(DISCONNECT) AND FEEDERS ARE DESIGNED BY OTHERS, SITE INSTALLED AND SUBJECT TO LOCAL JURISDICTION APPROVAL.
- SMOKE DETECTORS SHALL BE WIRED SO THAT THE OPERATION OF ANY ONE SMOKE DETECTOR WILL CAUSE SIMULTANEOUS ACTIVATION OF ALL OTHERS.
- ALL CIRCUITS CROSSING OVER MODULE MATING LINE(S) SHALL BE SITE CONNECTED IN APPROVED ACCESSIBLE JUNCTION BOXES OR WITH APPROVED CABLE CONNECTIONS.
- ALL WIRING SHALL BE NMC
- ANY STRIP RECEPT MOUNTED BENEATH A COUNTER SHALL BE WITHIN 6" OF THE EDGE
- ALL BRANCH CIRCUITS SUPPLYING 15 & 20 AMPRE OUTLETS IN LIVING AREAS ARE PROTECTED BY AN ARC-FAULT CIRCUIT INTERRUPTER IN ACCORDANCE WITH SECTION 210.12. NEC
- ALL ELECTRICAL FIXTURES/WIRING SHALL COMPLY WITH SECTION E3303.3 (SC & VA)
- IT IS THE BUILDERS RESPONSIBILITY TO PROVIDE ELECTRICAL PROVISIONS FOR ANY "MOBILE" WORKSTATION IF IT IS PERMANENTLY MOUNTED.

- FACTORY INSTALLED SUB PANEL BOX SHALL HAVE 2" MIN. CONDUIT FOR WIRE FEEDERS

MECHANICAL NOTES

- ALL AIR SUPPLY REGISTERS ARE ADJUSTABLE EXCEPT WHERE OTHERWISE SPECIFIED
- INTERIOR DOORS SHALL BE UNDERCUT 1" MIN ABOVE FINISHED FLOOR FOR AIR RETURN
- BATHROOMS SHALL BE PROVIDED WITH A WINDOW OR A MIN. 50 CFM VENT FAN. VA. REQUIRES A MINIMUM OF .35 AIR CHANGE EVERY HOUR.
- BATH VENT FANS SHALL BE DUCTED TO THE EXTERIOR AND TERMINATE AT AN APPROVED VENT CAP
- HVAC EQUIPMENT SHALL BE EQUIPPED WITH OUTSIDE FRESH AIR INTAKES BY OTHERS.
- HVAC SUPPLY DUCTS AND CALCULATIONS DESIGNED AND INSTALLED BY OTHERS
- ALL DUCTS SHALL HAVE A MIN. OF R-8 INSULATION
- ALL REGISTER BOOTS SHALL BE TAPED OR SEALED OTHERWISE.
- ALL RETURN GRILLS BY FACTORY UNLESS SPECIFIED
- * OPTIONAL FURNACE TO BE FACTORY INSTALLED. OPTIONAL FURNACE KW SIZING TO BE VERIFIED BY OTHERS WITH SITE PROVIDED MANUAL D & J.
- * OPTIONAL FURNACE USED FOR SUPPLEMENTAL HEATING ONLY. FOR OPTIMAL EFFICIENCY, A HEAT PUMP SHOULD BE INSTALLED.

ON-SITE CONNECTIONS

- ON-SITE STRUCTURAL CONNECTIONS: FOR SITE CONNECTIONS REFER TO SECTION DRAWINGS, FOUNDATION PLANS, AND TIE DOWN PLAN (ON-FRAME)
- ON-SITE ELECTRICAL CONNECTIONS: MULTI-SECTION UNITS WILL HAVE THE ELECTRICAL CROSSOVERS LOCATED EITHER IN THE FLOOR NEAR THE MARRIAGE LINE OR IN THE ENDWALLS NEAR THE CENTER OF THE UNIT. LOCATE THE JUNCTION BOXES AND CONNECT THE CONDUCTORS TOGETHER. THE CONDUCTORS SHOULD BE COLOR CODED OR MARKED FOR EASY IDENTIFICATION. DO NOT INTERCONNECT CIRCUITS OR CROSS CONDUCTORS.

- ON-SITE PLUMBING CONNECTIONS:
WATER LINES:
LOCATE AND CONNECT WATER LINE CROSS-OVERS LOCATED UNDER THE FLOOR AT THE MARRIAGE LINE. TURN THE WATER ON AND CHECK FOR LEAKS.
DRAIN LINES:
CONNECT DRAIN DROP-OUTS TO THE MAIN DRAIN. BE SURE ALL CONNECTIONS ARE MADE TO COMPLY WITH LOCAL PLUMBING CODES.
TWO STORY DESIGNS:
SOME 2 STORY MODELS WILL REQUIRE ADDITIONAL VERTICAL CONNECTIONS SEE PLAN SHEETS FOR LOCATIONS AND ACCESS POINTS

- INTEGRITY OF MARRIAGE LINE RIDGE BEAM SHALL NOT BE COMPROMISED UNLESS SPECIFICALLY DESIGNED FOR AND SHOWN ON APPROVED PLANS.

- ON-SITE GAS CONNECTIONS (IF APPLICABLE):
LOCATE "QUICK DISCONNECT" AND CONNECT. THE "QUICK DISCONNECT" IS LOCATED UNDER THE FLOOR AT THE MARRIAGE LINE. VERIFY THAT ALL CONNECTIONS ARE TIGHT AND HAVE BEEN CHECKED FOR LEAKS.

PLUMBING:

2018 NC PLUMBING CODE FROM 2012 NC RESIDENTIAL CODE

SITE CONNECTION OF ROOFS,FLOORS,WALLS(setup manual pages 11-13, pages AP-101, SE-101-102, CALCULATION SHEETS in plan set) FOUNDATIONS, PORCHES, DECKS, EXTERIOR STAIRS

ELECTRICAL CONNECTIONS ON SITE(pages 26-28 setup manual), PLUMBING CONNECTIONS ON SITE(pages 23-25 setup manual), 4X10 REGISTERS/BOOTS PROVIDED IN TYPICAL LOCATIONS (SEE AP-101)

* TRUNKLINE ,MANUAL D & J BY OTHERS ON SITE. DRYER VENTING BY OTHERS (page 20 setup manual).
* BLOWER DOOR TEST TO BE COMPLETED BY OTHERS ON SITE.

**ON BASEMENT ENTRY HOMES, FLOOR INSULATION IS NOT PROVIDED BY FACTORY. ALL BASEMENT WORK, INCLUDING FOUNDATION DESIGN, STAIRS, HVAC AND CONNECTION OF SMOKE DETECTOR AND REQUIRED OUTLETS, DONE BY OTHERS. PROVISIONS FOR EGRESS FROM BASEMENT MUST BE PROVIDED ON SITE BY OTHERS. ALL ENERGY COMPLIANCE FOR BASEMENTS MUST BE DONE ON SITE BY OTHERS

* RODENT PROOFING TO BE COMPLETED ON-SITE BY OTHERS PER RP-101 (IN HOME OWNERS PACKET) IN WINDBORNE DEBRIS AREAS, WINDOW/DOOR PROTECTION PROVIDED BY OTHERS PER LOCAL CODE ANY SITE INSTALLED ATTIC ACCESS SHOWN ON AP-101

NO SPRINKLER SYSTEMS REQUIRED FOR UNIT. A FIRE EXTIGUISHER TO BE PROVIDED ON SITE BY OTHERS

SEE ENERGY CODE INSPECTION CHECKLIST FOR FACTORY COMPLETED ITEMS AND SITE COMPLETED ITEMS

ALL FALL PROTECTION DEVICES REQUIRED PER R612.2, MUST BE INSTALLED ON SITE BY OTHERS

ATTENTION LOCAL INSPECTIONS DEPARTMENT

SET-UP INSTRUCTIONS ARE INCLUDED ON THE PLAN SHEETS & IN SET-UP MANUAL INCLUDED IN HOMES. SEE NOTES, CROSS SECTION AND FOUNDATION PAGES (ITEMS NOT COMPLETE AT FACTORY MARKED WITH * ON CROSS SECTION) IF CHAMPION HOMES INSTALLATION MANUAL IS NOT INCLUDED THESE PLANS ARE INCOMPLETE.

ATTENTION LOCAL INSPECTIONS DEPARTMENT

IF THIS STRUCTURE IS IN A THERMAL ZONE MORE STRINGENT THAT THAT LISTED ON THESE PLANS,IS SET ON PILING, OR IS INSTALLED AT A MOUNTAIN REGION OR COASTAL HGH 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.

ANY MODEL DESIGNED FOR 150 MPH Vult MAY BE LOCATED IN AREAS OF 4500 FT OR ABOVE

ALL OPERABLE WINDOWS TO INCLUDE INSECT SCREENS. ALL PATIO AND ATRIUM DOORS TO INCLUDE INSECT SCREENS.

IF HOME IS EQUIPPED WITH WOOD BURNING FIREPLACE, SEE PAGE 22 OF SET UP MANUAL AND MANUFACTURE'S INSTALLATION MANUAL FOR REQUIRED SITE INSTALLATION.

VIRGINIA MODS TO HAVE ICE DAM PROTECTION AS REQUIRED BY STATE/LOCAL CODES.

APPROVAL STAMP



PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: North Carolina

Signature: *Sharron Barry*

Title: Staff Plan Reviewer

Date: 12/4/19

NOTE: ALL HIGH WIND DESIGNS, CONSTRUCTION, FASTENING, ETC, BUILT PER CALCULATION MANUAL OR SPECIFIC ENGINEERING (MEETING OR EXCEEDING CHAPTER 45- NC)

MECHANICAL:

2018 NC MECHANICAL CODE FROM 2012 NC RESIDENTIAL CODE

ENERGY:

✓ 2018 NORTH CAROLINA ENERGY CONSERVATION CODE WITH CURRENT NC AMENDMENTS

* 2015 IECC for REScheck used for code compliance (with attic decking)
N1102.1.2 and Appendix E used for code compliance (without attic decking)



4055 HWY. 401 SOUTH LILLINGTON, NC 27546

DESIGN INFORMATION

OCCUPANCY	SINGLE FAMILY ✓
CONSTRUCTION TYPE	VB UNP
MAXIMUM WIND SPEED	130 MPH Vult ✓
WIND EXPOSURE	C
SEISMIC CATEGORY	C
FLOOR LIVE LOAD	40 PSF
2ND FLOOR LIVE LOAD (for homes with fixed walkup staircases)	30 PSF
FLOOR DEAD LOAD	10 PSF
ROOF LIVE LOAD	20 PSF STANDARD 30 PSF OPTIONAL
ROOF DEAD LOAD	10 PSF
GROUND SNOW LOAD	30 PSF
FIRE RATING EXT WALL	0 Hrs.
TENANT SEPARATION	0 Hrs.
MAX MEAN ROOF HT.	20.00' ✓

TITLE:

NOTES

MODEL:

ANY MODEL

DATE: 04-15-03

SCALE: NOT TO SCALE

DRAWN BY: CDB

REVISED:

REVISIONS

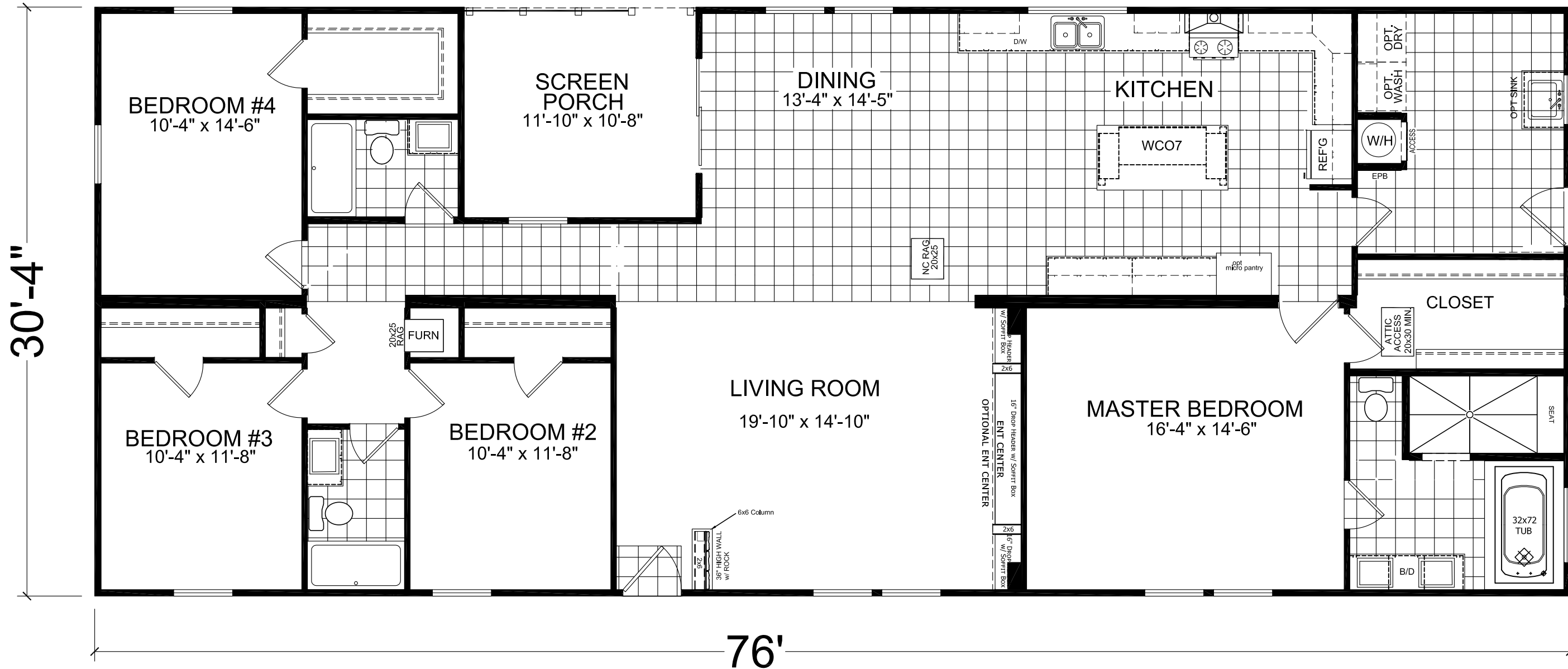
SHEET NO:

GE-101

PAGE:

MODEL 23-3276-16

4 BDRM, 3 BATH
 ACTUAL SIZE: 30'-4" X 76'-0"
 TOTAL AREA: 2176 SQ.FT.



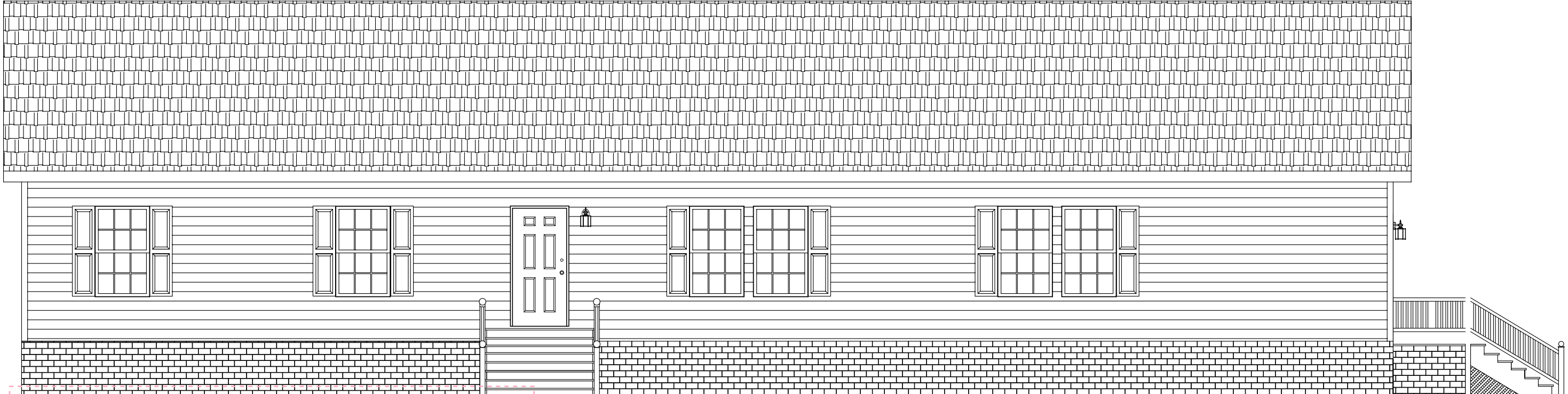
MATERIALS AND SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE FOR PRODUCTION AND CODE PURPOSES. ALL DIMENSIONS ARE NOMINAL AND APPROXIMATE. SQUARE FOOTAGE IS MEASURED FROM EXTERIOR WALL TO EXTERIOR WALL AND IS A APPROXIMATE FIGURE. THIS DRAWING IS A RENDERING AND IS MEANT FOR SALE PURPOSES ONLY.

PROJECT

PFS APPROVED
 Sharon Barry
 DATE: 12/4/19
 Approval Limited to Factory Built Portion Only
PFS CORPORATION
 Cottage Grove, WI

TITLE:	LITERATURE PLAN
MODEL:	23-3276-16 30'-4" x 76'-0" 4 BEDROOM 3 BATH
DATE:	01-13-16
SCALE:	
DRAWN BY:	STAFF
REVISID:	
	REVISIONS
SHEET NO:	L-101
PAGE:	

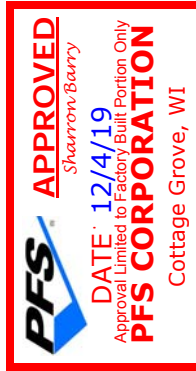
PROJECT



SHOWN WITH 5/12 PITCH (7/12 PITCH OPTIONAL)
SHOWN WITH STANDARD DOOR & WINDOW CONFIGURATION

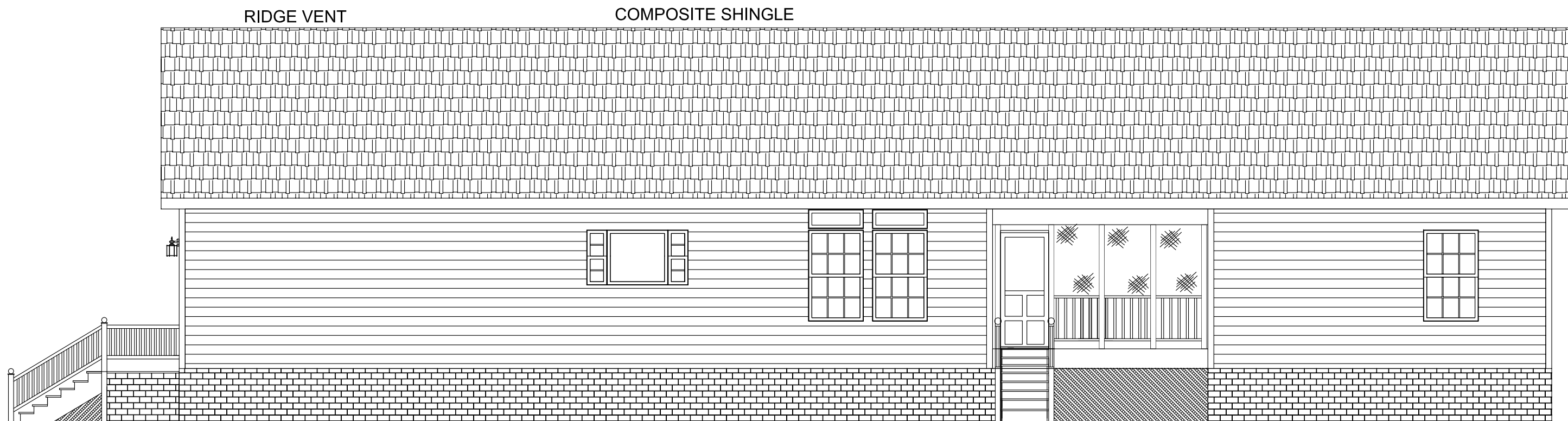
FOUNDATIONS, STEPS, PORCHES
AND RAILS DONE ON SITE BY OTHERS

FRONT ELEVATION



TITLE:	ELEVATIONS
MODEL:	23-3276-16 30'-4" x 76'-0" 4 BEDROOM 3 BATH
DATE:	01-13-16
SCALE:	NTS
DRAWN BY:	STAFF
REVISIONS:	
SHEET NO:	EV-101
PAGE:	

PROJECT



FOUNDATIONS, STEPS, PORCHES
AND RAILS DONE ON SITE BY OTHERS

REAR ELEVATION



TITLE:	ELEVATIONS
MODEL:	23-3276-16 30'-4" x 76'-0" 4 BEDROOM 3 BATH
DATE:	01-13-16
SCALE:	NTS
DRAWN BY:	STAFF
REVISED:	
	REVISIONS
SHEET NO:	EV-102
PAGE:	

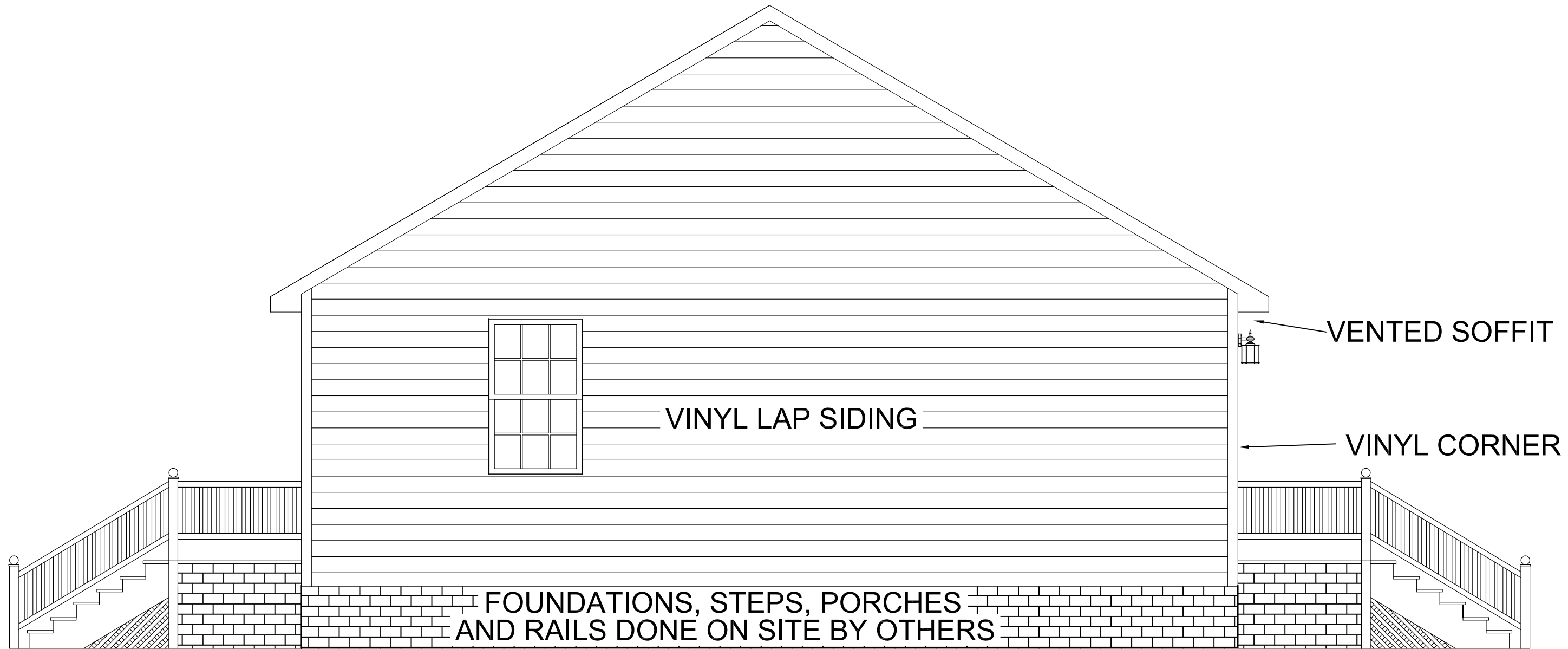


RIGHT ELEVATION
FOUNDATIONS, STEPS, PORCHES
AND RAILS DONE ON SITE BY OTHERS

PROJECT



TITLE:	ELEVATIONS
MODEL:	23-3276-16 30'-4" x 76'-0" 4 BEDROOM 3 BATH
DATE:	01-13-16
SCALE:	NTS
DRAWN BY:	STAFF
REVISED:	
	REVISIONS
SHEET NO:	EV-103
PAGE:	



FOUNDATIONS, STEPS, PORCHES
AND RAILS DONE ON SITE BY OTHERS

RIGHT ELEVATION

PROJECT



TITLE:	ELEVATIONS
MODEL:	23-3276-16 30'-4" x 76'-0" 4 BEDROOM 3 BATH
DATE:	01-13-16
SCALE:	NTS
DRAWN BY:	STAFF
REVISED:	
	REVISIONS
SHEET NO:	EV-104
PAGE:	

DESCRIPTION	GLAZING SQ. FT.	VENTING SQ. FT.	DESIGN PRESSURE	MANUFACTURER
36" X 61" EGRESS opt. SAFETY GLAZED	12.2	6.14	DP 50/DP 66	KINRO
30" X 36"	5.55	2.76	DP 66	KINRO
46" X 61" EGRESS	16.07	8.01	DP 25	KINRO
42" X 34" BLOCK GLASS	6.28	0	DP 50	HY-LITE
36" X 12" TRANSOM (MAY FLIP)	1.7	0	DP 66	KINRO
24" X 48" opt. SAFETY GLAZED	4.85	2.44	DP 66	KINRO
14" X 40" opt. SAFETY GLAZED	2.48	1.29	DP 66	KINRO
62" X 40" PICTURE	14.35	6.11	DP 50	KINRO
46" X 38" ARCH SAFETY GLAZED	8.26	3.58	DP 50	KINRO
30" X 8" TRANSOM	1.3	0	DP 66	KINRO
30" X 61"	9.95	5.85	DP 50	KINRO
30" X 72" FIXED PANEL SAFETY GLAZED	13.1	0	DP 50	KINRO
EXTERIOR DOORS				
74" X 80" ATRIUM DOOR with 15 LITE WINDOWS	24.96	19.45	DP 50	LIPPERT
72" X 78" SLIDING GLASS	34.37	19.45	DP 50	LIPPERT
36" X 80" EXTERIOR DOOR with 9 LITE WINDOW	4.4	19.45	DP 50	LIPPERT
36" X 80" EXTERIOR DOOR with 15 LITE WINDOW	14.68	19.45	DP 50	LIPPERT
36" X 80" EXTERIOR DOOR	0	0	DP 50	LIPPERT

DOOR SCHEDULE	WINDOW SCHEDULE
36" x 80" EXTERIOR	36" x 61" EGRESS
34" x 76" EXTERIOR	31 3/4" X 26" = 5.7 SQ FT 2 STEP EGRESS
30" x 80" INTERIOR	36" x 8" TRANSOM
24" x 80" INTERIOR	30" x 36"
72" x 80" SG GLASS DOOR	46" x 61" EGRESS
48" x 80" BIFOLD	34" x 42" BLOCK SAFETY GLAZED
60" x 80" BIFOLD	24" x 48" SAFETY GLAZED
74" x 80" ATRIUM DOOR	62" X 40" PICTURE
36" x 80" INTERIOR	14" x 40" OBSCURED S.G.
	30" x 61"
	30" x 8" TRANSOM
	46" X 38" ARCH SAFETY GLAZED
	12" x 36" TRANSOM

COLUMN SUPPORT	AREA
① 1-2x4's ② 2-2x4's ③ 3-2x4's	1st FLOOR 2176 SQ. FT
ALL COLUMN STUDS SHALL BE GLUED TOGETHER WITH 100% PVA GLUE COVERAGE. EACH COLUMN STUD SHALL BE NAILED TO ADJACENT COLUMN STUD WITH 131 x 214 NAILS SPACED @ O.C. STAGGERED OR APPROVED ALTERNATE FASTENING. RIDGE BEAMS TO CONTINUOUS PAST COLUMN STUDS.	2nd FLOOR N/A
STUDS SHALL BE MINIMUM SPF#2	GLAZING 190.0 SQFT

TRUSS LOCATED IN SECTION 1 PAGE 5 & 11

ALL BEAMS REFERENCED TO CHAMPION HOMES OF LILLINGTON SYSTEM PACKAGE SECTION 2, PAGE 30 AS PREPARED BY BARLOW ENGINEERING

MATEWALL
LIVE LOAD = 198 PLF TOTAL LOAD = 367 PLF

ALL BEAMS REFERENCED TO CHAMPION HOMES OF LILLINGTON SYSTEM PACKAGE SECTION 2, PAGE 28 AS PREPARED BY BARLOW ENGINEERING

SIDEWALL
LIVE LOAD = 201 PLF TOTAL LOAD = 378 PLF

(WORST CASE - 5/12)

ATTIC VENTILATION:
SEE WORKSHEET #1 CALCULATIONS

SHEARWALLS
WIND VELOCITY SHEARWALLS REFERENCED TO ATTACHED CALCULATIONS FROM BARLOW ENGINEERING SYSTEM PACKAGE

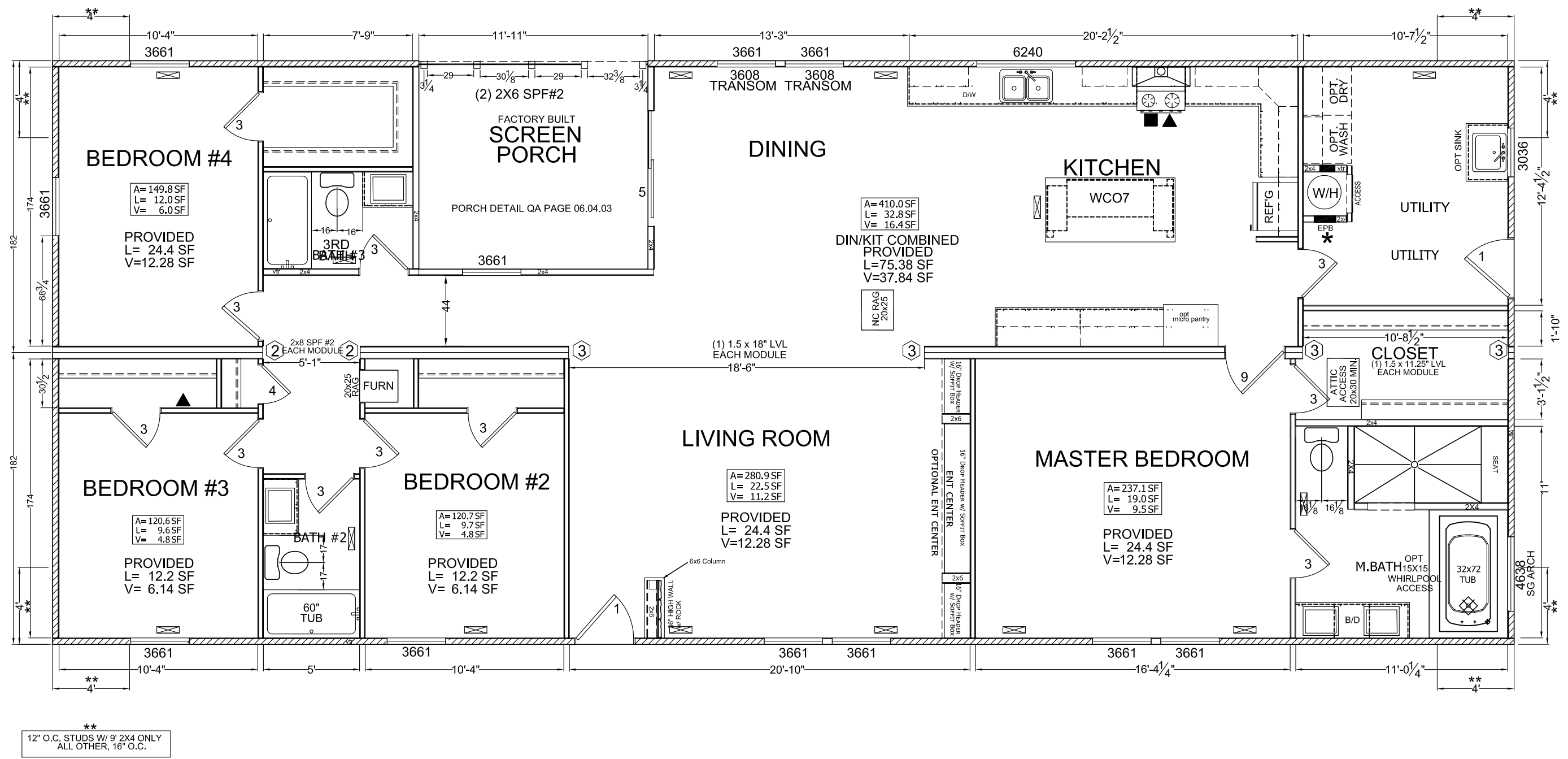
DRYER VENT TO BE INSTALLED ONSITE

4X10 REGISTER
TYPICAL REGISTER(S) INSTALLED IN EACH ROOM IF ADDITIONAL REQUIRED, BY OTHERS ON SITE.

DATA PLATE

ENERGY CERTIFICATION LABEL

LABEL LOCATIONS (STATE & PFS)



NOTE: ALL OPERABLE WINDOWS, PATIO DOORS AND ATRIUM DOORS ARE TO INCLUDE SCREENS FOR VENTILATION AND INSECTS.

CP-2 Revised or Added page per PFS review of 12-03-19

PROJECT

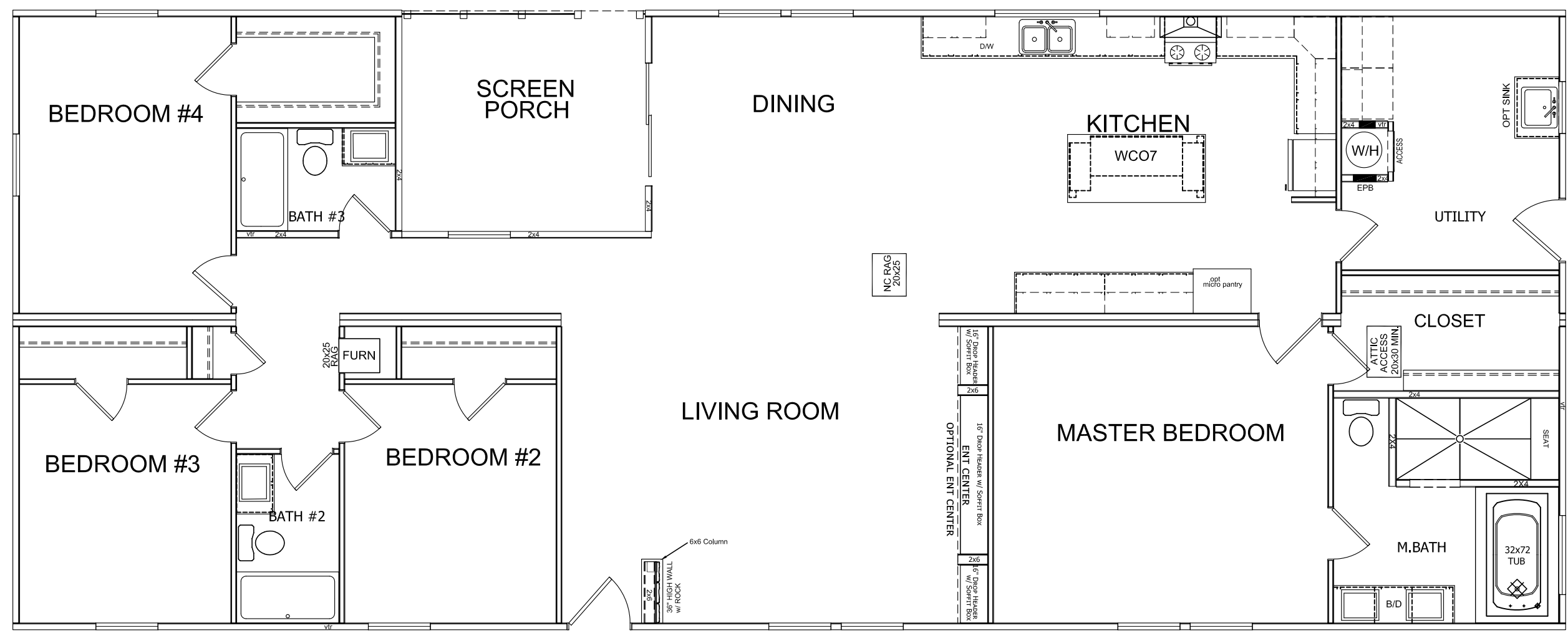
PFS APPROVED
Sharon Barry
DATE: 12/14/19
Approval Limited to Factory Built Portion Only
PFS CORPORATION
Cottage Grove, WI

TITLE:	FLOOR PLAN
MODEL:	23-3276-16 30"-4" x 76'-0" 4 BEDROOM 3 BATH
DATE:	01-13-16
SCALE:	3/16" = 1'-0"
DRAWN BY:	STAFF
REVISED:	
REVISIONS	
SHEET NO:	AP-101
PAGE:	

SEE STRUCTURAL BRACING SUMMARY AP202 FOR MORE DETAILS

SIDEWALL # 2 CONNECTION SUMMARY # F4

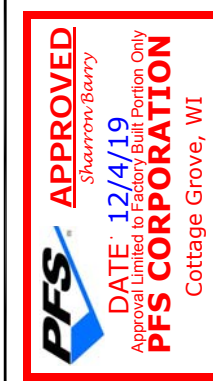
ENDWALL #2 CONNECTION SUMMARY # F/S 2



ENDWALL #1 CONNECTION SUMMARY # F/S 1

SIDEWALL # 1 CONNECTION SUMMARY # F3

PROJECT



TITLE:
 STRUCTURAL BRACING & CONNECTIONS

MODEL:
 23-3276-16
 30'-4" x 76'-0" 4 BEDROOM 3 BATH

DATE: 01-13-16

SCALE: 1/8" = 1'-0"

DRAWN BY: STAFF

REVISED:

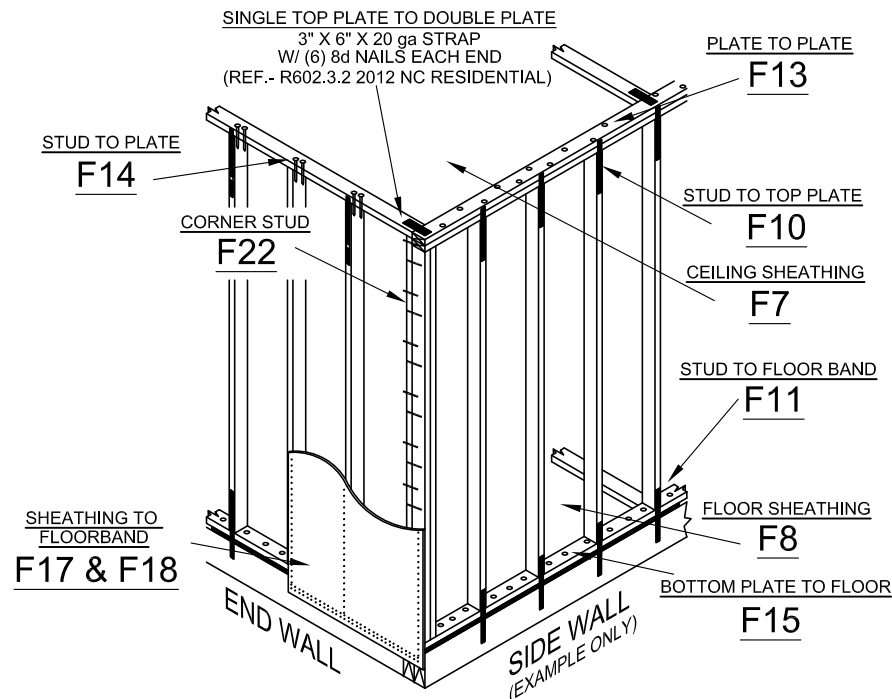
REVISIONS

SHEET NO:

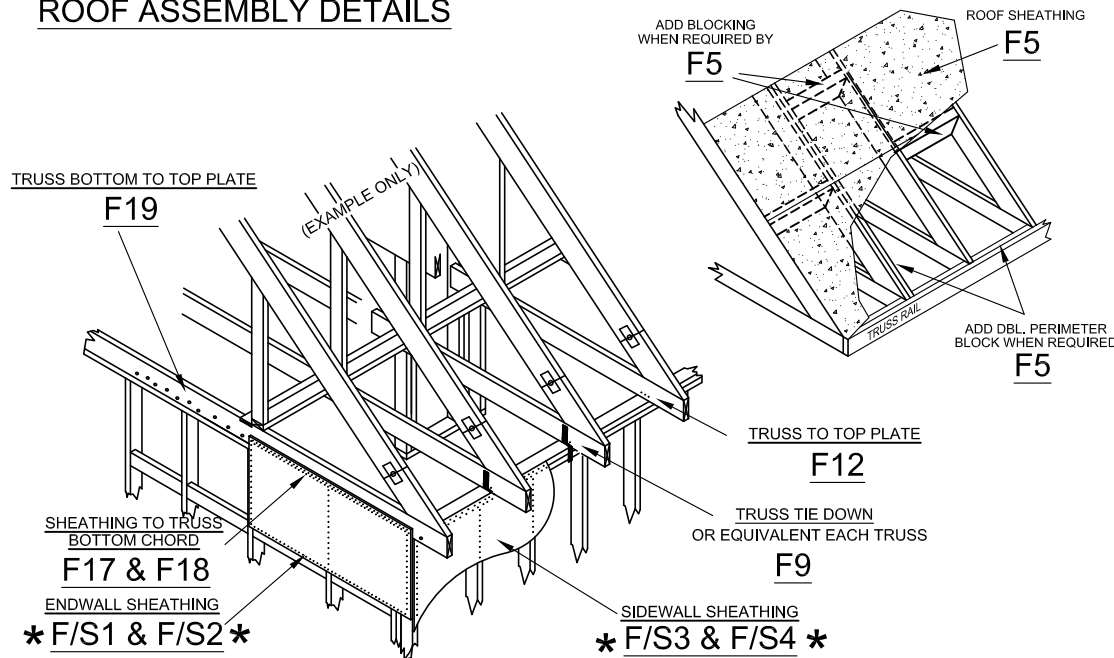
AP-201

PAGE:

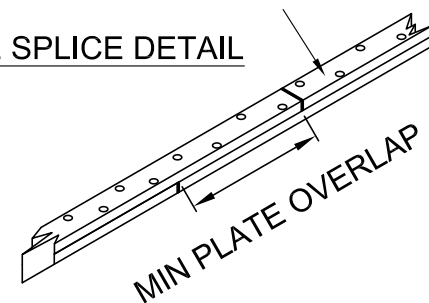
SIDEWALL/ENDWALL DETAIL



ROOF ASSEMBLY DETAILS



TOP PLATE SPLICE DETAIL



***GABLE ENDWALL OSB TO BE FASTENED PER F/S1 & F/S2**

SHEAR CALCULATIONS

MODEL No.: 23-3969 011316 (23-3276-16)
 SERIAL No.:
 WIND SPEED.: 130 VULT
 ✓ Roof 5 OR 7 /12

DESIGNED BY.: **BARLOW ENGINEERING**
 DATE.: 11/13/2019
 CHECKED BY.: **BARLOW ENGINEERING**

SHEARWALL DIAPHRAGM PANEL SUMMARY

BY	Q/R/D	LOCATION	EDGE FASTENING*		FIELD FASTENING*		NOTES	CONN. #
			8d	16 GA.	8d	16 GA.		
		ENDWALL #1 (HITCH)		4.0	8.0	7/16" OSB BLOCKED	(MASTER BEDROOM)	F/S1
		ENDWALL #2 (REAR)		5.0	12.0	7/16" OSB BLOCKED	(BEDROOM 3)	F/S2
		SIDEWALL #1 (A MODULE)		5.0	12.0	7/16" OSB BLOCKED	(LIVING)	F3
		SIDEWALL #2 (B MODULE)		6.0	12.0	7/16" OSB BLOCKED	(KITCHEN / DINING)	F4
		ROOF SHEATHING		5.0	12.0	7/16" OSB UNBLOCKED		F5
		INCREASE TO WITH		6.0	12.0	7/16" OSB UNBLOCKED		
		BLOCKING DISTANCE	0		0	FROM ENDWALLS (ROOF DIAPHRAGM SHEATHING CONNECTION : 297 PLF)		
		CEILING SHEATHING	7.0		7.0	1/2" GWB UNBLOCKED (FOAM ADHESIVE MEETS REQUIRED FASTENING)		F7
		FLOOR SHEATHING	6.0	15 GA.	12.0	19/32" OSB MIN.		F8

*8d COMMON NAILS (.131" x 2.5")
 *ROOF (16 GA. STAPLES)
 *FLOOR (8d COMMON NAILS (.131" x 2.5"))
 † 16 GA. STAPLE (REF. SEC 16 Pg. 14 8d TO 16GA. (Z))
 †ROOF (16 GA. STAPLE (REF. SEC 16 Pg. 15 14GA. TO 16GA. (Z))
 †FLOOR (15 GA. STAPLE (REF. SEC 16 Pg. 14 10D TO 15GA. (Z))

SUCTION FASTENER SPACING MUST BE NO GREATER THAN SHEAR DIAPHRAGM FASTENER SPACING

BY	Q/R/D	LOCATION	FASTENING *	ALT. FASTENER†	NOTES
		ROOF ZONE 1	12	8	
		ROOF ZONE 2	12	7	
		ROOF ZONE 3	12	7	
		ROOF ZONE 3 O/H	8	4	
		WALL ZONE 4	12	10	
		WALL ZONE 5	12	9	
		EDGE DIMENSION (Z)	3.03'	3.03'	

*8d COMMON NAILS (.131" x 2.5")
 † 16 GA. STAPLE (1" MIN. PEN) (REF. SEC 16 Pg. 15 8d TO 16GA. (W))

UPLIFT CONNECTIONS

BY	Q/R/D	LOCATION	UPLIFT # FASTENING *	ALT. FASTENING *	CONN. #	
		TRUSS TIE DOWN	594	(2) SIMPSON SDWC 15600	(1) SIMPSON H10A 1015# LP 285# LAT**	F9
		TRUSS TIE DOWN (FLAT STRAP)	594	(1) 1 1/2 x 20GA STRAP w/ (8) 0.113 NAILS		
		STUD TO TOP PLATE/CEILING BAND	396	(1) 1 1/2 x 20GA STRAP w/ (7) 0.113 NAILS	STRAP CAPACITY 569.38 LBS	F10
		STUD TO TOP PLATE ALT (OSB)	396	9 16 GA STAPLES EA. STUD	OR (8) 15 GA STAPLES EA STUD	
		STUD TO FLOOR BAND	307	(1) 1 1/2 x 20GA STRAP w/ (4) 0.113 NAILS	STRAP CAPACITY 379.72 LBS	F11
		STUD TO FLOOR BAND ALT (OSB)	307	9 16 GA STAPLES EA. STUD	OR (8) 15 GA STAPLES EA. STUD	

(REF. SEC 18 Pg. 17 20GA. STRAP/NAILS)
 (REF. SEC 18 Pg. 17 20GA. STRAP/NAILS)
 *QUANTITIES ARE EACH END
 ** 56TH ED. LSP CATALOG
 ** C-2011 ED. SIMPSON CATALOG
 ** LFP BULL 05-05

LATERAL CONNECTIONS

BY	Q/R/D	LOCATION	LOAD (PLF) AT IN. O.C.	LOAD (LBS)	FASTENING *	ALT. FASTENING *	CONN. #
		TRUSS TO TOP PLATE	.88	24	(1) #10 X 5" TSCREW EA TRUSS	(1) #10 X 5" TSCREW EA TRUSS	F12
		PLATE TO PLATE		375	15GA. X 2 1/2" STAPLES AT 7" O.C.	FACE NAILED	F13
		PLATE TO STUD			(3) 15GA. X 2 1/2" STAPLES EACH END	END NAILED	F14
		BOTTOM PLATE TO FLOOR			15GA. X 2 1/2" STAPLES AT 10" O.C.	FACE NAILED	F15

* STRAP NAIL/STAPLE QUANTITIES ARE EACH END
 (SUBSTITUTION REF. SEC 16 Pg. 14 .162 TO .113 & 15GA. (Z))
 (SUBSTITUTION REF. SEC 16 Pg. 14 .131 TO 15GA. (Z))
 (SUBSTITUTION REF. SEC 16 Pg. 14 .131 TO #8 WS (Z))

TOP PLATE SPLICES

BY	Q/R/D	LOCATION	FASTENING	NOTES	CONN. #
		PLATE TO PLATE	(2) ROWS 15GA. X 2 1/2" STAPLES AT 1" O.C.	FACE NAILED 4 MIN SPLICE	F16

(SUBSTITUTION REF. SEC 16 Pg. 15 .162 TO 15 GA. (Z))

UNIT SHEAR & UPLIFT CONNECTIONS

BY	Q/R/D	LOCATION / LOAD	FASTENING	CONN. #
		ENDWALLS	SHEATHING SHEAR CONN. TO FLOOR BAND AND BOTTOM CHORD w/ (2) ROWS OF 16GA. STAPLES AT (2) IN O.C.	F17
		ENDWALLS	SHEATHING UPLIFT CONN. TO FLOOR BAND AND BOTTOM CHORD w/ (2) ROWS OF 16GA. STAPLES AT (2) IN O.C.	F18
		ENDWALLS	BOTTOM CHORD TO TOP PLATE w/ .131 X 3" TOENAILS AT 3" IN O.C. OR SIMPSON LTP4 PLATE @ 15" O.C.	F19
		SIDEWALLS	SHEATHING SHEAR CONN. TO FLOOR BAND w/ (1) ROWS OF 16GA. STAPLES AT (6) IN O.C.	F20
		SIDEWALLS	SHEATHING UPLIFT CONN. TO FLOOR BAND w/ (1) ROWS OF 16GA. STAPLES AT (6) IN O.C.	F21

(SUBSTITUTION REF. SEC 16 Pg. 14 .131 TO 16 GA. (Z))
 (SUBSTITUTION REF. SEC 20 Pg. 14 .162 TO .113 (Z))

CORNER CONNECTIONS

BY	Q/R/D	LOCATION	FASTENING *	NOTES	CONN. #
		ALL EXTERIOR WALL INTERSECTIONS	(1) ROW(S) #8 SCREWS AT 15" O.C.	FACE NAILED/SCREWED	F22
		ALTERNATE FASTENER	(1) ROW(S) 3/8" Lag AT 36" O.C.		

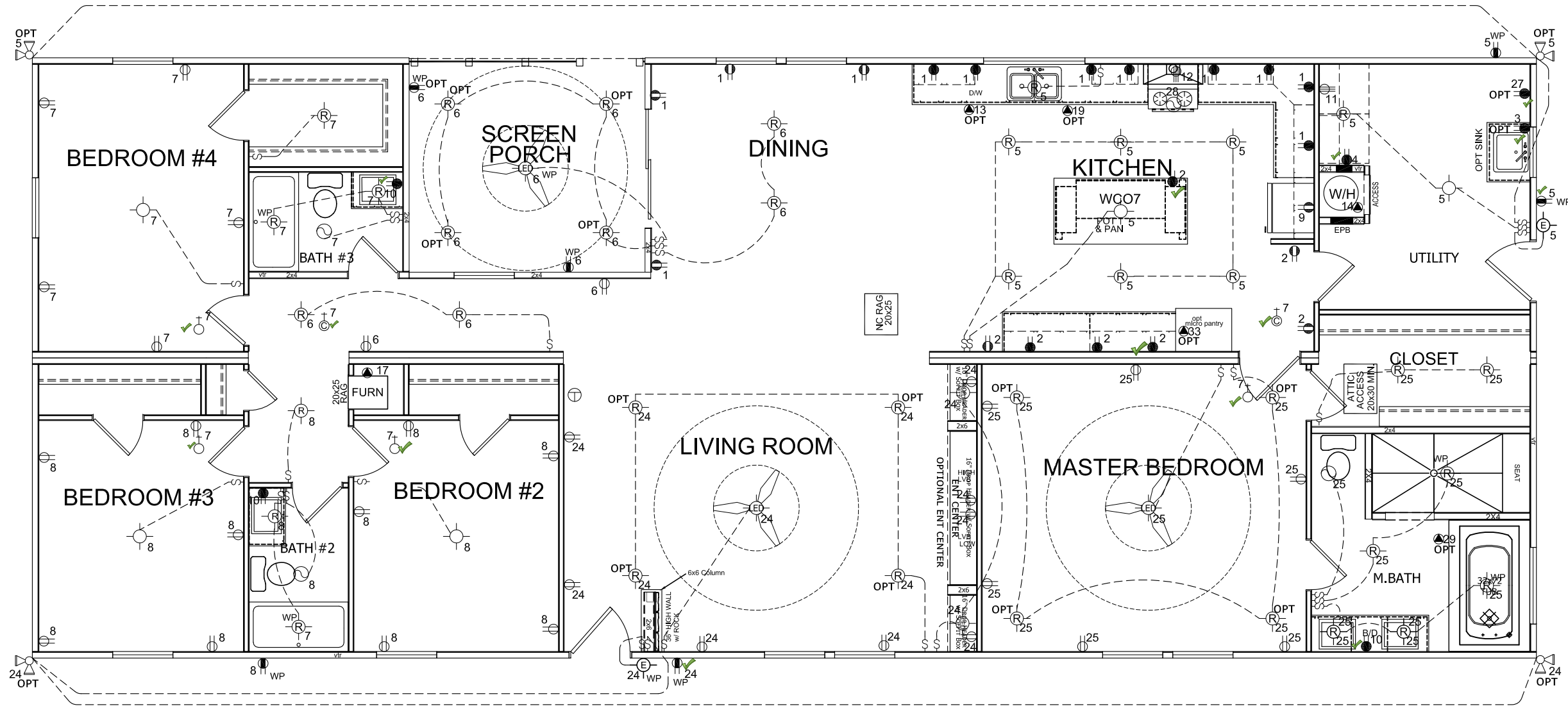
(SUBSTITUTION REF. SEC 20 Pg. 14 .162 TO .113 (Z))

CORNER HOLDOWNS

BY	Q/R/D	LOCATION	FASTENING *	NOTES	CONN. #
		ALL EXTERIOR WALL CORNERS	SEE F-101 FOR HOLDOWN REQUIREMENTS	HOLD DOWNS REQUIRED	F23

NC NOTE:
PER NC ECC 404.1, A MINIMUM OF 75% OF LAMPS INSTALLED IN PERMANENTLY INSTALLED FIXTURES MUST BE HIGH-EFFICIENT LAMPS (EXAMPLE. CFL'S)
ALL BULBS TO BE PROVIDED ON SITE BY OTHERS.

- RECEIPT TO BE INSTALLED FOR WHIRLPOOL TUB WITHIN 12" OF ACCESS IN DIRECT VIEW FOR DISCONNECT OF APPLIANCE.
- BREAKER LOCKOUT TO BE INSTALLED FOR DISHWASHER, WATER HEATER
- RANGE HOOD EXHAUST FAN IS A NON VENTED RECIRCULATION TYPE (CHARCOAL)
- CO/SMOKE DETECTOR COMPLIES WITH UL 217 AND UL 2034 FIRST ALERT MODEL #SC9120B (NC,SC)
- ❄ INSTALLED PANEL BOX IS TO BE CONSIDERED SUB PANEL BOX. MAIN PANEL W/ DISCONNECTED TO BE INSTALLED ON SITE BY OTHERS.



ALL APPLIANCES TO MEET OR EXCEED THEREQUIREMENTS OF APPLICABLE BUILDING CODES.

FURNACE NOTE: 15KW NORDYNE E6 FURNACE WITH 53,00 BTUH PROVIDED BY CHAMPION HOMES. THE BUILDER IS TO PROVIDE HVAC LAYOUT AND MANUAL D & J TO BE APPROVED BY LOCAL JURISDICTION.

ELECTRICAL LEGEND			

NOTE:

1. CIRCUIT NUMBERS MAY VARY AND NOT ALL CIRCUITS ARE IN USE
2. ARC-FAULT CIRCUIT INTERRUPTERS SHALL BE IN ACCORDANCE WITH SECTION 210.12 (A) OF THE CURRENT NEC.
3. OPTIONAL 220 VOLT RECEPTACLE PROVIDED FOR RANGE AND DRYER.
4. POWER RANGE HOOD STANDARD.
5. ALL CLOSET LIGHTS TO BE A MIN. 12" OFF OF SHELF.
6. DWELLING UNIT RECEPTACLE MUST BE RATED AS TAMPER RESISTANT ACCORDANCE WITH SECTION 406.12, NEC
7. WATER PROOF COVERS REQUIRED FOR OUTDOOR SWITCHES AND RECEPTACLE ACCORDANCE WILL SECTION 404.4 AND 404.9, NEC
8. OUTLET, DEVICE, PULL, AND JUNCTION ARE IN ACCORDANCE TO ARTICLE 314
9. ATTIC LIGHT TO BE INSTALLED, IF ATTIC TO BE USED FOR STORAGE, ON SITE

ELECTRICAL SCHEDULE				
BRKR	CIR #	NOMENCLATURE	VOLTS	WIRE
20	AF 1	GFI PORTABLE APPLIANCE	120	12/2
20	AF 2	GFI PORTABLE APPLIANCE	120	12/2
20	3	OPT PORTABLE APPLIANCE	120	12/2
20	4	WASHER	120	12/2
15	5	AF UTILITY/KIT	120	14/2
15	SD 6	AF DINING	120	14/2
15	7	AF BDR#4/BATH#3	120	14/2
20	8	AF/SD BDR#2/BTH#2/BDR#3	120	14/2
20	9	OPT PORTABLE APPLIANCE	120	12/2
20	10	GFI BATH GFIs	120	12/2
30	11	DRYER	240	10/3
40	12	RANGE	240	8/3
15	13	OPT DISH WASHER	120	14/2
25	14	WATER HEATER	240	10/2
30	15	OPT COUNTER TOP RANGE	PER MANF	
15	16	OPT FURNACE (GAS)	120	14/2
60/35	17	FURNACE (ELECTRIC)	240	6/6/8
20	18	OPT TRASH COMPACTOR	120	12/2
15	19	OPT DISPOSAL	120	14/2

ELECTRICAL SCHEDULE - CONT -				
BRKR	CIR #	NOMENCLATURE	VOLTS	WIRE
15	24	AF LIVING ROOM	120	14/2
15	25	OPT M.BDR/M.BATH	120	14/2
20	26	GFI OUTDOOR HYDRO MASSAGE SPA	PER MANF	
20	27	OPT FREEZER	120	12/2
15	28	OPT GEN LIGHTING	120	14/2
20	29	GFI INDOOR HYDRO MASSAGE SPA	120	12/2
20	33	GFI MICROWAVE	120	12/2

WIRE SIZING MAY INCREASE DUE TO DISTANCE FROM PANEL BOX

ARC FAULT FOR VA BEDROOMS ONLY

PANEL SIZING		
DESCRIPTION	KVA	
MAX. FLOOR AREA 2305 X 3VA, /1000	6.9	3 KVA
2 SMALL APPLIANCES @ 1500VA, /1000	3	3 KVA
RANGE @ 12.0 KW.	12	12 KVA
WATER HEATER @ 4.5 KW.	4.5	4.5 KVA
DISH WASHER @ 1.4 KW.	1.4	1.4 KVA
WASHER @ 1500VA, /1000	1.5	1.5 KVA
DRYER @ 5.0 KW.	5.0	5.0 KVA
DISPOSAL @ 1.4 KW.	1.4	1.4 KVA
W/P TUB @ 1500VA, /1000	1.5	1.5 KVA
W/P TUB @ 1500VA, /1000	1.5	1.5 KVA
2 SMALL APPLIANCES @ 1500VA, /1000	3	3 KVA
FOR MAX LOAD USED FOR CALCULATION PURPOSES		
TOTAL LOAD	41.7	41.7 KVA
1st 10 KVA @ 100%	10	10 KVA
REMAINDER @ 40%	12.68	12.68 KVA
HVAC @ 100%	10.5	10.5 KVA
TOTAL	33.18	33.18 KVA
33.18 X 1000 /240 = 138.3		
INSTALL 200 AMP PANEL		

PROJECT

APPROVED
Shaaron Barry
DATE: 12/4/19
Approval Limited to Factory Built Portion Only
PFS CORPORATION
Cottage Grove, WI

TITLE:
ELECTRICAL PLAN

MODEL:
23-3276-16
30'-4" x 76'-0" 4 BEDROOM 3 BATH
DATE: 01-13-16
SCALE: 3/16" = 1'-0"
DRAWN BY: STAFF
REVISED:

SHEET NO:
EP-101
PAGE:

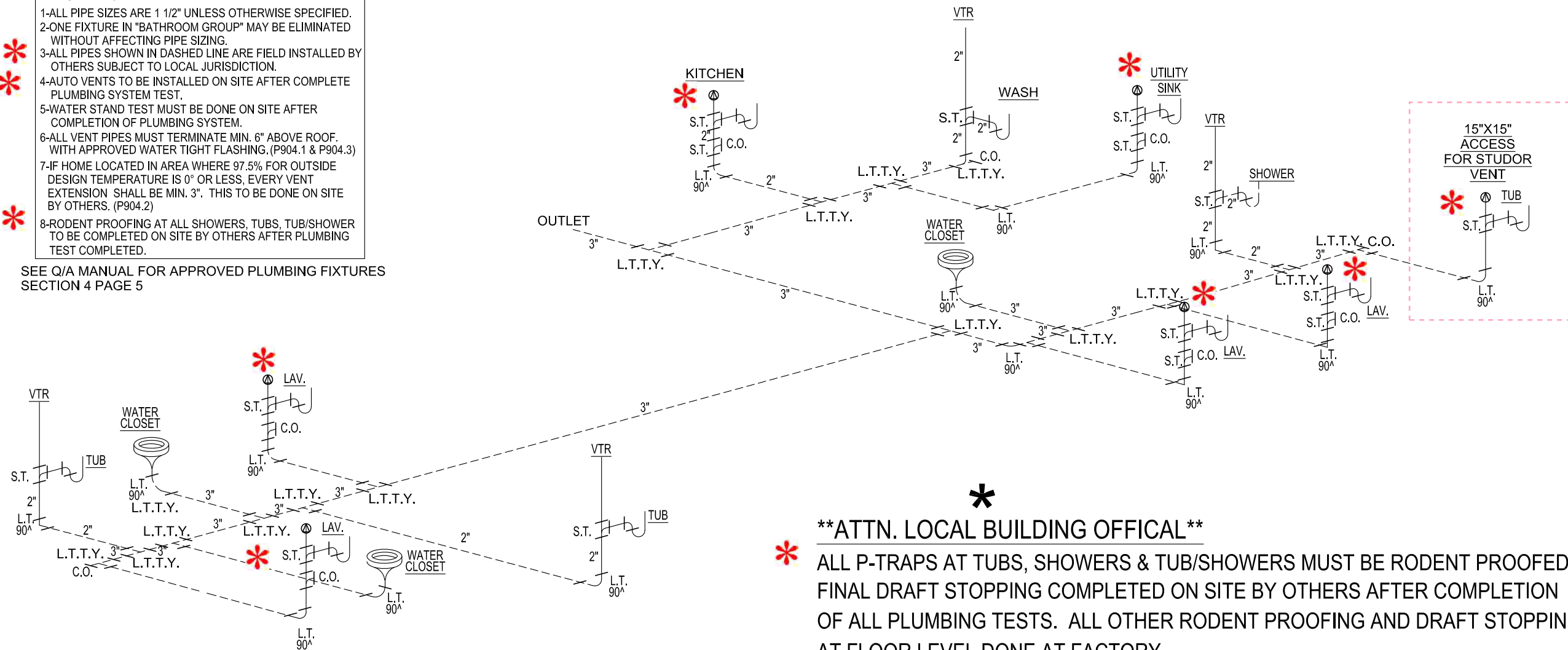
DWV PLUMBING PLAN

NOTES:

- 1-ALL PIPE SIZES ARE 1 1/2" UNLESS OTHERWISE SPECIFIED.
- 2-ONE FIXTURE IN "BATHROOM GROUP" MAY BE ELIMINATED WITHOUT AFFECTING PIPE SIZING.
- 3-ALL PIPES SHOWN IN DASHED LINE ARE FIELD INSTALLED BY OTHERS SUBJECT TO LOCAL JURISDICTION.
- 4-AUTO VENTS TO BE INSTALLED ON SITE AFTER COMPLETE PLUMBING SYSTEM TEST.
- 5-WATER STAND TEST MUST BE DONE ON SITE AFTER COMPLETION OF PLUMBING SYSTEM.
- 6-ALL VENT PIPES MUST TERMINATE MIN. 6" ABOVE ROOF WITH APPROVED WATER TIGHT FLASHING. (P904.1 & P904.3)
- 7-IF HOME LOCATED IN AREA WHERE 97.5% FOR OUTSIDE DESIGN TEMPERATURE IS 0° OR LESS, EVERY VENT EXTENSION SHALL BE MIN. 3". THIS TO BE DONE ON SITE BY OTHERS. (P904.2)
- 8-RODENT PROOFING AT ALL SHOWERS, TUBS, TUB/SHOWER TO BE COMPLETED ON SITE BY OTHERS AFTER PLUMBING TEST COMPLETED.

SEE Q/A MANUAL FOR APPROVED PLUMBING FIXTURES SECTION 4 PAGE 5

PIPE SUPPORT TO BE AS FOLLOWS:
 MAX HORIZONTAL SPACING = 4'
 MAX VERTICAL SPACING = 10'
 REFERENCE IPC TABLE 308.5



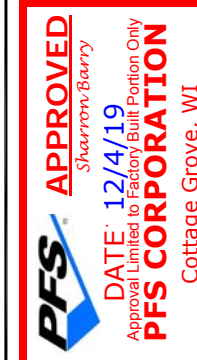
****ATTN. LOCAL BUILDING OFFICAL****

ALL P-TRAPS AT TUBS, SHOWERS & TUB/SHOWERS MUST BE RODENT PROOFED AND FINAL DRAFT STOPPING COMPLETED ON SITE BY OTHERS AFTER COMPLETION OF ALL PLUMBING TESTS. ALL OTHER RODENT PROOFING AND DRAFT STOPPING AT FLOOR LEVEL DONE AT FACTORY.

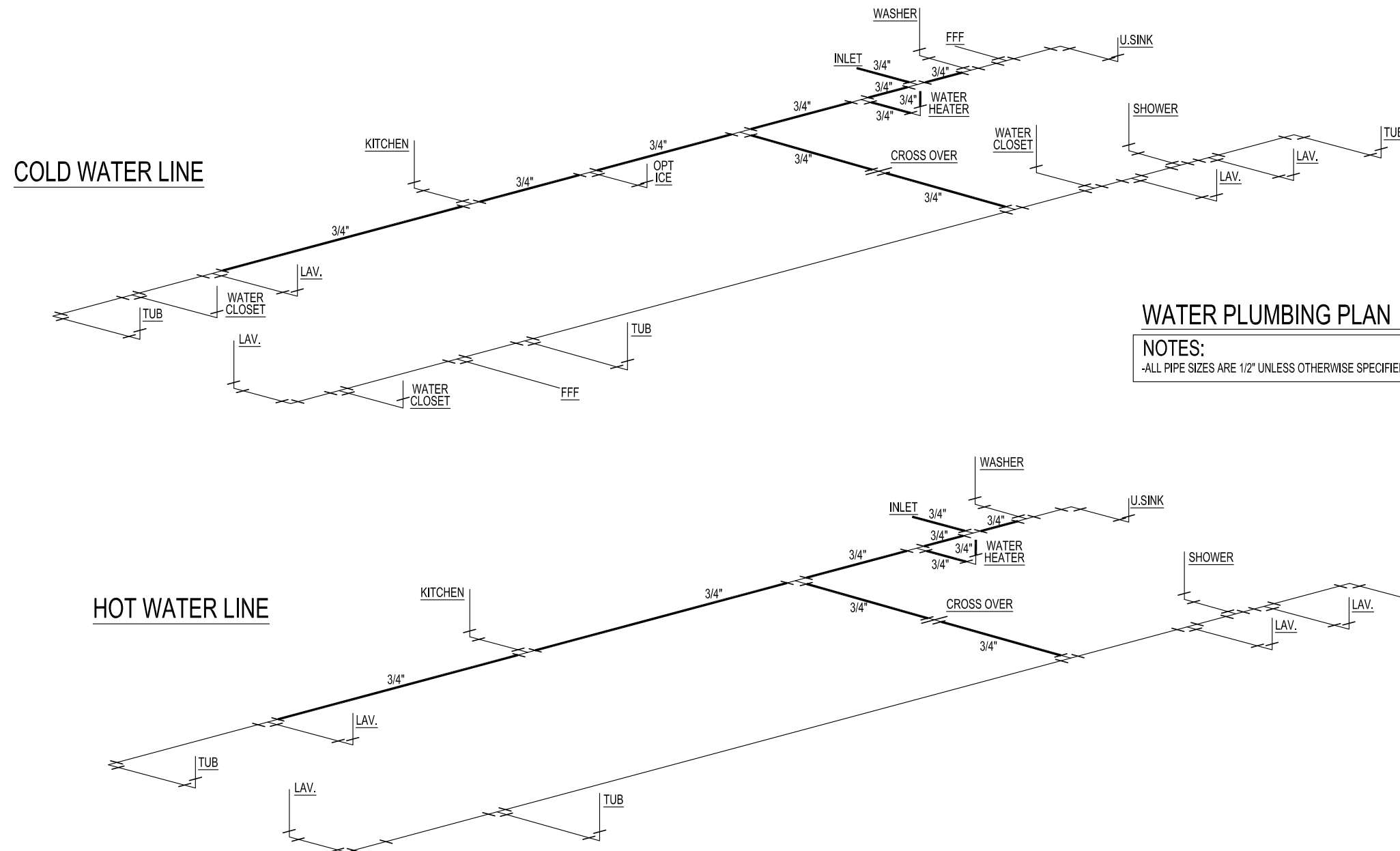
SEE PAGE AE-101 IN SETUP MANUAL IN HOME FOR DETAILS (SECTION 5, PG 36 QA MANUAL).

①	1 1/2" PVC OR ABS
②	2" PVC OR ABS
③	3" PVC OR ABS
⊕	APPROVED AUTOVENT
S/O	STUB OUT
VTR	VENT THROUGH ROOF
-----	INSTALLED ON SITE

PROJECT



TITLE:	DWV PLAN OFF-FRAME
MODEL:	23-3276-16 30'-4" x 76'-0" 4 BEDROOM 3 BATH
DATE:	01-13-16
SCALE:	NTS
DRAWN BY:	STAFF
REVISED:	REVISIONS
SHEET NO.:	PP-101
PAGE:	

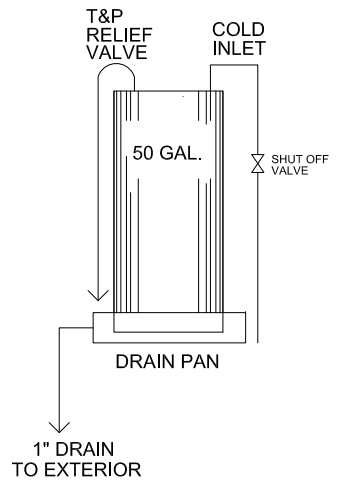


WATER PLUMBING PLAN

NOTES:
-ALL PIPE SIZES ARE 1/2" UNLESS OTHERWISE SPECIFIED.

WATER HEATER SECURED IN PLACE FOR TRANSIT WITH METAL SHIPPING STRAPS FROM WALL TO WALL

STATE WATER HEATER
MODEL # SC 152 DORTE 3 (ELECTRIC)
CO1094 IM 50 NHDST 2 (GAS)
MANF. INFORMATION LOCATED
IN Q.A. MANUAL, SECTION 4,
PAGE 04.01.01



SUPPLY AT WATER HEATER

- ALL PLUMBING FIXTURES HAVE SEPARATE SHUTOFF VALVES.
 - WATER HEATER SHALL HAVE A SAFETY PAN WITH 1 INCH DRAIN TO EXTERIOR.
 - WATER PIPES INSTALLED IN A WALL EXPOSED TO THE EXTERIOR SHALL BE LOCATED ON THE HEATED SIDE OF THE WALL INSULATION. WATER PIPING INSTALLED IN AN UNCONDITIONED ATTIC SHALL BE INSULATED WITH AN INSULATION OF R-6.5 MINIMUM.
 - DWV SYSTEM SHALL EITHER ABS or PVC-DWV
 - WATER SUPPLY LINES SHALL BE POLY-ETHYLENE (PEX), CPVC, OR COPPER, WHEN POLYETHYLENE SUPPLY LINES ARE INSTALLED THE MAXIMUM WATER HEATER SETTING IS 180 deg F. THE POLYETHYLENE PIPE SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURES LIMITATIONS AND INSTRUCTIONS.
 - BUILDING DRAIN AND CLEANOUTS ARE DESIGNED AND SITE INSTALLED BY OTHERS, SUBJECT TO LOCAL JURISDICTION APPROVAL.
 - TUB ACCESS PROVIDED UNDER HOME UNLESS OTHERWISE NOTED.
 - SHOWER STALLS SHALL BE COVERED w/ NON-ABSORANT MATERIAL TO A HEIGHT OF 72 INCHES ABOVE FINISH FLOOR.
 - T&P RELIEF VALVE w/DRAIN TO EXTERIOR OR PAN and SHUT-OFF WITHIN 3' of WATER SUPPLY AT WATER HEATER
 - THIS UNIT MUST BE CONNECTED TO PUBLIC WATER SUPPLY AND SEWAGE SYSTEM IF THESE ARE AVAILABLE
 - WATER PIPE DESIGNED FOR MAXIMUM INLET PRESSURE OF 80 PSL. SEE SETUP MANUAL SECTION 6.1
- SEE Q/A MANUAL FOR APPROVED PLUMBING FIXTURES SECTION 4 PAGE 5

PROJECT



TITLE:
WATER LINE PLAN

MODEL:
23-3276-16
30'-4" x 76'-0" 4 BEDROOM 3 BATH

DATE: 01-13-16

SCALE: NTS

DRAWN BY: STAFF

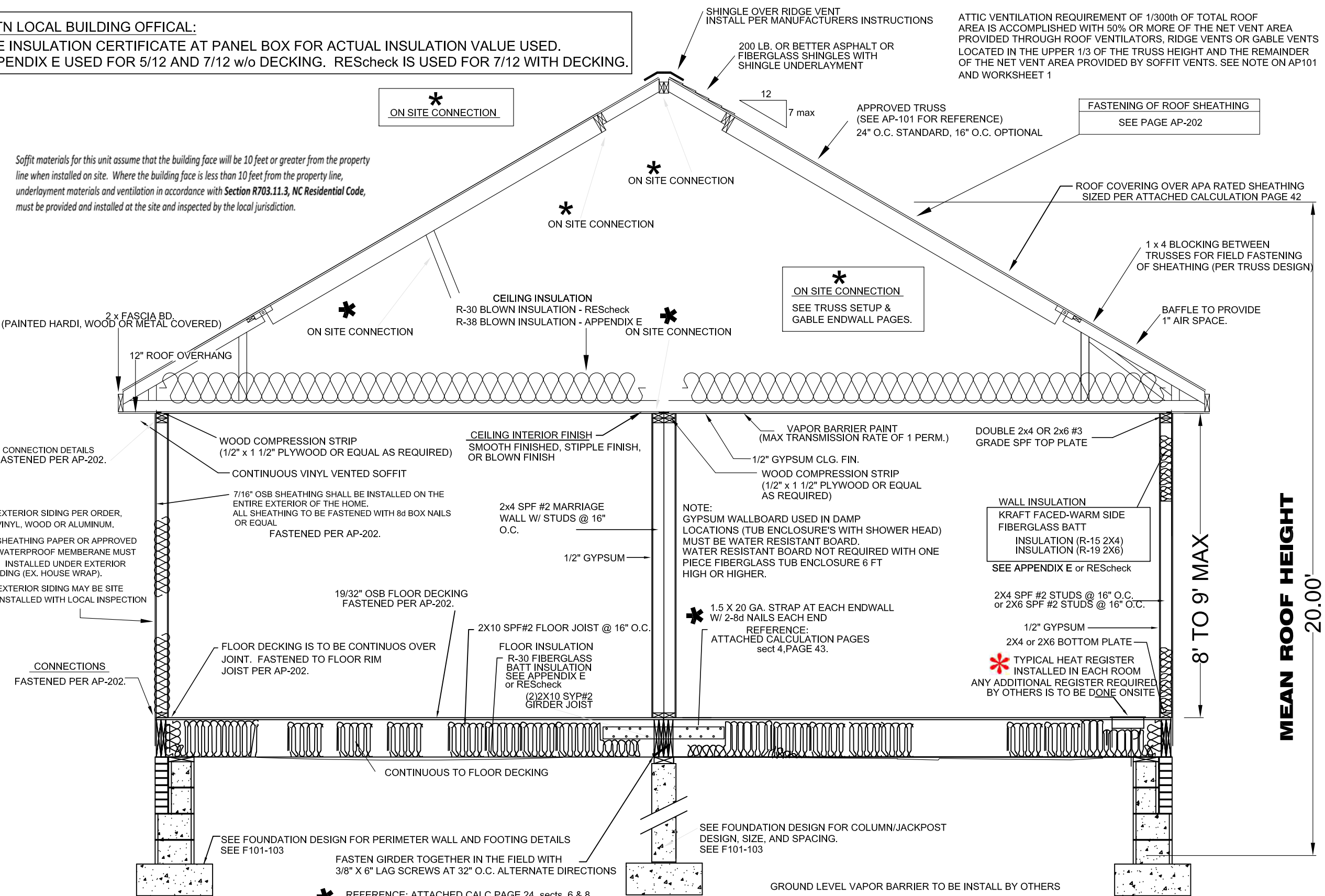
REVISED:

REVISIONS

SHEET NO:
WP-101

PAGE:

*** ATTN LOCAL BUILDING OFFICAL:**
SEE INSULATION CERTIFICATE AT PANEL BOX FOR ACTUAL INSULATION VALUE USED.
APPENDIX E USED FOR 5/12 AND 7/12 w/o DECKING. REScheck IS USED FOR 7/12 WITH DECKING.



Soffit materials for this unit assume that the building face will be 10 feet or greater from the property line when installed on site. Where the building face is less than 10 feet from the property line, underlayment materials and ventilation in accordance with Section R703.11.3, NC Residential Code, must be provided and installed at the site and inspected by the local jurisdiction.

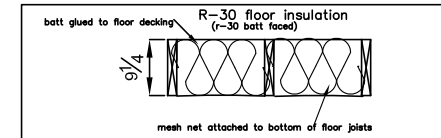
CONNECTION DETAILS FASTENED PER AP-202.

EXTERIOR SIDING PER ORDER, VINYL, WOOD OR ALUMINUM.
 SHEATHING PAPER OR APPROVED WATERPROOF MEMBERANE MUST INSTALLED UNDER EXTERIOR SIDING (EX. HOUSE WRAP).
 EXTERIOR SIDING MAY BE SITE INSTALLED WITH LOCAL INSPECTION

CONNECTIONS FASTENED PER AP-202.

NOTES:
 1. ALL FINISH MATERIAL TO HAVE CLASS "C" FIRE RATING.
 2. ALL PENETRATIONS THROUGH FLOOR OR CEILING FIRE STOPPED
 3. SEE FOUNDATION PLAN FOR SUPPORT AND TIE DOWN REQUIREMENTS.

* REFERENCE: ATTACHED CALC PAGE 24, sects, 6 & 8
 64'-0" / 11 = 5'-9" X 0.575 = 3'-4"



PROJECT

PFS APPROVED
 Shaaron Barry
 DATE: 12/4/19
 Approval Limited to Factory Built Portion Only
PFS CORPORATION
 Cottage Grove, WI

TITLE:
CROSS SECTION

MODEL:
23-3276-16
 30'-4" x 76'-0" 4 BEDROOM 3 BATH

DATE: 10/7/03
 SCALE: 1/8" = 1'-0"
 DRAWN BY: JPT
 REVISED: 04-13-04

REVISIONS	
CDB	ADDED DORMER INFORMATION
SFA	ADDED P-TRAP RODENT PROOF

SHEET NO:
SE-101

PAGE:

PROJECT



TITLE:
PERIMETER
FOUNDATION PLAN

MODEL:
23-3276-16
30'-4" x 76'-0" 4 BEDROOM 3 BATH
DATE: 01-13-16
SCALE: NTS
DRAWN BY: STAFF
REVISED:

REVISIONS

SHEET NO:

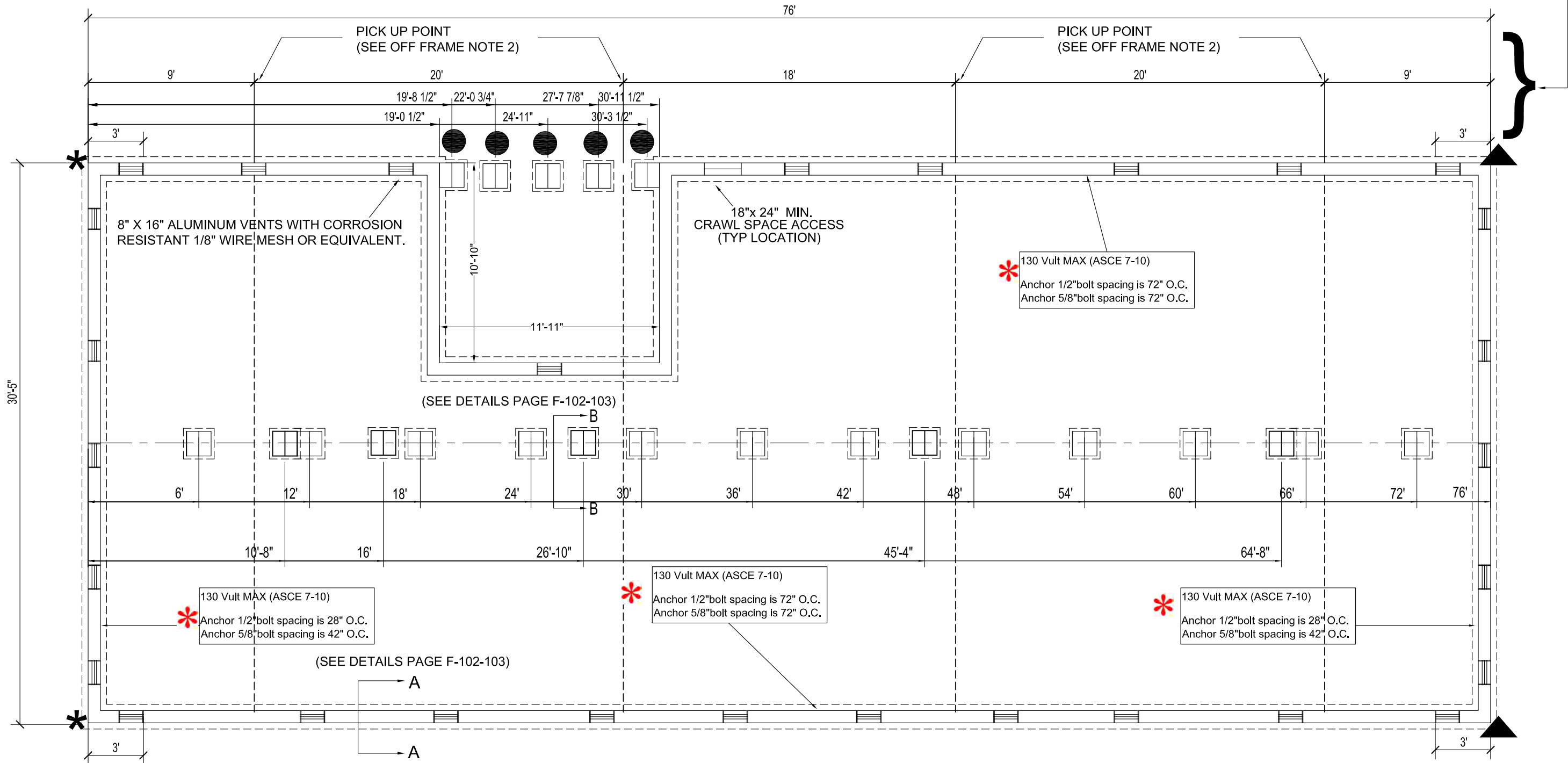
F-101

PAGE:

FOUNDATION VENT TO PROVIDE 1sf OF VENT
PER EACH 1500sf OF CRAWL SPACE AREA
2176 SF / 150 SF = 14.5
8"x16" (TYP) VENT= APPROX .5 SF
14.5/ .5 = APPROX. 29 VENTS

- NOTES:
1. SPLICES IN MATE LINE GIRDERS MUST FALL ON A SUPPORT PIER.
 2. PIERS OR POSTS TO BE SPACED PER CHART AND LOCATED UNDER OPENING COLUMN SUPPORTS WHEN OPENING WIDTH IS 4' OR GREATER.
 3. FOR SEISMIC DESIGN CATEGORY D0, D1 & D2 FOUNDATION DESIGNED BY OTHERS

- OFF FRAME LIFTING NOTES:
1. IF LIFTING POINTS ARE MORE THAN 32' FEET APART (TYPICAL OF UNIT LENGTHS GREATER THAN 64'), A THIRD AND FOURTH LIFTING POINT IS REQUIRED. THIRD AND FOURTH LIFTING POINT IS TO BE BETWEEN OUTER LIFTING POINTS AND MEET THE REQUIREMENTS OF NOTE 2.
 2. PICK UP POINT MUST NOT BE LOCATED UNDER A WALL OPENING.
IF AN OPENING CANNOT BE AVOIDED, A TEMPORARY WALL MUST BE INSTALLED.



NOTE:
1" ADDED TO OVERALL WIDTH TO ACCOMMODATE LIFT STRAPS

***** HOLD DOWN CAPABLE OF 1351 LB OF UPLIFT
INSTALL PER MANUFACTURE INSTRUCTIONS

***** HOLD DOWN CAPABLE OF 1607 LB OF UPLIFT
INSTALL PER MANUFACTURE INSTRUCTIONS

***** HOLD DOWN CAPABLE OF 3742 LB OF UPLIFT
INSTALL PER MANUFACTURE INSTRUCTIONS

PROJECT



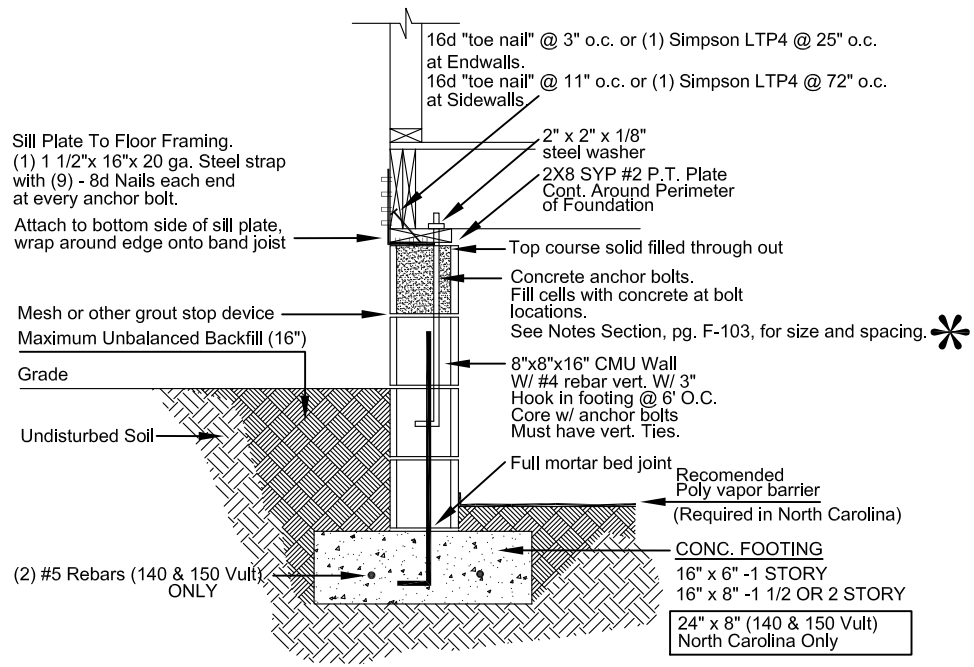
TITLE:
PERIMETER FOUNDATION DETAILS

MODEL:
23-3276-16
30'-4" x 76'-0" 4 BEDROOM 3 BATH

DATE: 01-13-16
SCALE: NTS
DRAWN BY: STAFF
REVISED:

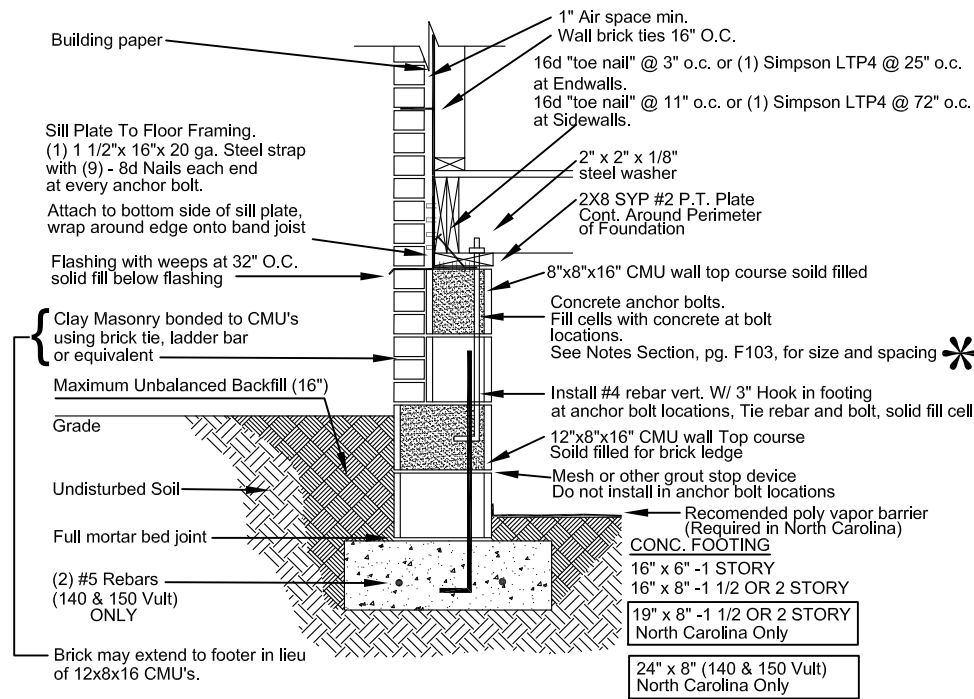
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F-102

PAGE:



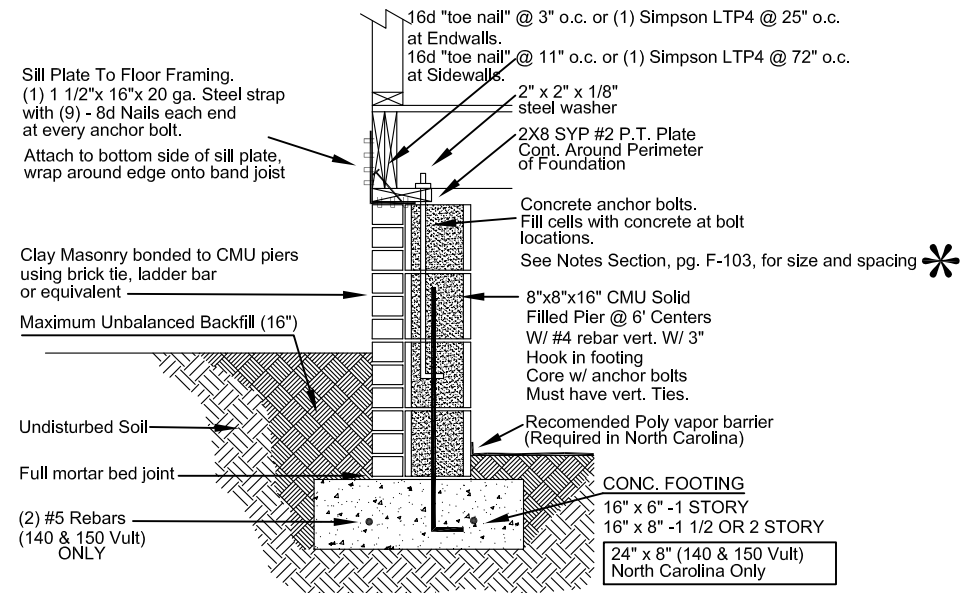
● If nail spacing is 2" or less, plates are recommended, since plate splitting may occur.

SECTION A-A
BLOCK WALL



● If nail spacing is 2" or less, plates are recommended, since plate splitting may occur.

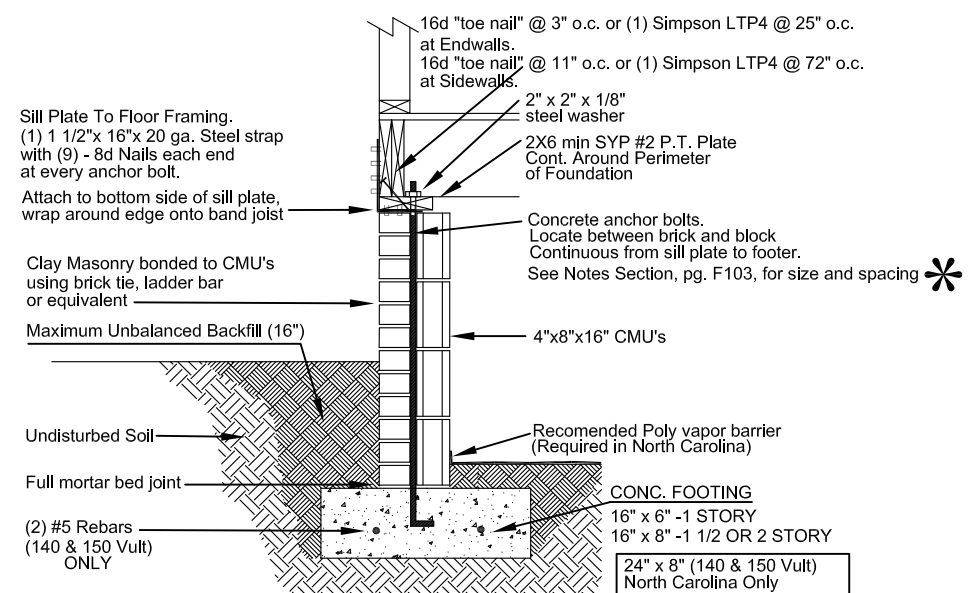
SECTION A-A
BRICK VENEER WALL



MAX 48" HEIGHT

● If nail spacing is 2" or less, plates are recommended, since plate splitting may occur.

SECTION A-A
PIER & CURTAIN WALL



● If nail spacing is 2" or less, plates are recommended, since plate splitting may occur.

SECTION A-A
CONTINUOUS 8" MASONRY WALL

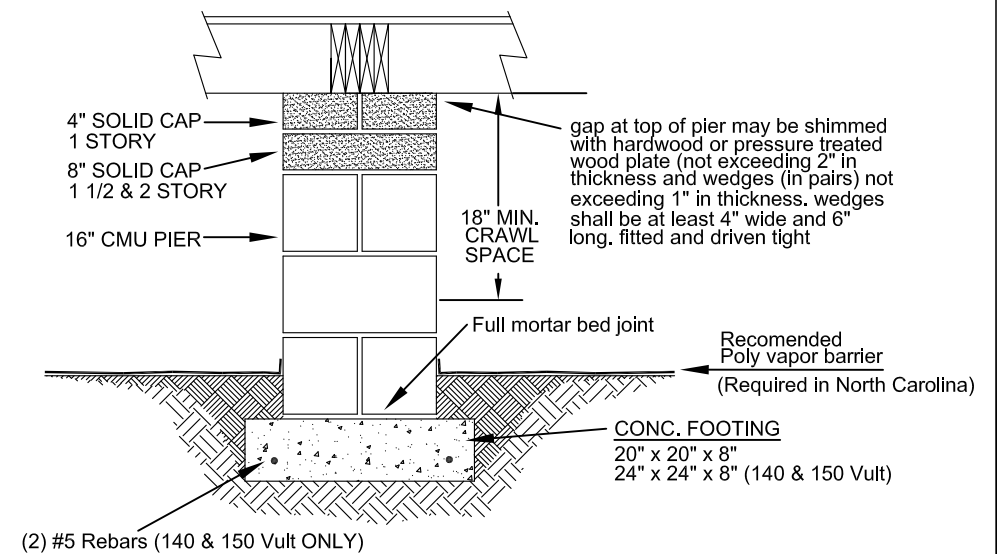
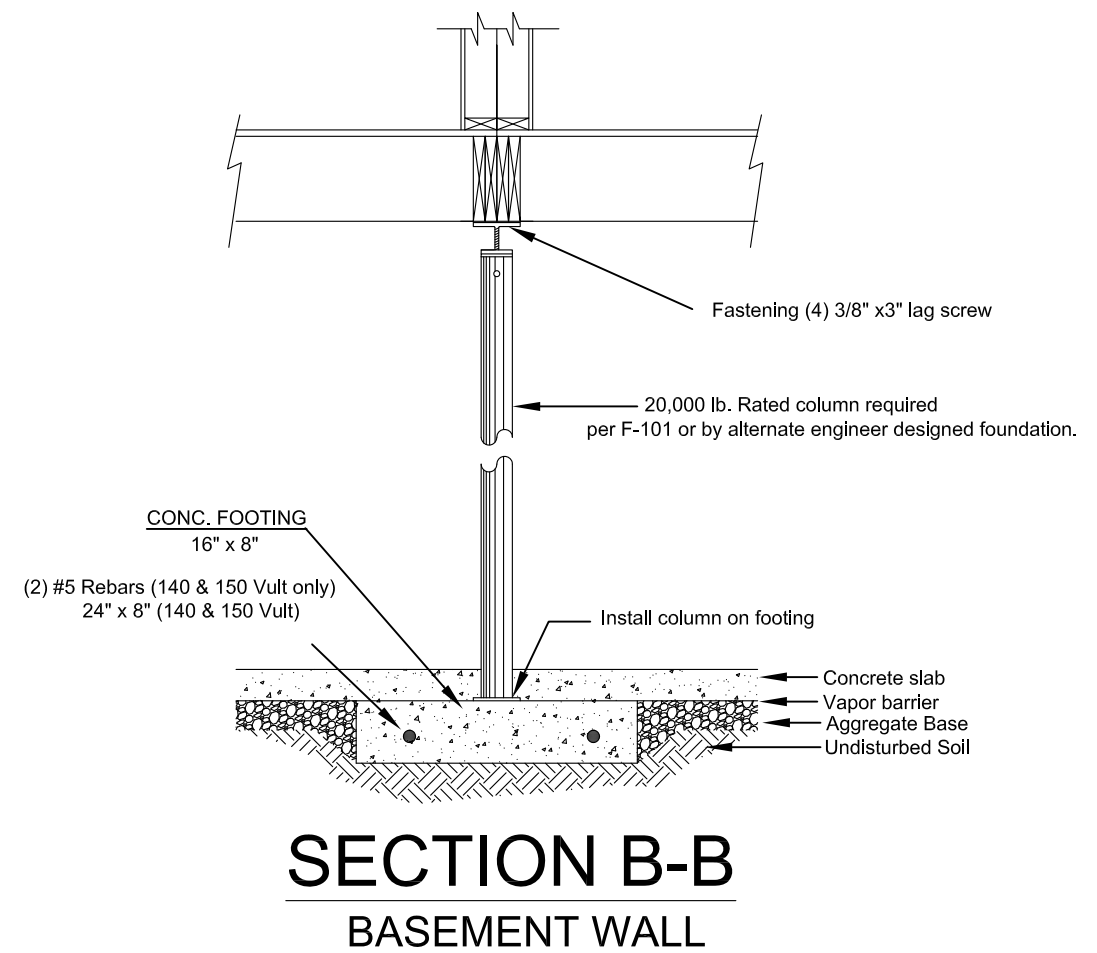
TYPICAL FOUNDATION NOTES :

- Foundation and its structural elements shall be capable of accommodating all superimposed live, dead, and other loads in accordance with applicable codes and all lateral loads in accordance with accepted design practices.
- Lots shall be provided with adequate drainage and shall be graded so as to drain surface water away from foundation walls - by lot owner.
- Materials shall conform to applicable standards and codes.
- Concrete subject to weathering shall have a minimum compressive strength and air content in accordance with code - 2500 psi concrete minimum.
- All exterior walls, bearing walls, columns, and piers shall be supported on continuous solid concrete footings which shall be of sufficient design to support safely the loads imposed as determined from the character of the soil, and shall in all cases, extend below the frost line. Top surface shall be level and bottom not exceeding 1 in 40 slope. Footings shall be not less than shown on drawings for 2000 psf soil.
- Foundation walls shall be constructed in accordance with the code and not less than as shown on the Drawings.
- Foundations shall extend not less than 12 inches below the finished natural grade or engineered fill and in no case less than the frost line depth. Footings on soil with a lower allowable soil pressure shall be designed in accordance with accepted engineering practice. However, where there is evidence that the groundwater table can rise to within 6 inches of the finished grade at the building perimeter or where there is evidence that the surface water does not readily drain from the building site, the building official may require that the grade in the under-floor space be as high as the outside finished grade, unless an approved drainage system is provided. Termite shields and/or protection shall be provided as per code. Local and state requirements for footings may exceed that shown on drawings. If there are any questions, contact your local building inspections department.
- Crawl space ventilation and access space shall be by openings in the foundation walls {cross-ventilation as required by code and/or as follows}. Provide 1 sq. Ft. of ventilation area for each 150 sq. Ft. of crawl space floor area. Use 8"x16" foundation vents with corrosion resistant wire mesh (1/8" mesh) or equal.
- Mortar shall be type "m" or "s".
- Minimum soil bearing capacity shall be 2000 psf.
- Anchorbolt length to be: masonry wall-20",
- Poured concrete footing w/two #5 rebar (120 & 130 only) continuous w'a minimun 25" lap. Place bars 3" from bottom.
- This foundation plan is provided for reference as a typical. Actual foundation conditions must be evaluated for applicability if this plan is to be used. Alternate foundation plans may be designed by others in accordance with the requirements of the jurisdiction having authority.

✱ Vertical wall reinforcement or continuous anchorage is as follows:

- Sidewall anchor bolt spacing see F-101
- Endwall anchor bolt spacing see F-101

There shall be a minimum of (2) bolts per sill plate section, with one bolt located not more than 12" from each end of the plate section.



CHAMPION

4055 HWY. 401 SOUTH LILLINGTON, NC 27546

PROJECT



TITLE:
PERIMETER
FOUNDATION
DETAILS

MODEL:
23-3276-16
30'-4" x 76'-0" 4 BEDROOM 3 BATH

DATE: 01-13-16
SCALE: NTS
DRAWN BY: STAFF
REVISED:

REVISIONS

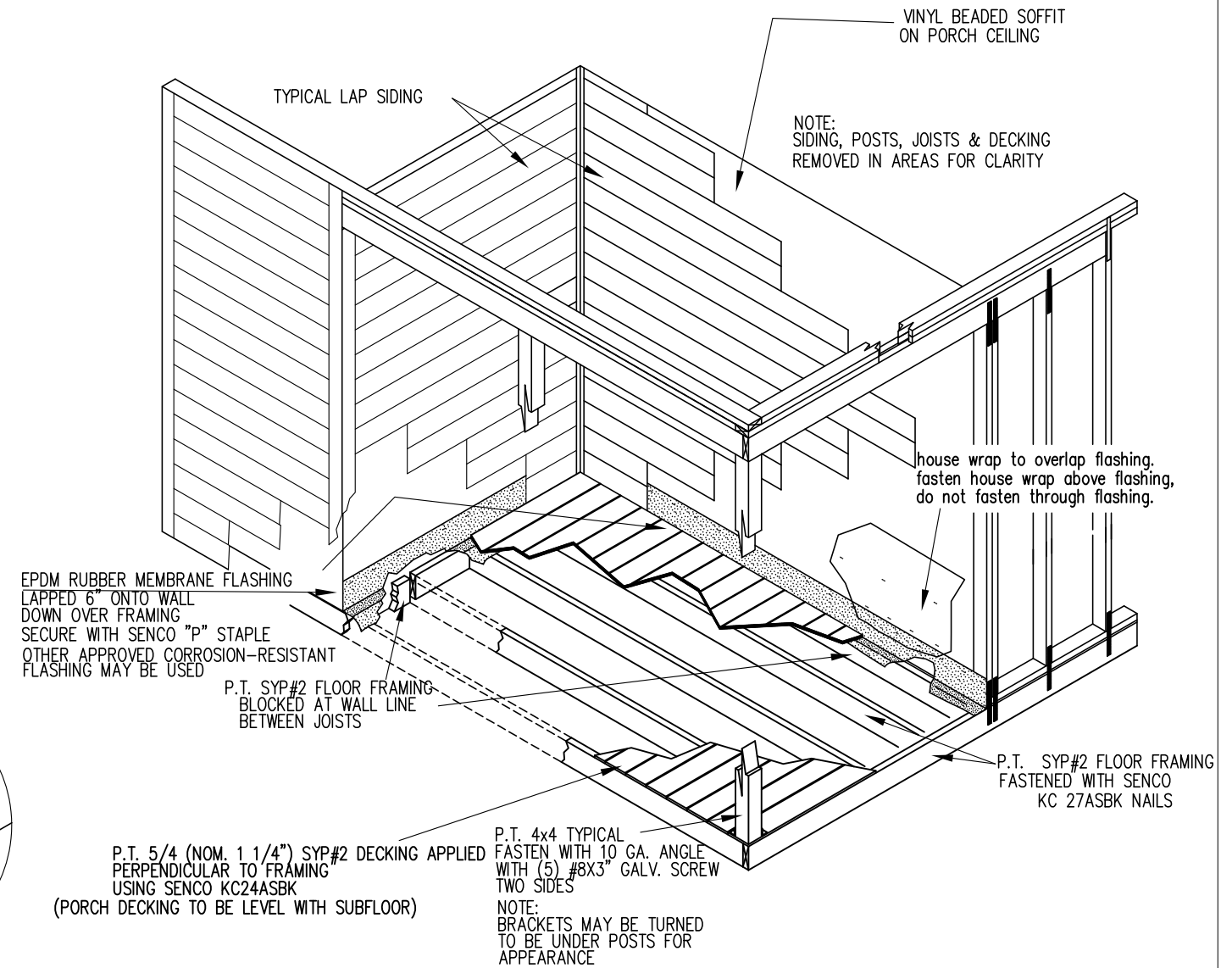
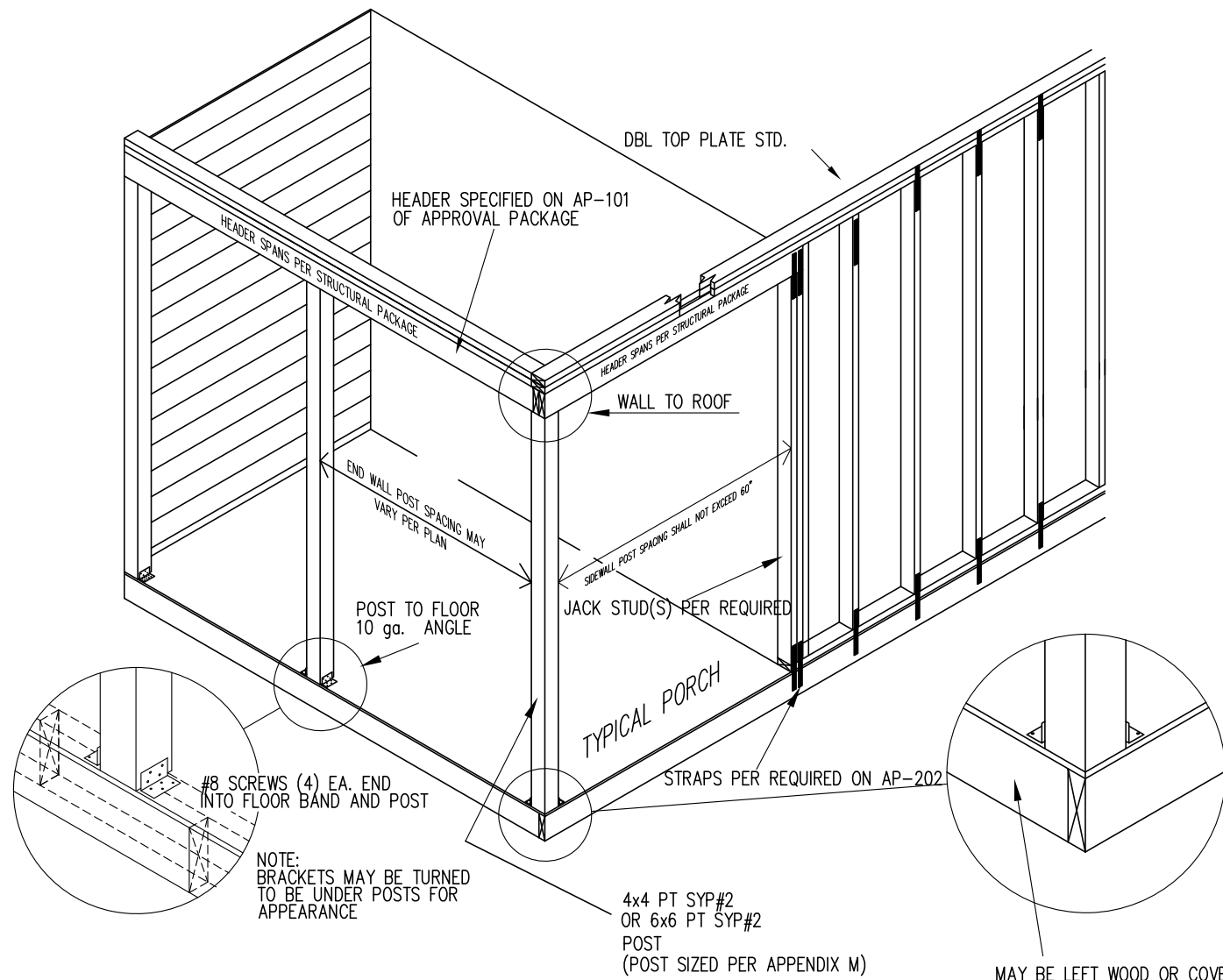
SHEET NO:

F-103

PAGE:

PORCH TYPICAL

NOTE:
IF HANDRAILS ARE TO BE INCLUDED/INSTALLED SEE PAGE AP-101 OF APPROVAL PACKAGE



NOTE:
NC -- PORCHES AND DECKS TO COMPLY WITH APPENDIX M

CHAMPION
MANUFACTURED BEAUTIFULLY™
755 W. BIG BEAVER ROAD, SUITE 1000, TROY, MI 48064
PHONE: 248-614-8200

PROJECT

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PFS APPROVED
Shannon Barry
DATE: 12/4/19
Approval Limited to Factory Built Porch Only
PFS CORPORATION
Cottage Grove, WI

TITLE:	CONSTRUCTION DETAILS
MODEL:	PORCH CONSTRUCTION TYPICAL PORCH DETAILS
DATE:	02-22-06
SCALE:	NTS
DRAWN BY:	STAFF
REVISED:	
REVISIONS	
1)	REV. PORCH HEADER 02-26-07 SA
SHEET NO:	3.6
PAGE:	

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	U-Factor	UA
Door 2: Glass SHGC: 0.28 Orientation: Back	40			0.350	14
Wall 3: Wood Frame, 16" o.c. Orientation: Right side	273	15.0	0.0	0.077	18
Window: 4638: Vinyl/Fiberglass Frame, Double Pane with Low-E SHGC: 0.28 Orientation: Right side	12			0.350	4
Window: 3036: Vinyl/Fiberglass Frame, Double Pane with Low-E SHGC: 0.28 Orientation: Right side	8			0.350	3
Door 3: Solid Orientation: Right side	20			0.140	3
Wall 4: Wood Frame, 16" o.c. Orientation: Left side	273	15.0	0.0	0.077	20
Window: 3661: Vinyl/Fiberglass Frame, Double Pane with Low-E SHGC: 0.28 Orientation: Left side	15			0.350	5
Floor 1: All-Wood Joist/Truss:Over Unconditioned Space	2,176	30.0	0.0	0.033	72

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 2015 IECC requirements in REScheck Version 4.6.5 and to comply with the mandatory requirements listed in the REScheck Inspection Checklist.

JON TYNDALL

12-2-19

Name - Title

Signature

Date





2015 IECC Energy Efficiency Certificate

Insulation Rating	R-Value
Above-Grade Wall	15.00
Below-Grade Wall	0.00
Floor	30.00
Ceiling / Roof	38.00
Ductwork (unconditioned spaces):	_____

Glass & Door Rating	U-Factor	SHGC
Window	0.35	0.28
Door	0.35	0.28

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

Name: JON TYNDALL Date: 12-2-19

Comments





APPENDIX E (E-1 THROUGH E-4) RESIDENTIAL REQUIREMENTS FOR ENERGY CONSERVATION

This appendix is a North Carolina addition and not part of the 2015 *International Residential Code*.
There will be no underlined text.

(The provisions contained in this appendix are adopted as part of this code.)

APPENDIX E-1 Energy Efficiency Certificate (Section N1101.14)

ENERGY EFFICIENCY CERTIFICATE (N1101.14)

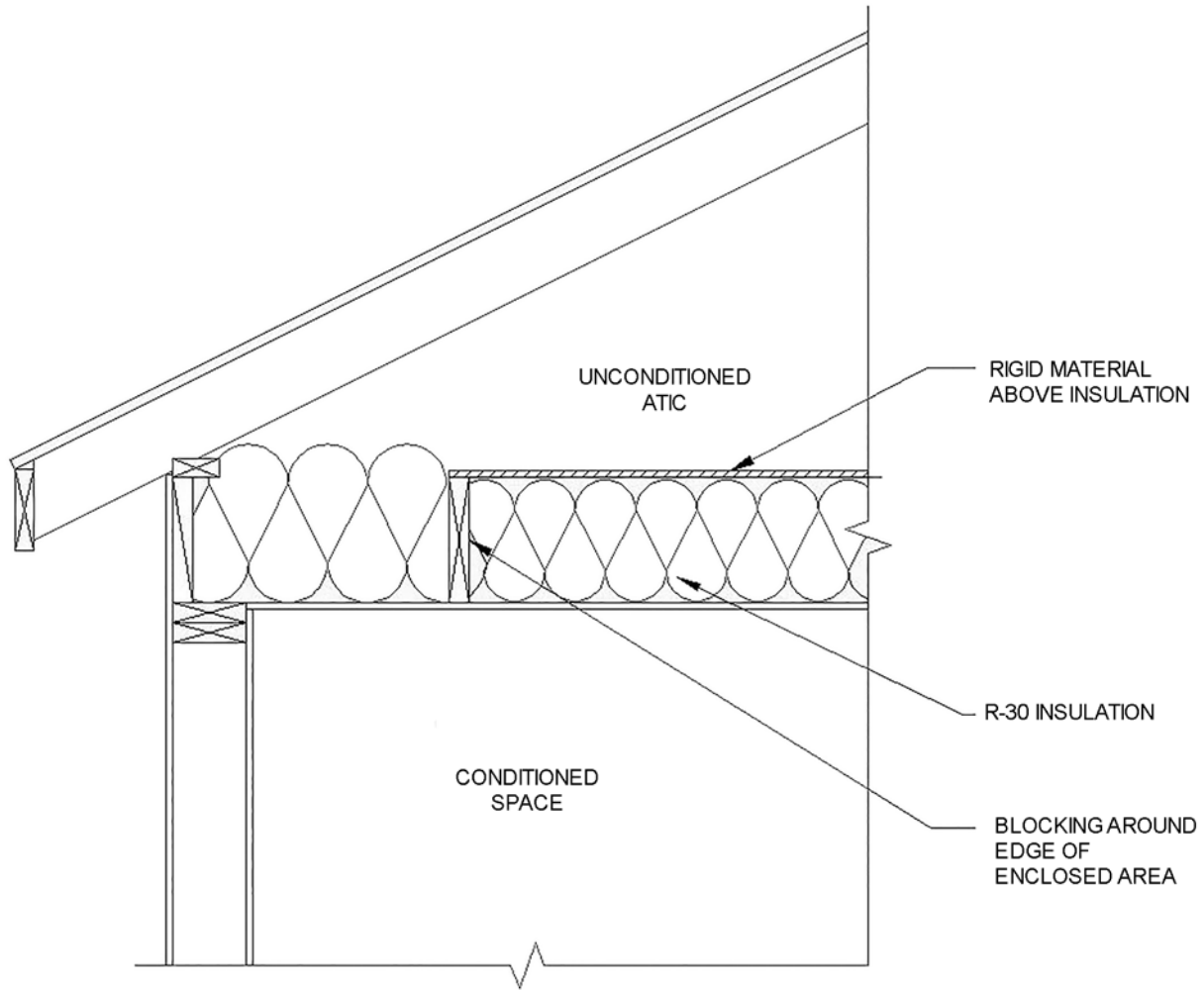
Builder, Permit Holder or Registered Design Professional	
Print Name:	
Signature:	
Property Address:	
Date:	
Insulation Rating – List the value covering largest area to all that apply	R-Value
Ceiling/roof:	R- 38
Wall:	R- 15 min
Floor:	R- 22
Closed crawl space wall:	R-
Closed crawl space floor:	R-
Slab:	R-
Basement wall:	R-
Fenestration:	
U-Factor	0.35
Solar Heat Gain Coefficient (SHGC)	0.28
Building Air Leakage	
<input type="checkbox"/> Visually inspected according to N1102.4.2.1 OR	
<input type="checkbox"/> Building air leakage test results (Sec. N1102.4.2.2) ACH50 [Target: 5.0] or CFM50/SFSA [Target: 0.30]	
Name of Tester/Company:	
Date:	Phone:
Ducts:	
Insulation	R- 8 flex only by factory
Total duct leakage test result (Sect. N1103.3.3) Circle one: Total duct leakage test (CFM25 Total/100SF) [Target: 5] or Duct leakage to the outside test (CFM25 Total/100SF) [Target: 4]	
Name of Tester or Company:	
Date:	Phone:
Certificate to be displayed permanently	

**APPENDIX E-2
INSULATION AND AIR SEALING DETAILS**



APPENDIX E-2.1

N1102.2.1 Ceilings with attic spaces: Exception for fully enclosed attic floor systems



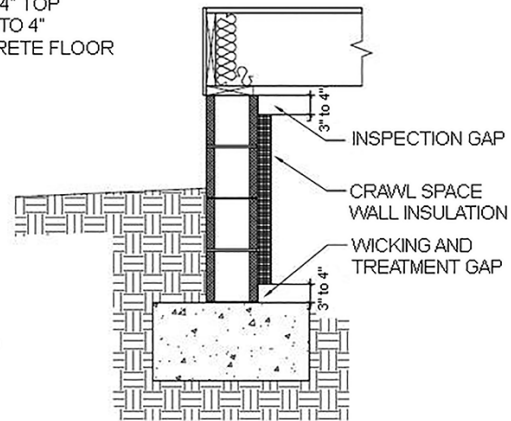
SECTION VIEW OF CEILING WITH ATTIC SPACE



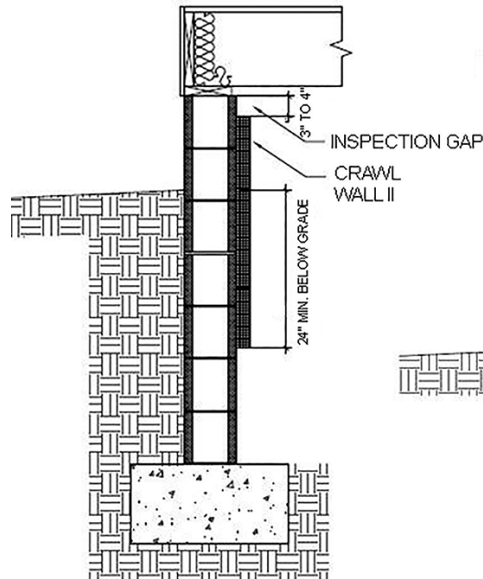
APPENDIX E-2.2

N1102.2.11 Closed crawl space walls. Insulation illustrations

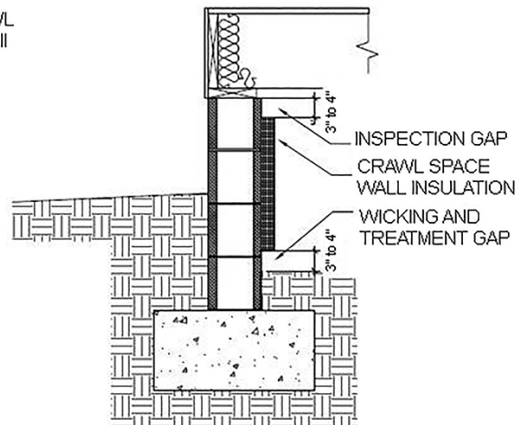
FOAM OR POROUS INSULATION HAS 3" TO 4" TOP INSPECTION GAP AND EXTENDS DOWN 3" TO 4" ABOVE TOP OF WALL FOOTING OR CONCRETE FLOOR



FOAM OR POROUS INSULATION HAS 3" TO 4" TOP INSPECTION GAP AND EXTENDS DOWN 24" BELOW GRADE



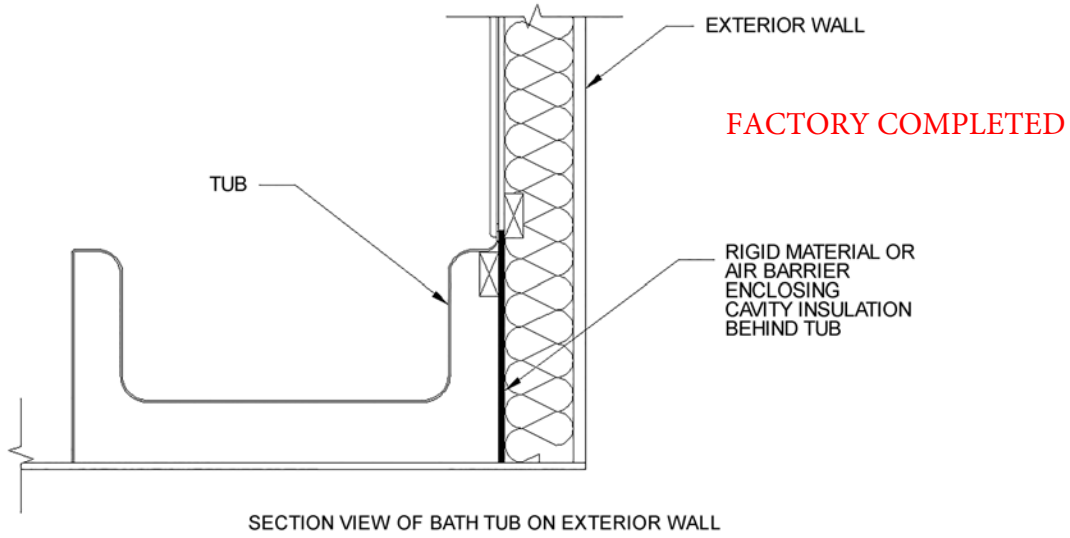
FOAM OR POROUS INSULATION HAS 3" TO 4" TOP INSPECTION GAP AND EXTENDS DOWN 3" TO 4" ABOVE INTERIOR GROUND SURFACE



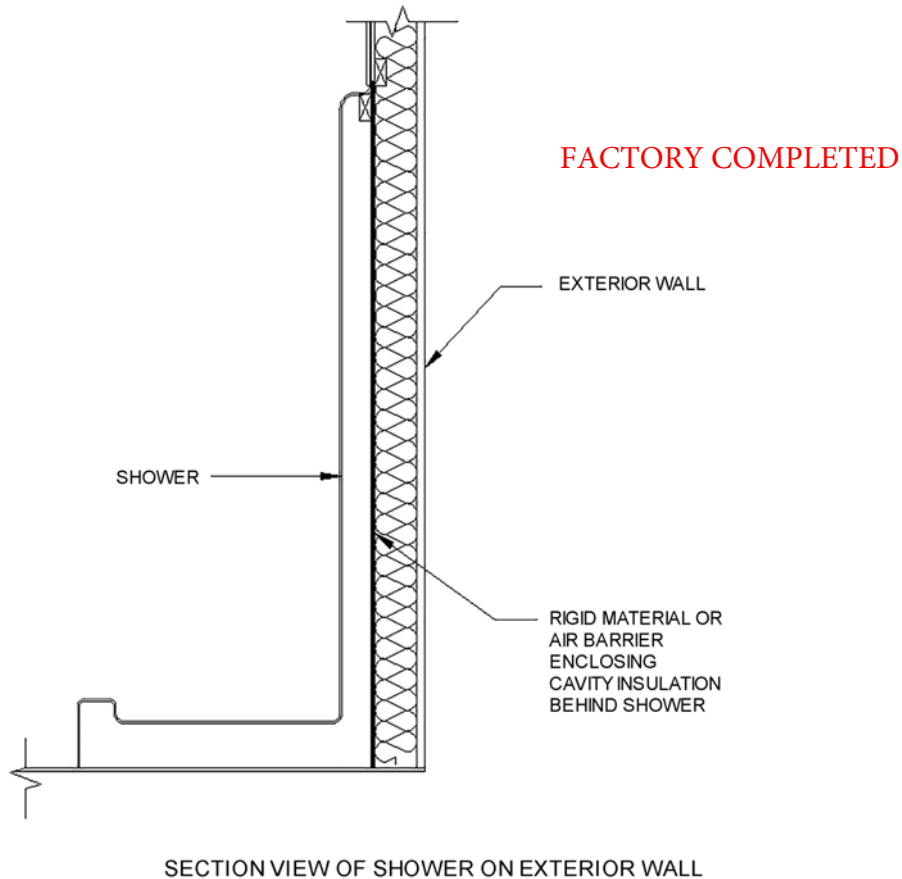
APPENDIX E-2.3



N1102.2.14 Framed cavity walls. Insulation enclosure—1. Tubs

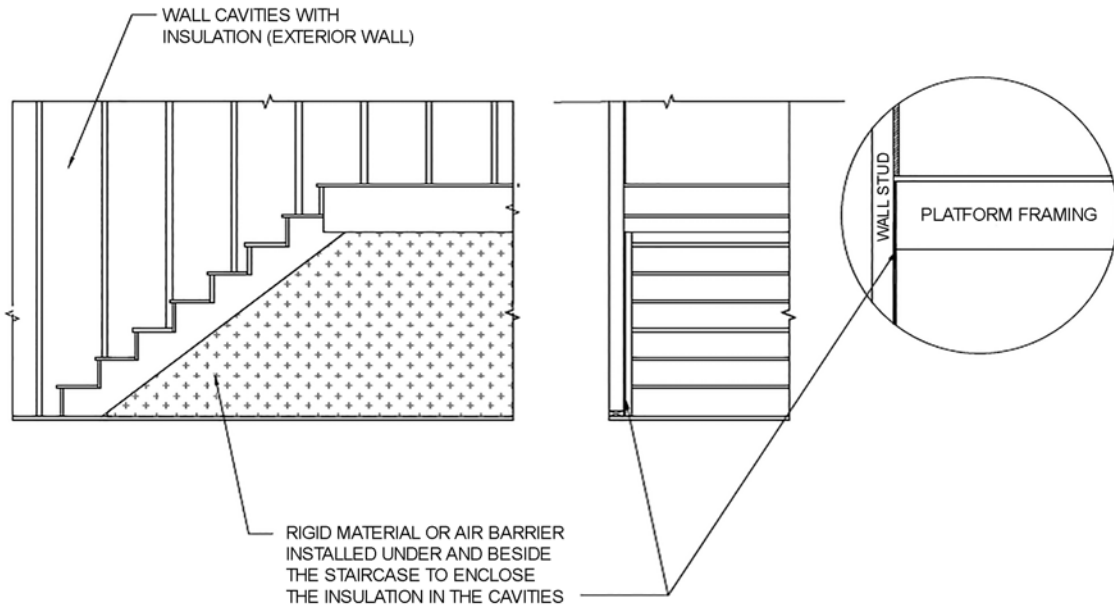


N1102.2.14 Framed cavity walls. Insulation enclosure—2. Showers



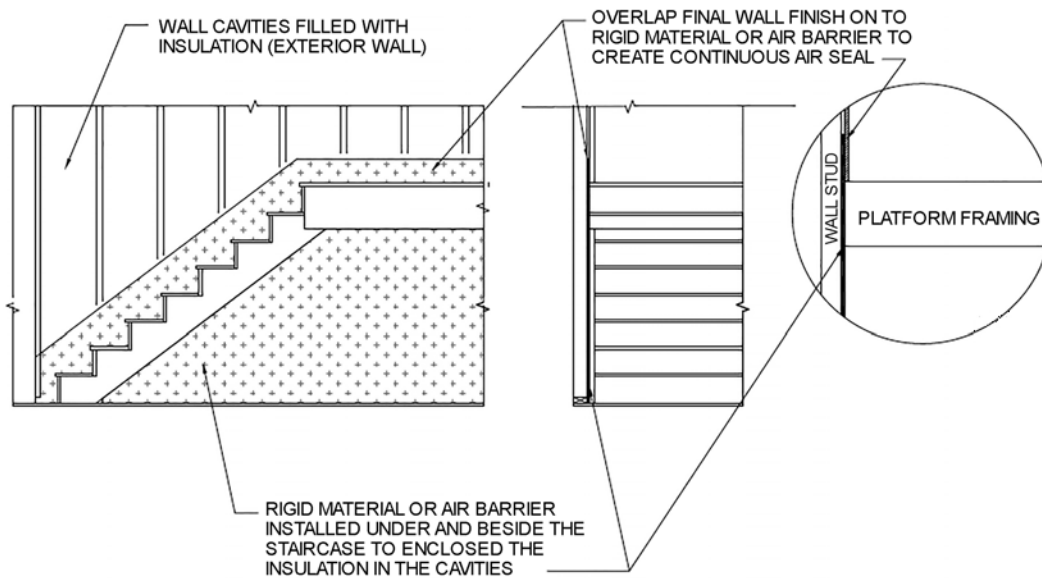
N1102.2.14 Framed cavity walls. Insulation enclosure—3. Stairs

FACTORY COMPLETED, IF APPLICABLE



SECTION VIEW OF INTERIOR STAIRCASE ON EXTERIOR WALL (OPTION 1)

N1102.2.14 Framed cavity walls. Insulation enclosure—3. Stairs

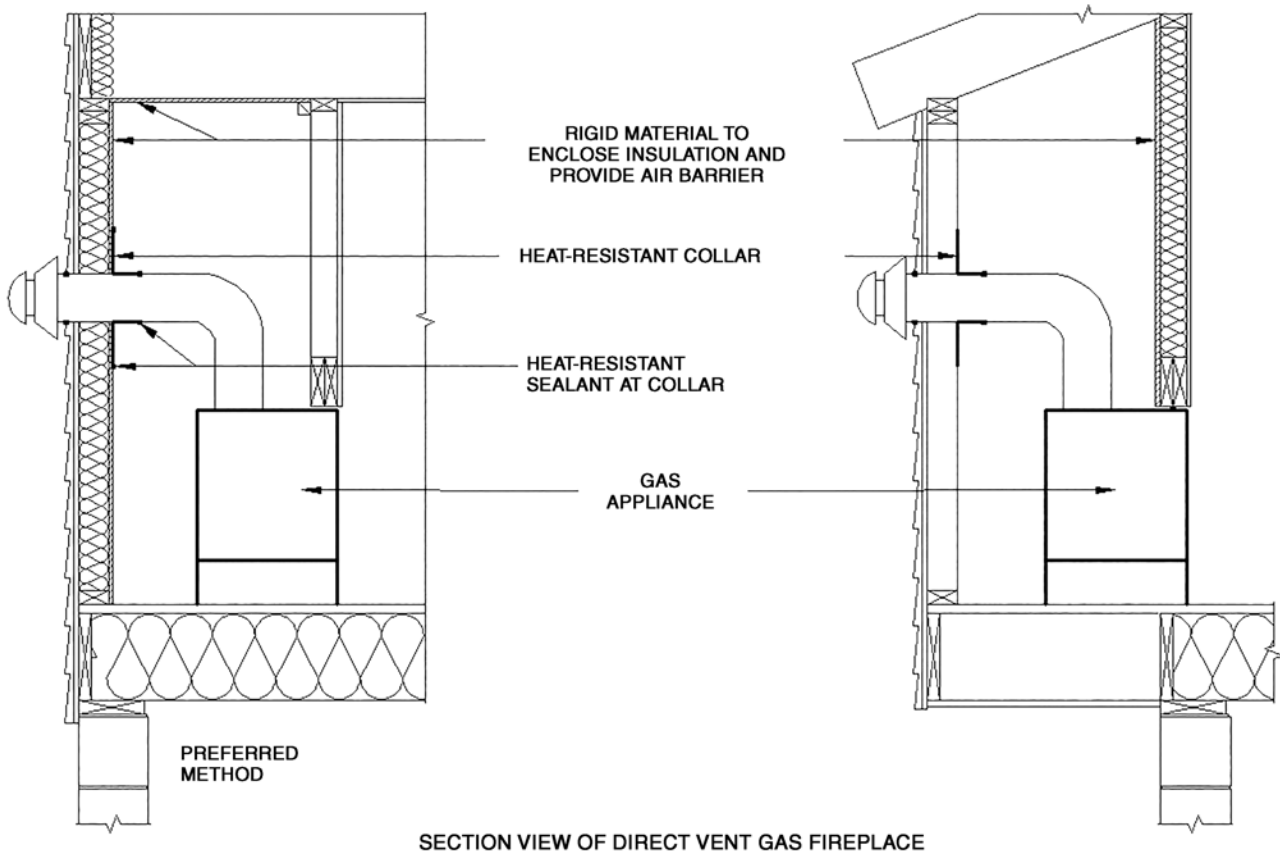


SECTION VIEW OF INTERIOR STAIRCASE ON EXTERIOR WALL (OPTION 2)



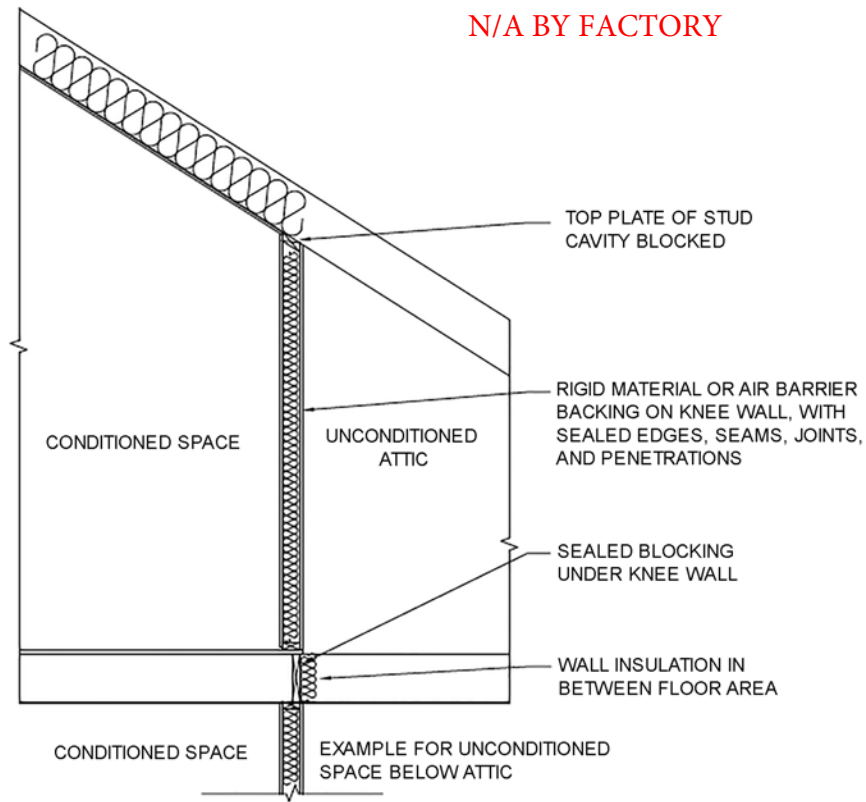
N1102.2.14 Framed cavity wall. Insulation enclosure—4. Direct vent gas fireplace

N/A BY FACTORY



N1102.2.15 Framed cavity walls. Insulation enclosure—5. Walls that adjoin attic spaces

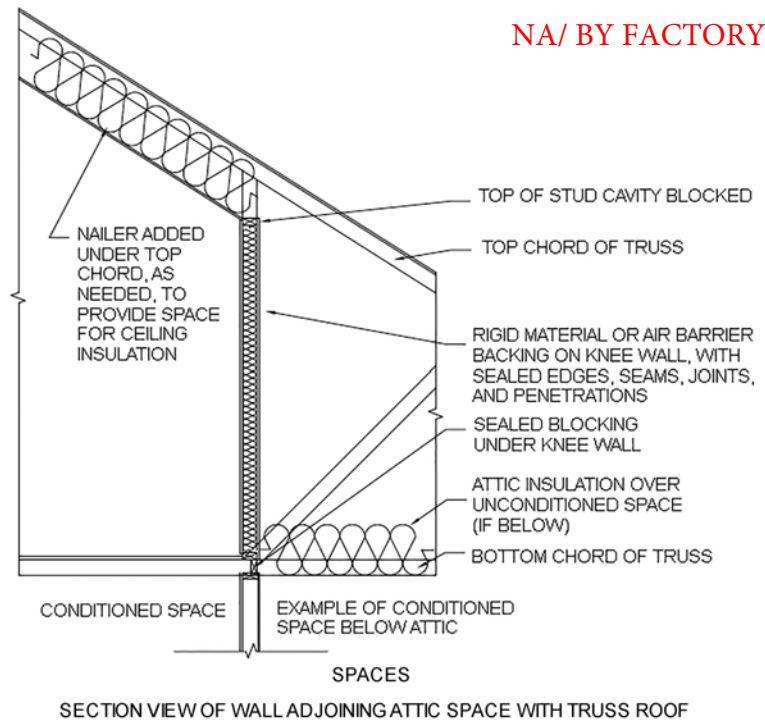
N/A BY FACTORY



SECTION VIEW OF WALL ADJOINING ATTIC SPACE WITH STICK FRAMED ROOF



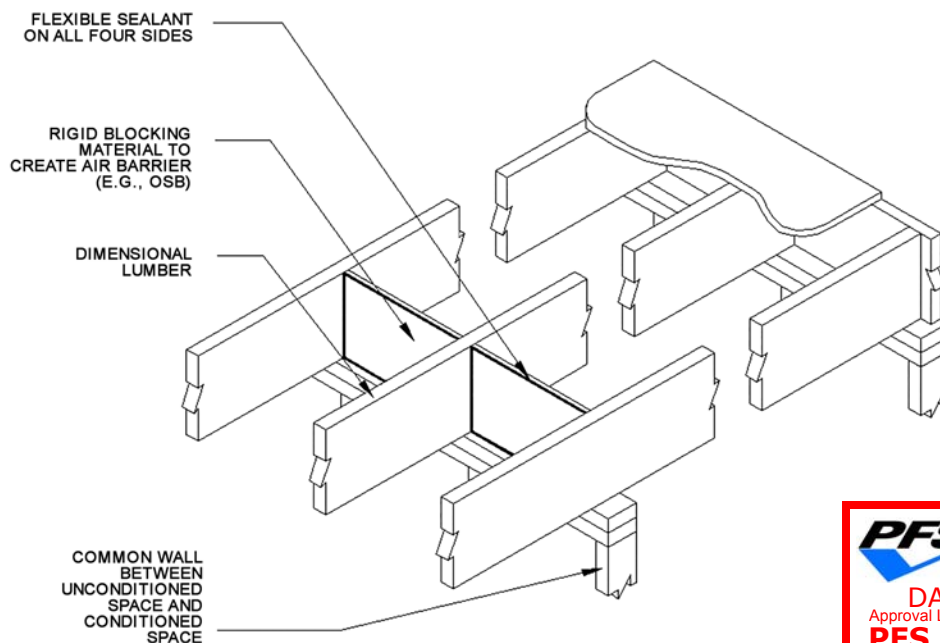
N1102.2.15 Framed cavity walls. Insulation enclosure—5. Walls that adjoin attic spaces



APPENDIX E-2.4

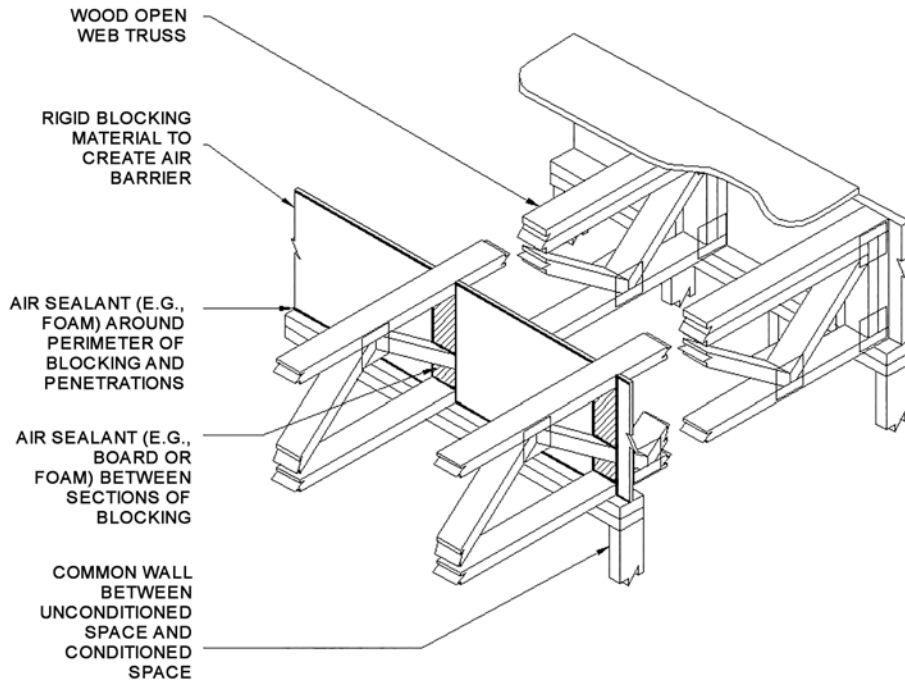
N1102.4.1 Building thermal envelope.—1. Block and seal floor/ceiling systems

N/A BY FACTORY



N1102.4.1 Building thermal envelope.—1. Block and seal floor/ceiling systems

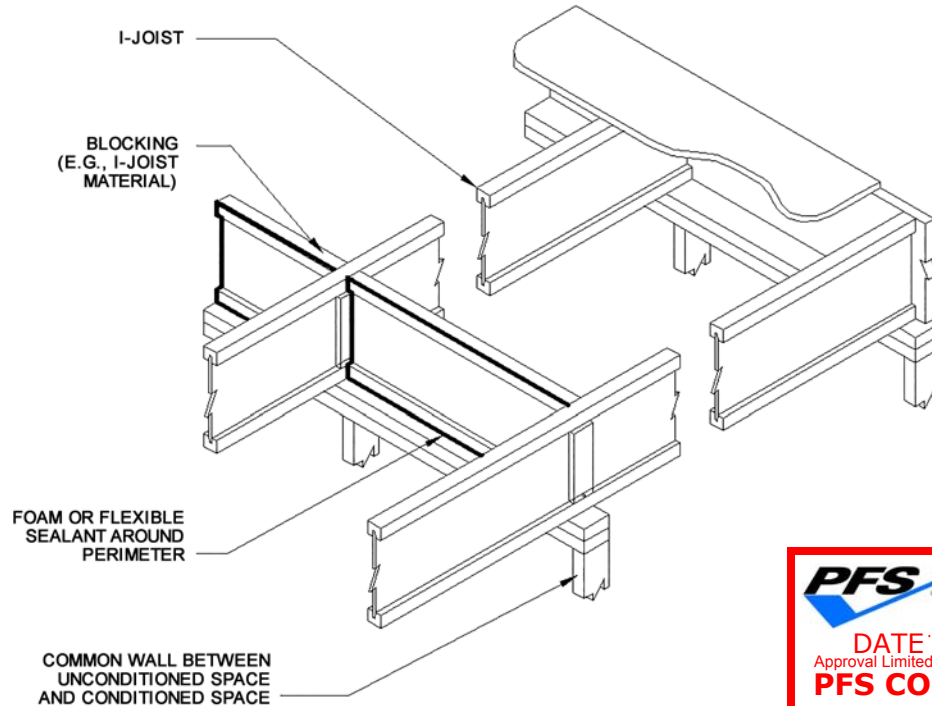
N/A BY FACTORY



ISOMETRIC VIEW OF WOOD TRUSS FLOOR/CEILING SYSTEM ABOVE COMMON WALL BETWEEN UNCONDITIONED AND CONDITIONED SPACE

N1102.4.1 Building thermal envelope. —1. Block and seal floor/ceiling systems

N/A BY FACTORY

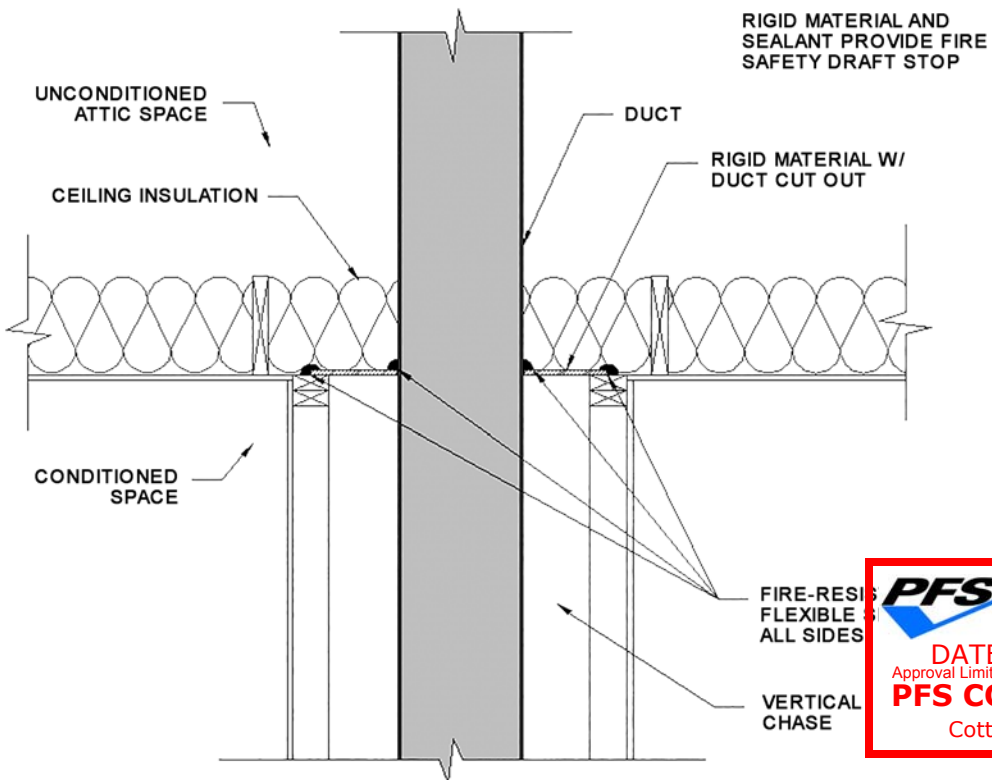
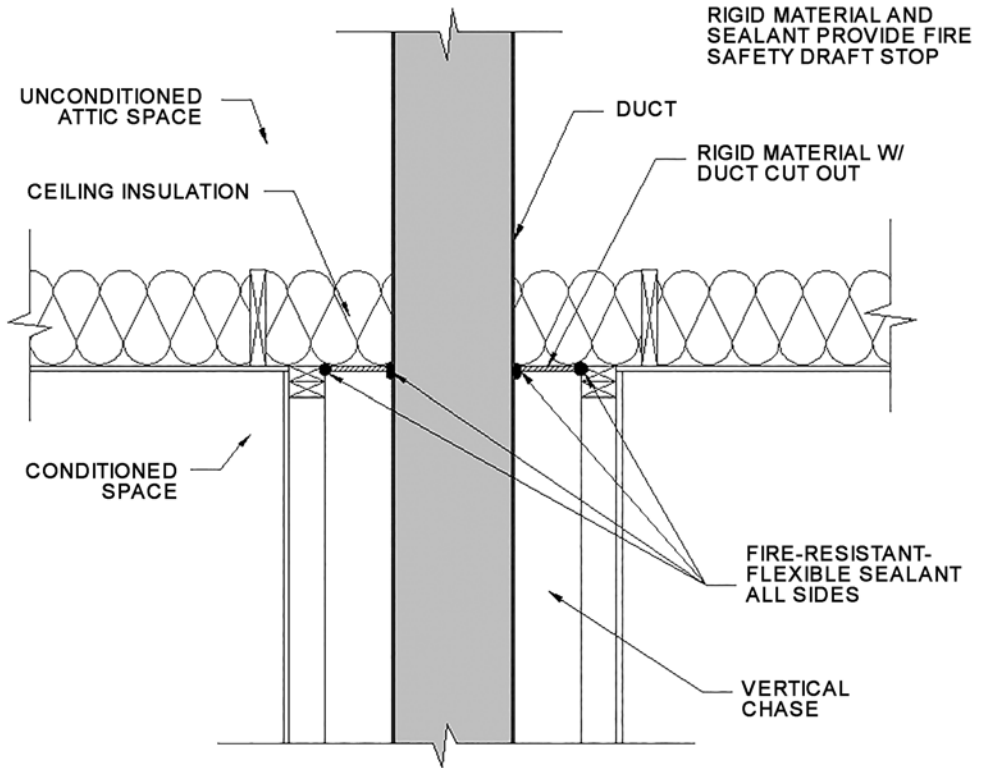


ISOMETRIC VIEW OF I-JOIST FLOOR/CEILING SYSTEM ABOVE COMMON WALL BETWEEN UNCONDITIONED AND CONDITIONED SPACE



N1102.4.1 Building thermal envelope—2. Cap and seal shafts and chases

BY OTHERS IF APPLICABLE



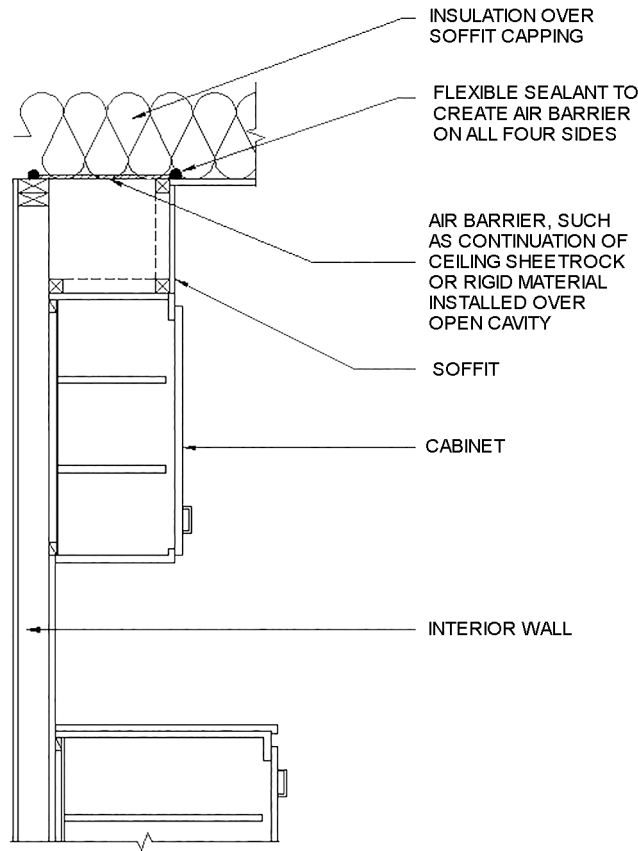
PFS *APPROVED*
Sharron Barry

DATE: 12/4/19
 Approval Limited to Factory Built Portion Only
PFS CORPORATION
 Cottage Grove, WI

SECTION VIEWS OF DUCT PENETRATING INTO ATTIC

N1102.4.1 Building thermal envelope. —3. Cap and seal soffit or dropped ceiling

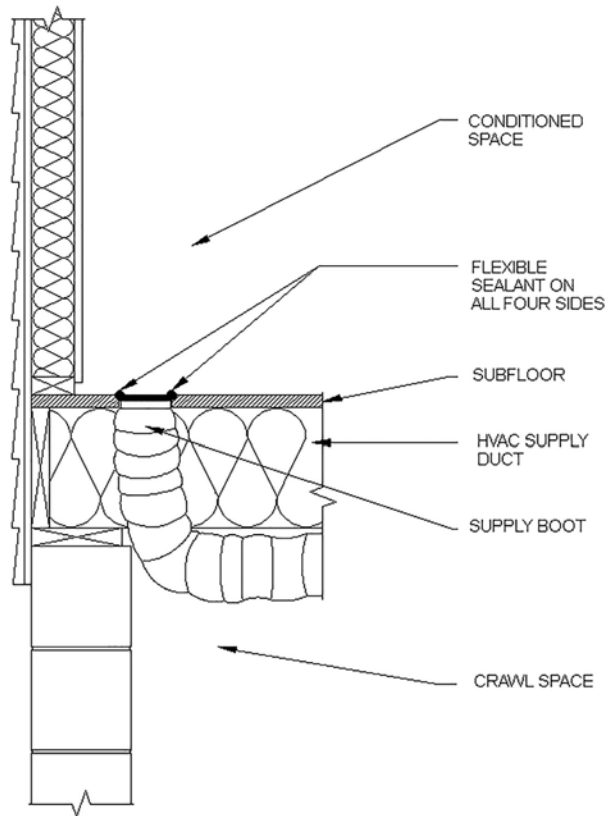
N/A



SECTION VIEW OF SOFFIT OVER CABINET

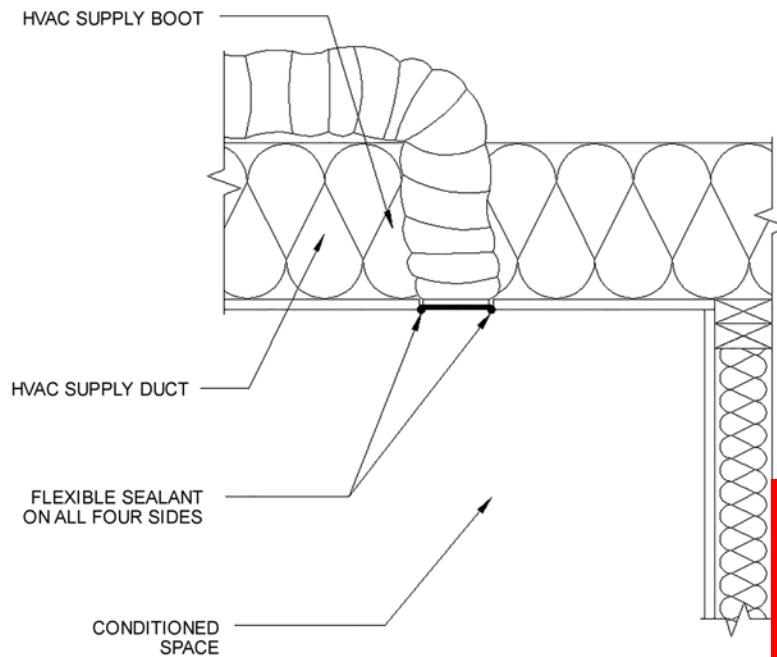


N1102.4.1 Building thermal envelope.—4. Seal HVAC boot penetration—floor **FACTORY COMPLETED**



SECTION VIEW OF FLOOR HVAC BOOT PENETRATION

N1102.4.1 Building thermal envelope.—4. Seal HVAC boot penetration—ceiling



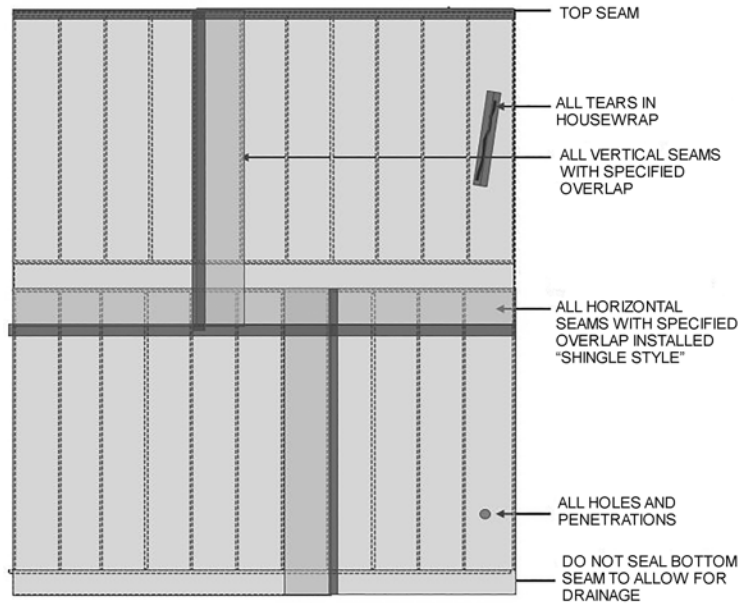
SECTION VIEW OF CEILING HVAC BOOT PENETRATION

PFS **APPROVED**
Sharron Barry
 DATE: 12/4/19
 Approval Limited to Factory Built Portion Only
PFS CORPORATION
 Cottage Grove, WI

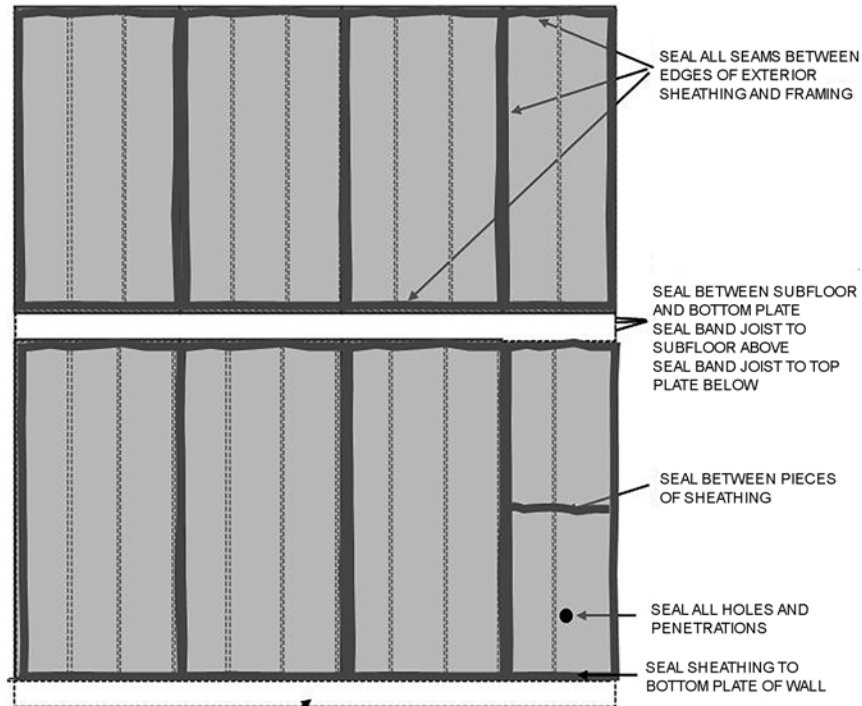
MUST BE INSPECTED ON SITE BY OTHERS FOR TEARS

N1102.4.1 Building thermal envelope.—5. Sealed exterior air barrier with housewrap

Follow manufacturer’s instructions for sealing air barrier-rated housewrap, including choice of materials, to provide an exterior air barrier at the following locations:



N1102.4.1 Building thermal envelope.—5. Sealed exterior air barrier with sheathing

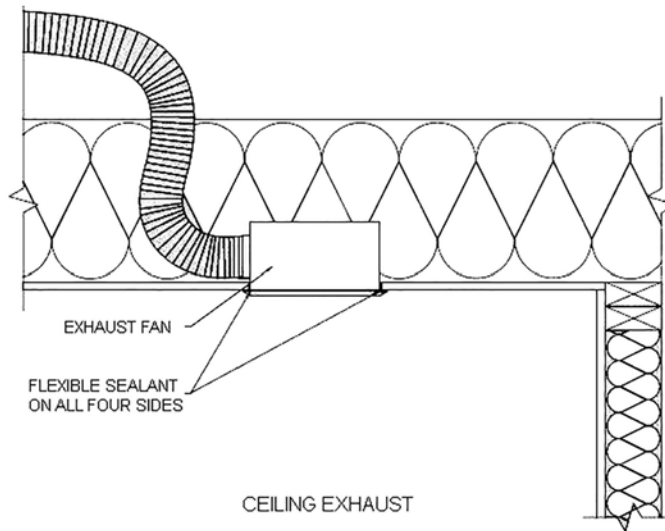


- 1) IF FIRST FLOOR IS SLAB-ON-GRADE, INSTALL SEAL SEALER UNDER BOTTOM PLATE OF EXTERIOR WALL.
- 2) IF FIRST FLOOR IS OVER UNCONDITIONED CRAWL SPACE OR BASEMENT, INSTALL SEAL SEALER UNDER BOTTOM PLATE AND SEAL SUBFLOOR TO BAND JOIST.
- 3) IF FIRST FLOOR IS OVER CONDITIONED BASEMENT OR CLOSED CRAWL SPACE WITH CRAWL SPACE WALL INSULATION BELOW, SEAL BETWEEN SUBFLOOR AND BOTTOM PLATE, SEAL BAND JOIST TO SUBFLOOR ABOVE, AND SEAL BAND JOIST TO TOP PLATE BELOW.



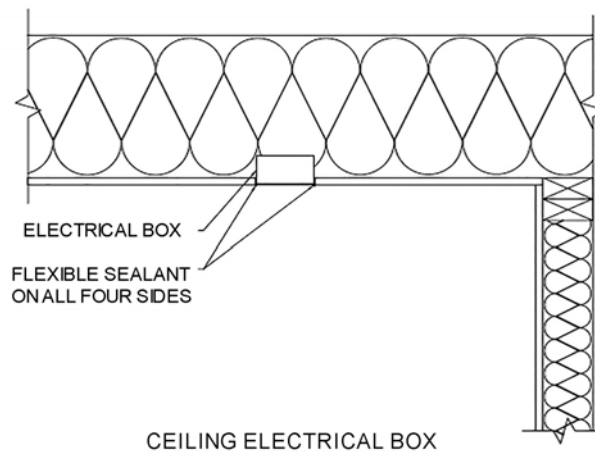
N1102.4.2.1 Visual inspection option. —Table N1102.4.2 Seal ceiling mechanical box penetrations

FACTORY COMPLETED



N1102.4.2.1 Visual inspection option. — Table N1102.4.2 Seal ceiling electrical box penetrations

FACTORY COMPLETED



**APPENDIX E-3:
SAMPLE WORKSHEETS FOR RESIDENTIAL AIR AND DUCT LEAKAGE TESTING**

**APPENDIX E-3A
AIR SEALING: VISUAL INSPECTION OPTION (Section N1102.4.2.1)**

SAMPLE WORKSHEET

N1102.4.2 Air sealing. Building envelope air tightness shall be demonstrated by Section N1102.4.2.1 or N1102.4.2.2.

N1102.4.2.1 Visual inspection option. Building envelope tightness shall be considered acceptable when items providing insulation enclosure in Section N1102.2.14 and enclosure and

air sealing in Section N1102.2.15 and air sealing in Section N1102.4.1 are addressed and when the items listed in Table N1102.4.2, applicable to the method of construction, are certified by the builder, permit holder or *registered design professional* via the certificate in Appendix E-1.

**TABLE N1102.4.2
AIR BARRIER INSPECTION**

COMPONENT	CRITERIA
factory done 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. For ceiling finishes that are not air barrier systems such as tongue-and-groove planks, air barrier systems (for example, taped house wrap), shall be used above the finish. Note: It is acceptable that sealants or gaskets applied as part of the application of the drywall will not be observable by the code official.
Walls	Sill plate is gasketed or sealed to subfloor or slab. factory done
Windows and doors	Space between window and exterior door jambs and framing is sealed. factory done
Floors (including above-garage and cantilevered floors)	Air barrier system is installed at any exposed edge of insulation. factory done
Penetrations	Utility penetrations through the building thermal envelope, including those for plumbing, electrical wiring, ductwork, security and fire alarm wiring, and control wiring, shall be sealed. factory done
Garage separation	Air sealing is provided between the garage and conditioned spaces. An air barrier system shall be installed between the ceiling system above the garage and the ceiling system of interior spaces.
Ceiling penetrations	Ceiling electrical box penetrations and ceiling mechanical box penetrations shall be caulked, gasketed, or sealed at the penetration of the ceiling finish. See Appendix E-2.4. factory done Exception: Ceiling electrical boxes and ceiling mechanical boxes not penetrating the building thermal envelope
Recessed lighting	Recessed light fixtures are air tight, IC rated, and sealed to drywall. factory done Exception: Fixtures in conditioned space.

****Attic Access insulated and weatherstripped per N1102.2.2.4****

Property Address:

N1102.4.2.1 Visual Inspection Option. The inspection information including tester name, date, and contact shall be included on the certificate described in Section N1101.14.

Signature _____

Date _____



**APPENDIX E-3B
Air sealing: Testing option (Section N1102.4.2.2)**

Sample Worksheet

N1102.4.2 Air sealing. Building envelope air tightness shall be demonstrated by Section N1102.4.2.1 or N1102.4.2.2:

N1102.4.2.2 Testing option. Building envelope tightness shall be considered acceptable when items providing insulation enclosure in Section N1102.2.14 and enclosure and air sealing in Section N1102.2.15 and air sealing in Section N1102.4.1 are addressed and when tested air leakage is less than or equal to one of the two following performance measurements:

1. 0.30 CFM50/Square Foot of Surface Area (SFSA) or
2. Five (5) air changes per hour (ACH50)

When tested with a blower door fan assembly, at a pressure of 33.5 psf (50 Pa). A single point depressurization, not temperature corrected, test is sufficient to comply with this provision, provided that the blower door fan assembly has been certified by the manufacturer to be capable of conducting tests in accordance with ASTM E779—03. Testing shall occur after rough in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation and combustion appliances. Testing shall be reported by the permit holder, a North Carolina licensed general contrac-

tor, a North Carolina licensed HVAC contractor, a North Carolina licensed Home Inspector, a *registered design professional*, a certified *BPI Envelope Professional* or a certified *HERS rater*.

During testing:

1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed;
2. Dampers shall be closed, but not sealed, including exhaust, backdraft, and flue dampers;
3. Interior doors shall be open;
4. Exterior openings for continuous ventilation systems, air intake ducted to the return side of the conditioning system, and energy or heat recovery ventilators shall be closed and sealed;
5. Heating and cooling system(s) shall be turned off; and
6. Supply and return registers shall not be sealed.

The air leakage information, including building air leakage result, tester name, date, and contact information, shall be included on the certificate described in Section N1101.14.

For Test Criteria 1 in this section, the report shall be produced in the following manner: Perform the blower door test and record the *CFM50* _____. Calculate the total square feet of surface area for the building thermal envelope, all floors, ceilings, and walls (this includes windows and doors) and record the area _____. Divide *CFM50* by the total square feet and record the result below. If the result is less than or equal to **[0.30 CFM50/SFSA]** the envelope tightness is acceptable; or

For Test Criteria 2, the report shall be produced in the following manner: Perform a blower door test and record the *CFM50* _____. Multiply the *CFM50* by 60 minutes to create CFHour50 and record _____. Then calculate the total conditioned volume of the home and record _____. Divide the CFH50 by the total volume and record the result below. If the result is less than or equal to **[5 ACH50]** the envelope tightness is acceptable.

Property Address: _____

Fan attachment location _____ Company Name _____

Contact Information: _____

Signature of Tester _____ Date _____

Permit Holder, NC Licensed General Contractor, NC Licensed HVAC Contractor,
NC Licensed Home Inspector, *Registered Design Professional*,
Certified BPI Envelope Professional, or *Certified HERS Rater*
(circle one).



APPENDIX E-3C
Duct sealing. Duct air leakage test (Section N1103.2.2 & Section N1103.3.3)

Sample Worksheet

N1103.3.2 Sealing (Mandatory Requirements). Ducts, air handlers, filter boxes, and building cavities used as ducts shall be sealed. Joints and seams shall comply with either the *International Mechanical Code* or *International Residential Code*, as applicable.

N1103.3.3 Duct leakage (Prescriptive) and duct testing (Mandatory). Duct testing and duct leakage shall be verified by compliance with either Section N1103.3.3.1 or N1103.3.3.2. Duct testing shall be verified using one of the two following methods:

N1103.3.3.1 Total duct leakage. Total duct leakage shall be less than or equal to 5 CFM (12 L/min) per 100 ft² (9.29 m²) of conditioned floor area served by that system when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure.

During testing:

1. Block, if present, ventilation air duct(s) connected to the conditioning system.
2. The duct air leakage testing equipment shall be attached to the largest return in the system or to the air handler.
3. The filter shall be removed and the air handler power shall be turned off.
4. Supply boots or registers and return boxes or grilles shall be taped, plugged, or otherwise sealed air tight.
5. The hose for measuring the 25 Pascals of pressure differential shall be inserted into the boot of the supply that is nominally closest to the air handler.
6. Specific instructions from the duct testing equipment manufacturer shall be followed to reach duct test pressure and measure duct air leakage.

N1103.3.3.2 Duct leakage to the outside. Conduct the test using fan pressurization of distribution system and building at a fixed reference pressure for combined supply and return leaks. Duct leakage to the outside shall be less than or equal to 4 CFM (12 L/min) per 100 ft² (9.29 m²) of conditioned floor area served by that system when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the entire system, relative to the outside, including the manufacturer's air handler enclosure.

During testing:

1. Block, if present, the ventilation air duct(s) connected to the conditioning system.
2. The duct air leakage testing equipment shall be attached to the largest return in the system or to the air handler.
3. The filter shall be removed and the air handler power shall be turned off.

4. Supply boots or registers and return boxes or grilles shall be taped, plugged, or otherwise sealed air tight or as tight as possible.
5. The hose for measuring the 25 Pascals of pressure differential shall be inserted into the boot of the supply that is nominally closest to the air handler.
6. Open all interconnecting doors in the building, close dampers for fireplaces and other operable dampers.
7. Set up an envelope air moving/flow-regulating/flow measurement assembly, such as a blower door, following the manufacturer's prescribed procedure.
8. Specific instructions from the duct testing equipment manufacturer shall be followed to reach duct test pressure and measure duct air leakage used in combination with a blower door. Typical steps are as follows:

- a. Depressurize the ductwork system to 25 Pa using the measurement hose in Step 5 above.
- b. Depressurize the house to 25 Pa using an envelope air moving/flow-regulating/flow measurement assembly, such as a blower door.
- c. Correct the duct pressure to measure 0 Pa of pressure differential between the house and the ductwork system.
- d. Read the CFM of duct leakage using the procedures for the specific equipment being used. (Note that most automatically calculating pressure gauges cannot compute the CFM25 automatically with a duct-to-house difference in pressure of 0 Pa, so the gauge setting should be set to read CFM instead of CFM25).

Testing shall be performed and reported by the permit holder, a North Carolina licensed general contractor, a North Carolina licensed HVAC contractor, a North Carolina licensed Home Inspector, a registered design professional, a certified BPI Envelope Professional or a certified HERS rater. A single point depressurization, not temperature corrected, test is sufficient to comply with this provision, provided that the duct testing fan assembly(s) has been certified by the manufacturer to be capable of conducting tests in accordance with ASTM E1554-07.

The duct leakage information, including duct leakage test selected and result, tester name, date, and contact information, shall be included on the certificate described in Section N1101.14.

For the Test Criteria, the report shall be produced in the following manner: perform the HVAC system air leakage test and record the CFM25. Calculate the total square feet of Conditioned Floor Area (CFA) served by that system. Multiply CFM25 by 100, divide the result by the CFA and



APPENDIX E

record the result. If the result is less than or equal to 5 CFM25/100SF for the "Total duct leakage test" or less than or equal to 4 CFM25/100SF for the "Duct leakage to the outside" test, then the HVAC system air tightness is acceptable.

Complete one duct leakage report for each HVAC system serving the home:

Property Address: _____

Test Performed: Total duct leakage or Duct leakage to the outside (circle one)

HVAC System Number: _____ Describe area of home served: _____

CFM25 Total _____ Conditioned Floor Area (CFA) served by system: _____ s.f.

CFM25 x 100 divided by CFA = _____ CFM25/100SF (e.g. 100 CFM25 x 100/2,000 CFA = 5 CFM25/100SF)

Fan attachment location _____

Company Name _____

Contact Information: _____

Signature of Tester

Date

Permit Holder, NC Licensed General Contractor, NC Licensed HVAC Contractor,
NC Licensed Home Inspector, *Registered Design Professional*,
Certified *BPI Envelope Professional*, or Certified *HERS Rater*
(circle one)



E-4D:

SAMPLE WORKSHEETS FOR RESIDENTIAL AIR AND DUCT LEAKAGE TESTING

E-4D.1
AIR SEALING: TESTING
(Section N1102.4.2.2)

Sample Worksheet for Alternative Residential
Energy Code for Higher Efficiency

Air sealing. Building envelope air tightness shall be demonstrated by Section N1102.4.2.2:

Air sealing: Testing option (Section N1102.4.2.2)
Sample Worksheet for Alternative Residential
Energy Code for Higher Efficiency

N1102.4.2.2 Testing. Building envelope tightness shall be considered acceptable when items providing insulation enclosure in Section N1102.2.14 and enclosure air sealing in Section N1102.2.15 and air sealing in Section N1102.4.1 are addressed and when tested air leakage is less than or equal to one of the two following performance measurements:

1. 0.24 CFM50 (6.8 L/min)/square foot of surface area (SFSA) or
2. Four (4) air changes per hour (ACH50)

When tested with a blower door fan assembly, at a pressure of 0.2 inches water gauge (50 Pa), a single point depressurization, not temperature corrected, test is sufficient to comply with this provision, provided that the blower door fan assembly has been certified by the manufacturer to be capable of conducting tests in accordance with ASTM E779—03.

Testing shall occur after rough in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation and combustion appliances. Testing shall be reported by the permit holder, a North Carolina licensed general contractor, a North Carolina licensed HVAC contractor, a North Carolina licensed Home Inspector, a *registered design professional*, a certified *BPI Envelope Professional* or a certified *HERS rater*.

During testing:

1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed;
2. Dampers shall be closed, but not sealed, including exhaust, backdraft, and flue dampers;
3. Interior doors shall be open;
4. Exterior openings for continuous ventilation systems, air intake ducted to the return side of the conditioning system, and energy or heat recovery ventilators shall be closed and sealed;
5. Heating and cooling system(s) shall be turned off; and
6. Supply and return registers shall not be sealed.

The air leakage information, including building air leakage result, tester name, date, and contact information, shall be included on the certificate described in Section N1101.14.

For Test Criteria 1 in this section, the report shall be produced in the following manner: Perform the blower door test and record the *CFM50* _____. Calculate the total square feet of surface area for the building thermal envelope, all floors, ceilings, and walls (this includes windows and doors) and record the area _____. Divide *CFM50* by the total square feet and record the result below. If the result is less than or equal to **[0.24 CFM50/SFSA]** the envelope tightness is acceptable; or

For Test Criteria 2, the report shall be produced in the following manner: Perform a blower door test and record the *CFM50* = _____. Multiply the *CFM50* by 60 minutes to create CF/Hour50 and record = _____. Then calculate the total conditioned volume of the home and record = _____ cubic feet. Divide the CF/Hour50 by the total volume and record the result = _____ ACH50. If the result is less than or equal to **[4 ACH50]** the envelope tightness is acceptable.

Property Address: _____

Fan attachment location _____ Company Name _____

Contact Information: _____

Signature of Tester _____ Date _____



Permit Holder, NC Licensed General Contractor, NC Licensed HVAC Contractor,
NC Licensed Home Inspector, *Registered Design Professional*,
Certified BPI Envelope Professional, or *Certified HERS Rater*
(circle one)

E-4D.2
DUCT SEALING. Duct air leakage test
(Section N1103.3.3)
Sample Worksheet for Alternative Residential
Energy Code for Higher Efficiency

N1103.3.3 Duct leakage (Prescriptive) and duct testing (Mandatory). Duct testing and duct leakage shall be verified by compliance with either Section N1103.3.3.1 or N1103.3.3.2. Duct testing shall be performed and reported by the permit holder, a NC licensed general contractor, a NC licensed HVAC contractor, a NC licensed Home Inspector, a *registered design professional*, a certified *BPI Envelope Professional* or a certified *HERS rater*. A single point depressurization, not temperature corrected, test is sufficient to comply with this provision, provided that the duct testing fan assembly(s) has been certified by the manufacturer to be capable of conducting tests in accordance with ASTM E1554—07.

The duct leakage information, including duct leakage test selected and result, tester name, date, and contact information, shall be included on the certificate described in Section N1101.3.

For the Test Criteria, the report shall be produced in the following manner: perform the HVAC system air leakage test and record the CFM25. Calculate the total square feet of Conditioned Floor Area (CFA) served by that system. Multiply CFM25 by 100, divide the result by the CFA and record the result. If the result is less than or equal to 4 CFM25/100SF for the “Total duct leakage test or less than or equal to 3 CFM25/100SF for the Duct leakage to the outside” test, then the HVAC system air tightness is acceptable.

Exceptions to testing requirements:

1. Duct systems or portions thereof inside the building thermal envelope shall not be required to be leak tested.
2. Installation of a partial system as part of replacement, renovation or addition does not require a duct leakage test.

1103.3.3.1 Total duct leakage. Total duct leakage less than or equal to 4 CFM (113 L/min) per 100 ft² (9.29 m²) of conditioned floor area served by that system when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the entire system, including the manufacturer’s air handler enclosure. During testing:

1. Block, if present, ventilation air duct(s) connected to the conditioning system.
2. The duct air leakage testing equipment shall be attached to the largest return in the system or to the air handler.
3. The filter shall be removed and the air handler power shall be turned off.
4. Supply boots or registers and return boxes or grilles shall be taped, plugged, or otherwise sealed air tight.
5. The hose for measuring the 25 Pascals of pressure differential shall be inserted into the boot of the supply that is nominally closest to the air handler.

6. Specific instructions from the duct testing equipment manufacturer shall be followed to reach duct test pressure and measure duct air leakage.

1103.3.3.2 Duct leakage to the outside. Conduct the test using fan pressurization of distribution system and building at a fixed reference pressure for combined supply and return leak. Duct leakage to the outside shall be less than or equal to 3 CFM (85 L/min) per 100 ft² (9.29 m²) of conditioned floor area served by that system when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the entire system, relative to the outside, including the manufacturer’s air handler enclosure.

During testing:

1. Block, if present, the ventilation air duct(s) connected to the conditioning system.
2. The duct air leakage testing equipment shall be attached to the largest return in the system or to the air handler.
3. The filter shall be removed and the air handler power shall be turned off.
4. Supply boots or registers and return boxes or grilles shall be taped, plugged, or otherwise sealed air tight or as tight as possible.
5. The hose for measuring the 25 Pascals of pressure differential shall be inserted into the boot of the supply that is nominally closest to the air handler.
6. Open all interconnecting doors in the building, close dampers for fireplaces and other operable dampers.
7. Set up an envelope air moving/flow-regulating/flow measurement assembly, such as a blower door, following the manufacturer’s prescribed procedure.
8. Specific instructions from the duct testing equipment manufacturer shall be followed to reach duct test pressure and measure duct air leakage used in combination with a blower door. Typical steps are as follows:

- a. Depressurize the ductwork system to 25 Pa using the measurement hose in Step 5 above.
- b. Depressurize the house to 25 Pa using an envelope air moving/flow-regulating/flow measurement assembly, such as a blower door.
- c. Correct the duct pressure to measure 0 Pa of pressure differential between the house and the ductwork system.
- d. Read the CFM of duct leakage using the procedures for the specific equipment being used. (Note that most automatically calculating pressure gauges cannot compute the CFM25 automatically with a duct-to-house difference in pressure of 0 Pa, so the gauge setting should be set to read CFM instead of CFM25).



MUST BE COMPLETED BY BUILDER ON SITE

APPENDIX E

Complete one duct leakage report for each HVAC system serving the home:

Property Address: _____

HVAC System Number: _____ Describe area of home served: _____

CFM25 Total _____. Conditioned Floor Area (CFA) served by system: _____ s.f.

CFM25 × 100 divided by CFA = _____ CFM25/100 SF

(e.g. 50 CFM25 × 100/ 2,000 CFA = 2.5 CFM25/100SF)

Fan attachment location _____

Company Name _____

Contact Information: _____

Signature of Tester

Date

Permit Holder, NC Licensed General Contractor, NC Licensed HVAC Contractor,
NC Licensed Home Inspector, *Registered Design Professional*,
Certified *BPI Envelope Professional*, or Certified *HERS Rater*
(circle one)



Required Ventilation

Model Number: 23-3276-16

Floor Length: ft.

Floor Type			
<input type="radio"/> 28 Wide	<input checked="" type="radio"/> 32 Wide	<input type="radio"/> Triple Wide	<input type="radio"/> T-Ranch
<input type="checkbox"/> Check if pod			

Manufacturer Specifications

Ridge Vent: **18 sq. in. per lf.**

Soffit Vent: **5.89 sq. in. per lf.**

House Required Ventilation

Required Ventilation for House:	<input type="text" value="1106.56"/>	sq. in.
Inches Required for Soffit Ventilation:	<input type="text" value="553.28"/>	sq. in.
Inches Required for Ridge Ventilation:	<input type="text" value="553.28"/>	sq. in.
Number of Ridge Vents Required:	<input type="text" value="7.684444"/>	pc.
	30.73778	lf. of Ridge Vent

Ventilation in House

Soffit Ventilation in house:	<input type="text" value="874"/>	sq. in.	
Ridge Ventilation in house:	<input type="text" value="576"/>	sq. in.	52.05% through Ridge Vent
Number of Ridge Vents in house:	<input type="text" value="8"/>	pc.	
	32	lf. of Ridge Vent	

Code can be found at R806.2 in the NC Residential and the IRC



HIGH WIND CALCULATIONS

FOR

**CHAMPION
HOME BUILDERS**
LILLINGTON, NC

CHAMPION 23-3969
5/12 , 7/12 PITCH
130 MPH
WIND EXPOSURE: C
ASCE 7-10

PREPARED BY:
BARLOW ENGINEERING. P.C.
6512 SIX FORKS RD, SUITE 203-B
RALEIGH, NC 27615



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NARRATIVE

190568
Champion – 23-3969-011316
33'-4" x 76'-0" One Story
5/12,7/12
130 mph
Exposure C
NC
11/13/2019

The structure was analyzed at 130 mph (Vult) wind per ASCE 7-10 for the state of North Carolina.

It was assumed that the structure will be on a basement foundation. Ensure that the foundation is structurally adequate for the shear, uplift and downward point loads imposed at corner connections and similar locations. This house has 2 pitched roofs for means of conservatism the shear calculations have been done for the higher pitch. Porch calculations are also included.

Holdown calculations are provided. Please see the mark up plan for location of holdowns.



SECTION 1

ASCE 7-10 TRUSS CALCULATIONS



Job 90954	Truss CC557327	Truss Type HINGED ATTIC	Qty 1	Ply 1	Champion Homes 315 NC #108 Ref. #3157393
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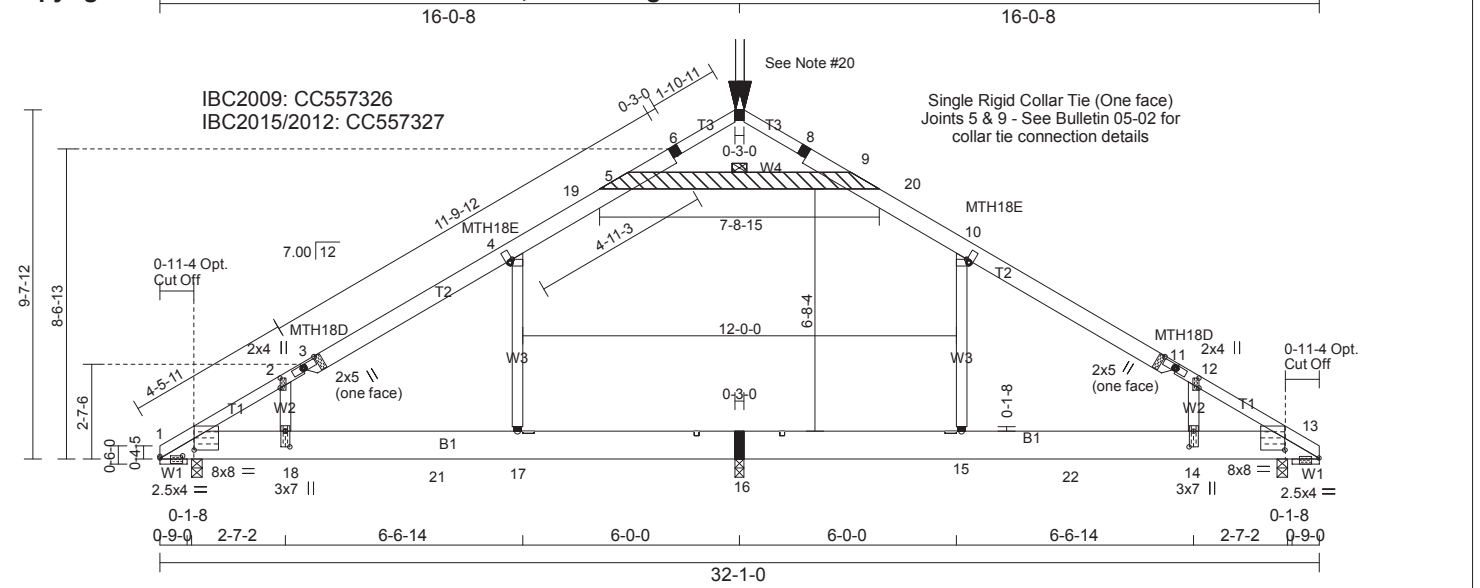


Plate Offsets (X,Y)-- [1:0-11-6,0-2-7], [2:0-2-0,0-0-0], [3:0-1-8,0-5-6], [3:0-0-11,0-0-0], [4:0-0-11,0-1-2], [10:0-0-11,0-1-2], [11:0-0-11,0-0-0], [11:0-1-8,0-5-6], [12:0-2-0,0-0-0], [13:0-11-6,0-2-7], [14:0-5-4,0-1-8], [18:0-5-4,0-1-8], [18:2-10-14,0-8-6], [18:3-5-10,0-8-6]

LOADING (psf)	SPACING- 2-0-0	CSI.	DEFL. in (loc) l/defl L/d	PLATES GRIP
TCLL 23.1 (Ground Snow=30.0)	Plate Grip DOL 1.15 Lumber DOL 1.15	TC 0.73 BC 0.95 WB 0.94	Vert(LL) 0.55 17-18 >344 240 Vert(CT) -0.52 17-18 >369 180 Horz(CT) 0.02 13 n/a n/a Attic -0.35 16-17 421 360	MT20 197/144 MT18HS 197/144
TCDL 7.0	Rep Stress Incr NO	Matrix-R		Weight: 215 lb FT = 0%
BCLL 0.0 *	Code IBC2015/TPI2014			
BCDL 7.0	IBC2012/TPI2007			

LUMBER-	BRACING-
TOP CHORD 2x4 SP No.2 or 2x4 SPF No.2 *Except* T2: 2x6 SP No.1 or 2x6 SPF No.2	TOP CHORD Structural wood sheathing directly applied or 4-4-5 oc purlins.
BOT CHORD 2x10 SP No.1 or 2x10 SPF No.2	BOT CHORD Rigid ceiling directly applied or 6-11-2 oc bracing.
WEBS 2x4 SP No.2 or 2x4 SPF No.2 *Except* W4: 2x6 SP No.2 or 2x6 SPF No.2 W1: 1-1/2x1-11/16 SPF Stud	WEBS 1 Row at midpt



REACTIONS. (lb/size) 1=1151/0-3-8 (min. 0-1-13), 13=1150/0-3-8 (min. 0-1-13), 16=359/0-3-0 (min. 0-1-8)
Max Horz 1=497(LC 8)
Max Uplift 1=-789(LC 9), 13=-791(LC 10), 16=-189(LC 9)
Max Grav 1=1151(LC 1), 13=1150(LC 1), 16=675(LC 2)

FORCES. (lb) - Maximum Compression/Maximum Tension
TOP CHORD 1-2=-1411/840, 2-3=-1502/1077, 3-4=-1469/1065, 4-35=-1287/1114, 5-35=-1188/1128,
5-6=-371/286, 6-7=-271/296, 7-8=-268/293, 8-9=-368/285, 9-36=-1187/1127, 10-36=-1287/1113,
10-11=-1469/1065, 11-12=-1502/1077, 12-13=-1411/835

BOT CHORD 1-18=-686/1191, 18-37=-686/1191, 19-37=-686/1191, 17-19=-686/1191, 17-24=-686/1191,
24-25=-686/1191, 25-26=-686/1191, 22-26=-686/1191, 20-22=-686/1191, 20-21=-686/1191,
21-23=-686/1191, 16-23=-686/1191, 16-29=-686/1191, 27-29=-686/1191, 27-28=-686/1191,
28-30=-686/1191, 30-33=-686/1191, 31-33=-686/1191, 31-32=-686/1191, 15-32=-686/1191,
15-34=-686/1191, 34-38=-686/1191, 14-38=-686/1191, 13-14=-686/1191
WEBS 10-15=-143/262, 2-18=-350/526, 12-14=-351/526, 4-17=-148/261, 5-9=-1012/983

REQUIRED FIELD JOINT CONNECTIONS - Maximum Compression (lb)/ Tension (lb)/ Shear (lb)/ Moment (lb-in)
5=1012/983/106/7091, 6=315/292/82/0, 7=212/247/162/0, 8=311/289/80/0, 9=1012/983/105/7175,
15=143/262/0/0, 16=686/1191/385/0, 17=148/261/0/0

- NOTES-**
1) Dado: 0-1-8 length x 0-1-8 deep dado, 1-0-0 to right edge from joint 16 on the top face.
2) Dado: 0-3-10 length x 0-0-12 deep dado, 5-6-14 to right edge from joint 16 on the top face.
3) Dado: 0-1-8 length x 0-1-8 deep dado, 1-0-0 to left edge from joint 16 on the top face.

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



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

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

Job 90954	Truss CC557327	Truss Type HINGED ATTIC	Qty 1	Ply 1	Champion Homes 315 NC #108 Ref. #3157393
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- 4) Dado: 0-3-10 length x 0-0-12 deep dado, 5-6-14 to left edge from joint 16 on the top face.
- 5) Wind: ASCE 7-10; Vult=150mph (3-second gust) Vasd=119mph; TCDL=2.8psf; BCDL=2.8psf; h=30ft; Cat. II; Exp C; enclosed; MWFRS (envelope) gable end zone and C-C Exterior(2) zone; cantilever left and right exposed ;C-C for members and forces & MWFRS for reactions shown; Lumber DOL=1.60 plate grip DOL=1.60
- 6) TLL: ASCE 7-10; Pg=30.0 psf (ground snow); Ps=23.1 psf (roof snow); Category II; Exp C; Partially Exp.; Ct=1.1
- 7) Roof design snow load has been reduced to account for slope.
- 8) Unbalanced snow loads have been considered for this design.
- 9) All plates are MT20 plates unless otherwise indicated.
- 10) See HINGE PLATE DETAILS for plate placement.
- 11) Provisions must be made to prevent lateral movement of hinged member(s) during transportation.
- 12) All additional member connections shall be provided by others for forces as indicated.
- 13) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
- 14) * 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, with BCDL = 7.0psf.
- 15) Ceiling dead load (5.0 psf) on member(s). 4-5, 9-10, 5-9
- 16) Bottom chord live load (30.0 psf) and additional bottom chord dead load (0.0 psf) applied only to room. 16-17, 15-16
- 17) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 789 lb uplift at joint 1, 791 lb uplift at joint 13 and 189 lb uplift at joint 16.
- 18) Fixity of member 5 - 9 has been changed.
- 19) This truss is designed in accordance with the 2015 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
- 20) Hanger(s) or other connection device(s) shall be provided sufficient to support concentrated load(s) 180 lb down and 238 lb up at 16-0-2 on top chord. The design/selection of such connection device(s) is the responsibility of others.
- 21) Attic room checked for L/360 deflection.
- 22) In the LOAD CASE(S) section, loads applied to the face of the truss are noted as front (F) or back (B).
- 23) This truss is designed in accordance with the 2012 IBC Sec 2306.1 and referenced standard ANSI/TPI 1
- 24) Take precaution to keep the chords in plane, any bending or twisting of the hinge plate must be repaired before the building is put into service.
- 25) The field-installed members are an integral part of the truss design. Retain a design professional to specify final field connections and temporary supports. All field-installed members must be properly fastened prior to applying any loading to the truss. This design anticipates the final set position.
- 26) Reference UFP Engineering Bulletin 06-06 for information on re-grading ripped lumber.
- 27) Based on: CC557326
- 28) Revision: IBC2015/2012 version



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

WARNING - Verify design parameters and READ NOTES

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

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

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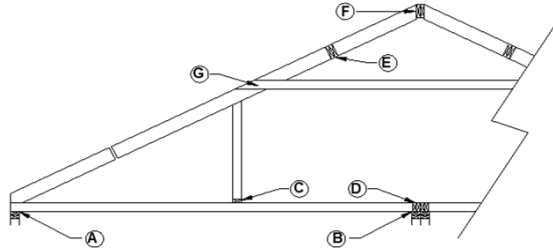
Job	Truss	MFG	Customer
90954	CC557327	315	CHAMPION HOMES

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



TRUSS CONNECTIONS

TRUSS NUMBER : **CC557327**
 PROJECT NUMBER : **190284**
 TRUSS PITCH : **7/12**
 MODULE WIDTH : **15'-2"**
 TRUSS WIDTH : **32'-1"**



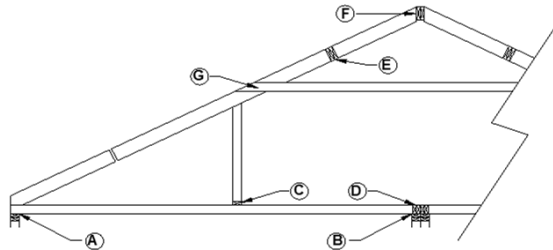
UPLIFT CONNECTIONS (MWFRS LOADS):

150 / 119 mph									
CONDITION "A" - EXTERIOR WALL:			CHECK STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END	QTY / END	CHECK ALT. STRAP
UPLIFT (lbs)	CASE	CD	1 1/2" x 26ga STRAP	10 d NAILS	16 ga STAPLE	1 1/2" x 20 ga STRAP	10 d NAILS	16 ga STAPLE	SIMPSON H6 TWIST STRAP
791	WIND	1.6	NO GOOD	N/A	N/A	OK	3	8	OK
ALTERNATE: (9) 16 d NAILS TOENAILED THROUGH BC INTO BAND PLUS (6) 16 d NAILS THROUGH SHEATHING INTO BAND AND STUD									
ALTERNATE: (2) SIMPSON SDWC15600 SCREW									
ALTERNATE: (4) #10 x 5" WOOD SCREW WITH MINIMUM 2 in PENETRATION									
CONDITION "B" - MATING WALL (PER SIDE):			CHECK STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END	QTY / END	CHECK ALT. STRAP
UPLIFT (lbs / PER SIDE)	CASE	CD	1 1/2" x 26ga STRAP	10 d NAILS	16 ga STAPLE	1 1/2" x 20 ga STRAP	10 d NAILS	16 ga STAPLE	SIMPSON CS20 STRAP
95	WIND	1.6	OK	2	2	OK	2	2	OK
ALTERNATE: (2) 16 d NAILS TOENAILED THROUGH BC INTO BAND PLUS (2) 16 d NAILS THROUGH SHEATHING INTO BAND AND STUD									
130 / 101 mph (ADJUSTED)									
CONDITION "A" - EXTERIOR WALL:			CHECK STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END	QTY / END	CHECK ALT. STRAP
UPLIFT (lbs)	CASE	CD	1 1/2" x 26ga STRAP	10 d NAILS	16 ga STAPLE	1 1/2" x 20 ga STRAP	10 d NAILS	16 ga STAPLE	SIMPSON H6 TWIST STRAP
594	WIND	1.6	NO GOOD	N/A	N/A	OK	2	6	OK
ALTERNATE: (7) 16 d NAILS TOENAILED THROUGH BC INTO BAND PLUS (5) 16 d NAILS THROUGH SHEATHING INTO BAND AND STUD									
ALTERNATE: (2) SIMPSON SDWC15600 SCREW									
ALTERNATE: (3) #10 x 5" WOOD SCREW WITH MINIMUM 2 in PENETRATION									
CONDITION "B" - MATING WALL (PER SIDE):			CHECK STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END	QTY / END	CHECK ALT. STRAP
UPLIFT (lbs / PER SIDE)	CASE	CD	1 1/2" x 26ga STRAP	10 d NAILS	16 ga STAPLE	1 1/2" x 20 ga STRAP	10 d NAILS	16 ga STAPLE	SIMPSON H3 TWIST STRAP
71	WIND	1.6	OK	2	2	OK	2	2	OK
ALTERNATE: (2) 16 d NAILS TOENAILED THROUGH BC INTO BAND PLUS (2) 16 d NAILS THROUGH SHEATHING INTO BAND AND STUD									
115 / 90 mph (ADJUSTED)									
CONDITION "A" - EXTERIOR WALL:			CHECK STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END	QTY / END	CHECK ALT. STRAP
UPLIFT (lbs)	CASE	CD	1 1/2" x 26ga STRAP	10 d NAILS	16 ga STAPLE	1 1/2" x 20 ga STRAP	10 d NAILS	16 ga STAPLE	SIMPSON H8 TWIST STRAP
464	WIND	1.6	OK	3	5	OK	2	5	OK
ALTERNATE: (6) 16 d NAILS TOENAILED THROUGH BC INTO BAND PLUS (4) 16 d NAILS THROUGH SHEATHING INTO BAND AND STUD									
ALTERNATE: (1) SIMPSON SDWC15600 SCREW									
ALTERNATE: (2) #10 x 5" WOOD SCREW WITH MINIMUM 2 in PENETRATION									
CONDITION "B" - MATING WALL (PER SIDE):			CHECK STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END	QTY / END	CHECK ALT. STRAP
UPLIFT (lbs / PER SIDE)	CASE	CD	1 1/2" x 26ga STRAP	10 d NAILS	16 ga STAPLE	1 1/2" x 20 ga STRAP	10 d NAILS	16 ga STAPLE	SIMPSON H3 TWIST STRAP
56	WIND	1.6	OK	2	2	OK	2	2	OK
ALTERNATE: (2) 16 d NAILS TOENAILED THROUGH BC INTO BAND PLUS (2) 16 d NAILS THROUGH SHEATHING INTO BAND AND STUD									



TRUSS CONNECTIONS

TRUSS NUMBER : **CC557327**
 PROJECT NUMBER : **190284**
 TRUSS PITCH : **7/12**
 MODULE WIDTH : **15'-2"**
 TRUSS WIDTH : **32'-1"**



MAXIMUM OF DL + LL + 30 psf GSL & 150 / 119 mph WIND										
CONDITION "C" - KNEEWALL TO BOTTOM CHORD:			CHECK STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END
TENSION (lbs)	CASE	CD	1 1/2" x 26ga STRAP	10 d NAILS	16 ga STAPLE	1 1/2" x 20 ga STRAP	10 d NAILS	16 ga STAPLE	SIMPSON CS20 STRAP	10 d NAILS
261	SNOW	1.15	OK	3	3	OK	2	3	OK	3
CONDITION "D" - BOTTOM CHORD AT MATING LINE:										
			CHECK STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END
TENSION (lbs)	CASE	CD	1 1/2" x 26ga STRAP	10 d NAILS	16 ga STAPLE	1 1/2" x 20 ga STRAP	10 d NAILS	16 ga STAPLE	SIMPSON CS16 STRAP	10 d NAILS
1191	SNOW	1.15	NO GOOD	N/A	N/A	NO GOOD	N/A	N/A	OK	11
ALTERNATE: USE (10) 16 d NAILS THROUGH DECKING EACH SIDE										
SHEAR (lbs)	CASE	CD								
385	SNOW	1.15	USE (5) 16 d NAILS TOENAILED INTO BEAM (WHERE NO BEARING WALL BELOW)							
ALTERNATE: OK FOR SIMPSON L90 ANGLE										
CONDITION "E" - TOP CHORD FLIP:										
TENSION (lbs)	CASE	CD								
289	SNOW	1.15	USE (6) 6 d NAILS THROUGH SHEATHING EACH SIDE							
ALTERNATE: USE (7) 16 ga STAPLE THROUGH SHEATHING EACH SIDE										
SHEAR (lbs)	CASE	CD								
80	SNOW	1.15	USE (2) 16 d NAILS TOENAILED EACH END PLUS USE 10 d NAILS AT 24 in O.C. THROUGH PLATES							
CONDITION "F" - RIDGE:										
			CHECK STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END
TENSION (lbs)	CASE	CD	1 1/2" x 26ga STRAP	10 d NAILS	16 ga STAPLE	1 1/2" x 20 ga STRAP	10 d NAILS	16 ga STAPLE	SIMPSON CS20 STRAP	10 d NAILS
247	SNOW	1.15	OK	2	3	OK	2	3	OK	3
SHEAR (lbs)	CASE	CD								
162	SNOW	1.15	USE (2) 16 d NAILS TOENAILED INTO BEAM EACH RAFTER							
CONDITION "G" - COLLAR TIE: SEE UFP BULLETIN 05-02										

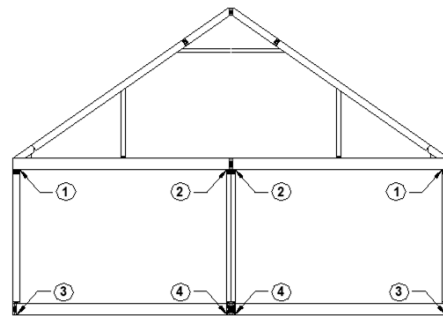


COMPONENT LOAD SUMMARY

EXTERIOR WALL DEAD LOAD =	12	psf	x	10	ft	=	120	plf
MATING WALL DEAD LOAD =	8	psf	x	10	ft	=	80	plf
FLOOR DEAD LOAD =	10	psf	x	16	ft / 2	=	80	plf
FLOOR LIVE LOAD =	40	psf	x	16	ft / 2	=	320	plf
CEILING DEAD LOAD =	5	psf	x	16	ft / 2	=	40	plf

LOCATION 1 = EXT. WALL HEADER & EXT. WALL STUD
LOCATION 2 = M. WALL HEADER & M. WALL STUD
LOCATION 3 = PERIMETER BAND
LOCATION 4 = CENTER GIRDER
LOCATIONS 3 & 4 MAY BE USED TO GENERATE FOUNDATION LOADS

* CROSS SECTION IS FOR REFERENCE ONLY
AND MAY NOT REFLECT ACTUAL TRUSS



TRUSS CC557327, 7/12 PITCH, 32'-1" WIDTH

COMPONENT LOADS (lbs/ft)

30 psf GROUND SNOW (MATING WALL LOADS ARE PER SIDE OF LINE)

LOCATION	1	2	3	4
DEAD LOAD	294	86	494	246
LIVE LOAD	282	83	602	403
TOTAL LOAD	576	169	1096	649

C & C UPLIFT

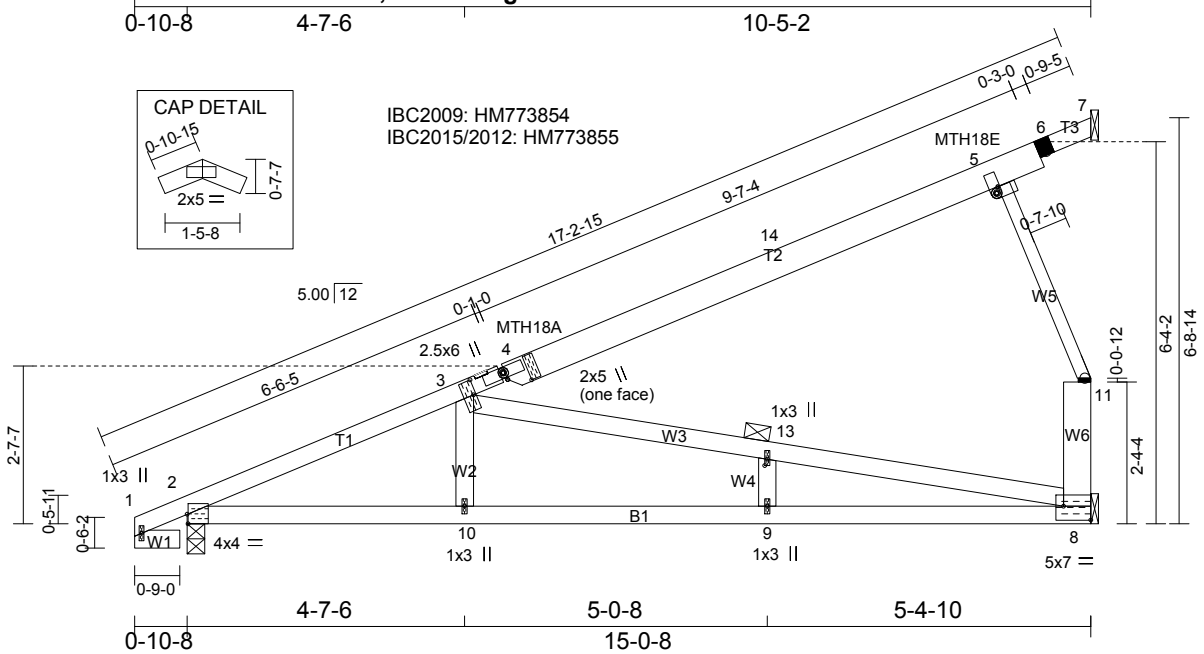
LOCATION	1	2	3	4
UPLIFT (0.6) DEAD LOAD	176	52	296	148
150 / 119 mph UPLIFT	396	47	-100	-
130 / 101 mph UPLIFT	297	36	-1	-
115 / 90 mph UPLIFT	232	28	-	-



Job 89373	Truss HM773855	Truss Type HINGE MONO	Qty 1	Ply 1	Champion Homes 315 NC Ref. #3157316
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IBC2009: HM773854
IBC2015/2012: HM773855

Plate Offsets (X,Y)-- [2:0-0-3,Edge], [3:0-3-0,0-0-8], [4:0-0-5,0-1-9], [4:0-1-15,0-4-6], [5:0-0-11,0-1-2], [8:Edge,0-2-12], [13:0-1-4,0-0-8]

SPACING-- 2-0-0 LOADING (psf)	SPACING-- 1-4-0 LOADING (psf)	SPACING-- 2-0-0 LOADING (psf)	CSI.	DEFL.	in (loc)	l/defl	L/d	PLATES	GRIP
TCLL 23.1	TCLL 34.7	Plate Grip DOL 1.15	TC 0.90	Vert(LL) -0.22	8-9	>808	240	MT20	197/144
(Ground Snow=30.0)	(Ground Snow=45.0)	Lumber DOL 1.15	BC 0.85	Vert(CT) -0.40	8-9	>442	180	MT18HS	197/144
TCDL 10.0	TCDL 15.0	Rep Stress Incr YES	WB 0.67	Horz(CT) 0.02	8	n/a	n/a		
BCLL 0.0	BCLL 0.0	Code IBC2015/TPI2014	Matrix-R						
BCDL 10.0	BCDL 15.0	IBC2012/TPI2007							
								Weight: 83 lb	
								FT = 0%	

LUMBER-	BRACING-
TOP CHORD 2x4 SP No.1 *Except* T2: 2x6 SP No.1 or 2x6 SPF No.2, T3: 2x4 SPF No.2	TOP CHORD Structural wood sheathing directly applied or 2-2-0 oc purlins, except end verticals.
BOT CHORD 2x4 SP No.1	BOT CHORD Rigid ceiling directly applied or 5-2-10 oc bracing.
WEBS 2x4 SP No.2 *Except* W3: 2x4 SP No.2 or 2x4 SPF No.2 W6: 2x6 SP No.1 or 2x6 SPF No.2, W5: 2x3 SPF Stud W1: 2x4 SPF Stud	JOINTS 1 Brace at Jt(s): 11, 13

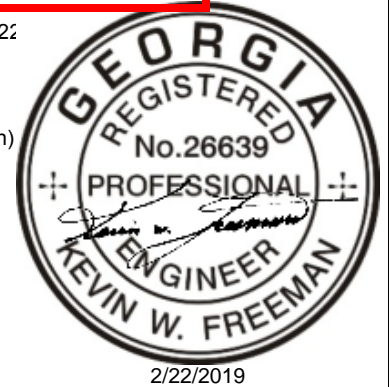
REACTIONS. (lb/size) 2=721/0-3-8 (min. 0-1-8), 8=622/Mechanical, 7=-0/Mechanical
Max Horz 2=419(LC 9), 7=-62(LC 14)
Max Uplift 2=-392(LC 9), 8=-497(LC 9)
Max Grav 2=752(LC 14), 8=733(LC 14)

FORCES. (lb) - Maximum Compression/Maximum Tension
TOP CHORD 1-2=0/21, 2-15=-1319/623, 3-15=-1219/625, 3-16=-326/0, 16-17=-322/0, 4-17=-318/0, 4-14=-338/22, 5-14=-225/32, 5-6=-111/49, 6-7=-70/57, 8-11=-404/414
BOT CHORD 2-10=-960/1108, 9-10=-960/1108, 8-9=-960/1108
WEBS 3-10=0/330, 3-13=-973/825, 8-13=-975/815, 5-11=-433/443, 9-13=0/76

REQUIRED FIELD JOINT CONNECTIONS - Maximum Compression (lb)/ Tension (lb)/ Shear (lb)/ Moment (lb-in)
6=86/55/38/0, 11=433/443/157/0

- NOTES-**
1) Dado: 0-2-10 length x 0-0-12 deep dado, 0-2-4 to right edge from joint 4 on the top face.
2) Wind: ASCE 7-10; Vult=150mph (3-second gust) Vasd=119mph @24in o.c.; TCDL=4.0psf; BCDL=4.0psf; (Alt. 180mph @16in o.c.; TCDL=6.0psf; BCDL=6.0psf); h=30ft; Cat. II; Exp C; enclosed; MWFRS (envelope) gable end zone and C-C Exterior(2) zone; C-C for members and forces & MWFRS for reactions shown; Lumber DOL=1.6 plate grip DOL=1.60

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



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

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



Job 89373	Truss HM773855	Truss Type HINGE MONO	Qty 1	Ply 1	Champion Homes 315 NC Ref. #3157316
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- 3) TLL: ASCE 7-10; Pg=30.0 psf (ground snow); Ps=23.1 psf (roof snow); Category II; Exp C; Partially Exp.; Ct=1.1
- 4) Roof design snow load has been reduced to account for slope.
- 5) Unbalanced snow loads have been considered for this design.
- 6) This truss has been designed for greater of min roof live load of 19.0 psf or 2.00 times flat roof load of 23.1 psf on overhangs non-concurrent with other live loads.
- 7) All plates are MT20 plates unless otherwise indicated.
- 8) See HINGE PLATE DETAILS for plate placement.
- 9) Provisions must be made to prevent lateral movement of hinged member(s) during transportation.
- 10) All additional member connections shall be provided by others for forces as indicated.
- 11) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
- 12) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 392 lb uplift at joint 2 and 497 lb uplift at joint 8.
- 13) This truss is designed in accordance with the 2015 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
- 14) **This truss is designed in accordance with the 2012 IBC Sec 2306.1 and referenced standard ANSI/TPI 1**
- 15) **Take precaution to keep the chords in plane, any bending or twisting of the hinge plate must be repaired before the building is put into service.**
- 16) **The field-installed members are an integral part of the truss design. Retain a design professional to specify final field connections and temporary supports. All field-installed members must be properly fastened prior to applying any loading to the truss. This design anticipates the final set position.**
- 17) Based on: HM773854
- 18) Revision: IBC2015/2012 Version



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

WARNING - Verify design parameters and READ NOTES

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

Universal Forest Products, Inc. 2801 EAST BELTLINE RD, NE
 PHONE (616)-364-6161 FAX (616)-365-0060 GRAND RAPIDS, MI 49525





Universal Forest Products®

Job	Truss	MFG	Customer
89373	HM773855	315	CHAMPION HOMES

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





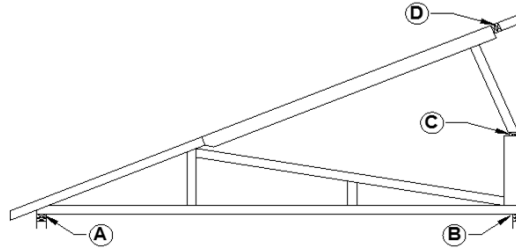
APPROVED
Sharron Barry

DATE: 12/4/19
Approval Limited to Factory Built Portion Only

PFS CORPORATION
Cottage Grove, WI

TRUSS CONNECTIONS

TRUSS NUMBER : **HM773855**
 PROJECT NUMBER : **190127**
 TRUSS PITCH : **5/12**
 TRUSS SPAN : **15'-2"**
 UNIT WIDTH : **30'-4"**



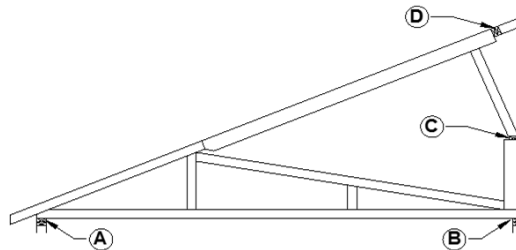
UPLIFT CONNECTIONS (MWFRS LOADS):

150 / 119 mph									
CONDITION "A" - EXTERIOR WALL:			CHECK STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END	QTY / END	CHECK ALT. STRAP
UPLIFT (lbs)	CASE	CD	1 1/2" x 26ga STRAP	10 d NAILS	16 ga STAPLE	1 1/2" x 20 ga STRAP	10 d NAILS	16 ga STAPLE	SIMPSON H8 TWIST STRAP
392	WIND	1.6	OK	3	4	OK	2	4	OK
ALTERNATE: (5) 16 d NAILS TOENAILED THROUGH BC INTO BAND PLUS (3) 16 d NAILS THROUGH SHEATHING INTO BAND AND STUD									
ALTERNATE: (1) SIMPSON SDWC15600 SCREW									
ALTERNATE: (2) #10 x 5" WOOD SCREW WITH MINIMUM 2 in PENETRATION									
CONDITION "B" - MATING WALL (PER SIDE):			CHECK STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END	QTY / END	CHECK ALT. STRAP
UPLIFT (lbs / PER SIDE)	CASE	CD	1 1/2" x 26ga STRAP	10 d NAILS	16 ga STAPLE	1 1/2" x 20 ga STRAP	10 d NAILS	16 ga STAPLE	SIMPSON CS20 STRAP
497	WIND	1.6	NO GOOD	N/A	N/A	OK	2	5	OK
ALTERNATE: (6) 16 d NAILS TOENAILED THROUGH BC INTO BAND PLUS (4) 16 d NAILS THROUGH SHEATHING INTO BAND AND STUD									
130 / 101 mph (ADJUSTED)									
CONDITION "A" - EXTERIOR WALL:			CHECK STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END	QTY / END	CHECK ALT. STRAP
UPLIFT (lbs)	CASE	CD	1 1/2" x 26ga STRAP	10 d NAILS	16 ga STAPLE	1 1/2" x 20 ga STRAP	10 d NAILS	16 ga STAPLE	SIMPSON H3 TWIST STRAP
294	WIND	1.6	OK	2	3	OK	2	3	OK
ALTERNATE: (4) 16 d NAILS TOENAILED THROUGH BC INTO BAND PLUS (3) 16 d NAILS THROUGH SHEATHING INTO BAND AND STUD									
ALTERNATE: (1) SIMPSON SDWC15600 SCREW									
ALTERNATE: (2) #10 x 5" WOOD SCREW WITH MINIMUM 2 in PENETRATION									
CONDITION "B" - MATING WALL (PER SIDE):			CHECK STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END	QTY / END	CHECK ALT. STRAP
UPLIFT (lbs / PER SIDE)	CASE	CD	1 1/2" x 26ga STRAP	10 d NAILS	16 ga STAPLE	1 1/2" x 20 ga STRAP	10 d NAILS	16 ga STAPLE	SIMPSON H8 TWIST STRAP
373	WIND	1.6	OK	3	4	OK	2	4	OK
ALTERNATE: (5) 16 d NAILS TOENAILED THROUGH BC INTO BAND PLUS (3) 16 d NAILS THROUGH SHEATHING INTO BAND AND STUD									
115 / 90 mph (ADJUSTED)									
CONDITION "A" - EXTERIOR WALL:			CHECK STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END	QTY / END	CHECK ALT. STRAP
UPLIFT (lbs)	CASE	CD	1 1/2" x 26ga STRAP	10 d NAILS	16 ga STAPLE	1 1/2" x 20 ga STRAP	10 d NAILS	16 ga STAPLE	SIMPSON H3 TWIST STRAP
231	WIND	1.6	OK	2	3	OK	2	3	OK
ALTERNATE: (3) 16 d NAILS TOENAILED THROUGH BC INTO BAND PLUS (2) 16 d NAILS THROUGH SHEATHING INTO BAND AND STUD									
ALTERNATE: (1) SIMPSON SDWC15600 SCREW									
ALTERNATE: (2) #10 x 5" WOOD SCREW WITH MINIMUM 2 in PENETRATION									
CONDITION "B" - MATING WALL (PER SIDE):			CHECK STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END	QTY / END	CHECK ALT. STRAP
UPLIFT (lbs / PER SIDE)	CASE	CD	1 1/2" x 26ga STRAP	10 d NAILS	16 ga STAPLE	1 1/2" x 20 ga STRAP	10 d NAILS	16 ga STAPLE	SIMPSON H3 TWIST STRAP
292	WIND	1.6	OK	2	3	OK	2	3	OK
ALTERNATE: (4) 16 d NAILS TOENAILED THROUGH BC INTO BAND PLUS (3) 16 d NAILS THROUGH SHEATHING INTO BAND AND STUD									



TRUSS CONNECTIONS

TRUSS NUMBER : HM773855
 PROJECT NUMBER : 190127
 TRUSS PITCH : 5/12
 TRUSS SPAN : 15'-2"
 UNIT WIDTH : 30'-4"



MAXIMUM OF DL + LL + 30 psf GSL & 150 / 119 mph WIND										
CONDITION "C" - KNEEWALL TO WEB MEMBER:			CHECK STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END	QTY / END	CHECK ALT. STRAP	QTY / END
TENSION (lbs)	CASE	CD	1 1/2" x 26ga STRAP	10 d NAILS	16 ga STAPLE	1 1/2" x 20 ga STRAP	10 d NAILS	16 ga STAPLE	SIMPSON CS20 STRAP	10 d NAILS
443	SNOW	1.15	OK	4	5	OK	2	5	OK	5
SHEAR (lbs)	CASE	CD								
157	SNOW	1.15	USE (3) 8 d NAILS TOENAILED KNEEWALL TO PLATE AND WEB MEMBER TO PLATE							
CONDITION "D" - TOP CHORD FLIP:										
TENSION (lbs)	CASE	CD								
55	SNOW	1.15	USE (2) 6 d NAILS THROUGH SHEATHING EACH SIDE							
			ALTERNATE: USE (2) 16 ga STAPLE THROUGH SHEATHING EACH SIDE							
SHEAR (lbs)	CASE	CD								
38	SNOW	1.15	USE (2) 16 d NAILS TOENAILED EACH END PLUS USE 10 d NAILS AT 24 in O.C. THROUGH PLATES							

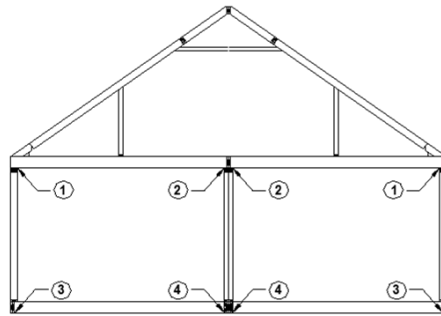


COMPONENT LOAD SUMMARY

EXTERIOR WALL DEAD LOAD = 12 psf x 10 ft = 120 plf
 MATING WALL DEAD LOAD = 8 psf x 10 ft = 80 plf
 FLOOR DEAD LOAD = 10 psf x 15.16 ft / 2 = 75.8 plf
 FLOOR LIVE LOAD = 40 psf x 15.16 ft / 2 = 303.2 plf
 CEILING DEAD LOAD = 5 psf x 15.16 ft / 2 = 37.9 plf

LOCATION 1 = EXT. WALL HEADER & EXT. WALL STUD
LOCATION 2 = M. WALL HEADER & M. WALL STUD
LOCATION 3 = PERIMETER BAND
LOCATION 4 = CENTER GIRDER
LOCATIONS 3 & 4 MAY BE USED TO GENERATE FOUNDATION LOADS

* CROSS SECTION IS FOR REFERENCE ONLY
 AND MAY NOT REFLECT ACTUAL TRUSS



TRUSS HM773855, 5/12 PITCH, 15'-2" WIDTH

COMPONENT LOADS (lbs/ft)

30 psf GROUND SNOW (MATING WALL LOADS ARE PER SIDE OF LINE)

LOCATION	1	2	3	4
DEAD LOAD	175	171	371	327
LIVE LOAD	201	196	505	500
TOTAL LOAD	376	367	876	827

C & C UPLIFT

LOCATION	1	2	3	4
UPLIFT (0.6) DEAD LOAD	105	103	223	196
150 / 119 mph UPLIFT	196	249	-	-53
130 / 101 mph UPLIFT	147	187	-	-
115 / 90 mph UPLIFT	116	146	-	-



SECTION 2
STRUCTURAL CALCULATIONS



101/130 mph WIND, 7/12 PITCH, FIELD PRESSURE (27.73 psf)

HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)	HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)	HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)				
8 ft	2 x 4 SPF STUD GRADE	12	740	0.23	9 ft	2 x 4 SPF STUD GRADE	12	295	0.376	10 ft	2 x 4 SPF STUD GRADE	12	**NG**	-				
		16	295	0.306			16	**NG**	-			16	**NG**	-				
		19.2	295	0.367			19.2	**NG**	-			19.2	**NG**	-	19.2	**NG**	-	
		24	**NG**	-			24	**NG**	-			24	**NG**	-	24	**NG**	-	
	2 x 4 SPF #2	12	1555	0.197		2 x 4 SPF #2	12	1025	0.322		2 x 4 SPF #2	12	**NG**	-	2 x 4 SPF #2	12	**NG**	-
		16	1255	0.262			16	730	0.43			16	**NG**	-		16	**NG**	-
		19.2	1020	0.315			19.2	**NG**	-			19.2	**NG**	-		19.2	**NG**	-
		24	665	0.394			24	**NG**	-			24	**NG**	-		24	**NG**	-
	2 x 4 SYP #2	12	1385	0.197		2 x 4 SYP #2	12	855	0.322		2 x 4 SYP #2	12	**NG**	-	2 x 4 SYP #2	12	**NG**	-
		16	1030	0.262			16	495	0.43			16	**NG**	-		16	**NG**	-
		19.2	750	0.315			19.2	**NG**	-			19.2	**NG**	-		19.2	**NG**	-
		24	295	0.394			24	**NG**	-			24	**NG**	-		24	**NG**	-
	2 x 6 SPF STUD GRADE	12	4770	0.059		2 x 6 SPF STUD GRADE	12	3580	0.097		2 x 6 SPF STUD GRADE	12	2585	0.15	2 x 6 SPF STUD GRADE	12	2585	0.15
		16	4155	0.079			16	2915	0.129			16	1885	0.2		16	1885	0.2
		19.2	3675	0.095			19.2	2385	0.155			19.2	1305	0.24		19.2	1305	0.24
		24	2955	0.118			24	1560	0.194			24	320	0.3		24	320	0.3
	2 x 6 SPF #2	12	7360	0.051		2 x 6 SPF #2	12	5605	0.083		2 x 6 SPF #2	12	4260	0.129	2 x 6 SPF #2	12	4260	0.129
		16	6785	0.068			16	5030	0.111			16	3695	0.172		16	3695	0.172
		19.2	6355	0.081			19.2	4600	0.133			19.2	3270	0.206		19.2	3270	0.206
		24	5740	0.101			24	3980	0.166			24	2650	0.257		24	2650	0.257
	2 x 6 SYP #2	12	7265	0.051		2 x 6 SYP #2	12	5430	0.083		2 x 6 SYP #2	12	4055	0.129	2 x 6 SYP #2	12	4055	0.129
		16	6610	0.068			16	4790	0.111			16	3430	0.172		16	3430	0.172
		19.2	6120	0.081			19.2	4305	0.133			19.2	2950	0.206		19.2	2950	0.206
		24	5420	0.101			24	3600	0.166			24	2240	0.257		24	2240	0.257



THE DESIGNER IS TO DETERMINE IF ACTUAL DEFLECTION IS WITHIN ACCEPTABLE LIMITS
EVEN IF RATIO MEETS CODE REQUIREMENTS

BARLOW ENGINEERING, P.C.
6512 SIX FORKS RD., SUITE 203-B
RALEIGH, NC 27615

101/130 mph WIND, 7/12 PITCH, EDGE PRESSURE (33.66 psf)

HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)	HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)	HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)			
8 ft	2 x 4 SPF STUD GRADE	12	455	0.279	9 ft	2 x 4 SPF STUD GRADE	12	**NG**	-	10 ft	2 x 4 SPF STUD GRADE	12	**NG**	-			
		16	295	0.372			16	**NG**	-			16	**NG**	-			
		19.2	**NG**	-			19.2	**NG**	-			19.2	**NG**	-	19.2	**NG**	-
		24	**NG**	-			24	**NG**	-			24	**NG**	-	24	**NG**	-
	2 x 4 SPF #2	12	1360	0.239		2 x 4 SPF #2	12	835	0.391		2 x 4 SPF #2	12	**NG**	-			
		16	1005	0.318			16	**NG**	-			16	**NG**	-			
		19.2	720	0.382			19.2	**NG**	-			19.2	**NG**	-			
		24	**NG**	-			24	**NG**	-			24	**NG**	-			
	2 x 4 SYP #2	12	1160	0.239		2 x 4 SYP #2	12	630	0.391		2 x 4 SYP #2	12	**NG**	-			
		16	730	0.318			16	**NG**	-			16	**NG**	-			
		19.2	365	0.382			19.2	**NG**	-			19.2	**NG**	-			
		24	**NG**	-			24	**NG**	-			24	**NG**	-			
	2 x 6 SPF STUD GRADE	12	4375	0.072		2 x 6 SPF STUD GRADE	12	3155	0.118		2 x 6 SPF STUD GRADE	12	2140	0.182			
		16	3645	0.096			16	2350	0.157			16	1265	0.243			
		19.2	3065	0.115			19.2	1690	0.188			19.2	485	0.292			
		24	2165	0.144			24	570	0.235			24	295	0.365			
	2 x 6 SPF #2	12	6990	0.062		2 x 6 SPF #2	12	5235	0.101		2 x 6 SPF #2	12	3895	0.156			
		16	6325	0.082			16	4575	0.134			16	3245	0.208			
		19.2	5830	0.098			19.2	4070	0.161			19.2	2745	0.25			
		24	5110	0.123			24	3340	0.202			24	1995	0.313			
	2 x 6 SYP #2	12	6840	0.062		2 x 6 SYP #2	12	5015	0.101		2 x 6 SYP #2	12	3650	0.156			
		16	6090	0.082			16	4275	0.134			16	2920	0.208			
		19.2	5525	0.098			19.2	3705	0.161			19.2	2345	0.25			
		24	4705	0.123			24	2865	0.202			24	1465	0.313			



THE DESIGNER IS TO DETERMINE IF ACTUAL DEFLECTION IS WITHIN ACCEPTABLE LIMITS
EVEN IF RATIO MEETS CODE REQUIREMENTS

BARLOW ENGINEERING, P.C.
6512 SIX FORKS RD., SUITE 203-B
RALEIGH, NC 27615

EXTERIOR WALL HEADER - 1 STORY & 2 / 3 STORY UPPER LEVEL (LOCATION 1) Cottage Grove, WI
TRUSS CC557327
7/12 PITCH, 32.08 ft UNIT WIDTH, 30 psf GROUND SNOW LOAD

2x4 FOR (2) MEMBER HEADERS
2x6 FOR (3) MEMBER HEADERS

MEMBER	QUANTITY	HEADER LL (plf)	HEADER TL (plf)	MAXIMUM SPAN	LIMITED BY	MID-SPAN DEFLECTION (in)	MIN. NUMBER OF JACKSTUDS REQ'D EACH END			UPLIFT (plf)	UPLIFT REACTION (lbs)
							SPF #2	SYP #2	SPF STUD		
2 x 4 SPF #2	1	282	576	2' - 3"	Lb	0.049	1	1	2	396	458
2 x 6 SPF #2	1	282	576	3' - 4"	Lb	0.058	2	2	2	396	669
2 x 8 SPF #2	1	282	576	4' - 3"	Lb	0.066	2	2	2	396	849
2 x 10 SPF #2	1	282	576	5' - 2"	Lb	0.07	2	2	2	396	1037
2 x 12 SPF #2	1	282	576	6' - 0"	Lb	0.071	2	2	3	396	1202
2 x 4 SYP #2	1	282	576	2' - 1"	Lb	0.035	1	1	2	396	419
2 x 6 SYP #2	1	282	576	3' - 2"	Lb	0.045	2	2	2	396	627
2 x 8 SYP #2	1	282	576	4' - 0"	Lb	0.051	2	2	2	396	796
2 x 10 SYP #2	1	282	576	4' - 9"	Lb	0.049	2	2	2	396	945
2 x 12 SYP #2	1	282	576	5' - 9"	Lb	0.059	2	2	2	396	1149
1.5 x 3.5 LVL	1	282	576	3' - 2"	Lb	0.135	2	2	2	396	643
1.5 x 5.5 LVL	1	282	576	5' - 0"	Lb	0.2	2	2	2	396	996
1.5 x 7.25 LVL	1	282	576	6' - 6"	Lb	0.254	2	2	3	396	1302
1.5 x 9.25 LVL	1	282	576	8' - 3"	Lb	0.314	3	3	3	396	1648
1.5 x 11.25 LVL	1	282	576	10' - 0"	Lb	0.373	3	3	3	396	1991
1.5 x 12 LVL	1	282	576	10' - 8"	Lb	0.394	3	3	3	396	2119
1.5 x 14 LVL	1	282	576	12' - 5"	Lb	0.451	3	3	3	396	2461
1.5 x 16 LVL	1	282	576	14' - 1"	Lb	0.506	3	3	3	396	2800
1.5 x 18 LVL	1	282	576	15' - 10"	Lb	0.56	3	3	3	396	3137
1.5 x 20 LVL	1	282	576	17' - 6"	Lb	0.614	3	3	3	396	3474
1.5 x 22 LVL	1	282	576	19' - 2"	Lb	0.668	3	3	4	396	3810
1.5 x 24 LVL	1	282	576	20' - 11"	Lb	0.72	3	3	4	396	4145
2 x 4 SPF #2	2	282	576	3' - 3"	Lb	0.099	1	1	1	396	648
2 x 6 SPF #2	2	282	576	4' - 9"	Lb	0.116	1	1	1	396	946
2 x 8 SPF #2	2	282	576	6' - 0"	Lb	0.131	1	1	2	396	1200
2 x 10 SPF #2	2	282	576	7' - 4"	Lb	0.141	2	2	2	396	1466
2 x 12 SPF #2	2	282	576	8' - 7"	Lb	0.141	2	2	2	396	1700
2 x 4 SYP #2	2	282	576	2' - 11"	Lb	0.069	1	1	1	396	593
2 x 6 SYP #2	2	282	576	4' - 5"	Lb	0.09	1	1	1	396	887
2 x 8 SYP #2	2	282	576	5' - 8"	Lb	0.102	1	1	2	396	1126
2 x 10 SYP #2	2	282	576	6' - 8"	Lb	0.097	2	2	2	396	1336
2 x 12 SYP #2	2	282	576	8' - 2"	Lb	0.118	2	2	2	396	1625
1.5 x 3.5 LVL	2	282	576	4' - 7"	Lb	0.27	1	1	1	396	910
1.5 x 5.5 LVL	2	282	576	7' - 1"	Lb	0.4	2	2	2	396	1409
1.5 x 7.25 LVL	2	282	576	9' - 3"	Lb	0.508	2	2	2	396	1841
1.5 x 9.25 LVL	2	282	576	11' - 9"	Lb	0.628	2	2	3	396	2330
1.5 x 11.25 LVL	2	282	576	14' - 2"	Lb	0.745	3	3	3	396	2816
1.5 x 12 LVL	2	282	576	15' - 1"	Lb	0.788	3	3	3	396	2997
1.5 x 14 LVL	2	282	576	17' - 6"	Lb	0.901	3	3	3	396	3480
1.5 x 16 LVL	2	282	576	19' - 11"	Lb	1.012	3	3	3	396	3959
1.5 x 18 LVL	2	282	576	22' - 4"	Lb	1.121	3	3	3	396	4437
1.5 x 20 LVL	2	282	576	24' - 9"	Lb	1.228	3	3	4	396	4913
1.5 x 22 LVL	2	282	576	27' - 2"	Lb	1.335	3	3	4	396	5388
1.5 x 24 LVL	2	282	576	29' - 7"	Lb	1.44	3	3	4	396	5861
2 x 4 SPF #2	3	282	576	4' - 0"	Lb	0.148	1	1	1	396	793
2 x 6 SPF #2	3	282	576	5' - 10"	Lb	0.174	1	1	1	396	1158
2 x 8 SPF #2	3	282	576	7' - 5"	Lb	0.197	1	1	1	396	1470
2 x 10 SPF #2	3	282	576	9' - 0"	Lb	0.211	1	1	1	396	1795
2 x 12 SPF #2	3	282	576	10' - 6"	Lb	0.212	1	1	1	396	2082
2 x 4 SYP #2	3	282	576	3' - 8"	Lb	0.104	1	1	1	396	726
2 x 6 SYP #2	3	282	576	5' - 5"	Lb	0.134	1	1	1	396	1086
2 x 8 SYP #2	3	282	576	6' - 11"	Lb	0.153	1	1	1	396	1379
2 x 10 SYP #2	3	282	576	8' - 3"	Lb	0.146	1	1	1	396	1637
2 x 12 SYP #2	3	282	576	10' - 0"	Lb	0.177	1	1	1	396	1991
1.5 x 3.5 LVL	3	282	576	5' - 7"	Lb	0.405	1	1	1	396	1114
1.5 x 5.5 LVL	3	282	576	8' - 8"	Lb	0.599	1	1	1	396	1726
1.5 x 7.25 LVL	3	282	576	11' - 4"	Lb	0.763	1	1	1	396	2255
1.5 x 9.25 LVL	3	282	576	14' - 4"	Lb	0.942	1	1	1	396	2854
1.5 x 11.25 LVL	3	282	576	17' - 5"	Lb	1.118	1	1	2	396	3449
1.5 x 12 LVL	3	282	576	18' - 6"	Lb	1.182	1	1	2	396	3671
1.5 x 14 LVL	3	282	576	21' - 6"	Lb	1.352	1	1	2	396	4262
1.5 x 16 LVL	3	282	576	24' - 5"	Lb	1.518	2	2	2	396	4849
1.5 x 18 LVL	3	282	576	27' - 5"	Lb	1.681	2	2	2	396	5434
1.5 x 20 LVL	3	282	576	30' - 4"	Lb	1.843	2	2	2	396	6017
1.5 x 22 LVL	3	282	576	33' - 3"	Lb	2.003	2	2	3	396	6599
1.5 x 24 LVL	3	282	576	36' - 3"	Lb	2.16	2	2	3	396	7179

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EVEN IF RATIO MEETS CODE REQUIREMENTS

BARLOW ENGINEERING, P.C.
6512 SIX FORKS RD., SUITE 203-B
RALEIGH, NC 27615

MATING WALL STUDS



CHAMPION HOMES of NC

ALL WINDS, ALL PITCHES, LATERAL PRESSURE (5 psf)

HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)	HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)	HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)
8 ft	2 x 3 SPF STUD GRADE	12	610	0.114	9 ft	2 x 3 SPF STUD GRADE	12	435	0.186	10 ft	2 x 3 SPF STUD GRADE	12	310	0.288
		16	540	0.151			16	370	0.248			16	295	0.385
		19.2	490	0.182			19.2	320	0.298			19.2	295	0.461
		24	420	0.227			24	295	0.372			24	**NG**	-
	2 x 3 SPF #2	12	830	0.097		2 x 3 SPF #2	12	615	0.159		2 x 3 SPF #2	12	465	0.247
		16	775	0.13			16	565	0.213			16	415	0.33
		19.2	735	0.156			19.2	525	0.255			19.2	385	0.395
		24	680	0.195			24	475	0.319			24	335	0.494
	2 x 3 SYP #2	12	800	0.097		2 x 3 SYP #2	12	585	0.159		2 x 3 SYP #2	12	435	0.247
		16	740	0.13			16	530	0.213			16	385	0.33
		19.2	695	0.156			19.2	485	0.255			19.2	345	0.395
		24	630	0.195			24	430	0.319			24	295	0.494
	2 x 4 SPF STUD GRADE	12	1920	0.041		2 x 4 SPF STUD GRADE	12	1450	0.068		2 x 4 SPF STUD GRADE	12	1110	0.105
		16	1810	0.055			16	1345	0.09			16	1010	0.14
		19.2	1725	0.066			19.2	1265	0.108			19.2	940	0.168
		24	1605	0.083			24	1155	0.136			24	830	0.21
	2 x 4 SPF #2	12	2495	0.035		2 x 4 SPF #2	12	1905	0.058		2 x 4 SPF #2	12	1485	0.09
		16	2400	0.047			16	1815	0.077			16	1400	0.12
		19.2	2330	0.057			19.2	1750	0.093			19.2	1340	0.144
		24	2230	0.071			24	1660	0.116			24	1255	0.18
	2 x 4 SYP #2	12	2450	0.035		2 x 4 SYP #2	12	1855	0.058		2 x 4 SYP #2	12	1440	0.09
		16	2340	0.047			16	1755	0.077			16	1345	0.12
		19.2	2260	0.057			19.2	1685	0.093			19.2	1280	0.144
		24	2150	0.071			24	1585	0.116			24	1185	0.18
2 x 6 SPF STUD GRADE	12	6495	0.011	2 x 6 SPF STUD GRADE	12	5520	0.017	2 x 6 SPF STUD GRADE	12	4600	0.027			
	16	6345	0.014		16	5340	0.023		16	4405	0.036			
	19.2	6230	0.017		19.2	5205	0.028		19.2	4260	0.043			
	24	6065	0.021		24	5010	0.035		24	4060	0.054			
2 x 6 SPF #2	12	9150	0.009	2 x 6 SPF #2	12	7445	0.015	2 x 6 SPF #2	12	6055	0.023			
	16	8980	0.012		16	7260	0.02		16	5870	0.031			
	19.2	8855	0.015		19.2	7125	0.024		19.2	5735	0.037			
	24	8670	0.018		24	6935	0.03		24	5545	0.046			
2 x 6 SYP #2	12	9325	0.009	2 x 6 SYP #2	12	7490	0.015	2 x 6 SYP #2	12	6040	0.023			
	16	9125	0.012		16	7280	0.02		16	5835	0.031			
	19.2	8970	0.015		19.2	7125	0.024		19.2	5685	0.037			
	24	8760	0.018		24	6910	0.03		24	5480	0.046			

*** LOADS AND QUANTITIES ARE PER SIDE OF MATING WALL

THE DESIGNER IS TO DETERMINE IF ACTUAL DEFLECTION IS WITHIN ACCEPTABLE LIMITS
EVEN IF RATIO MEETS CODE REQUIREMENTS

BARLOW ENGINEERING, P.C.
6512 SIX FORKS RD., SUITE 203-B
RALEIGH, NC 27615

DATE: 12/4/19
Approval Limited to Factory Built Portion Only

PFS CORPORATION

Cottage Grove, WI

2x6 FOR (3) MEMBER HEADERS

MATING WALL HEADER - 1 STORY & 2 / 3 STORY UPPER LEVEL (LOCATION 1 & 2)
TRUSS CC557327
7/12 PITCH, 32.08 ft UNIT WIDTH, 30 psf GROUND SNOW LOAD

MEMBER	QUANTITY	HEADER LL (plf)	HEADER TL (plf)	MAXIMUM SPAN	LIMITED BY	MID-SPAN DEFLECTION (in)	MIN. NUMBER OF JACKSTUDS REQ'D EACH END SPF #2	SYP #2	SPF STUD	UPLIFT (plf)	UPLIFT REACTION (lbs)
2 x 4 SPF #2	1	83	169	4' - 3"	Lb	0.169	1	1	1	47	100
2 x 6 SPF #2	1	83	169	6' - 2"	Lb	0.197	1	1	1	47	147
2 x 8 SPF #2	1	83	169	7' - 10"	Lb	0.223	1	1	2	47	186
2 x 10 SPF #2	1	83	169	9' - 7"	Lb	0.24	2	2	2	47	227
2 x 12 SPF #2	1	83	169	11' - 2"	Lb	0.241	2	2	2	47	263
2 x 4 SYP #2	1	83	169	3' - 10"	Lb	0.118	1	1	1	47	92
2 x 6 SYP #2	1	83	169	5' - 10"	Lb	0.153	1	1	1	47	137
2 x 8 SYP #2	1	83	169	7' - 5"	Lb	0.173	1	1	2	47	175
2 x 10 SYP #2	1	83	169	8' - 9"	Lb	0.165	2	2	2	47	207
2 x 12 SYP #2	1	83	169	10' - 8"	Lb	0.201	2	2	2	47	252
1.5 x 3.5 LVL	1	83	169	5' - 11"	Lb	0.46	1	1	1	47	141
1.5 x 5.5 LVL	1	83	169	9' - 3"	Lb	0.681	2	2	2	47	218
1.5 x 7.25 LVL	1	83	169	12' - 1"	Lb	0.866	2	2	2	47	285
1.5 x 9.25 LVL	1	83	169	15' - 4"	Lb	1.071	2	2	2	47	361
1.5 x 11.25 LVL	1	83	169	18' - 6"	Lb	1.27	2	2	2	47	436
1.5 x 12 LVL	1	83	169	19' - 9"	Lb	1.342	2	2	2	47	464
1.5 x 14 LVL	1	83	169	22' - 11"	Lb	1.536	2	2	3	47	539
1.5 x 16 LVL	1	83	169	26' - 1"	Lb	1.724	3	3	3	47	613
1.5 x 18 LVL	1	83	169	29' - 3"	Lb	1.91	3	3	3	47	687
1.5 x 20 LVL	1	83	169	32' - 4"	Lb	2.093	3	3	3	47	761
1.5 x 22 LVL	1	83	169	35' - 6"	Lb	2.275	3	3	3	47	835
1.5 x 24 LVL	1	83	169	38' - 7"	Lb	2.454	3	3	3	47	908
2 x 4 SPF #2	2	83	169	6' - 0"	Lb	0.337	1	1	1	47	142
2 x 6 SPF #2	2	83	169	8' - 9"	Lb	0.395	1	1	1	47	207
2 x 8 SPF #2	2	83	169	11' - 2"	Lb	0.447	1	1	1	47	263
2 x 10 SPF #2	2	83	169	13' - 8"	Lb	0.479	1	1	1	47	321
2 x 12 SPF #2	2	83	169	15' - 10"	Lb	0.481	1	1	1	47	372
2 x 4 SYP #2	2	83	169	5' - 6"	Lb	0.237	1	1	1	47	130
2 x 6 SYP #2	2	83	169	8' - 3"	Lb	0.305	1	1	1	47	194
2 x 8 SYP #2	2	83	169	10' - 6"	Lb	0.347	1	1	1	47	247
2 x 10 SYP #2	2	83	169	12' - 5"	Lb	0.331	1	1	1	47	293
2 x 12 SYP #2	2	83	169	15' - 1"	Lb	0.402	1	1	1	47	356
1.5 x 3.5 LVL	2	83	169	8' - 3"	Ld TL - I/240	0.846	1	1	1	47	195
1.5 x 5.5 LVL	2	83	169	13' - 0"	Ld TL - I/240	1.33	1	1	1	47	307
1.5 x 7.25 LVL	2	83	169	17' - 1"	Lb	1.733	1	1	1	47	403
1.5 x 9.25 LVL	2	83	169	21' - 8"	Lb	2.141	1	1	2	47	511
1.5 x 11.25 LVL	2	83	169	26' - 3"	Lb	2.539	2	2	2	47	617
1.5 x 12 LVL	2	83	169	27' - 11"	Lb	2.685	2	2	2	47	657
1.5 x 14 LVL	2	83	169	32' - 5"	Lb	3.071	2	2	2	47	762
1.5 x 16 LVL	2	83	169	36' - 10"	Lb	3.448	2	2	2	47	868
1.5 x 18 LVL	2	83	169	41' - 4"	Lb	3.819	2	2	3	47	972
1.5 x 20 LVL	2	83	169	45' - 9"	Lb	4.187	3	3	3	47	1077
1.5 x 22 LVL	2	83	169	50' - 2"	Lb	4.55	3	3	3	47	1181
1.5 x 24 LVL	2	83	169	54' - 7"	Lb	4.908	3	3	3	47	1284
2 x 4 SPF #2	3	83	169	7' - 4"	Lb	0.506	1	1	1	47	174
2 x 6 SPF #2	3	83	169	10' - 9"	Lb	0.592	1	1	1	47	254
2 x 8 SPF #2	3	83	169	13' - 8"	Lb	0.67	1	1	1	47	322
2 x 10 SPF #2	3	83	169	16' - 8"	Lb	0.719	1	1	1	47	393
2 x 12 SPF #2	3	83	169	19' - 4"	Lb	0.722	1	1	1	47	456
2 x 4 SYP #2	3	83	169	6' - 9"	Lb	0.355	1	1	1	47	159
2 x 6 SYP #2	3	83	169	10' - 1"	Lb	0.458	1	1	1	47	238
2 x 8 SYP #2	3	83	169	12' - 10"	Lb	0.52	1	1	1	47	302
2 x 10 SYP #2	3	83	169	15' - 3"	Lb	0.496	1	1	1	47	359
2 x 12 SYP #2	3	83	169	18' - 6"	Lb	0.604	1	1	1	47	436
1.5 x 3.5 LVL	3	83	169	9' - 6"	Ld TL - I/240	0.968	1	1	1	47	224
1.5 x 5.5 LVL	3	83	169	14' - 11"	Ld TL - I/240	1.522	1	1	1	47	351
1.5 x 7.25 LVL	3	83	169	19' - 8"	Ld TL - I/240	2.006	1	1	1	47	463
1.5 x 9.25 LVL	3	83	169	26' - 7"	Lb	3.212	1	1	1	47	625
1.5 x 11.25 LVL	3	83	169	32' - 1"	Lb	3.809	1	1	1	47	756
1.5 x 12 LVL	3	83	169	34' - 2"	Lb	4.027	1	1	1	47	804
1.5 x 14 LVL	3	83	169	39' - 8"	Lb	4.607	1	1	1	47	934
1.5 x 16 LVL	3	83	169	45' - 2"	Lb	5.172	1	1	1	47	1063
1.5 x 18 LVL	3	83	169	50' - 7"	Lb	5.729	1	1	1	47	1191
1.5 x 20 LVL	3	83	169	56' - 1"	Lb	6.28	1	1	2	47	1319
1.5 x 22 LVL	3	83	169	61' - 6"	Lb	6.825	2	2	2	47	1446
1.5 x 24 LVL	3	83	169	66' - 11"	Lb	7.362	2	2	2	47	1573

THE DESIGNER IS TO DETERMINE IF ACTUAL DEFLECTION IS WITHIN ACCEPTABLE LIMITS
EVEN IF RATIO MEETS CODE REQUIREMENTS

BARLOW ENGINEERING, P.C.
6512 SIX FORKS RD., SUITE 203-B
RALEIGH, NC 27615



**PERIMETER BAND - 1 STORY & 2 / 3 STORY UPPER LEVEL (LOCATION 3)
 TRUSS CC557327
 7/12 PITCH, 32.08 ft UNIT WIDTH, 30 psf GROUND SNOW LOAD**

MEMBER	QUANTITY	HEADER LL (plf)	HEADER TL (plf)	MAXIMUM SPAN	LIMITED BY	MID-SPAN DEFLECTION (in)	UPLIFT (plf)	UPLIFT REACTION (lbs)
2 x 8 SPF #2	1	602	1096	3' - 1"	Lb	0.034	-100	-155
2 x 10 SPF #2	1	602	1096	3' - 9"	Lb	0.037	-100	-190
2 x 12 SPF #2	1	602	1096	4' - 4"	Lb	0.037	-100	-220
2 x 8 SYP #2	1	602	1096	2' - 10"	Lb	0.027	-100	-146
2 x 10 SYP #2	1	602	1096	3' - 5"	Lb	0.026	-100	-173
2 x 12 SYP #2	1	602	1096	4' - 2"	Lb	0.031	-100	-210
1.5 x 7.25 LVL	1	602	1096	4' - 9"	Lb	0.134	-100	-238
1.5 x 9.25 LVL	1	602	1096	6' - 0"	Lb	0.165	-100	-302
1.5 x 11.25 LVL	1	602	1096	7' - 3"	Lb	0.196	-100	-365
2 x 8 SPF #2	2	602	1096	4' - 4"	Lb	0.069	-100	-220
2 x 10 SPF #2	2	602	1096	5' - 4"	Lb	0.074	-100	-268
2 x 12 SPF #2	2	602	1096	6' - 2"	Lb	0.074	-100	-311
2 x 8 SYP #2	2	602	1096	4' - 1"	Lb	0.053	-100	-206
2 x 10 SYP #2	2	602	1096	4' - 10"	Lb	0.051	-100	-245
2 x 12 SYP #2	2	602	1096	5' - 11"	Lb	0.062	-100	-298
1.5 x 7.25 LVL	2	602	1096	6' - 8"	Lb	0.267	-100	-337
1.5 x 9.25 LVL	2	602	1096	8' - 6"	Lb	0.33	-100	-427
1.5 x 11.25 LVL	2	602	1096	10' - 3"	Lb	0.392	-100	-516
2 x 8 SPF #2	3	602	1096	5' - 4"	Lb	0.103	-100	-269
2 x 10 SPF #2	3	602	1096	6' - 6"	Lb	0.111	-100	-329
2 x 12 SPF #2	3	602	1096	7' - 7"	Lb	0.111	-100	-381
2 x 8 SYP #2	3	602	1096	5' - 0"	Lb	0.08	-100	-253
2 x 10 SYP #2	3	602	1096	5' - 11"	Lb	0.077	-100	-300
2 x 12 SYP #2	3	602	1096	7' - 3"	Lb	0.093	-100	-364
1.5 x 7.25 LVL	3	602	1096	8' - 3"	Lb	0.401	-100	-413
1.5 x 9.25 LVL	3	602	1096	10' - 5"	Lb	0.495	-100	-522
1.5 x 11.25 LVL	3	602	1096	12' - 7"	Lb	0.587	-100	-631

THE DESIGNER IS TO DETERMINE IF ACTUAL DEFLECTION IS WITHIN ACCEPTABLE LIMITS EVEN IF RATIO MEETS CODE REQUIREMENTS



FLOOR JOIST (10 psf DEAD LOAD / 40 psf LIVE LOAD)

ALL LEVELS

MEMBER	QTY	SPACING (in O.C.)	TOTAL LOAD (plf)	LIVE LOAD (plf)	MAX. SPAN	LIMITED BY	MID-SPAN DEFLECTION (in)
2 x 8 SPF #2	1	12	50	40	13' - 6"	Ld LL - l/360	0.563
2 x 10 SPF #2	1	12	50	40	17' - 2"	Ld LL - l/360	0.719
2 x 12 SPF #2	1	12	50	40	20' - 7"	Lb	0.814
2 x 8 SYP #2	1	12	50	40	13' - 6"	Ld LL - l/360	0.563
2 x 10 SYP #2	1	12	50	40	16' - 2"	Lb	0.559
2 x 12 SYP #2	1	12	50	40	19' - 8"	Lb	0.68
2 x 8 SPF #2	1	16	66.67	53.33	12' - 3"	Ld LL - l/360	0.512
2 x 10 SPF #2	1	16	66.67	53.33	15' - 4"	Lb	0.607
2 x 12 SPF #2	1	16	66.67	53.33	17' - 10"	Lb	0.61
2 x 8 SYP #2	1	16	66.67	53.33	11' - 9"	Lb	0.44
2 x 10 SYP #2	1	16	66.67	53.33	14' - 0"	Lb	0.419
2 x 12 SYP #2	1	16	66.67	53.33	17' - 0"	Lb	0.51
2 x 8 SPF #2	1	19.2	80	64	11' - 5"	Lb	0.472
2 x 10 SPF #2	1	19.2	80	64	14' - 0"	Lb	0.506
2 x 12 SPF #2	1	19.2	80	64	16' - 3"	Lb	0.509
2 x 8 SYP #2	1	19.2	80	64	10' - 9"	Lb	0.366
2 x 10 SYP #2	1	19.2	80	64	12' - 9"	Lb	0.35
2 x 12 SYP #2	1	19.2	80	64	15' - 6"	Lb	0.425
2 x 8 SPF #2	1	24	100	80	10' - 3"	Lb	0.378
2 x 10 SPF #2	1	24	100	80	12' - 6"	Lb	0.405
2 x 12 SPF #2	1	24	100	80	14' - 6"	Lb	0.407
2 x 8 SYP #2	1	24	100	80	9' - 7"	Lb	0.293
2 x 10 SYP #2	1	24	100	80	11' - 5"	Lb	0.28
2 x 12 SYP #2	1	24	100	80	13' - 11"	Lb	0.34

THE DESIGNER IS TO DETERMINE IF ACTUAL DEFLECTION IS WITHIN ACCEPTABLE LIMITS
 EVEN IF RATIO MEETS CODE REQUIREMENTS

FLOOR JOIST



**CENTER GIRDER - 1 STORY & 2 / 3 STORY UPPER LEVEL (LOCATION 4)
 TRUSS CC557327
 7/12 PITCH, 32.08 ft UNIT WIDTH, 30 psf GROUND SNOW LOAD**

MEMBER	QUANTITY	HEADER LL (plf)	HEADER TL (plf)	MAXIMUM SPAN	LIMITED BY	MID-SPAN DEFLECTION (in)	UPLIFT (plf)	UPLIFT REACTION (lbs)
2 x 8 SPF #2	1	403	649	4' - 0"	Lb	0.058	0	0
2 x 10 SPF #2	1	403	649	4' - 11"	Lb	0.062	0	0
2 x 12 SPF #2	1	403	649	5' - 8"	Lb	0.063	0	0
2 x 8 SYP #2	1	403	649	3' - 9"	Lb	0.045	0	0
2 x 10 SYP #2	1	403	649	4' - 5"	Lb	0.043	0	0
2 x 12 SYP #2	1	403	649	5' - 5"	Lb	0.052	0	0
1.5 x 7.25 LVL	1	403	649	6' - 2"	Lb	0.226	0	0
1.5 x 9.25 LVL	1	403	649	7' - 10"	Lb	0.279	0	0
1.5 x 11.25 LVL	1	403	649	9' - 5"	Lb	0.331	0	0
2 x 8 SPF #2	2	403	649	5' - 8"	Lb	0.116	0	0
2 x 10 SPF #2	2	403	649	6' - 11"	Lb	0.125	0	0
2 x 12 SPF #2	2	403	649	8' - 1"	Lb	0.125	0	0
2 x 8 SYP #2	2	403	649	5' - 4"	Lb	0.09	0	0
2 x 10 SYP #2	2	403	649	6' - 4"	Lb	0.086	0	0
2 x 12 SYP #2	2	403	649	7' - 8"	Lb	0.105	0	0
1.5 x 7.25 LVL	2	403	649	8' - 9"	Lb	0.451	0	0
1.5 x 9.25 LVL	2	403	649	11' - 1"	Lb	0.558	0	0
1.5 x 11.25 LVL	2	403	649	13' - 4"	Lb	0.661	0	0
2 x 8 SPF #2	3	403	649	6' - 11"	Lb	0.175	0	0
2 x 10 SPF #2	3	403	649	8' - 6"	Lb	0.187	0	0
2 x 12 SPF #2	3	403	649	9' - 10"	Lb	0.188	0	0
2 x 8 SYP #2	3	403	649	6' - 6"	Lb	0.135	0	0
2 x 10 SYP #2	3	403	649	7' - 9"	Lb	0.129	0	0
2 x 12 SYP #2	3	403	649	9' - 5"	Lb	0.157	0	0
1.5 x 7.25 LVL	3	403	649	10' - 8"	Lb	0.677	0	0
1.5 x 9.25 LVL	3	403	649	13' - 6"	Lb	0.836	0	0
1.5 x 11.25 LVL	3	403	649	16' - 4"	Lb	0.992	0	0

THE DESIGNER IS TO DETERMINE IF ACTUAL DEFLECTION IS WITHIN ACCEPTABLE LIMITS EVEN IF RATIO MEETS CODE REQUIREMENTS

EXTERIOR WALL STUD TABLES



CHAMPION HOMES of NC

101/130 mph WIND, 5/12 PITCH, FIELD PRESSURE (27.47 psf)

HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)	HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)	HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)				
8 ft	2 x 4 SPF STUD GRADE	12	755	0.227	9 ft	2 x 4 SPF STUD GRADE	12	295	0.372	10 ft	2 x 4 SPF STUD GRADE	12	**NG**	-				
		16	295	0.303			16	**NG**	-			16	**NG**	-				
		19.2	295	0.364			19.2	**NG**	-			19.2	**NG**	-	19.2	**NG**	-	
		24	**NG**	-			24	**NG**	-			24	**NG**	-	24	**NG**	-	
	2 x 4 SPF #2	12	1565	0.195		2 x 4 SPF #2	12	1035	0.319		2 x 4 SPF #2	12	660	0.495	2 x 4 SPF #2	12	660	0.495
		16	1265	0.26			16	740	0.426			16	**NG**	-		16	**NG**	-
		19.2	1035	0.312			19.2	**NG**	-			19.2	**NG**	-		19.2	**NG**	-
		24	685	0.39			24	**NG**	-			24	**NG**	-		24	**NG**	-
	2 x 4 SYP #2	12	1395	0.195		2 x 4 SYP #2	12	865	0.319		2 x 4 SYP #2	12	490	0.495	2 x 4 SYP #2	12	490	0.495
		16	1045	0.26			16	510	0.426			16	**NG**	-		16	**NG**	-
		19.2	765	0.312			19.2	**NG**	-			19.2	**NG**	-		19.2	**NG**	-
		24	320	0.39			24	**NG**	-			24	**NG**	-		24	**NG**	-
	2 x 6 SPF STUD GRADE	12	4790	0.059		2 x 6 SPF STUD GRADE	12	3605	0.096		2 x 6 SPF STUD GRADE	12	2610	0.149	2 x 6 SPF STUD GRADE	12	2610	0.149
		16	4180	0.078			16	2940	0.128			16	1915	0.198		16	1915	0.198
		19.2	3705	0.094			19.2	2420	0.154			19.2	1340	0.238		19.2	1340	0.238
		24	2995	0.117			24	1605	0.192			24	375	0.298		24	375	0.298
	2 x 6 SPF #2	12	7380	0.05		2 x 6 SPF #2	12	5625	0.082		2 x 6 SPF #2	12	4275	0.128	2 x 6 SPF #2	12	4275	0.128
		16	6810	0.067			16	5055	0.11			16	3720	0.17		16	3720	0.17
		19.2	6380	0.08			19.2	4625	0.132			19.2	3300	0.204		19.2	3300	0.204
		24	5770	0.1			24	4010	0.164			24	2685	0.255		24	2685	0.255
	2 x 6 SYP #2	12	7285	0.05		2 x 6 SYP #2	12	5450	0.082		2 x 6 SYP #2	12	4075	0.128	2 x 6 SYP #2	12	4075	0.128
		16	6635	0.067			16	4815	0.11			16	3455	0.17		16	3455	0.17
		19.2	6150	0.08			19.2	4330	0.132			19.2	2980	0.204		19.2	2980	0.204
		24	5455	0.1			24	3635	0.164			24	2275	0.255		24	2275	0.255

THE DESIGNER IS TO DETERMINE IF ACTUAL DEFLECTION IS WITHIN ACCEPTABLE LIMITS
EVEN IF RATIO MEETS CODE REQUIREMENTS

BARLOW ENGINEERING, P.C.
6512 SIX FORKS RD., SUITE 203-B
RALEIGH, NC 27615

EXTERIOR WALL STUD TABLES



CHAMPION HOMES of NC

101/130 mph WIND, 5/12 PITCH, EDGE PRESSURE (33.35 psf)

HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)	HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)	HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)				
8 ft	2 x 4 SPF STUD GRADE	12	470	0.276	9 ft	2 x 4 SPF STUD GRADE	12	**NG**	-	10 ft	2 x 4 SPF STUD GRADE	12	**NG**	-				
		16	295	0.368			16	**NG**	-			16	**NG**	-				
		19.2	**NG**	-			19.2	**NG**	-			19.2	**NG**	-	19.2	**NG**	-	
		24	**NG**	-			24	**NG**	-			24	**NG**	-	24	**NG**	-	
	2 x 4 SPF #2	12	1370	0.237		2 x 4 SPF #2	12	845	0.387		2 x 4 SPF #2	12	**NG**	-	2 x 4 SPF #2	12	**NG**	-
		16	1020	0.316			16	**NG**	-			16	**NG**	-		16	**NG**	-
		19.2	735	0.379			19.2	**NG**	-			19.2	**NG**	-		19.2	**NG**	-
		24	**NG**	-			24	**NG**	-			24	**NG**	-		24	**NG**	-
	2 x 4 SYP #2	12	1170	0.237		2 x 4 SYP #2	12	640	0.387		2 x 4 SYP #2	12	**NG**	-	2 x 4 SYP #2	12	**NG**	-
		16	745	0.316			16	**NG**	-			16	**NG**	-		16	**NG**	-
		19.2	385	0.379			19.2	**NG**	-			19.2	**NG**	-		19.2	**NG**	-
		24	**NG**	-			24	**NG**	-			24	**NG**	-		24	**NG**	-
	2 x 6 SPF STUD GRADE	12	4395	0.071		2 x 6 SPF STUD GRADE	12	3175	0.116		2 x 6 SPF STUD GRADE	12	2160	0.181	2 x 6 SPF STUD GRADE	12	2160	0.181
		16	3670	0.095			16	2380	0.155			16	1300	0.241		16	1300	0.241
		19.2	3095	0.114			19.2	1725	0.186			19.2	530	0.289		19.2	530	0.289
		24	2205	0.142			24	625	0.233			24	295	0.361		24	295	0.361
	2 x 6 SPF #2	12	7005	0.061		2 x 6 SPF #2	12	5250	0.1		2 x 6 SPF #2	12	3915	0.155	2 x 6 SPF #2	12	3915	0.155
		16	6350	0.081			16	4595	0.133			16	3265	0.206		16	3265	0.206
		19.2	5855	0.098			19.2	4095	0.16			19.2	2770	0.248		19.2	2770	0.248
		24	5140	0.122			24	3370	0.2			24	2025	0.31		24	2025	0.31
	2 x 6 SYP #2	12	6860	0.061		2 x 6 SYP #2	12	5035	0.1		2 x 6 SYP #2	12	3670	0.155	2 x 6 SYP #2	12	3670	0.155
		16	6115	0.081			16	4300	0.133			16	2945	0.206		16	2945	0.206
		19.2	5555	0.098			19.2	3735	0.16			19.2	2375	0.248		19.2	2375	0.248
		24	4740	0.122			24	2900	0.2			24	1505	0.31		24	1505	0.31

THE DESIGNER IS TO DETERMINE IF ACTUAL DEFLECTION IS WITHIN ACCEPTABLE LIMITS
EVEN IF RATIO MEETS CODE REQUIREMENTS

BARLOW ENGINEERING, P.C.
6512 SIX FORKS RD., SUITE 203-B
RALEIGH, NC 27615



**EXTERIOR WALL HEADER - 1 STORY (LOCATION 1)
TRUSS HM773855
5/12 PITCH, 30.33 ft UNIT WIDTH, 30 psf GROUND SNOW LOAD**

2x3 FOR (1) MEMBER HEADERS
2x4 FOR (2) MEMBER HEADERS
2x6 FOR (3) MEMBER HEADERS

MEMBER	QUANTITY	HEADER LL (plf)	HEADER TL (plf)	MAXIMUM SPAN	LIMITED BY	MID-SPAN DEFLECTION (in)	MIN. NUMBER OF JACKSTUDS REQ'D EACH END	SYP #2	SPF STUD	UPLIFT (plf)	UPLIFT REACTION (lbs)
2 x 4 SPF #2	1	201	378	2' - 10"	Lb	0.075	1	1	1	196	280
2 x 6 SPF #2	1	201	378	4' - 2"	Lb	0.088	2	2	2	196	409
2 x 8 SPF #2	1	201	378	5' - 3"	Lb	0.1	2	2	2	196	518
2 x 10 SPF #2	1	201	378	6' - 5"	Lb	0.107	2	2	2	196	633
2 x 12 SPF #2	1	201	378	7' - 5"	Lb	0.108	2	2	2	196	734
2 x 4 SYP #2	1	201	378	2' - 7"	Lb	0.053	1	1	1	196	256
2 x 6 SYP #2	1	201	378	3' - 10"	Lb	0.068	2	2	2	196	383
2 x 8 SYP #2	1	201	378	4' - 11"	Lb	0.078	2	2	2	196	487
2 x 10 SYP #2	1	201	378	5' - 10"	Lb	0.074	2	2	2	196	577
2 x 12 SYP #2	1	201	378	7' - 1"	Lb	0.09	2	2	2	196	702
1.5 x 3.5 LVL	1	201	378	4' - 0"	Lb	0.206	2	2	2	196	393
1.5 x 5.5 LVL	1	201	378	6' - 2"	Lb	0.304	2	2	2	196	609
1.5 x 7.25 LVL	1	201	378	8' - 1"	Lb	0.387	2	2	2	196	795
1.5 x 9.25 LVL	1	201	378	10' - 3"	Lb	0.479	2	2	3	196	1007
1.5 x 11.25 LVL	1	201	378	12' - 4"	Lb	0.568	3	3	3	196	1217
1.5 x 12 LVL	1	201	378	13' - 2"	Lb	0.6	3	3	3	196	1295
1.5 x 14 LVL	1	201	378	15' - 4"	Lb	0.687	3	3	3	196	1503
1.5 x 16 LVL	1	201	378	17' - 5"	Lb	0.771	3	3	3	196	1711
1.5 x 18 LVL	1	201	378	19' - 6"	Lb	0.854	3	3	3	196	1917
1.5 x 20 LVL	1	201	378	21' - 7"	Lb	0.936	3	3	3	196	2123
1.5 x 22 LVL	1	201	378	23' - 9"	Lb	1.017	3	3	3	196	2328
1.5 x 24 LVL	1	201	378	25' - 10"	Lb	1.097	3	3	3	196	2532
2 x 4 SPF #2	2	201	378	4' - 0"	Lb	0.151	1	1	1	196	396
2 x 6 SPF #2	2	201	378	5' - 10"	Lb	0.177	1	1	1	196	578
2 x 8 SPF #2	2	201	378	7' - 5"	Lb	0.2	1	1	1	196	733
2 x 10 SPF #2	2	201	378	9' - 1"	Lb	0.214	1	1	2	196	896
2 x 12 SPF #2	2	201	378	10' - 7"	Lb	0.215	2	2	2	196	1039
2 x 4 SYP #2	2	201	378	3' - 8"	Lb	0.106	1	1	1	196	362
2 x 6 SYP #2	2	201	378	5' - 6"	Lb	0.136	1	1	1	196	542
2 x 8 SYP #2	2	201	378	7' - 0"	Lb	0.155	1	1	1	196	688
2 x 10 SYP #2	2	201	378	8' - 3"	Lb	0.148	1	1	1	196	817
2 x 12 SYP #2	2	201	378	10' - 1"	Lb	0.18	2	2	2	196	993
1.5 x 3.5 LVL	2	201	378	5' - 8"	Lb	0.411	1	1	1	196	556
1.5 x 5.5 LVL	2	201	378	8' - 9"	Lb	0.609	1	1	2	196	861
1.5 x 7.25 LVL	2	201	378	11' - 5"	Lb	0.775	2	2	2	196	1125
1.5 x 9.25 LVL	2	201	378	14' - 6"	Lb	0.957	2	2	2	196	1424
1.5 x 11.25 LVL	2	201	378	17' - 6"	Lb	1.135	2	2	3	196	1721
1.5 x 12 LVL	2	201	378	18' - 8"	Lb	1.2	2	2	3	196	1831
1.5 x 14 LVL	2	201	378	21' - 8"	Lb	1.373	3	3	3	196	2126
1.5 x 16 LVL	2	201	378	24' - 8"	Lb	1.542	3	3	3	196	2419
1.5 x 18 LVL	2	201	378	27' - 7"	Lb	1.708	3	3	3	196	2711
1.5 x 20 LVL	2	201	378	30' - 7"	Lb	1.872	3	3	3	196	3002
1.5 x 22 LVL	2	201	378	33' - 7"	Lb	2.034	3	3	3	196	3292
1.5 x 24 LVL	2	201	378	36' - 6"	Lb	2.194	3	3	3	196	3581
2 x 4 SPF #2	3	201	378	4' - 11"	Lb	0.226	1	1	1	196	485
2 x 6 SPF #2	3	201	378	7' - 2"	Lb	0.265	1	1	1	196	708
2 x 8 SPF #2	3	201	378	9' - 1"	Lb	0.3	1	1	1	196	898
2 x 10 SPF #2	3	201	378	11' - 2"	Lb	0.321	1	1	1	196	1097
2 x 12 SPF #2	3	201	378	12' - 11"	Lb	0.323	1	1	1	196	1272
2 x 4 SYP #2	3	201	378	4' - 6"	Lb	0.159	1	1	1	196	444
2 x 6 SYP #2	3	201	378	6' - 9"	Lb	0.205	1	1	1	196	664
2 x 8 SYP #2	3	201	378	8' - 7"	Lb	0.233	1	1	1	196	843
2 x 10 SYP #2	3	201	378	10' - 2"	Lb	0.222	1	1	1	196	1000
2 x 12 SYP #2	3	201	378	12' - 4"	Lb	0.27	1	1	1	196	1216
1.5 x 3.5 LVL	3	201	378	6' - 11"	Lb	0.617	1	1	1	196	681
1.5 x 5.5 LVL	3	201	378	10' - 9"	Lb	0.913	1	1	1	196	1054
1.5 x 7.25 LVL	3	201	378	14' - 0"	Lb	1.162	1	1	1	196	1378
1.5 x 9.25 LVL	3	201	378	17' - 9"	Lb	1.436	1	1	1	196	1744
1.5 x 11.25 LVL	3	201	378	21' - 6"	Lb	1.703	1	1	1	196	2107
1.5 x 12 LVL	3	201	378	22' - 10"	Lb	1.801	1	1	1	196	2243
1.5 x 14 LVL	3	201	378	26' - 6"	Lb	2.06	1	1	2	196	2604
1.5 x 16 LVL	3	201	378	30' - 2"	Lb	2.313	1	1	2	196	2963
1.5 x 18 LVL	3	201	378	33' - 10"	Lb	2.561	2	1	2	196	3320
1.5 x 20 LVL	3	201	378	37' - 6"	Lb	2.808	2	2	2	196	3677
1.5 x 22 LVL	3	201	378	41' - 1"	Lb	3.052	2	2	2	196	4032
1.5 x 24 LVL	3	201	378	44' - 9"	Lb	3.291	2	2	2	196	4386

THE DESIGNER IS TO DETERMINE IF ACTUAL DEFLECTION IS WITHIN ACCEPTABLE LIMITS
EVEN IF RATIO MEETS CODE REQUIREMENTS

BARLOW ENGINEERING, P.C.
6512 SIX FORKS RD., SUITE 203-B
RALEIGH, NC 27615



ALL WINDS, ALL PITCHES, LATERAL PRESSURE (5 psf)

HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)	HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)	HEIGHT	SIZE	SPACING	LOAD (lbs)	DEF. (in)
8 ft	2 x 3 SPF STUD GRADE	12	610	0.114	9 ft	2 x 3 SPF STUD GRADE	12	435	0.186	10 ft	2 x 3 SPF STUD GRADE	12	310	0.288
		16	540	0.151			16	370	0.248			16	295	0.385
		19.2	490	0.182			19.2	320	0.298			19.2	295	0.461
		24	420	0.227			24	295	0.372			24	**NG**	-
	2 x 3 SPF #2	12	830	0.097		2 x 3 SPF #2	12	615	0.159		2 x 3 SPF #2	12	465	0.247
		16	775	0.13			16	565	0.213			16	415	0.33
		19.2	735	0.156			19.2	525	0.255			19.2	385	0.395
		24	680	0.195			24	475	0.319			24	335	0.494
	2 x 3 SYP #2	12	800	0.097		2 x 3 SYP #2	12	585	0.159		2 x 3 SYP #2	12	435	0.247
		16	740	0.13			16	530	0.213			16	385	0.33
		19.2	695	0.156			19.2	485	0.255			19.2	345	0.395
		24	630	0.195			24	430	0.319			24	295	0.494
	2 x 4 SPF STUD GRADE	12	1920	0.041		2 x 4 SPF STUD GRADE	12	1450	0.068		2 x 4 SPF STUD GRADE	12	1110	0.105
		16	1810	0.055			16	1345	0.09			16	1010	0.14
		19.2	1725	0.066			19.2	1265	0.108			19.2	940	0.168
		24	1605	0.083			24	1155	0.136			24	830	0.21
	2 x 4 SPF #2	12	2495	0.035		2 x 4 SPF #2	12	1905	0.058		2 x 4 SPF #2	12	1485	0.09
		16	2400	0.047			16	1815	0.077			16	1400	0.12
		19.2	2330	0.057			19.2	1750	0.093			19.2	1340	0.144
		24	2230	0.071			24	1660	0.116			24	1255	0.18
	2 x 4 SYP #2	12	2450	0.035		2 x 4 SYP #2	12	1855	0.058		2 x 4 SYP #2	12	1440	0.09
		16	2340	0.047			16	1755	0.077			16	1345	0.12
		19.2	2260	0.057			19.2	1685	0.093			19.2	1280	0.144
		24	2150	0.071			24	1585	0.116			24	1185	0.18
2 x 6 SPF STUD GRADE	12	6495	0.011	2 x 6 SPF STUD GRADE	12	5520	0.017	2 x 6 SPF STUD GRADE	12	4600	0.027			
	16	6345	0.014		16	5340	0.023		16	4405	0.036			
	19.2	6230	0.017		19.2	5205	0.028		19.2	4260	0.043			
	24	6065	0.021		24	5010	0.035		24	4060	0.054			
2 x 6 SPF #2	12	9150	0.009	2 x 6 SPF #2	12	7445	0.015	2 x 6 SPF #2	12	6055	0.023			
	16	8980	0.012		16	7260	0.02		16	5870	0.031			
	19.2	8855	0.015		19.2	7125	0.024		19.2	5735	0.037			
	24	8670	0.018		24	6935	0.03		24	5545	0.046			
2 x 6 SYP #2	12	9325	0.009	2 x 6 SYP #2	12	7490	0.015	2 x 6 SYP #2	12	6040	0.023			
	16	9125	0.012		16	7280	0.02		16	5835	0.031			
	19.2	8970	0.015		19.2	7125	0.024		19.2	5685	0.037			
	24	8760	0.018		24	6910	0.03		24	5480	0.046			

*** LOADS AND QUANTITIES ARE PER SIDE OF MATING WALL

THE DESIGNER IS TO DETERMINE IF ACTUAL DEFLECTION IS WITHIN ACCEPTABLE LIMITS
EVEN IF RATIO MEETS CODE REQUIREMENTS

BARLOW ENGINEERING, P.C.
6512 SIX FORKS RD., SUITE 203-B
RALEIGH, NC 27615



CHAMPION HOMES OF NC

**MATING WALL HEADER - 1 STORY (LOCATION 2)
TRUSS HM778355**

5/12 PITCH, 30.33 ft UNIT WIDTH, 30 psf GROUND SNOW LOAD

2x3 FOR (1) MEMBER HEADERS
2x4 FOR (2) MEMBER HEADERS
2x6 FOR (3) MEMBER HEADERS

MEMBER	QUANTITY	HEADER LL (plf)	HEADER TL (plf)	MAXIMUM SPAN	LIMITED BY	MID-SPAN DEFLECTION (in)	MIN. NUMBER OF JACKSTUDS REQ'D EACH END	SPF #2	SYP #2	SPF STUD	UPLIFT (plf)	UPLIFT REACTION (lbs)
2 x 4 SPF #2	1	198	367	2' - 10"	Lb	0.078	1	1	1	1	249	361
2 x 6 SPF #2	1	198	367	4' - 2"	Lb	0.091	2	2	2	2	249	527
2 x 8 SPF #2	1	198	367	5' - 4"	Lb	0.103	2	2	2	2	249	668
2 x 10 SPF #2	1	198	367	6' - 6"	Lb	0.11	2	2	2	2	249	816
2 x 12 SPF #2	1	198	367	7' - 7"	Lb	0.111	2	2	2	2	249	947
2 x 4 SYP #2	1	198	367	2' - 7"	Lb	0.055	1	1	1	1	249	330
2 x 6 SYP #2	1	198	367	3' - 11"	Lb	0.07	2	2	2	2	249	494
2 x 8 SYP #2	1	198	367	5' - 0"	Lb	0.08	2	2	2	2	249	627
2 x 10 SYP #2	1	198	367	5' - 11"	Lb	0.076	2	2	2	2	249	744
2 x 12 SYP #2	1	198	367	7' - 3"	Lb	0.093	2	2	2	2	249	905
1.5 x 3.5 LVL	1	198	367	4' - 0"	Lb	0.212	2	2	2	2	249	507
1.5 x 5.5 LVL	1	198	367	6' - 3"	Lb	0.314	2	2	2	2	249	785
1.5 x 7.25 LVL	1	198	367	8' - 2"	Lb	0.399	2	2	2	2	249	1025
1.5 x 9.25 LVL	1	198	367	10' - 5"	Lb	0.493	2	2	3	3	249	1298
1.5 x 11.25 LVL	1	198	367	12' - 7"	Lb	0.585	3	3	3	3	249	1569
1.5 x 12 LVL	1	198	367	13' - 4"	Lb	0.618	3	3	3	3	249	1670
1.5 x 14 LVL	1	198	367	15' - 6"	Lb	0.707	3	3	3	3	249	1938
1.5 x 16 LVL	1	198	367	17' - 8"	Lb	0.794	3	3	3	3	249	2205
1.5 x 18 LVL	1	198	367	19' - 10"	Lb	0.879	3	3	3	3	249	2471
1.5 x 20 LVL	1	198	367	21' - 11"	Lb	0.964	3	3	3	3	249	2737
1.5 x 22 LVL	1	198	367	24' - 1"	Lb	1.048	3	3	3	3	249	3001
1.5 x 24 LVL	1	198	367	26' - 2"	Lb	1.13	3	3	3	3	249	3265
2 x 4 SPF #2	2	198	367	4' - 1"	Lb	0.155	1	1	1	1	249	510
2 x 6 SPF #2	2	198	367	5' - 11"	Lb	0.182	1	1	1	1	249	745
2 x 8 SPF #2	2	198	367	7' - 7"	Lb	0.206	1	1	1	1	249	945
2 x 10 SPF #2	2	198	367	9' - 3"	Lb	0.221	1	1	2	2	249	1155
2 x 12 SPF #2	2	198	367	10' - 9"	Lb	0.222	2	2	2	2	249	1339
2 x 4 SYP #2	2	198	367	3' - 9"	Lb	0.109	1	1	1	1	249	467
2 x 6 SYP #2	2	198	367	5' - 7"	Lb	0.141	1	1	1	1	249	699
2 x 8 SYP #2	2	198	367	7' - 1"	Lb	0.16	1	1	1	1	249	887
2 x 10 SYP #2	2	198	367	8' - 5"	Lb	0.152	1	1	1	1	249	1053
2 x 12 SYP #2	2	198	367	10' - 3"	Lb	0.185	1	1	2	2	249	1280
1.5 x 3.5 LVL	2	198	367	5' - 9"	Lb	0.423	1	1	1	1	249	717
1.5 x 5.5 LVL	2	198	367	8' - 10"	Lb	0.627	1	1	2	2	249	1110
1.5 x 7.25 LVL	2	198	367	11' - 7"	Lb	0.798	2	2	2	2	249	1450
1.5 x 9.25 LVL	2	198	367	14' - 8"	Lb	0.986	2	2	2	2	249	1836
1.5 x 11.25 LVL	2	198	367	17' - 9"	Lb	1.169	2	2	3	3	249	2218
1.5 x 12 LVL	2	198	367	18' - 11"	Lb	1.236	2	2	3	3	249	2361
1.5 x 14 LVL	2	198	367	22' - 0"	Lb	1.414	3	3	3	3	249	2741
1.5 x 16 LVL	2	198	367	25' - 0"	Lb	1.588	3	3	3	3	249	3119
1.5 x 18 LVL	2	198	367	28' - 0"	Lb	1.759	3	3	3	3	249	3495
1.5 x 20 LVL	2	198	367	31' - 1"	Lb	1.928	3	3	3	3	249	3870
1.5 x 22 LVL	2	198	367	34' - 1"	Lb	2.095	3	3	3	3	249	4245
1.5 x 24 LVL	2	198	367	37' - 1"	Lb	2.26	3	3	3	3	249	4617
2 x 4 SPF #2	3	198	367	5' - 0"	Lb	0.233	1	1	1	1	249	625
2 x 6 SPF #2	3	198	367	7' - 3"	Lb	0.273	1	1	1	1	249	913
2 x 8 SPF #2	3	198	367	9' - 3"	Lb	0.309	1	1	1	1	249	1158
2 x 10 SPF #2	3	198	367	11' - 4"	Lb	0.331	1	1	1	1	249	1414
2 x 12 SPF #2	3	198	367	13' - 2"	Lb	0.333	1	1	1	1	249	1640
2 x 4 SYP #2	3	198	367	4' - 7"	Lb	0.164	1	1	1	1	249	572
2 x 6 SYP #2	3	198	367	6' - 10"	Lb	0.211	1	1	1	1	249	856
2 x 8 SYP #2	3	198	367	8' - 8"	Lb	0.24	1	1	1	1	249	1087
2 x 10 SYP #2	3	198	367	10' - 4"	Lb	0.229	1	1	1	1	249	1289
2 x 12 SYP #2	3	198	367	12' - 7"	Lb	0.278	1	1	1	1	249	1568
1.5 x 3.5 LVL	3	198	367	7' - 0"	Lb	0.635	1	1	1	1	249	878
1.5 x 5.5 LVL	3	198	367	10' - 11"	Lb	0.941	1	1	1	1	249	1359
1.5 x 7.25 LVL	3	198	367	14' - 3"	Lb	1.197	1	1	1	1	249	1776
1.5 x 9.25 LVL	3	198	367	18' - 0"	Lb	1.479	1	1	1	1	249	2248
1.5 x 11.25 LVL	3	198	367	21' - 9"	Lb	1.754	1	1	1	1	249	2717
1.5 x 12 LVL	3	198	367	23' - 2"	Lb	1.855	1	1	1	1	249	2892
1.5 x 14 LVL	3	198	367	26' - 11"	Lb	2.121	1	1	2	2	249	3357
1.5 x 16 LVL	3	198	367	30' - 8"	Lb	2.382	1	1	2	2	249	3820
1.5 x 18 LVL	3	198	367	34' - 4"	Lb	2.638	1	1	2	2	249	4281
1.5 x 20 LVL	3	198	367	38' - 0"	Lb	2.892	2	2	2	2	249	4740
1.5 x 22 LVL	3	198	367	41' - 9"	Lb	3.143	2	2	2	2	249	5198
1.5 x 24 LVL	3	198	367	45' - 5"	Lb	3.39	2	2	2	2	249	5655

*** LOADS AND QUANTITIES ARE PER SIDE OF MATING LINE

THE DESIGNER IS TO DETERMINE IF ACTUAL DEFLECTION IS WITHIN ACCEPTABLE LIMITS
EVEN IF RATIO MEETS CODE REQUIREMENTS

BARLOW ENGINEERING, P.C.
6512 SIX FORKS RD., SUITE 203-B
RALEIGH, NC 27615



**PERIMETER BAND - 1 STORY (LOCATION 3)
TRUSS HM773855
5/12 PITCH, 30.33 ft UNIT WIDTH, 30 psf GROUND SNOW LOAD**

MEMBER	QUANTITY	HEADER LL (plf)	HEADER TL (plf)	MAXIMUM SPAN	LIMITED BY	MID-SPAN DEFLECTION (in)	UPLIFT (plf)	UPLIFT REACTION (lbs)
2 x 8 SPF #2	1	505	878	3' - 5"	Lb	0.043	0	0
2 x 10 SPF #2	1	505	878	4' - 2"	Lb	0.046	0	0
2 x 12 SPF #2	1	505	878	4' - 11"	Lb	0.046	0	0
2 x 8 SYP #2	1	505	878	3' - 3"	Lb	0.033	0	0
2 x 10 SYP #2	1	505	878	3' - 10"	Lb	0.032	0	0
2 x 12 SYP #2	1	505	878	4' - 8"	Lb	0.039	0	0
1.5 x 7.25 LVL	1	505	878	5' - 3"	Lb	0.167	0	0
1.5 x 9.25 LVL	1	505	878	6' - 8"	Lb	0.206	0	0
1.5 x 11.25 LVL	1	505	878	8' - 1"	Lb	0.244	0	0
2 x 8 SPF #2	2	505	878	4' - 10"	Lb	0.086	0	0
2 x 10 SPF #2	2	505	878	5' - 11"	Lb	0.092	0	0
2 x 12 SPF #2	2	505	878	6' - 11"	Lb	0.093	0	0
2 x 8 SYP #2	2	505	878	4' - 7"	Lb	0.067	0	0
2 x 10 SYP #2	2	505	878	5' - 5"	Lb	0.064	0	0
2 x 12 SYP #2	2	505	878	6' - 7"	Lb	0.077	0	0
1.5 x 7.25 LVL	2	505	878	7' - 6"	Lb	0.333	0	0
1.5 x 9.25 LVL	2	505	878	9' - 6"	Lb	0.412	0	0
1.5 x 11.25 LVL	2	505	878	11' - 6"	Lb	0.489	0	0
2 x 8 SPF #2	3	505	878	6' - 0"	Lb	0.129	0	0
2 x 10 SPF #2	3	505	878	7' - 4"	Lb	0.138	0	0
2 x 12 SPF #2	3	505	878	8' - 6"	Lb	0.139	0	0
2 x 8 SYP #2	3	505	878	5' - 7"	Lb	0.1	0	0
2 x 10 SYP #2	3	505	878	6' - 8"	Lb	0.096	0	0
2 x 12 SYP #2	3	505	878	8' - 1"	Lb	0.116	0	0
1.5 x 7.25 LVL	3	505	878	9' - 2"	Lb	0.5	0	0
1.5 x 9.25 LVL	3	505	878	11' - 8"	Lb	0.618	0	0
1.5 x 11.25 LVL	3	505	878	14' - 1"	Lb	0.733	0	0

THE DESIGNER IS TO DETERMINE IF ACTUAL DEFLECTION IS WITHIN ACCEPTABLE LIMITS
EVEN IF RATIO MEETS CODE REQUIREMENTS



**CENTER GIRDER - 1 STORY (LOCATION 4)
TRUSS HM778355
5/12 PITCH, 30.33 ft UNIT WIDTH, 30 psf GROUND SNOW LOAD**

MEMBER	QUANTITY	HEADER LL (plf)	HEADER TL (plf)	MAXIMUM SPAN	LIMITED BY	MID-SPAN DEFLECTION (in)	UPLIFT (plf)	UPLIFT REACTION (lbs)
2 x 8 SPF #2	1	500	827	3' - 6"	Lb	0.046	53	95
2 x 10 SPF #2	1	500	827	4' - 4"	Lb	0.049	53	116
2 x 12 SPF #2	1	500	827	5' - 0"	Lb	0.049	53	134
2 x 8 SYP #2	1	500	827	3' - 4"	Lb	0.035	53	89
2 x 10 SYP #2	1	500	827	3' - 11"	Lb	0.034	53	106
2 x 12 SYP #2	1	500	827	4' - 10"	Lb	0.041	53	128
1.5 x 7.25 LVL	1	500	827	5' - 5"	Lb	0.177	53	145
1.5 x 9.25 LVL	1	500	827	6' - 11"	Lb	0.219	53	184
1.5 x 11.25 LVL	1	500	827	8' - 4"	Lb	0.259	53	222
2 x 8 SPF #2	2	500	827	5' - 0"	Lb	0.091	53	134
2 x 10 SPF #2	2	500	827	6' - 2"	Lb	0.098	53	164
2 x 12 SPF #2	2	500	827	7' - 1"	Lb	0.098	53	190
2 x 8 SYP #2	2	500	827	4' - 8"	Lb	0.071	53	126
2 x 10 SYP #2	2	500	827	5' - 7"	Lb	0.068	53	149
2 x 12 SYP #2	2	500	827	6' - 10"	Lb	0.082	53	182
1.5 x 7.25 LVL	2	500	827	7' - 9"	Lb	0.354	53	206
1.5 x 9.25 LVL	2	500	827	9' - 9"	Lb	0.438	53	260
1.5 x 11.25 LVL	2	500	827	11' - 10"	Lb	0.519	53	315
2 x 8 SPF #2	3	500	827	6' - 2"	Lb	0.137	53	164
2 x 10 SPF #2	3	500	827	7' - 6"	Lb	0.147	53	201
2 x 12 SPF #2	3	500	827	8' - 9"	Lb	0.148	53	233
2 x 8 SYP #2	3	500	827	5' - 9"	Lb	0.106	53	154
2 x 10 SYP #2	3	500	827	6' - 10"	Lb	0.101	53	183
2 x 12 SYP #2	3	500	827	8' - 4"	Lb	0.123	53	222
1.5 x 7.25 LVL	3	500	827	9' - 6"	Lb	0.531	53	252
1.5 x 9.25 LVL	3	500	827	12' - 0"	Lb	0.656	53	319
1.5 x 11.25 LVL	3	500	827	14' - 6"	Lb	0.778	53	385

*** LOADS AND QUANTITIES ARE PER SIDE OF MATING LINE

THE DESIGNER IS TO DETERMINE IF ACTUAL DEFLECTION IS WITHIN ACCEPTABLE LIMITS EVEN IF RATIO MEETS CODE REQUIREMENTS

FLOOR JOIST (10 psf DEAD LOAD / 40 psf LIVE LOAD)

ALL LEVELS

MEMBER	QTY	SPACING (in O.C.)	TOTAL LOAD (plf)	LIVE LOAD (plf)	MAX. SPAN	LIMITED BY	MID-SPAN DEFLECTION (in)
2 x 8 SPF #2	1	12	50	40	13' - 6"	Ld LL - I/360	0.563
2 x 10 SPF #2	1	12	50	40	17' - 2"	Ld LL - I/360	0.719
2 x 12 SPF #2	1	12	50	40	20' - 7"	Lb	0.814
2 x 8 SYP #2	1	12	50	40	13' - 6"	Ld LL - I/360	0.563
2 x 10 SYP #2	1	12	50	40	16' - 2"	Lb	0.559
2 x 12 SYP #2	1	12	50	40	19' - 8"	Lb	0.68
2 x 8 SPF #2	1	16	66.67	53.33	12' - 3"	Ld LL - I/360	0.512
2 x 10 SPF #2	1	16	66.67	53.33	15' - 4"	Lb	0.607
2 x 12 SPF #2	1	16	66.67	53.33	17' - 10"	Lb	0.61
2 x 8 SYP #2	1	16	66.67	53.33	11' - 9"	Lb	0.44
2 x 10 SYP #2	1	16	66.67	53.33	14' - 0"	Lb	0.419
2 x 12 SYP #2	1	16	66.67	53.33	17' - 0"	Lb	0.51
2 x 8 SPF #2	1	19.2	80	64	11' - 5"	Lb	0.472
2 x 10 SPF #2	1	19.2	80	64	14' - 0"	Lb	0.506
2 x 12 SPF #2	1	19.2	80	64	16' - 3"	Lb	0.509
2 x 8 SYP #2	1	19.2	80	64	10' - 9"	Lb	0.366
2 x 10 SYP #2	1	19.2	80	64	12' - 9"	Lb	0.35
2 x 12 SYP #2	1	19.2	80	64	15' - 6"	Lb	0.425
2 x 8 SPF #2	1	24	100	80	10' - 3"	Lb	0.378
2 x 10 SPF #2	1	24	100	80	12' - 6"	Lb	0.405
2 x 12 SPF #2	1	24	100	80	14' - 6"	Lb	0.407
2 x 8 SYP #2	1	24	100	80	9' - 7"	Lb	0.293
2 x 10 SYP #2	1	24	100	80	11' - 5"	Lb	0.28
2 x 12 SYP #2	1	24	100	80	13' - 11"	Lb	0.34

THE DESIGNER IS TO DETERMINE IF ACTUAL DEFLECTION IS WITHIN ACCEPTABLE LIMITS
EVEN IF RATIO MEETS CODE REQUIREMENTS



SECTION 3

ASCE 7-10 WIND CALCULATIONS



DETERMINE WIND LOADS PER ASCE 7-10:

MAIN WIND FORCE RESISTING SYSTEM :

CONSTANTS:

WIND VELOCITY (V):	130 mph	DIRECTIONALITY FACTOR (K _d):	0.85
VEL. PRESS. EXP. COEF. (K _h):	0.94	q _n : = .00256 x K _h x K _{z1} x K _d x V ² =	34.57
VEL. PRESS. EXP. COEF. (K _z):	0.94	q _z : = .00256 x K _z x K _{z1} x K _d x V ² =	34.57
MULT. for TOPO. FACTOR (K ₁):	0.09	GUST EFFECT FACTOR (G):	0.85
MULT. for TOPO. FACTOR (K ₂):	0	INTERNAL PRESS. COEF. (GC _{pi1}):	0.18
MULT. for TOPO. FACTOR (K ₃):	0		-0.18
K _{zt} : = (1 + K ₁ x K ₂ x K ₃) ² =	1		

PER TABLE 6-6, ASCE 7-05, pp 49, "EXTERNAL PRESSURE COEFFICIENTS, Cp"

WALL PRESSURE COEFFICIENTS

SURFACE		Cp	USE WITH
WINDWARD WALL	ALL	0.8	qz
LEEWARD WALL	SIDE	-0.5	qh
LEEWARD WALL	END	-0.5	qh
SIDE WALL	ALL	-0.7	qh

**ROOF PRESSURE COEFFICIENTS FOR USE WITH qh
NORMAL TO RIDGE (WIND FROM SIDEWALL)**

Cp - WINDWARD WALL	-0.55
	-0.07
Cp - LEEWARD WALL	-0.60

PARALLEL TO RIDGE (WIND FROM ENDWALL)

Cp - 0 TO h/2	-1.17
Cp - h/2 TO h	-1.17
Cp - h TO 2h	-1.17
Cp - > 2h	-0.18
Cp	0.00

LATERAL LOADS:

EXTERNAL PRESSURE COEFFICIENTS:

30.26 ° ROOF

CASE A - WIND FROM SIDE WALL:

SIDE WALL: GC _{pf1} =	0.54	GC _{pf1E} =	0.77
SIDE WALL: GC _{pf4} =	-0.41	GC _{pf4E} =	-0.60

LOAD CALCULATIONS (WIND FROM SIDE WALL):

P = q GCp - qi (GCpi)	qh*[(Gcpf)-(Gcpi)]	12.4452	20.3963
		24.8904	32.8415
EXAMPLE:		-20.3963	-26.965
		-7.9511	-14.519

P = qh GCp - qi (GCpi) = (34.57 psf x 0.85 x 0.8) - (34.57 x 0.18) = 17.3 psf

P = qh GCp - qi (GCpi) = (34.57 psf x 0.85 x 0.8) - (34.57 x -0.18) = 29.7 psf

WINDWARD	P =	17.30	psf
WINDWARD	P =	29.70	psf
LEEWARD	P =	-20.90	psf
LEEWARD	P =	-8.50	psf

TOTAL SIDEWALL PRESSURE :

USE	38.20	psf WIND LOAD
-----	-------	---------------

CASE B - WIND FROM END WALL:

ENDWALL: GC _{pf1} =	0.4	GC _{pf1E} =	0.61
ENDWALL: GC _{pf4} =	-0.29	GC _{pf4E} =	-0.43

LOAD CALCULATIONS (WIND FROM END WALL):

P = q GCp - qi (GCpi)

EXAMPLE:

P = qz GCp - qi (GCpi) = (34.57 psf x 0.85 x 0.8) - (34.57 x 0.18) = 17.3 psf

P = qz GCp - qi (GCpi) = (34.57 psf x 0.85 x 0.8) - (34.57 x -0.18) = 29.7 psf

WINDWARD	P =	17.30	psf
WINDWARD	P =	29.70	psf
LEEWARD	P =	-20.90	psf
LEEWARD	P =	-8.50	psf



TOTAL ENDWALL PRESSURE :

USE	38.20	psf WIND LOAD
-----	-------	---------------

LATERAL LOADING:

- MAX. FLOOR WIDTH (W) = 30.33 ft
- MAX. FLOOR LENGTH (L) = 76.00 ft
- ROOF SPAN (RS) = 30.33 ft
- ROOF PITCH: 7 / 12
- ROOF ANGLE (θ) = 30.26 °
- MAX. WALL HEIGHT (H) = 9.00 ft
- RIDGE ROOF HEIGHT (hr)= 8.85 ft
- EDGE ROOF HEIGHT (he)= 3.54 ft

CALCULATE LATERAL PRESSURE AT FLOOR: (PERPENDICULAR TO RIDGE)

$$W_{LAT} = 38.20 \text{ psf}$$

$$w_{FL} = W_{LAT} * H = 38.2 \text{ psf} * 9 \text{ ft} = 207 \text{ plf (w/ 0.6 FACTOR)}$$

CALCULATE LATERAL PRESSURE AT FLOOR: (PARALLEL TO RIDGE)

$$W_{LAT} = 38.20 \text{ psf}$$

$$w_{FL} = W_{LAT} * H = 38.2 \text{ psf} * 9 \text{ ft} = 206 \text{ plf (w/ 0.6 FACTOR)}$$

CALCULATE LATERAL PRESSURE @ ROOF: (PERPENDICULAR TO RIDGE)

$$\sin(\theta) = 0.503639764$$

$$W_{R-PER} = W_{max(roof)} * hr * \sin(\theta) + w_{FL} / 2 = 40.6 \text{ psf} * 4.45768709346345 \text{ ft} + 207 \text{ plf} / 2 =$$

(BUT NO LESS THAN: 207 plf / 2 = 104 plf) (ASCE 7-10 FIGURE 27.4-1 NOTE 6)

$$W_{R-PER} = 213 \text{ plf (w/ 0.6 FACTOR)}$$

CALCULATE LATERAL PRESSURE @ ROOF: (PARALLEL TO RIDGE)

$$\text{GABLE AREA } (A_T) = RS * hr / 2 = 30.33 \text{ ft} * 8.85 \text{ ft} / 2 = 134.21 \text{ ft}^2$$

$$\text{TOTAL WIND LOAD } (P_w) = (A_T - A_e) * w_{fl}$$

$$P_w = (134.21 \text{ ft}^2) * \text{psf} = 5127 \text{ lbs}$$

$$W_{R-PAR} = P_w / R + W_{fl} / 2 = 5127 \text{ lbs} / 30.33 \text{ ft} + 206 \text{ plf} / 2 = 204 \text{ plf (w/ 0.6 FACTOR)}$$

DETERMINE WIND LOADS PER ASCE 7-10 FOR ALL-HEIGHT BUILDINGS:

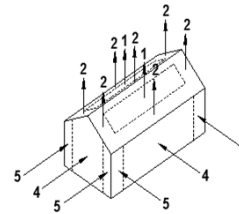
COMPONENTS AND CLADDING :

CONSTANTS:	WIND VELOCITY (V):	130 mph	DIRECTIONALITY FACTOR (K_d):	0.85
	VEL. PRESS. EXP. COEF. (K_z):	0.94	$q_z = .00256 \times K_z \times K_{zt} \times K_d \times V^2 =$	34.57
	MULT. for TOPO. FACTOR (K_1):	0.09	$q_1 = q_h = q_z =$	34.57
	MULT. for TOPO. FACTOR (K_2):	0.00	GUST EFFECT FACTOR (G):	0.85
	MULT. for TOPO. FACTOR (K_3):	0.00	INTERNAL PRESS. COEF. (GC_{pi}):	0.18
	$K_{zt} = (1 + K_1 \times K_2 \times K_3)^2 =$	1.00		-0.18

LATERAL LOADS (COMPONENTS AND CLADDING):

EXTERNAL PRESSURE COEFFICIENTS:

SIDE WALL:	FIELD:	$GC_{pf4} =$	-1.00
	EDGE:	$GC_{pf5} =$	-1.16



LOAD CALCULATIONS:

$P = q_h \times (GC_{pf} - GC_{pi})$

EXAMPLE:

$P_{4i} = q_h \times (GC_{pf4} - GC_{pi4}) = 34.57 \text{ psf} \times [(-1 - 0.18)] = -40.8 \text{ psf}$

$P_{5i} = q_h \times (GC_{pf5} - GC_{pi5}) = 34.57 \text{ psf} \times [(-1 - -0.18)] = -28.35 \text{ psf}$

FIELD:	$P_{4i} =$	-40.80 psf
FIELD:	$P_{5i} =$	-28.35 psf
EDGE:	$P_{4i} =$	-46.33 psf
EDGE:	$P_{5i} =$	-33.88 psf

USE **-24.48** psf WIND LOAD FOR FIELD.
USE **-27.80** psf WIND LOAD FOR EDGE.

**** (W/ 0.6 FACTOR)**

UPLIFT LOADS (COMPONENTS AND CLADDING):

EXTERNAL PRESSURE COEFFICIENTS:

ROOF:	FIELD:	$GC_{pf1} =$	-0.82
	EDGE:	$GC_{pf2} =$	-1.05
	OVERHANG:	$GC_{pf3} =$	-1.85
	DOWNWARD:	$GC_{pf1-3} =$	0.84

LOAD CALCULATIONS:

$P_h = q_h \times (GC_p - GC_{pi})$

EXAMPLE:

$P_h = q_h \times (GC_{pf1} - GC_{pi1}) = 34.57 \text{ psf} \times [(-0.82 - 0.18)] = -34.57 \text{ psf}$

$P_{1i} = q_h \times (GC_{pf1} - GC_{pi1}) = 34.57 \text{ psf} \times [(-0.82 - -0.18)] = -22.13 \text{ psf}$

FIELD:	$P_{1i} =$	-34.57 psf
FIELD:	$P_{1i} =$	-22.13 psf
EDGE:	$P_{2i} =$	-42.53 psf
EDGE:	$P_{2i} =$	-30.08 psf
OVERHANG:	$P_{3i} =$	-70.18 psf
OVERHANG:	$P_{3i} =$	-57.74 psf
DOWNWARD:	$P_{1-3i} =$	22.82 psf
DOWNWARD:	$P_{1-3i} =$	35.27 psf

USE **-20.74** psf WIND LOAD FOR FIELD.
USE **-25.52** psf WIND LOAD FOR EDGE.
USE **-42.11** psf WIND LOAD FOR OVERHANG.
USE **21.16** psf DOWNWARD WIND LOAD.

**** (W/ 0.6 FACTOR)**

DETERMINE WIND LOADS PER ASCE 7-10 FOR ALL-HEIGHT BUILDINGS:

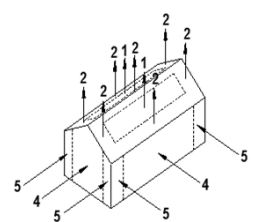
COMPONENTS AND CLADDING: FOR FASTENERS ONLY (EFFECTIVE AREA SHALL BE NO GREATER THAN FASTENER TRIBUTARY AREA):

CONSTANTS:	WIND VELOCITY (V):	130 mph	DIRECTIONALITY FACTOR (K _d):	0.85
	VEL. PRESS. EXP. COEF. (K _z):	0.94	q _z : = .00256 x K _z x K _{z1} x K _d x V ² =	34.57
	MULT. for TOPO. FACTOR (K ₁):	0.09	q _i = q _h = q _z =	34.57
	MULT. for TOPO. FACTOR (K ₂):	0.00	GUST EFFECT FACTOR (G):	0.85
	MULT. for TOPO. FACTOR (K ₃):	0.00	INTERNAL PRESS. COEF. (GC _{pi}):	0.18
	K _{z1} : = (1 + K ₁ x K ₂ x K ₃) ² =	1.00		<u>-0.18</u>

LATERAL LOADS (COMPONENTS AND CLADDING):

EXTERNAL PRESSURE COEFFICIENTS:

SIDE WALL:) (ZONE 4):	GC _{pf4} =	-1.10
EDGE (ZONE 5):	GC _{pf5} =	-1.40



LOAD CALCULATIONS:

$P = q_h \times (GC_{pf} - GC_{pi})$

EXAMPLE:

$P_{4i} = q_h \times (GC_{pf4} - GC_{pi4}) = 34.57 \text{ psf} \times [(-1.1 - 0.18)] = -44.25 \text{ psf}$

$P_{5i} = q_h \times (GC_{pf5} - GC_{pi5}) = 34.57 \text{ psf} \times [(-1.1 - -0.18)] = -31.81 \text{ psf}$

FIELD (ZONE 4):	P _{4i} =	-44.25 psf
FIELD (ZONE 4):	P _{4i} =	-31.81 psf
EDGE (ZONE 5):	P _{5i} =	-54.63 psf
EDGE (ZONE 5):	P _{5i} =	-42.18 psf

USE	26.55	psf WIND LOAD FOR FIELD.
USE	32.78	psf WIND LOAD FOR EDGE.

**** (W/ 0.6 FACTOR)**

UPLIFT LOADS (COMPONENTS AND CLADDING):

EXTERNAL PRESSURE COEFFICIENTS:

ROOF:) (ZONE 1):	GC _{pf1} =	-1.00
EDGE (ZONE 2):	GC _{pf2} =	-1.20
CORNER (ZONE 3):	GC _{pf3} =	-1.20
CORNER OH (ZONE 3):	GC _{pf1-3} =	-2.00

LOAD CALCULATIONS:

$P_h = q_h \times (GC_p - GC_{pi})$

EXAMPLE:

$P_h = q_h \times (GC_{pf1} - GC_{pi1}) = 34.57 \text{ psf} \times [(-1 - 0.18)] = -40.8 \text{ psf}$

$P_{1i} = q_h \times (GC_{pf1} - GC_{pi1}) = 34.57 \text{ psf} \times [(-1 - -0.18)] = -28.35 \text{ psf}$

FIELD (ZONE 1):	P _{1i} =	-40.80 psf
FIELD (ZONE 1):	P _{1i} =	-28.35 psf
EDGE (ZONE 2):	P _{2i} =	-47.71 psf
EDGE (ZONE 2):	P _{2i} =	-35.27 psf
CORNER (ZONE 3):	P _{3i} =	-47.71 psf
CORNER (ZONE 3):	P _{3i} =	-35.27 psf

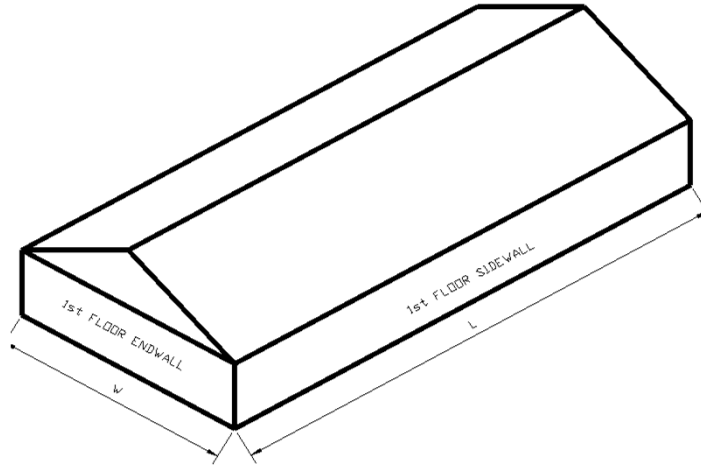
USE	24.48	psf WIND LOAD FOR FIELD (ZONE 1).
USE	28.63	psf WIND LOAD FOR EDGE (ZONE 2).
USE	28.63	psf WIND LOAD FOR CORNER (ZONE 3).
USE	45.22	psf WIND LOAD FOR CORNER OH (ZONE 3).

**** (W/ 0.6 FACTOR)**



SECTION 4

SHEARWALL CALCULATIONS



BUILDING INFORMATION:

JOB NUMBER = 190568
 PLAN NAME / NUMBER = Champion 23-3969(011316)
 FIRST FLOOR WIDTH (W₁) = 30.33 ft
 FIRST FLOOR LENGTH (L₁) = 76 ft
 ROOF SPAN = 30.33 ft
 TRUSS SPACING (TOC) = 24 in
 STUD SPACING (SOC) = 16 in
 WIND SPEED (Vult) = 130 mph
 EXPOSURE FACTOR = C

SHEARWALL SUMMARY:

FIRST FLOOR ENDWALL #1: 7/16" OSB EXTERIOR (BLOCKED) w/ 1/2" GWB INTERIOR
MASTER BEDROOM /CLOSET END WITH 16 ga STAPLES SPACED AT 4" EDGE

FIRST FLOOR ENDWALL #2: 7/16" OSB EXTERIOR (BLOCKED) w/ 1/2" GWB INTERIOR
BEDROOM #3 #4 END WITH 16 ga STAPLES SPACED AT 6" EDGE

FIRST FLOOR SIDEWALL #1: 7/16" OSB EXTERIOR (BLOCKED) w/ 1/2" GWB INTERIOR
KITCHEN SIDE WITH 16 ga STAPLES SPACED AT 6" EDGE

FIRST FLOOR SIDEWALL #2: 7/16" OSB EXTERIOR (BLOCKED) w/ 1/2" GWB INTERIOR
LIVING ROOM SIDE WITH 16 ga STAPLES SPACED AT 6" EDGE

ROOF SHEATHING: 7/16" OSB (UN-BLOCKED) w/ 16 ga. STAPLES @ 6"/12"
CEILING SHEATHING: 1/2" GWB (UN-BLOCKED) w/ FASTENERS @ 7"/17"
FLOOR SHEATHING: 19/32" MIN. OSB (UN-BLOCKED) w / 8 d NAILS @ 6"/12"

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SHEATHING SUCTION FASTENING:

**THE BELOW REQUIRED FASTENING IS REQUIRED AT ALL FRAMING STUDS AND TRUSSES, NOT ONLY AT PANEL EDGES.
SUCTION FASTENER SPACING MUST BE NO GREATER THAN WHAT IS REQUIRED FOR SHEARWALLS AND ROOF DIAPHRAGM ABOVE**

FOR ROOF ZONE 1: USE 0.131" x 2.5" COMMON NAIL (FACE NAILED) AT 12 in o.c.
OR USE 16 ga. STAPLE AT 8 in o.c.
FOR ROOF ZONE 2: USE 0.131" x 2.5" COMMON NAIL (FACE NAILED) AT 12 in o.c.
OR USE 16 ga. STAPLE AT 7 in o.c.
FOR ROOF ZONE 3 (CORNER): USE 0.131" x 2.5" COMMON NAIL (FACE NAILED) AT 12 in o.c.
OR USE 16 ga. STAPLE AT 7 in o.c.
FOR ROOF ZONE 30H (CORNER OVERHANG): USE 0.131" x 2.5" COMMON NAIL (FACE NAILED) AT 8 in o.c.
OR USE 16 ga. STAPLE AT 4 in o.c.
FOR WALL ZONE 4: USE 0.131" x 2.5" COMMON NAIL (FACE NAILED) AT 12 in o.c.
OR USE 16 ga. STAPLE AT 10 in o.c.
FOR WALL ZONE 5: USE 0.131" x 2.5" COMMON NAIL (FACE NAILED) AT 12 in o.c.
OR USE 16 ga. STAPLE AT 9 in o.c.
EDGE DIMENSION, a = 3.03 ft

CONNECTION SUMMARY: CONNECTIONS TO BE AS SPECIFIED OR EQUIVALENT

UPLIFT CONNECTIONS

MAKE ROOF TRUSS UPLIFT CONNECTIONS AT SIDEWALL AND MATEWALL

REQUIRED TRUSS TIE DOWN: USE (2) SIMPSON SDWC15600 SCREW
NO GOOD FOR SIMPSON H8
OK FOR SIMPSON H10A
OK FOR (5) #10 WOOD SCREWS x 5" LENGTH (MIN. 2" OF PENETRATION)
OR TRUSS CONNECTION TO WITHSTAND AN UPLIFT FORCE OF 594 lbs

1ST FLOOR STUD TO TOP PLATE / CEILING BAND: USE A 1.5 x 20 ga STRAP EACH STUD WITH (4) 8d NAIL(S) EACH END
OR WITH (9) 16 ga. STAPLE(S) EACH END
OR CONNECTION TO WITHSTAND AN UPLIFT FORCE OF 396 lbs

1st FLOOR STUD TO FLOOR BAND: USE A 1.5 x 20 ga STRAP EACH STUD WITH (4) 8d NAIL(S) EACH END
OR WITH (9) 16 ga. STAPLE(S) EACH END
OR CONNECTION TO WITHSTAND AN UPLIFT FORCE OF 307 lbs

FLOOR BAND TO SILL PLATE CONNECTION: USE A 1.5 x 20 ga STRAP WITH (9) 8d NAIL(S) EACH END
OR WITH (23) 16 ga. STAPLE(S) EACH END
WRAPPED AROUND THE SILL PLATE AT EACH ANCHOR BOLT LOCATION
OR CONNECTION TO WITHSTAND AN UPLIFT FORCE OF 1110 lbs

LATERAL CONNECTIONS

TRUSS TO TOP PLATE CONNECTION: FOR SIMPSON H8 - USE (2) ADDITIONAL #10 x 5" WOOD SCREW (TOENAILED) PER TRUSS
FOR SIMPSON H10A - USE (0) ADDITIONAL #10 x 5" WOOD SCREW (TOENAILED) PER TRUSS
FOR #10 x 5" WOOD SCREW (TOENAILED) - USE (0) ADDITIONAL #10 x 5" WOOD SCREW (TOENAILED) PER TRUSS
FOR 2SIMPSON SDWC15600 SCREW - USE (1) ADDITIONAL #10 x 5" WOOD SCREW (TOENAILED) PER TRUSS

PLATE TO PLATE CONNECTION: ATTACH WITH 15 ga. STAPLE (FACE) AT 7" ON CENTER

PLATE TO STUD CONNECTION: USE (3) 15 ga. STAPLE (FACE) PER STUD

BOTTOM PLATE TO FLOOR CONNECTION: ATTACH WITH 0.131" x 2.5" COMMON NAIL (FACE NAILED) AT 10" ON CENTER

TOP PLATE SPLICES

TOP PLATE SPLICES SHALL BE A MINIMUM OF 4 ft w/ (2) ROWS 16d (0.162" x 3.5" COMMON NAIL (FACE NAILED)) 3" o.c
OR A MINIMUM OF 14 ft w/ (2) ROWS 16d (0.162" x 3.5" COMMON NAIL (FACE NAILED)) 12" o.c
OR A MINIMUM OF 9 ft w/ (2) ROWS 15 ga. STAPLE (FACE) 3" o.c
OR A MINIMUM OF 36 ft w/ (2) ROWS 15 ga. STAPLE (FACE) 12" o.c

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HORIZONTAL FLOOR DIAPHRAGM CONTINUITY

FIRST FLOOR
MODULE TO MODULE CONNECTION AT FLOOR RIMBAND: (ALONG MATE LINE)
USE A MIN. OF (10) 1/2" DIA. THRU BOLTS
OR USE A MIN. OF (21) 3/8" DIA. LAG SCREW

MODULE TO MODULE CONNECTION AT FLOOR RIMBAND: (AT ENDWALLS)
USE A 1.5 x 20 ga STRAP WITH (2) 8d NAIL(S) EACH END
OR WITH (5) 16 ga. STAPLE(S) EACH END
TO ATTACH MODULE TO MODULE AT EACH ENDWALL
OR CONNECTION TO WITHSTAND A TENSILE FORCE OF 234 lbs

SHEAR CONNECTIONS

FIRST FLOOR ENDWALL
UNIT SHEAR SHEATHING TO FLOOR BAND: USE SHEATHING CONNECTION WITH 1 ROW(S) OF 8D NAILS AT 2" O.C.
(AND SHEATHING TO TRUSS BOTTOM CHORD) OR USE SHEATHING CONNECTION WITH 2 ROW(S) OF 16 ga. STAPLES AT 2" O.C.
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 568 plf

UNIT UPLIFT SHEATHING TO FLOOR BAND: USE SHEATHING CONNECTION WITH 1 ROW(S) OF 8d NAILS AT 2" O.C.
OR USE SHEATHING CONNECTION WITH 2 ROW(S) OF 16 ga. STAPLES AT 2" O.C.
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 568 plf

ALTERNATE: FASTEN SHEATHING TO BAND WITH 1" WIDE STRIP OF 200 psi MINIMUM CONSTRUCTION ADHESIVE

TRUSS BOTTOM CHORD TO TOP PLATE CONNECTION: USE 0.131" x 2.5" COMMON NAIL (TOENAILED) AT 3" ON CENTER
OR USE (1) SIMPSON LTP4 PLATE AT 25" ON CENTER
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 8094 lbs

RIMBAND TO SILL PLATE CONNECTION: USE 0.131" x 2.5" COMMON NAIL (TOENAILED) AT 2" ON CENTER
OR USE (1) SIMPSON LTP4 PLATE AT 16" ON CENTER
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 13062 lbs

SILL PLATE TO FOUNDATION CONNECTION: USE 1/2" ANCHOR BOLTS AT 28" O.C.
OR USE 5/8" ANCHOR BOLTS AT 42" O.C.
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 13062 lbs

FIRST FLOOR SIDEWALL
UNIT SHEAR SHEATHING TO RIMBAND CONNECTION: USE SHEATHING CONNECTION WITH 1 ROW(S) OF 8d NAILS AT 6" O.C.
OR USE SHEATHING CONNECTION WITH 1 ROW(S) OF 16 ga. STAPLES AT 6" O.C.
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 97 plf

UNIT UPLIFT SHEATHING TO RIMBAND CONNECTION: USE SHEATHING CONNECTION WITH 1 ROW(S) OF 8d NAILS AT 6" O.C.
OR USE SHEATHING CONNECTION WITH 1 ROW(S) OF 16 ga. STAPLES AT 6" O.C.
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 97 plf

ALTERNATE: FASTEN SHEATHING TO BAND WITH 1" WIDE STRIP OF 200 psi MINIMUM CONSTRUCTION ADHESIVE

RIMBAND TO SILL PLATE CONNECTION: USE 0.131" x 2.5" COMMON NAIL (TOENAILED) AT 11" ON CENTER
OR USE (1) SIMPSON LTP4 PLATE AT 72" ON CENTER
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 5444 lbs

SILL PLATE TO FOUNDATION CONNECTION: USE 1/2" ANCHOR BOLTS AT 72" O.C.
OR USE 5/8" ANCHOR BOLTS AT 72" O.C.
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 5444 lbs

HOLDDOWN CONNECTIONS

FIRST FLOOR CORNER HOLDDOWN: NO PHYSICAL HOLDDOWN REQUIRED

OR CONNECTION TO WITHSTAND AN UPLIFT FORCE OF 0 lbs
SEE MARKUPS FOR HOLD DOWN LOCATIONS

FIRST FLOOR CORNER STUD CONNECTION: FASTEN CORNER STUDS 2 ROWS OF 0.131" x 2.5" COMMON NAIL (FACE NAILED) AT 15" ON CENTER
OR USE (6) 3/8" DIA. LAG SCREWS

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SHEARWALL DESIGN
(per ASCE 7-10)



CHAMPION HOME BUILDERS

DESIGN PARAMETERS

MEAN ROOF HEIGHT (MRH) =	20.00 ft
NUMBER OF STORIES =	1
FIRST FLOOR WIDTH (W ₁) =	30.33 ft
FIRST FLOOR LENGTH (L ₁) =	76 ft
BUILDING ASPECT RATIO (L/W) =	2.51
FLOOR JOIST DEPTH =	9.25 in
MAX. VERTICAL FLOOR OFFSET =	0 in
FLOOR ASPECT RATIO (L/W) =	2.51
MAX. FLOOR DIAPHRAGM OPENING WIDTH =	0 ft
MAX. FLOOR DIAPHRAGM OPENING LENGTH =	0 ft
FIRST FLOOR HEIGHT (H ₁) =	8 ft
CEILING ASPECT RATIO (L/W) =	2.51
MIN. SHEARWALL SEGMENT (H / 3.5) =	2.29 ft
ROOF PITCH =	7 /12

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\\SERVER2\Data\2019\190568\CHAMPION SHEAR\CALCS 23-3975 031319



CONNECTION INFORMATION:

TRUSS TO PLATE CONNECTORS

	UPLIFT STRENGTH:		SHEAR STRENGTH:	
SIMPSON SDWC15600 SCREW	U =	485 lbs	F2 =	148 lbs
SIMPSON H8	U =	565 lbs	F ₂ =	0 lbs
SIMPSON H10A	U =	1015 lbs	F ₁ =	505 lbs
SIMPSON H10	U =	850 lbs	F ₂ =	235 lbs
#10 x 5" WOOD SCREW (TOENAILED)	U =	127 lbs	F ₂ =	188 lbs
		200 psi MINIMUM CONSTRUCTION ADHESIVE	Z =	100 psi (END-GRAIN)
		200 psi MINIMUM CONSTRUCTION ADHESIVE	Z =	200 psi (FACE)

FLAT STRAPS	MAXIMUM	FASTENERS: 8d NAIL	16 ga. STAPLE
1.5 x 20 ga STRAP	Z = 1265 lbs	Z = 127.3	48.3 lbs
DBL 1.5 x 20 ga STRAP	Z = 2530 lbs	Z = 131.4	46 lbs
(3) 1.5 x 20 ga STRAP	Z = 3795 lbs	Z = 140.5	45.1 lbs
(2) 1.5" x 22 ga. STRAP	Z = 1620 lbs	Z = 129.4	46.4 lbs
(2) 1.5" x 20 ga. STRAP	Z = 1946 lbs	Z = 131.4	46 lbs

HOLDDOWNS w/ 1 1/2" EDGE DISTANCE

MINIMUM 8" STEM WALL

ASSUME 3000 psi Fc CONCRETE

SIMPSON LSTHD8RJ	Z =	1950 lbs
SIMPSON STHD10RJ	Z =	3230 lbs
SIMPSON STHD14RJ	Z =	5150 lbs
SIMPSON PA51	Z =	2025 lbs
1/2" DIA. THRU BOLT	Z =	623 lbs
1/2" ANCHOR BOLT	Z =	1056 lbs
5/8" ANCHOR BOLT	Z =	1488 lbs
3/8" DIA. LAG SCREW	Z =	288 lbs
3/8" DIA. x 3 1/2" (3" PENETRATION) LAG SCREW	W =	669 lbs (WITHDRAWAL)
0.131" x 2.5" COMMON NAIL (FACE NAILED)	Z =	100 lbs
0.131" x 2.5" COMMON NAIL (TOENAILED)	Z =	83 lbs
0.131" x 2.5" COMMON NAIL (ENDNAILED)	Z =	67 lbs
0.162" x 3.5" COMMON NAIL (TOENAILED)	Z =	158 lbs
0.162" x 3.5" COMMON NAIL (FACE NAILED)	Z =	191 lbs
0.162" x 3.5" COMMON NAIL (ENDNAILED)	Z =	128 lbs
8d COMMON NAIL (FACE NAILED), 7/16" SIDE MEMBER	Z =	95 lbs
0.131" x 2.5" COMMON NAIL (FACE NAILED)	W =	69 lbs (7/16" SIDE; WITHDRAWAL)
#10 x 5" WOOD SCREW (TOENAILED)	Z =	188 lbs
#10 x 5" WOOD SCREW (TOENAILED)	W =	127 lbs (WITHDRAWAL; MIN. 2" PENETRATION)
15 ga. STAPLE (FACE)	Z =	72 lbs
16 ga. STAPLE	W =	34 lbs (7/16" SIDE; WITHDRAWAL)
16 ga. STAPLE (FACE)	Z =	63.7 lbs
(1) SIMPSON LTP4 PLATE	Z =	575 lbs
1/2" GWB (UN-BLOCKED) w/ FASTENERS @ 7"/7"	Z =	70 plf
7/16" OSB (UN-BLOCKED) w/ 16 ga. STAPLES @ 6"/12"	Z =	127 plf
7/16" OSB (BLOCKED) w/ 16 ga. STAPLES @ 6"/12"	Z =	189 plf
19/32" MIN. OSB (UN-BLOCKED) w/ 8 d NAILS @ 6"/12"	Z =	305 plf
19/32" MIN. OSB (BLOCKED) w/ 16 ga STAPLES @ 6"/12"	Z =	201 plf
7/16" OSB (BLOCKED) w/ 16 ga STAPLES @ 6"/12" & 4" o.c. @ PERIMETER	Z =	258 plf
7/16" OSB (BLOCKED) w/ 16 ga STAPLES @ 4"/12" & 2 1/2" o.c. @ PERIMETER	Z =	384 plf
19/32" OSB (BLOCKED) w/ 16 ga STAPLES @ 6"/12" & 4" o.c. @ PERIMETER	Z =	269 plf
19/32" OSB (BLOCKED) w/ 16 ga STAPLES @ 4"/12" & 2 1/2" o.c. @ PERIMETER, DOUBLE FRAMING	Z =	402 plf

NOTE: SIMPSON CONNECTORS & FASTEN VALUES ASSUME SPF FRAMING MATERIAL
ANCHOR BOLT VALUES ASSUME DF/SP VALUES

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DESIGN UPLIFT LOADS

ROOF & CEILING ASSEMBLY DEAD LOAD =	15 psf
WALL DEAD LOAD (WDL) =	14 psf
FLOOR DEAD LOAD (FDL) =	10 psf
ROOF SPAN (RS) =	30.33 ft
TRUSS SPACING (TOC) =	24 in
STUD SPACING (SOC) =	16 in
FIRST FLOOR HEIGHT (H ₁) =	8 ft

UPLIFT CONNECTION LOAD:

w_{up} = 297 plf CONVERTED FROM TRUSS CC557327

REQUIRED TRUSS TIE DOWN:

$$P_{up} = w_{up} * TOC =$$

$$P_{up} = 297 \text{ plf} * 24 \text{ in} / 12 =$$

$$P_{up} = 594 \text{ lbs}$$

NO. OF = 2

AVAILABLE UPLIFT STRENGTH = 970 lbs

USE (2) SIMPSON SDWC15600 SCREW
NO GOOD FOR SIMPSON H8
OK FOR SIMPSON H10A
OK FOR (5) #10 WOOD SCREWS x 5" LENGTH (MIN. 2" OF PENETRATION)
OR TRUSS CONNECTION TO WITHSTAND AN UPLIFT FORCE OF 594 lbs

REQUIRED SIDEWALL STUD TIE DOWN LOADING:

1ST FLOOR STUD TO TOP PLATE / CEILING BAND: $P_{1tp} = w_{up} * SOC = 297 * 16 / 12 = 396 \text{ lbs}$

1st FLOOR STUD TO FLOOR BAND: $P_{1fb} = P_{1tp} - 0.6 * WDL * H_1 * SOC =$
 $P_{1fb} = 396 \text{ lbs} - 0.6 * 14 \text{ psf} * 8 \text{ ft} * 16 \text{ in} / 12 = 307 \text{ lbs}$

CHECK FASTENERS:

8d NAIL $Z = 127.3 \text{ lbs}$
396 lbs / 127.3 lbs / FASTENER = 3.11 FASTENERS
USE (4) 8d NAIL(S) EACH END

16 ga. STAPLE $Z = 48.3 \text{ lbs}$
396 lbs / 48.3 lbs / FASTENER = 8.2 FASTENERS
USE (9) 16 ga. STAPLE(S) EACH END

USE A 1.5 x 20 ga STRAP EACH STUD WITH (4) 8d NAIL(S) EACH END
OR WITH (9) 16 ga. STAPLE(S) EACH END
OR CONNECTION TO WITHSTAND AN UPLIFT FORCE OF 396 lbs

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SHEARWALL DESIGN
(per ASCE 7-10)



CHAMPION HOME BUILDERS

SIDEWALL 1st FLOOR BAND TO SILL PLATE CONNECTION:

SIDEWALL UPLIFT AT SILL PLATE:

$$w_{sp} = P_{1fb} / SOC - 0.6 * FDL * W_1 / 4 =$$

$$w_{sp} = 307 \text{ lbs} * 12 / 16 \text{ in} - 0.6 * 10 \text{ psf} * 30.33 \text{ ft} / 4 =$$

$$w_{sp} = 185 \text{ plf}$$

CHECK STRAP AT ANCHOR BOLT LOCATIONS:

1/2" ANCHOR BOLT SPACING (BOC) = 72 in

$$P_{sp} = w_{sp} * BOC = 185 \text{ plf} * 72 = 1110 \text{ lb}$$

CHECK FASTENERS:

8d NAIL Z = 127.3 lbs

$$1110 \text{ lbs} / 127.3 \text{ lbs} / \text{FASTENER} = 8.72 \text{ FASTENERS}$$

USE (9) 8d NAIL(S) EACH END

16 ga. STAPLE Z = 48.3 lbs

$$1110 \text{ lbs} / 48.3 \text{ lbs} / \text{FASTENER} = 22.98 \text{ FASTENERS}$$

USE (23) 16 ga. STAPLE(S) EACH END

**USE A 1.5 x 20 ga STRAP WITH (9) 8d NAIL(S) EACH END
OR WITH (23) 16 ga. STAPLE(S) EACH END
WRAPPED AROUND THE SILL PLATE AT EACH ANCHOR BOLT LOCATION
OR CONNECTION TO WITHSTAND AN UPLIFT FORCE OF 1110 lbs**

CHECK BENDING IN RIMBAND:

DBL. 2x10 SPF #2 RIMBAND DESIGN VALUES:

SECTION MODULUS (S) = 42.78 in³

ALLOWABLE BENDING (fb) = 875 psi

$$M_{MAX} = \frac{w_{sp} * BOC^2}{8} =$$

$$M_{MAX} = \frac{185 \text{ plf} * (72 / 12)^2}{8} = 9990 \text{ in-lbs}$$

$$\text{APPLIED fb} = \frac{M_{MAX}}{S} = \frac{9990 \text{ in-lbs}}{42.78 \text{ in}^3} = 234 \text{ psi}$$

ALLOWABLE BENDING (fb) = 875 psi > APPLIED fb = 234 psi

DBL. 2x10 SPF #2 RIMBAND IS OK

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SHEARWALL DESIGN
(per ASCE 7-10)



CHAMPION HOME BUILDERS

LATERAL LOAD AT ROOF/CEILING DIAPHRAGM

ROOF SPAN = 30.33 ft
ROOF PITCH = 7 /12

WIND PERPENDICULAR TO RIDGE:

213 plf

WIND PARALLEL TO RIDGE:

204 plf

LATERAL LOAD AT FLOOR DIAPHRAGM

WIND PERPENDICULAR TO RIDGE:

207 plf

WIND PARALLEL TO RIDGE:

206 plf

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SHEARWALL DESIGN
(per ASCE 7-10)



CHAMPION HOME BUILDERS

LATERAL FRAMING CONNECTION LOADS FROM WIND:

(FOR ROOF-TO-PLATE, PLATE-TO-PLATE, PLATE-TO-STUD, AND PLATE-TO-FLOOR)

PER ASCE 7-10 WIND PRESSURE (w) = 28 psf
 wl-wall' = w * H / 2 = 112 plf

TRUSS MULTIPLIER = 2
 STUD MULTIPLIER = 1.33

TRUSS TO TOP PLATE CONNECTION:

$P_C = w_{l-wall} * M_{24} = 112 \text{ plf} * 2 = 224 \text{ lbs}$

TRUSS CONNECTION: SIMPSON SDWC15600 SCREW

$F_2 = 148 \text{ lbs}$

$P_C = P - F_2 =$
 $P_C = 224 \text{ lbs} - 148 \text{ lbs} =$
 $P_C = 76 \text{ lbs}$

OF #10 x 5" WOOD SCREW (TOENAILED) REQUIRED = $\frac{P_C}{Z} = \frac{76 \text{ lbs}}{188 \text{ lbs}} = 1 \text{ SCREWS}$

USE (1) ADDITIONAL #10 x 5" WOOD SCREW (TOENAILED) PER TRUSS

TRUSS CONNECTION: SIMPSON H8

$F_2 = 0 \text{ lbs}$

$P_C = P - F_2 =$
 $P_C = 224 \text{ lbs} - 0 \text{ lbs} =$
 $P_C = 224 \text{ lbs}$

OF #10 x 5" WOOD SCREW (TOENAILED) REQUIRED = $\frac{P_C}{Z} = \frac{224 \text{ lbs}}{188 \text{ lbs}} = 2 \text{ SCREWS}$

USE (2) ADDITIONAL #10 x 5" WOOD SCREW (TOENAILED) PER TRUSS

TRUSS CONNECTION: SIMPSON H10A

$F_1 = 505 \text{ lbs}$

$P_C = P - F_2 =$
 $P_C = 224 \text{ lbs} - 505 \text{ lbs} =$
 $P_C = -281 \text{ lbs}$

OF #10 x 5" WOOD SCREW (TOENAILED) REQUIRED = $\frac{P_C}{Z} = \frac{-281 \text{ lbs}}{188 \text{ lbs}} = 0 \text{ SCREWS}$

USE (0) ADDITIONAL #10 x 5" WOOD SCREW (TOENAILED) PER TRUSS

TRUSS CONNECTION: #10 x 5" WOOD SCREW (TOENAILED)

$F_1 = 940 \text{ lbs}$

$P_C = P - F_2 =$
 $P_C = 224 \text{ lbs} - 940 \text{ lbs} =$
 $P_C = -716 \text{ lbs}$

OF REQUIRED = $\frac{P_C}{Z} = \frac{-716 \text{ lbs}}{188 \text{ lbs}} = 0 \text{ SCREWS}$

USE (0) ADDITIONAL #10 x 5" WOOD SCREW (TOENAILED) PER TRUSS

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SHEARWALL DESIGN
(per ASCE 7-10)



CHAMPION HOME BUILDERS

PLATE TO PLATE CONNECTION:

$$\text{SPACING OF 15 ga. STAPLE (FACE)} = \frac{Z * 12}{W_{\text{wall}}} = \frac{72 \text{ lbs} * 12}{112 \text{ plf}} = 7 \text{ in O.C. (16" max)}$$

ATTACH WITH 15 ga. STAPLE (FACE) AT 7" ON CENTER

PLATE TO STUD CONNECTION:

$$P_c = W_{\text{wall}} * M_{16} = 112 \text{ plf} * 1.33 = 149 \text{ lbs}$$

$$\# \text{ OF 15 ga. STAPLE (FACE) REQUIRED} = \frac{P_c}{Z} = \frac{149 \text{ lbs}}{72 \text{ lbs}} = 3 \text{ STAPLES}$$

USE (3) 15 ga. STAPLE (FACE) PER STUD

BOTTOM PLATE TO FLOOR CONNECTION:

$$\text{SPACING OF 0.131" x 2.5" COMMON NAIL (FACE NAILED)} = \frac{Z * 12}{W_{\text{wall}}} = \frac{100 \text{ lbs} * 12}{112 \text{ plf}} = 10 \text{ in O.C. (16" max)}$$

ATTACH WITH 0.131" x 2.5" COMMON NAIL (FACE NAILED) AT 10" ON CENTER

TOP PLATE SPLICE LENGTH

STRUCTURE WIDTH (W) =	30.33 ft	
STRUCTURE LENGTH (L) =	76 ft	
0.162" x 3.5" COMMON NAIL (FACE NAILED)	Z =	191 lbs
15 ga. STAPLE (FACE)	Z =	72 lbs
ROOF DIAPHRAGM LOADING (w _{per}) =	213 plf	

$$\text{DIAPHRAGM CHORD FORCE} = T = \frac{w_{\text{per}} * L^2}{8 * W} = \frac{213 \text{ plf} * 76 \text{ ft}^2}{8 * 30.33 \text{ ft}} = 5071 \text{ lbs}$$

$$\text{REQUIRED SPLICE LENGTH (w/ (2) 16d 3" o.c.): } \frac{T * 3" / 12" / \text{ft}}{2 * Z} = \frac{5071 \text{ lbs} * 3" / 12" / \text{ft}}{2 * 191 \text{ lbs / NAIL}} = 4 \text{ ft}$$

$$\text{REQUIRED SPLICE LENGTH (w/ (2) 16d 12" o.c.): } \frac{T * 12" / 12" / \text{ft}}{2 * Z} = \frac{5071 \text{ lbs} * 12" / 12" / \text{ft}}{2 * 191 \text{ lbs / NAIL}} = 14 \text{ ft}$$

$$\text{REQUIRED SPLICE LENGTH (w/ (2) 15 ga 3" o.c.): } \frac{T * 3" / 12" / \text{ft}}{2 * Z} = \frac{5071 \text{ lbs} * 3" / 12" / \text{ft}}{2 * 72 \text{ lbs / NAIL}} = 9 \text{ ft}$$

$$\text{REQUIRED SPLICE LENGTH (w/ (2) 15 ga 12" o.c.): } \frac{T * 12" / 12" / \text{ft}}{2 * Z} = \frac{5071 \text{ lbs} * 12" / 12" / \text{ft}}{2 * 72 \text{ lbs / NAIL}} = 36 \text{ ft}$$

TOP PLATE SPLICES SHALL BE A MINIMUM OF 4 ft w/ (2) ROWS 16d (0.162" x 3.5" COMMON NAIL (FACE NAILED)) 3" o.c
OR A MINIMUM OF 14 ft w/ (2) ROWS 16d (0.162" x 3.5" COMMON NAIL (FACE NAILED)) 12" o.c
OR A MINIMUM OF 9 ft w/ (2) ROWS 15 ga. STAPLE (FACE) 3" o.c
OR A MINIMUM OF 36 ft w/ (2) ROWS 15 ga. STAPLE (FACE) 12" o.c

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ROOF DIAPHRAGM SHEATHING REQUIREMENTS

ROOF SPAN (RS) =	30.33 ft	
ROOF LENGTH (RL) =	76 ft	
ROOF PITCH =	7 / 12	
ROOF ANGLE (RA) =	30.3 °	
w_{l-per} =	213 plf	
STANDARD ROOF SHEATHING =	7/16" OSB (UN-BLOCKED) w/ 16 ga. STAPLES @ 6"/12"	
ROOF SHEATHING SHEAR CAPACITY (v_r) =	127 plf	
STANDARD CEILING SHEATHING =	1/2" GWB (UN-BLOCKED) w/ FASTENERS @ 7"/7"	
CEILING SHEATHING SHEAR CAPACITY (v_c) =	70 plf	
MAX DIAPHRAGM SHEAR (v) = $\frac{L * w_{l-per} / 2}{RS}$	$\frac{76 \text{ ft} * 213 \text{ plf} / 2}{30.33 \text{ ft}}$	267 plf
NET DIAPHRAGM SHEAR CAPACITY (v_n) = $v_r + v_c$	127 plf + 70 plf =	197 plf
DIAPHRAGM SHEAR CAPACITY REQUIRED = 267 plf	>	STANDARD ROOF/CEILING DIAPHRAGM CAPACITY = 197 plf

STANDARD ROOF/CEILING DIAPHRAGM NO GOOD AT ENDWALLS; SEE BELOW FOR ROOF MODIFICATION

LENGTH OF ROOF SHEATHING TO BE MODIFIED (x) = $(RL / 2) * (1 - v_n / v)$
 $x = (76 \text{ ft} / 2) * (1 - 197 \text{ plf} / 267 \text{ plf})$
 $x = 10 \text{ ft}$

ROOF SHEATHING CAPACITY REQUIRED AT ENDWALLS = $v - v_c$ = $267 \text{ plf} - 70 \text{ plf}$ = 197 plf

INCREASE TO 7/16" OSB (BLOCKED) w/ 16 ga STAPLES @ 4"/12" & 2 1/2" o.c. @ PERIMETER WITHIN 10 ft OF ENDWALLS

FLOOR DIAPHRAGM SHEATHING REQUIREMENTS

BUILDING WIDTH (W) =	30.33 ft	
BUILDING LENGTH (L) =	76 ft	
FL_{l-per} =	207 plf	
STANDARD FLOOR SHEATHING =	19/32" MIN. OSB (UN-BLOCKED) w/ 8 d NAILS @ 6"/12"	
FLOOR DIAPHRAGM SHEAR CAPACITY (v_f) =	305 plf	
MAX FLOOR DIAPHRAGM SHEAR (v) = $\frac{L * 3 / 4 * FL_{l-per} / 2}{W}$	$\frac{76 \text{ ft} * 3 / 4 * 207 \text{ plf} / 2}{30.33 \text{ ft}}$	195 plf
DIAPHRAGM SHEAR CAPACITY REQUIRED = 195 plf	<	STANDARD ROOF/CEILING DIAPHRAGM CAPACITY = 305 plf

STANDARD FLOOR DIAPHRAGM OK



SHEATHING SUCTION CONNECTION (PER ASCE 7-10 C-C PRESSURES, pp. 55-58)

TRUSS SPACING (TOC) =	24 in O.C.
STUD SPACING (SOC) =	16 in O.C.
0.131" x 2.5" COMMON NAIL (FACE NAILED)	69 lbs (7/16" SIDE MEMBER; WITHDRAWAL)
16 ga. STAPLE	34 lbs (7/16" SIDE MEMBER; WITHDRAWAL)
a =	3.03 ft

FOR ROOF ZONE 1 (FIELD):

24.48 psf

TRUSS LOADING = 24.48 psf x 24" o.c. / 12" / ft = 49 plf

NAILS: $\frac{49 \text{ plf}}{69 \text{ lbs / FASTENER}} = 0.8 \text{ FASTENERS / ft} = 15 \text{ in O.C.}$
MAX ALLOWABLE SPACING: 12 in O.C.

STAPLES: $\frac{49 \text{ plf}}{34 \text{ lbs / FASTENER}} = 1.5 \text{ FASTENERS / ft} = 8 \text{ in O.C.}$
MAX ALLOWABLE SPACING: 12 in O.C.

USE 0.131" x 2.5" COMMON NAIL (FACE NAILED) AT 12 in o.c.
OR USE 16 ga. STAPLE AT 8 in o.c.

FOR ROOF ZONE 2 (EDGE):

28.626 psf

TRUSS LOADING = 28.626 psf x 24" o.c. / 12" / ft = 57 plf

NAILS: $\frac{57 \text{ plf}}{69 \text{ lbs / FASTENER}} = 0.9 \text{ FASTENERS / ft} = 13 \text{ in O.C.}$
MAX ALLOWABLE SPACING: 12 in O.C.

STAPLES: $\frac{57 \text{ plf}}{34 \text{ lbs / FASTENER}} = 1.7 \text{ FASTENERS / ft} = 7 \text{ in O.C.}$
MAX ALLOWABLE SPACING: 12 in O.C.

USE 0.131" x 2.5" COMMON NAIL (FACE NAILED) AT 12 in o.c.
OR USE 16 ga. STAPLE AT 7 in o.c.

FOR ROOF ZONE 3 (CORNER):

28.626 psf

TRUSS LOADING = 28.626 psf x 24" o.c. / 12" / ft = 57 plf

NAILS: $\frac{57 \text{ plf}}{69 \text{ lbs / FASTENER}} = 0.9 \text{ FASTENERS / ft} = 13 \text{ in O.C.}$
MAX ALLOWABLE SPACING: 12 in O.C.

STAPLES: $\frac{57 \text{ plf}}{34 \text{ lbs / FASTENER}} = 1.7 \text{ FASTENERS / ft} = 7 \text{ in O.C.}$
MAX ALLOWABLE SPACING: 12 in O.C.

USE 0.131" x 2.5" COMMON NAIL (FACE NAILED) AT 12 in o.c.
OR USE 16 ga. STAPLE AT 7 in o.c.

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SHEARWALL DESIGN
(per ASCE 7-10)



CHAMPION HOME BUILDERS

FOR ROOF ZONE 30H (CORNER OVERHANG):

45.222 psf

TRUSS LOADING = 45.222 psf x 24" o.c. / 12" / ft = 90 plf

NAILS: $\frac{90 \text{ plf}}{69 \text{ lbs / FASTENER}} = 1.4 \text{ FASTENERS / ft} = 8 \text{ in O.C.}$
 MAX ALLOWABLE SPACING: 12 in O.C.

STAPLES: $\frac{90 \text{ plf}}{34 \text{ lbs / FASTENER}} = 2.7 \text{ FASTENERS / ft} = 4 \text{ in O.C.}$
 MAX ALLOWABLE SPACING: 12 in O.C.

USE 0.131" x 2.5" COMMON NAIL (FACE NAILED) AT 8 in o.c.
OR USE 16 ga. STAPLE AT 4 in o.c.

FOR WALL ZONE 4 (FIELD):

26.55 psf

STUD LOADING = 26.55 psf x 16" o.c. / 12" / ft = 35 plf

NAILS: $\frac{35 \text{ plf}}{69 \text{ lbs / FASTENER}} = 0.6 \text{ FASTENERS / ft} = 20 \text{ in O.C.}$
 MAX ALLOWABLE SPACING: 12 in O.C.

STAPLES: $\frac{35 \text{ plf}}{34 \text{ lbs / FASTENER}} = 1.1 \text{ FASTENERS / ft} = 10 \text{ in O.C.}$
 MAX ALLOWABLE SPACING: 12 in O.C.

USE 0.131" x 2.5" COMMON NAIL (FACE NAILED) AT 12 in o.c.
OR USE 16 ga. STAPLE AT 10 in o.c.

FOR WALL ZONE 5 (EDGE):

32.778 psf

STUD LOADING = 32.778 psf x 16" o.c. / 12" / ft = 44 plf

NAILS: $\frac{44 \text{ plf}}{69 \text{ lbs / FASTENER}} = 0.7 \text{ FASTENERS / ft} = 17 \text{ in O.C.}$
 MAX ALLOWABLE SPACING: 12 in O.C.

STAPLES: $\frac{44 \text{ plf}}{34 \text{ lbs / FASTENER}} = 1.3 \text{ FASTENERS / ft} = 9 \text{ in O.C.}$
 MAX ALLOWABLE SPACING: 12 in O.C.

USE 0.131" x 2.5" COMMON NAIL (FACE NAILED) AT 12 in o.c.
OR USE 16 ga. STAPLE AT 9 in o.c.

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SHEARWALL DESIGN
(per ASCE 7-10)



CHAMPION HOME BUILDERS

FIRST FLOOR ENDWALL #1 SHEATHING LENGTH REQUIREMENTS
MASTER BEDROOM /CLOSET END

FIRST FLOOR WIDTH (W ₁) =	30.33 ft	
FIRST FLOOR LENGTH (L ₁) =	76 ft	
SHEARWALL TYPE: 7/16" OSB EXTERIOR (BLOCKED) w/ 1/2" GWB INTERIOR		
SHEATHING EDGE FASTENER SPACING =	4 in O.C. (16 ga STAPLES OR EQUIVALENT)	
SHEARWALL STRENGTH (V) =	590 plf	
MIN. SHEARWALL SEGMENT LENGTH =	2.3 ft	
FULL HEIGHT SHEATHING PROVIDED (ΣL) =	19.18 ft	
1st FL. PERCENT FULL HEIGHT SHEATHING=	77 %	
1st FL. MAX. UNRESTRAINED OPENING HEIGHT =	6.83 ft	
SHEAR ADJUSTMENT FACTOR (C _o) =	0.743 (TABLE 2305.3.7.2, IBC)	
1st FL. NUMBER OF SHEARWALLS (N _{end}) =	2	
ADDITIONAL WALL LOAD =	0 lbs	
SHEARWALL REACTION (R _{end1}) = L ₁ * W _{1-per} / N _{end} + ADDITIONAL=		
R _{end1} =	76 ft * 213 plf / 2 + 0 lbs =	8094 lbs
MIN. LENGTH SEGMENTED SHEARWALLS (L _{sw}) = R _{end1} / V =		
	8094 lbs / 590 plf =	13.72 ft

PERFORATED FULL HEIGHT SHEATHING LENGTH REQUIRED (ENDWALL) = LSW / CO = 13.72 ft / 0.743 = 18.47 ft

PERFORATED FULL HEIGHT SHEATHING REQUIRED = 18.47 ft < **PERFORATED FULL HEIGHT SHEATHING PROVIDED = 19.18 ft**

ENDWALL SHEARWALLS OK
ALL EXTERIOR SHEATHING TO BE BLOCKED UNO

FIRST FLOOR HORIZONTAL FLOOR DIAPHRAGM CONTINUITY:

MODULE TO MODULE CONNECTION AT FLOOR RIMBAND: (ALONG MATE LINE)
(DEEP BEAM HORIZONTAL SHEAR)

$$V_r = \frac{(3 * F_{l-per} / 4) * L}{2} = \frac{3 / 4 * 207 \text{ plf} * 76 \text{ ft}}{2} = 5900 \text{ lbs}$$

1/2" DIA. THRU BOLT = $\frac{V_r}{Z_{1/2 \text{ BOLT}}} = \frac{5900 \text{ lbs}}{623 \text{ lbs}} = 10 \text{ BOLTS}$

3/8" DIA. LAG SCREW $\frac{V_r}{Z_{1/2 \text{ BOLT}}} = \frac{5900 \text{ lbs}}{288 \text{ lbs}} = 21 \text{ SCREWS}$

USE A MIN. OF (10) 1/2" DIA. THRU BOLTS
OR USE A MIN. OF (21) 3/8" DIA. LAG SCREW
TO ATTACH MODULE TO MODULE ALONG MATE LINE

MODULE TO MODULE CONNECTION AT FLOOR RIMBAND: (AT ENDWALLS)
(CHORD FORCE CONTINUITY)

$$T = \frac{3/4 * F_{l-per} * W^2}{8 * L} = \frac{3/4 * 206 \text{ plf} * 30.33 \text{ ft}^2}{8 * 76 \text{ ft}} = 234 \text{ lbs}$$

CHECK FASTENERS:

8d NAIL Z = 127.3 lbs
234 lbs / 127.3 lbs / FASTENER = 1.84 FASTENERS
USE (2) 8d NAIL(S) EACH END

16 ga. STAPLE Z = 48.3 lbs
234 lbs / 48.3 lbs / FASTENER = 4.84 FASTENERS
USE (5) 16 ga. STAPLE(S) EACH END

USE A 1.5 x 20 ga STRAP WITH (2) 8d NAIL(S) EACH END
OR WITH (5) 16 ga. STAPLE(S) EACH END
TO ATTACH MODULE TO MODULE AT EACH ENDWALL
OR CONNECTION TO WITHSTAND A TENSILE FORCE OF 234 lbs

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FIRST FLOOR ENDWALL #1: UPLIFT DUE TO OVERTURNING

FULL HEIGHT SHEATHING PROVIDED (ΣL_i) = 19.18 ft
 SHEARWALL ADJUSTMENT FACTOR (C_p) = 0.743
 SHEARWALL REACTION (R_{end2}) = 8094 lbs
 WALL HEIGHT (H) = 8 ft

$$UPLIFT\ FORCE\ (U_{E1}) = \frac{R_{end1} \times H}{\Sigma L_i \times C_o} =$$

$$U_{E1} = \frac{8094\ lbs \times 8\ ft}{19.18\ ft \times 0.743} = 4544\ lbs$$

**FIRST FLOOR ENDWALL #2 SHEATHING LENGTH REQUIREMENTS
 BEDROOM #3 #4 END**

FIRST FLOOR WIDTH (W_1) = 30.33 ft
 FIRST FLOOR LENGTH (L_1) = 76 ft
 SHEARWALL TYPE: 7/16" OSB EXTERIOR (BLOCKED) w/ 1/2" GWB INTERIOR
 SHEATHING EDGE FASTENER SPACING = 6 in O.C. (16 ga STAPLES OR EQUIVALENT)
 SHEARWALL STRENGTH (V) = 436 plf
 MIN. SHEARWALL SEGMENT LENGTH = 2.3 ft
 FULL HEIGHT SHEATHING PROVIDED (ΣL_i) = 27.27 ft
 1st FL. PERCENT FULL HEIGHT SHEATHING = 90 %
 1st FL. MAX. UNRESTRAINED OPENING HEIGHT = 5.08 ft
 SHEAR ADJUSTMENT FACTOR (C_o) = 0.917 (TABLE 2305.3.7.2, IBC)
 1st FL. NUMBER OF SHEARWALLS (N_{end}) = 2
 ADDITIONAL WALL LOAD = 0 lbs

$$SHEARWALL\ REACTION\ (R_{end1}) = L_1 \times W_{1-per} / N_{end} + ADDITIONAL = 8094\ lbs$$

$$R_{end1} = 76\ ft \times 213\ plf / 2 + 0\ lbs =$$

$$MIN.\ LENGTH\ SEGMENTED\ SHEARWALLS\ (L_{sw}) = R_{end1} / V = 8094\ lbs / 436\ plf = 18.56\ ft$$

PERFORATED FULL HEIGHT SHEATHING LENGTH REQUIRED (ENDWALL) = $L_{sw} / C_o = 18.56\ ft / 0.917 = 20.25\ ft$

PERFORATED FULL HEIGHT SHEATHING REQUIRED = 20.25 ft < PERFORATED FULL HEIGHT SHEATHING PROVIDED = 27.27 ft

**ENDWALL SHEARWALLS OK
 ALL EXTERIOR SHEATHING TO BE BLOCKED UNO**

FIRST FLOOR ENDWALL #2: UPLIFT DUE TO OVERTURNING

FULL HEIGHT SHEATHING PROVIDED (ΣL_i) = 27.27 ft
 SHEARWALL ADJUSTMENT FACTOR (C_p) = 0.917
 SHEARWALL REACTION (R_{end2}) = 8094 lbs
 WALL HEIGHT (H) = 8 ft

$$UPLIFT\ FORCE\ (U_{E1}) = \frac{R_{end1} \times H}{\Sigma L_i \times C_o} =$$

$$U_{E1} = \frac{8094\ lbs \times 8\ ft}{27.27 \times 0.917} = 2590\ lbs$$



FIRST FLOOR ENDWALL: SHEAR CONNECTIONS

FIRST FLOOR WIDTH (W ₁) =	30.33 ft	
FIRST FLOOR LENGTH (L ₁) =	64 ft	
FL _{1-per} =	207 plf	
1/2" ANCHOR BOLT	Z =	1056 lbs
5/8" ANCHOR BOLT	Z =	1488 lbs
0.131" x 2.5" COMMON NAIL (TOENAILED)	Z =	83 lbs
(1) SIMPSON LTP4 PLATE	Z =	575 lbs

MAXIMUM FIRST FLOOR ENDWALL SHEAR LOAD = 8094 lbs

TRUSS BOTTOM CHORD TO TOP PLATE CONNECTION:

# TOENAILS PER FOOT =	V / Z / W = 8094 lbs / 83 lbs / 30.33 ft =	3.2 NAILS / ft
TOENAIL SPACING =	12 / # = 12 / 3.2 =	3 " O.C. (16" MAX)
# LTP4 PLATES PER FOOT =	V / Z / W = 8094 lbs / 575 lbs / 30.33 ft =	0.5 PLATES / ft
LTP4 PLATE SPACING =	12 / # = 12 / 0.5 =	25 " O.C. (72" MAX)

**USE 0.131" x 2.5" COMMON NAIL (TOENAILED) AT 3" ON CENTER
OR USE (1) SIMPSON LTP4 PLATE AT 25" ON CENTER
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 8094 lbs**

RIMBAND TO SILL PLATE CONNECTION:

$$V = \text{MAX ENDWALL SHEAR} + L_1 \times (3/4 * FL_{1-per}) / 2 = 13062 \text{ lbs}$$

$$V = 8094 \text{ lbs} + 64 \text{ ft} \times (3/4 * 207 \text{ plf}) / 2$$

# TOENAILS PER FOOT =	V / Z / W = 13062 lbs / 83 lbs / 30.33 ft =	5.2 NAILS / ft
TOENAIL SPACING =	12 / # = 12 / 5.2 =	2 " O.C. (16" MAX)
# LTP4 PLATES PER FOOT =	V / Z / W = 13062 lbs / 575 lbs / 30.33 ft =	0.7 PLATES / ft
LTP4 PLATE SPACING =	12 / # = 12 / 0.7 =	16 " O.C. (72" MAX)

**USE 0.131" x 2.5" COMMON NAIL (TOENAILED) AT 2" ON CENTER
OR USE (1) SIMPSON LTP4 PLATE AT 16" ON CENTER
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 13062 lbs**

SILL PLATE TO FOUNDATION CONNECTION:

# 1/2" ANCHOR BOLTS =	V / Z = 13062 lbs / 1056 lbs =	13 BOLTS
BOLT SPACING = (W - 2) / (N - 1) =	(30.33 ft - 2) / (13 - 1) =	28 in

**USE 1/2" ANCHOR BOLTS AT 28" O.C
ANCHOR BOLTS TO BE A MIN. OF 4" AND A MAX. OF 1'-0" FROM CORNERS
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 13062 lbs**

# 5/8" ANCHOR BOLTS =	V / Z = 13062 lbs / 1488 lbs =	9 BOLTS
BOLT SPACING = (W - 2) / (N - 1) =	(30.33 ft - 2) / (9 - 1) =	42 in

**USE 5/8" ANCHOR BOLTS AT 42" O.C
ANCHOR BOLTS TO BE A MIN. OF 4" AND A MAX. OF 1'-0" FROM CORNERS
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 13062 lbs**

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CHECK SHEATHING TO RIMBAND CONNECTION:

UNIT SHEAR CHECK:

$$\text{SHEAR FORCE (V)} = \frac{R_{\text{end1}}}{\sum L_i \times C_o} =$$

FIRST FLOOR ENDWALL #1: $V = \frac{8094 \text{ lbs}}{19.18 \times 0.743} = 568 \text{ plf}$

FIRST FLOOR ENDWALL #2: $V = \frac{8094 \text{ lbs}}{27.27 \times 0.917} = 324 \text{ plf}$

MAXIMUM FIRST FLOOR ENDWALL UNIT SHEAR = 568 plf

CHECK # 8d NAILS REQUIRED FOR SHEATHING CONNECTION:

8d COMMON NAIL (FACE NAILED), 7/16" SIDE MEMBER $Z = 95 \text{ lbs}$

OF 8d NAILS PER FOOT = $\frac{V}{Z} = \frac{568 \text{ plf}}{95 \text{ lbs / NAIL}}$

OF 8d NAILS PER FOOT = 5.98 NAILS PER FOOT

OVERALL 8d NAIL SPACING = $12 / \# = 12 / 5.98 = 2 \text{ " O.C.}$

OF ROWS : 1 ROW(S)

8d NAIL SPACING WITHIN EACH ROW = 1 * SPACING 1 * 2 o.c. 2 " O.C.

CHECK # 16 ga. STAPLES REQUIRED FOR SHEATHING CONNECTION:

16 ga. STAPLE (FACE) $Z = 63.7 \text{ lbs}$

OF 16 ga. STAPLES PER FOOT = $\frac{V}{Z} = \frac{568 \text{ plf}}{63.7 \text{ lbs / STAPLE}}$

OF 16 ga. STAPLES PER FOOT = 8.92 STAPLES PER FOOT

OVERALL 16 ga. STAPLE SPACING = $12 / \# = 12 / 8.92 = 1 \text{ " O.C.}$

OF ROWS : 2 ROW(S)

16 ga. STAPLE SPACING WITHIN EACH ROW = 2 * SPACING 2 * 1 o.c. 2 " O.C.

**USE SHEATHING CONNECTION WITH 1 ROW(S) OF 8D NAILS AT 2" O.C.
OR USE SHEATHING CONNECTION WITH 2 ROW(S) OF 16 ga. STAPLES AT 2" O.C.
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 568 plf**

SHEARWALL DESIGN
(per ASCE 7-10)



CHAMPION HOME BUILDERS

UNIT UPLIFT CHECK: (EQUAL TO UNIT SHEAR)

CHECK # 8d NAILS REQUIRED FOR SHEATHING CONNECTION:

8d COMMON NAIL (FACE NAILED), 7/16" SIDE MEMBER Z = 95 lbs

OF 8d NAILS PER FOOT = $\frac{V}{Z} = \frac{568 \text{ plf}}{95 \text{ lbs / NAIL}}$

OF 8d NAILS PER FOOT = 5.98 NAILS PER FOOT

OVERALL 8d NAIL SPACING = 12 / # = 12 / 5.98 = 2 " O.C.

OF ROWS : 1 ROW(S)

8d NAIL SPACING WITHIN EACH ROW = 1 * SPACING 1 * 2 o.c. 2 " O.C.

CHECK # 14 ga. STAPLES REQUIRED FOR SHEATHING CONNECTION:

16 ga. STAPLE (FACE) Z = 63.7 lbs

OF 16 ga. STAPLES PER FOOT = $\frac{V}{Z} = \frac{568 \text{ plf}}{63.7 \text{ lbs / STAPLE}}$

OF 16 ga. STAPLES PER FOOT = 8.92 STAPLES PER FOOT

OVERALL 16 ga. STAPLE SPACING = 12 / # = 12 / 8.92 = 1 " O.C.

OF ROWS : 2 ROW(S)

14 ga. STAPLE SPACING WITHIN EACH ROW = 2 * SPACING 2 * 1 o.c. 2 " O.C.

**USE SHEATHING CONNECTION WITH 1 ROW(S) OF 8d NAILS AT 2" O.C.
OR USE SHEATHING CONNECTION WITH 2 ROW(S) OF 16 ga. STAPLES AT 2" O.C.
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 568 plf**

ALTERNATE SHEATHING CONNECTION FOR UNIT UPLIFT (GLUE):

200 psi MINIMUM CONSTRUCTION ADHESIVE Z = 200 psi (FACE)

WIDTH OF GLUE REQUIRED FOR SHEATHING CONNECTION ALONG FLOOR BAND:

WIDTH OF GLUE STRIP REQUIRED = $\frac{V}{Z} = \frac{568 \text{ plf}}{200 \text{ psi} * 12" / \text{ft}} = 1 "$

FASTEN SHEATHING TO BAND WITH 1" WIDE STRIP OF 200 psi MINIMUM CONSTRUCTION ADHESIVE

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FIRST FLOOR SIDEWALL #1 SHEATHING LENGTH REQUIREMENTS
KITCHEN SIDE

FIRST FLOOR WIDTH (W ₁) =	30.33 ft	
FIRST FLOOR LENGTH (L ₁) =	76 ft	
SHEARWALL TYPE: 7/16" OSB EXTERIOR (BLOCKED) w/ 1/2" GWB INTERIOR		
SHEATHING EDGE FASTENER SPACING =	6 in O.C. (16 ga STAPLES OR EQUIVALENT)	
SHEARWALL STRENGTH (V) =	277 plf	
MIN. SHEARWALL SEGMENT LENGTH =	2.3 ft	
FULL HEIGHT SHEATHING PROVIDED (ΣL _i) =	53.75 ft	
1st FL. PERCENT FULL HEIGHT SHEATHING =	71 %	
1st FL. MAX. UNRESTRAINED OPENING HEIGHT =	6.8 ft	
SHEAR ADJUSTMENT FACTOR (C _o) =	0.689 (TABLE 2305.3.7.2, IBC)	
1st FL. NUMBER OF SHEARWALLS (N _{side}) =	2	
ADDITIONAL WALL LOAD =	0 lbs	

SHEARWALL REACTION (R_{side1}) = W₁ * W_{i,para} / N_{side} + ADDITIONAL =
 $R_{side1} = 30.33 \text{ ft} * 204 \text{ plf} / 2 + 0 \text{ lbs} = 3101 \text{ lbs}$

MIN. LENGTH SEGMENTED SHEARWALLS (L_{sw}) = R_{side1} / V = 3101 lbs / 277 = 11.19 ft

PERFORATED FULL HEIGHT SHEATHING LENGTH REQUIRED (SIDEWALL) = L_{sw} / C_o = 11.19 ft / 0.689 = 16.25 ft

PERFORATED FULL HEIGHT SHEATHING REQUIRED = 16.25 ft < **PERFORATED FULL HEIGHT SHEATHING PROVIDED = 53.75 ft**

SIDEWALL SHEARWALLS OK
ALL EXTERIOR SHEATHING TO BE BLOCKED UNO

FIRST FLOOR SIDEWALL #1: UPLIFT DUE TO OVERTURNING

FULL HEIGHT SHEATHING PROVIDED (ΣL _i) =	53.75 ft
SHEARWALL ADJUSTMENT FACTOR (C _p) =	0.689
SHEARWALL REACTION (R _{side1}) =	3101 lbs
WALL HEIGHT (H) =	8 ft

UPLIFT FORCE (U_{E1}) = $\frac{R_{side1} \times H}{\Sigma L_i \times C_o} =$

$U_{E1} = \frac{3101 \text{ lbs} \times 8 \text{ ft}}{53.75 \times 0.689} = 670 \text{ lbs}$



FIRST FLOOR SIDEWALL #2 SHEATHING LENGTH REQUIREMENTS
LIVING ROOM SIDE

FIRST FLOOR WIDTH (W ₁) =	30.33 ft
FIRST FLOOR LENGTH (L ₁) =	76 ft
SHEARWALL TYPE: 7/16" OSB EXTERIOR (BLOCKED) w/ 1/2" GWB INTERIOR	
SHEATHING EDGE FASTENER SPACING =	6 in O.C. (16 ga STAPLES OR EQUIVALENT)
SHEARWALL STRENGTH (V) =	277 plf
MIN. SHEARWALL SEGMENT LENGTH =	2.3 ft
FULL HEIGHT SHEATHING PROVIDED (ΣL _i) =	49.343 ft
1st FL. PERCENT FULL HEIGHT SHEATHING =	65 %
1st FL. MAX. UNRESTRAINED OPENING HEIGHT =	6.8 ft
SHEAR ADJUSTMENT FACTOR (C _o) =	0.652 (TABLE 2305.3.7.2, IBC)
1st FL. NUMBER OF SHEARWALLS (N _{side}) =	2
ADDITIONAL WALL LOAD =	0 lbs

SHEARWALL REACTION (R_{side1}) = W₁ * W_{fpara} / N_{side} + ADDITIONAL =
 $R_{side1} = 30.33 \text{ ft} * 204 \text{ plf} / 2 + 0 \text{ lbs} = 3101 \text{ lbs}$

MIN. LENGTH SEGMENTED SHEARWALLS (L_{sw}) = R_{side1} / V = 3101 lbs / 277 plf = 11.19 ft

PERFORATED FULL HEIGHT SHEATHING LENGTH REQUIRED (SIDEWALL) = L_{sw} / C_o = 11.19 ft / 0.652 = 17.18 ft

PERFORATED FULL HEIGHT SHEATHING REQUIRED = 17.18 ft < **PERFORATED FULL HEIGHT SHEATHING PROVIDED = 49.34 ft**

SIDEWALL SHEARWALLS OK
ALL EXTERIOR SHEATHING TO BE BLOCKED UNO

FIRST FLOOR SIDEWALL #2: UPLIFT DUE TO OVERTURNING

FULL HEIGHT SHEATHING PROVIDED (ΣL _i) =	49.343 ft
SHEARWALL ADJUSTMENT FACTOR (C _p) =	0.652
SHEARWALL REACTION (R _{side1}) =	3101 lbs
WALL HEIGHT (H) =	8 ft

UPLIFT FORCE (U_{E1}) = $\frac{R_{side1} \times H}{\Sigma L_i \times C_o} =$
 $U_{E1} = \frac{3101 \text{ lbs} \times 8 \text{ ft}}{49.343 \times 0.652} = 772 \text{ lbs}$



FIRST FLOOR SIDEWALL: SHEAR CONNECTIONS

FIRST FLOOR WIDTH (W_1) =	30.33 ft	
FIRST FLOOR LENGTH (L_1) =	64 ft	
$FL_{i,para}$ =	206 plf	
$W_{i,para}$ =	204 plf	
1/2" ANCHOR BOLT	Z =	1056 lbs
5/8" ANCHOR BOLT	Z =	1488 lbs
0.131" x 2.5" COMMON NAIL (TOENAILED)	Z =	83 lbs
(1) SIMPSON LTP4 PLATE	Z =	575 lbs

MAXIMUM FIRST FLOOR SIDEWALL SHEAR LOAD = 3101 lbs

RIMBAND TO SILL PLATE CONNECTION:

$$V = \text{MAX SIDEWALL SHEAR} + W_1 \times (3/4 * FL_{i,para}) / 2 = 5444 \text{ lbs}$$

$$V = 3101 \text{ lbs} + 30.33 \text{ ft} \times (3/4 * 206 \text{ plf}) / 2$$

TOENAILS PER FOOT = $V / Z / L_1 = 5444 \text{ lbs} / 83 \text{ lbs} / 64 \text{ ft} = 1.0 \text{ NAILS} / \text{ft}$

TOENAIL SPACING = $12 / \# = 12 / 1 = 11 \text{ " O.C. (16" MAX)}$

LTP4 PLATES PER FOOT = $V / Z / W = 5444 \text{ lbs} / 575 \text{ lbs} / 64 \text{ ft} = 0.1 \text{ PLATES} / \text{ft}$

LTP4 PLATE SPACING = $12 / \# = 12 / 0.1 = 72 \text{ " O.C. (72" MAX)}$

**USE 0.131" x 2.5" COMMON NAIL (TOENAILED) AT 11" ON CENTER
OR USE (1) SIMPSON LTP4 PLATE AT 72" ON CENTER
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 5444 lbs**

SILL PLATE TO FOUNDATION CONNECTION:

1/2" ANCHOR BOLTS = $V / Z = 5444 \text{ lbs} / 1056 \text{ lbs} = 6 \text{ BOLTS}$

BOLT SPACING = $(L - 2) / (N - 1) = (64 \text{ ft} - 2) / (6 - 1) = 72 \text{ in}$

**USE 1/2" ANCHOR BOLTS AT 72" O.C
ANCHOR BOLTS TO BE A MIN. OF 4" AND A MAX. OF 1'-0" FROM CORNERS
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 5444 lbs**

5/8" ANCHOR BOLTS = $V / Z = 5444 \text{ lbs} / 1488 \text{ lbs} = 4 \text{ BOLTS}$

BOLT SPACING = $(L - 2) / (N - 1) = (64 \text{ ft} - 2) / (4 - 1) = 72 \text{ in}$

**USE 5/8" ANCHOR BOLTS AT 72" O.C
ANCHOR BOLTS TO BE A MIN. OF 4" AND A MAX. OF 1'-0" FROM CORNERS
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 5444 lbs**



CHECK SHEATHING TO RIMBAND CONNECTION:

UNIT SHEAR CHECK:

$$\text{SHEAR FORCE (V)} = \frac{R_{\text{end1}}}{\sum L_i \times C_o} =$$

FIRST FLOOR SIDEWALL #1: $V = \frac{3101 \text{ lbs}}{53.75 \times 0.689} = 84 \text{ plf}$

FIRST FLOOR SIDEWALL #2: $V = \frac{3101 \text{ lbs}}{49.343 \times 0.652} = 97 \text{ plf}$

MAXIMUM FIRST FLOOR SIDEWALL UNIT SHEAR = 97 plf

CHECK # 8d NAILS REQUIRED FOR SHEATHING CONNECTION:

8d COMMON NAIL (FACE NAILED), 7/16" SIDE MEMBER $Z = 95 \text{ lbs}$

OF 8d NAILS PER FOOT = $\frac{V}{Z} = \frac{97 \text{ plf}}{95 \text{ lbs / NAIL}}$

OF 8d NAILS PER FOOT = 1.03 NAILS PER FOOT

OVERALL 8d NAIL SPACING = $12 / \# = 12 / 1.03 = 11 \text{ " O.C.}$

OF ROWS : 1 ROW(S)

8d NAIL SPACING WITHIN EACH ROW = 1 * SPACING 1 * 11 o.c. 6 " O.C.

CHECK # 16 ga. STAPLES REQUIRED FOR SHEATHING CONNECTION:

16 ga. STAPLE (FACE) $Z = 63.7 \text{ lbs}$

OF 16 ga. STAPLES PER FOOT = $\frac{V}{Z} = \frac{97 \text{ plf}}{63.7 \text{ lbs / STAPLE}}$

OF 16 ga. STAPLES PER FOOT = 1.53 STAPLES PER FOOT

OVERALL 16 ga. STAPLE SPACING = $12 / \# = 12 / 1.53 = 7 \text{ " O.C.}$

OF ROWS : 1 ROW(S)

16 ga. STAPLE SPACING WITHIN EACH ROW = 1 * SPACING 1 * 7 o.c. 6 " O.C.

**USE SHEATHING CONNECTION WITH 1 ROW(S) OF 8d NAILS AT 6" O.C.
OR USE SHEATHING CONNECTION WITH 1 ROW(S) OF 16 ga. STAPLES AT 6" O.C.
OR CONNECTION TO WITHSTAND A SHEAR FORCE OF 97 plf**



COMBINED CORNER HOLDDOWN REQUIREMENTS

UPLIFT FORCES: (SEE ABOVE FOR CALCULATIONS)

1st FLOOR ENDWALL #1 UPLIFT FORCE (UE1) =	4544 lbs
1st FLOOR ENDWALL #2 UPLIFT FORCE (UE1) =	2590 lbs
1st FLOOR SIDEWALL #1 UPLIFT FORCE (US1) =	670 lbs
1st FLOOR SIDEWALL #2 UPLIFT FORCE (US1) =	772 lbs

DEAD LOADS:

FIRST FLOOR WIDTH (W ₁) =	30.33 ft (MAX: 4 * CEILING HEIGHT)
FIRST FLOOR LENGTH (L ₁) =	64 ft (MAX: 4 * CEILING HEIGHT)
FIRST FLOOR HEIGHT (H ₁) =	8 ft
ROOF & CEILING ASSEMBLY DEAD LOAD (RDL) =	15 psf
WALL DEAD LOAD (WDL) =	12 psf
FLOOR DEAD LOAD (FDL) =	10 psf

SIDEWALL FIRST FLOOR CORNER:

ROOF DEAD LOAD = 0.6 * RDL * W ₁ * L ₁ / 8 =	
ROOF DEAD LOAD = 0.6 * 15 psf * 30.33 ft * 64 ft / 8 =	2184 lbs
WALL DEAD LOAD = 0.6 * (WDL * H ₁ * L ₁ / 2) =	
WALL DEAD LOAD = 0.6 * 12 psf * 8 ft * 64 ft / 2 =	1843 lbs
1st FLOOR DEAD LOAD = 0.6 * FDL * W ₁ * L ₁ / 8 =	
1st FLOOR DEAD LOAD = 0.6 * 10 psf * 30.33 ft * 64 ft / 8 =	1456 lbs
TOTAL DEAD LOAD = 1843 lbs + 2184 lbs + 1456 lbs =	5483 lbs

CORNER STUD CONNECTION LOAD = MAX WALL UPLIFT - SELF WEIGHT	
772 lbs - 5483 lbs =	-4711 lbs

ENDWALL FIRST FLOOR CORNER:

WALL DEAD LOAD = 0.6 * (WDL * H ₁ * W ₁ / 2) =	
WALL DEAD LOAD = 0.6 * 12 psf * 8 ft * 30.33 ft / 2 =	874 lbs
GABLE WALL DEAD LOAD = 0.6 * (WDL * (H / 2) * W / 2) =	483 lbs
GABLE WALL DEAD LOAD = 0.6 * 12 psf * ((7 / 12) * (30.33 ft / 2) / 2) * (30.33 ft) / 2 =	483 lbs
TOTAL DEAD LOAD = 874 lbs + 483 lbs =	1357 lbs

CORNER STUD CONNECTION LOAD = MAX WALL UPLIFT - SELF WEIGHT	
2590 lbs - 1357 lbs =	1233 lbs

FIRST FLOOR HOLDDOWNS

UPLIFT FORCE =	2590 lbs (MAX. OF FIRST FLOOR UPLIFT FORCES)
FIRST FLOOR DEAD LOAD (DL ₁) = 5483 lbs + 1357 lbs =	6840 lbs
HOLDDOWN FORCE = 2590 lbs - 6840 lbs =	0 lbs

NO PHYSICAL HOLDDOWN REQUIRED

FIRST FLOOR CORNER STUD CONNECTION

0.131" x 2.5" COMMON NAIL (FACE NAILED)	Z =	100 lbs
MAX CORNER STUD CONNECTION LOAD =	1233 lbs	
NAIL SPACING (2 ROWS) =	$\frac{2 * H * Z}{U} = \frac{2 * 8 ft * 100 lbs}{1233 lbs}$	15 in O.C. (16" MAX)
# OF 3/8" DIA. LAG SCREW REQUIRED =	$\frac{U}{Z} = \frac{1233 lbs}{288 lbs}$	6 LAG SCREWS (6 MIN)

**FASTEN CORNER STUDS 2 ROWS OF 0.131" x 2.5" COMMON NAIL (FACE NAILED) AT 15" ON CENTER
OR USE (6) 3/8" DIA. LAG SCREWS**

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SECTION 5

PORCH CALCULATIONS



PORCH CALCULATIONS

Barlow Project Number:
 Model Number: Champion 23-3669-011316

Porch Uplift Connections

p,overhang =	17.49	psf
truss o.c. =	24	" o.c.
truss span =	32.08	ft
porch TWmax =	12	ft
post TLmax =	11.09	ft
roof DL =	8	psf
roof Σp =	17.49	psf
truss uplift =	297	plf

***** ALL PORCH UPLIFT CONNECTIONS
 TO BE MADE
 AT POSTS AND PORCH HEADER JACK STUDS
 AND CONTINUED TO FOUNDATION BY OTHERS**

DETERMINE TRUSS CONNECTORS:

TRUSS + OVERHANG UPLIFT: $297 \text{ plf} \times 24 \text{ in}/12 + 17.49 \text{ psf} \times 24 \text{ in} / 12 \times 11.09 \text{ ft}$ 788 lbs UPLIFT AT EXTERIOR

SIMPSON H10 UPLIFT = 850 lbs

$\frac{788 \text{ lbs UPLIFT}}{850 \text{ lbs/STRAP}} = 0.9 \text{ FASTENERS}$

**USE (1) H10 FOR TRUSS TO HEADER CONNECTION
 OR A CONNECTION TO WITHSTAND 788 lbs UPLIFT**

HEADER TO POST:

TRUSS + OVERHANG UPLIFT AT POST:
 CENTER POST TRIBUTARY LENGTH= 2.75 ft

$297 \text{ plf} \times 2.75 \text{ ft} + 17.49 \text{ psf} \times 11.09 \text{ ft} \times 2.75 \text{ ft}$ 1350 lbs UPLIFT AT EXTERIOR (CONTROLLING UPLIFT)

SIMPSON CS18 UPLIFT = 1370 lbs

$\frac{1350 \text{ lbs UPLIFT}}{1370 \text{ lbs/STRAP}} = 1.0 \text{ FASTENERS}$

**USE (1) SIMPSON CS18 STRAP FOR HEADER TO POST
 WITH (9) 10d NAILS EACH STRAP EACH END
 OR A CONNECTION TO WITHSTAND 1351 lbs UPLIFT**

POST TO FOUNDATION:

TRUSS + OVERHANG UPLIFT AT POST:

$297 \text{ plf} \times 2.75 \text{ ft} + 17.49 \text{ psf} \times 11.09 \text{ ft} \times 2.75 \text{ ft}$ 1350 lbs UPLIFT AT EXTERIOR

**USE (1) SIMPSON LSTHD8RJ FOR POST TO FOUNDATION
 OR A CONNECTION TO WITHSTAND 1351 lbs UPLIFT**

PREPARED BY:
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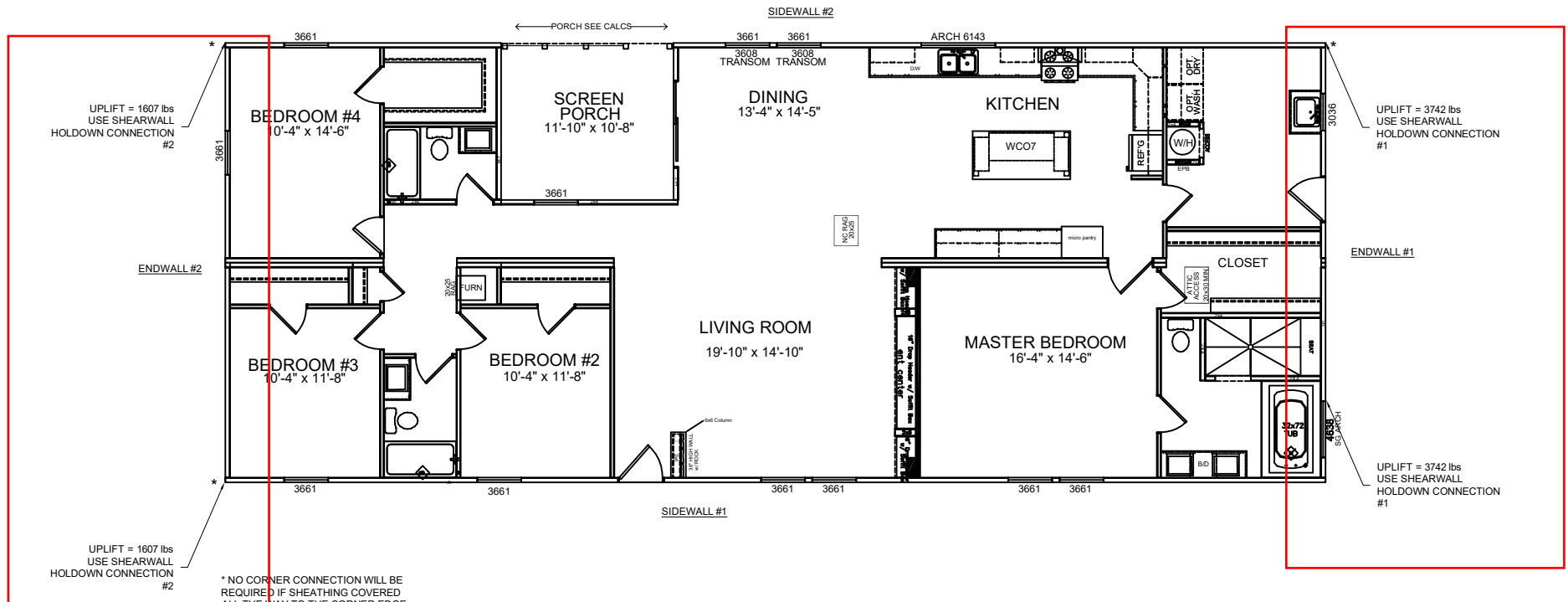
SECTION 6

MARK UP PLANS

MODEL 23-3969 011316 (Rev 012816RS)

4 BDRM, 3 BATH
 ACTUAL SIZE: 30'-4" X 76'-0"
 TOTAL AREA: 2055 SQ.FT.

FIRST FLOOR FRAMING PLAN



* NO CORNER CONNECTION WILL BE
 REQUIRED IF SHEATHING COVERED
 ALL THE WAY TO THE CORNER EDGE.
 OTHERWISE, PROVIDE CONNECTION
 AS REQUIRED.

* MIN CORNER CONNECTION
 (2) ROWS 16d COMMON NAILS @ 16"
 O.C.
 OR (6) 1/4" LAG SCREWS