THE SOUTH CAROLINA BUILDING CODES COUNCIL

MODULAR PLAN REVIEW AND QUALITY CONTROL PROGRAM APPROVAL

By completing and submitting this form, the Manufacturer is attesting to the accuracy of the information.

Manufacturer Impresa Building Systems of Greenwood SC, LLC
Address 161 Rock Church Rd. SE Greenwood, SC 29649
Telephone 864-379-3880
Location of Manufacturing Facility
Address Same
Telephone Same
Approved Inspection Agency Office ICC NTA LLC
Address 305 N. Oakland Ave., Nappanee, IN 46550
Telephone 574-773-7975

☐ Quality Control Program Approval
☐ Design Approval
☐ Building System Approval
☒ Model Name/Number Lakespring Plan

☒ Building/Component Plans
☐ Mechanical Plans
☐ Test Data
☒ Calculations (Type) Structural
☐ Other (Specify)
☒ Electrical Plans
☐ Specifications
☐ Quality Control Manual
☒ Plumbing Plans

Occupancy Classification R3 Type of Construction VB
Live Load Floors (If Varying, Specify) 40
Live Load Roof 20 Snow Load 20 Wind Speed 115 Vult Exposure C
Seismic Performance Category C
R-Value Floor 19 (Bsmet Walls) R-Value Walls 19 R-Value Roof 38
Fire Rating Exterior Walls n/a Fire Rating Roof/Ceiling n/a
Fire Rating Occupant or Tenant Separation Walls n/a
Fire Rating Occupant or Tenant Separation Floor/Ceiling n/a
Fire Rating Corridor Walls n/a Fire Rating Chasewalls n/a

This is to certify that the Documents submitted conform to the South Carolina Modular Buildings Construction Act.
Architect/Engineer Name and Title David R. Tompos, PE, General Manager
Agency Name ICC NTA LLLC
Manufacturing Facility Representative Name and Title Dan Hobbs, President

Personal information provided in this application may be subject to public scrutiny or release under the S.C. Freedom of Information Act or other provisions of federal and state law.

Date check mailed:

FOR COUNCIL USE ONLY:

Fee Received: $ Date:

HOMES DESIGNED FOR SET IN:
SAVANNAH LAKES VILLAGE
MCCORMICK, SOUTH CAROLINA

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 31010
WILLIAM E FULTZ
01/28/22

IMPRESA
BUILDING SYSTEMS
of Greenwood SC, LLC

SOUTH CAROLINA
2018 INTERNATIONAL RESIDENTIAL CODE WITH AMENDMENTS
2009 INTERNATIONAL ENERGY CONSERVATION CODE
SOUTH CAROLINA CONSTRUCTION CODE

CONSTRUCTION TYPE = 5B
OCCUPANCY CLASSIFICATION =R-3
FLOOR LIVE LOAD = 40 PSF
ROOF LIVE LOAD = 20 PSF
GROUND SNOW LOAD = 20 PSF
DESIGN WIND VELOCITY = 115 MPH Vult. Exp. C
SEISMIC DESIGN = C

APPROVED BY
NTA 1/31/2022
Approval of this document does not authorize or approve any deviation or deviations from the requirements of applicable State Laws.

ATTENTION LOCAL INSPECTION DEPARTMENT:

THE FOLLOWING ITEMS HAVE NOT BEEN INSPECTED BY NTA AND ARE NOT CERTIFIED BY THE SOUTH CAROLINA MODULAR LABEL:

1.ALL FOUNDATION SUPPORT TO THE MODULES
2. GARAGE (including fire separation from dwelling unit), DECK AND PORCH
3. HVAC COMPLETE INSTALLATION
4. CLOTHES DRYER VENT
5. ALL EXTERIO SIDING
6. REVERSE GABLE INSTALLATION AND FINISH
7. CONNECTION OF MODULES TO EACH OTHER AND FOUNDATION
8. PLUMBING CONNECTIONS UNDER THE FLOOR OF THE MODULES AND TO SEWER AND SUPPLY

ATTENTION LOCAL INSPECTION DEPARTMENT:

THIS MODULAR UNIT MAY BE BUILT IN THE ORIENTATION OF THIS PLAN SET OR AS A REVERSE OF THIS PLAN SET.

REVISION:	DATE:	BY:	REVISION:	DATE:	BY:

CUSTOMER/PROJECT:
ADDRESS:

IMPRESA BUILDING SYSTEMS of Greenwood SC, LLC

DRAWN BY:
CHECKED BY:
APPROVED BY:
ISSUE DATE:
PROJECT PHASE:
PROJECT NUMBER:
BOX NUMBER:
SCALE: N/A

COVER

SHEET:
COVER

DATE PRINTED

NOTE:
1). ALL ELECTRICAL MATERIALS AND EQUIPMENT ARE TO BE LISTED OR LABELED.
2). ALL ELECTRICAL INSTALLATIONS ARE TO BE IN ACCORDANCE WITH THE APPLICABLE NFPA 70 (N.E.C.) SEE DATA PLATE @ PANEL BOX.
3). NM CABLE TO BE SECURED @ 4-1/2' O.C. AND WITHIN 12" OF BOXES AND FITTINGS.
4). THE SERVICE DISCONNECT TO LOCATE AT POINT NEAREST SERVICE ENTRANCE.
5). SMOKE DETECTORS NOT TO BE LOCATED ON GFCI CIRCUIT AND ARE INTERCONNECTED.
6). 370-27(C) OUTLET BOXES SHALL NOT BE USED AS SOLE SUPPORT FOR CEILING FANS UNLESS LISTED FOR THE APPLICATION.

ATTIC VENTILATION:
ATTIC SPACES SHALL BE VENTILATED WITH WEATHER PROTECTED VENTS WITH APPROPRIATE AREAS AS FOLLOWS:
THE NET FREE CROSS-VENTILATION AREA MAY BE NOT LESS THAN 1/150 OF THE AREA OF THE SPACE
THE AREA CAN BE REDUCED TO 1/300 IF THE FOLLOWING BOTH OF THE FOLLOWING CONDITIONS ARE MET
1. IN THERMAL ZONE 6,7 AND 8 VAPOR BARRIER IS USED ON WARM SIDE IN WINTER ON THE CEILING MEMBRANE
2 NOT LESS THAN 40 PERCENT AND NOT MORE THAN 50 PERCENT OF THE REQUIRED VENTILATING AREA IS PROVIDED BY VENTILATORS LOCATED IN THE UPPER PORTION OF THE ATTIC OR RAFTER SPACE. UPPER VENTILATORS SHALL BE LOCATED NOT MORE THAN 3 FEET (914 MM) BELOW THE RIDGE OR HIGHEST POINT OF THE SPACE, MEASURED VERTICALLY. THE BALANCE OF THE REQUIRED VENTILATION PROVIDED SHALL BE LOCATED IN THE BOTTOM ONE-THIRD OF THE ATTIC SPACE. WHERE THE LOCATION OF WALL OR ROOF FRAMING MEMBERS CONFLICTS WITH THE INSTALLATION OF UPPER VENTILATORS, INSTALLATION MORE THAN 3 FEET (914 MM) BELOW THE RIDGE OR HIGHEST POINT OF THE SPACE SHALL BE PERMITTED.

NOTE: ATTIC ACCESS (MIN.)
IRC - 22" X 30"

NOTE:
1). EVERY SLEEPING ROOM SHALL HAVE AT LEAST ONE OPERABLE WINDOW OR EXTERIOR DOOR APPROVED FOR EMERGENCY EGRESS OR RESCUE. THE UNIT MUST BE OPERABLE FROM THE INSIDE TO A FULL CLEAR OPENING WITHOUT THE USE OF SEPERATE TOOLS. WHERE WINDOWS ARE PROVIDED AS A MEANS OF EGRESS OR RESCUE THEY SHALL HAVE A SILL HEIGHT OF NOT MORE THAN 44 INCHES ABOVE THE FLOOR.
ALL EGRESS OR RESCUE WINDOWS FROM SLEEPING ROOMS MUST HAVE A NET CLEAR OPENING OF 5.7 SQ. FT.(4.0 NC.). THE MINIMUM NET CLEAR OPENING HEIGHT DIMENSION SHALL BE 24 INCHES. THE MINIMUM NET CLEAR OPENING WIDTH DIMENSION SHALL BE 20 INCHES.
EXCEPTION: GRADE FLOOR WINDOW MAY HAVE A MINIMUM NET CLEAR OPENING OF 5.0 SQ. FT.
(NORTH CAROLINA)
ALL EGRESS OR RESCUE WINDOWS FROM SLEEPING ROOMS MUST HAVE A MINIMUM NET CLEAR OPENING OF 4.0 SQ. FT. THE MINIMUM NET CLEAR OPENING HEIGHT DIMENSION SHALL BE 22 INCHES. THE MINIMUM NET CLEAR OPENING WIDTH DIMENSION SHALL BE 20 INCHES. EACH EGRESS WINDOW FROM SLEEPING ROOMS MUST HAVE A MINIMUM TOTAL GLASS AREA OF NOT LESS THAN 5.0 SQ. FT. IN THE CASE OF A GROUND FLOOR WINDOW AND NOT LESS THAN 5.7 SQ. FT. IN THE CASE OF A SECOND STORY WINDOW.
2). INTERIOR FINISHES SHALL CONFORM WITH THE FOLLOWING:
NC - CLASS "C" (FLAME SPREAD 76 - 200)

GENERAL NOTES:

1). FOR INTER-CONNECTION OF MODULES, TYPICAL UPLIFT CONNECTIONS AND TYPICAL CROSS-SECTION SEE "SECTION' OR "SET UP MANUAL".
2). RECEPTACLES INSTALLED IN KITCHEN SHALL HAVEGROUND-FAULT CIRCUIT-INTERRUPTER PROTECTION.
3). RETURN AIR GRILL IS NOT TO BE LOCATED WITHIN 10' OF COOKING APPLIANCE.
4). KITCHEN HOOD VENT MAY BE VENTED TO THE OUTSIDE. MAINTAIN 1" CLEARANCE TO COMBUSTIBLES.
5). BATHROOM RECEPTICLES SHALL BE ON A 20 AMP CIRCUIT WITH GROUND-FAULT CIRCUIT INTERRUPTER PROTECTION THIS CIRCUIT SHALL HAVE NO OTHER OUTLETS.

NOTE:
SMOKE DETECTORS SHALL BE LOCATED AT EACH SLEEPING AREA IN ADDITION TO THE LOCATIONS SHOWN ON THE PLAN. EACH SMOKE DETECTOR IS TO OPERATE BY AC AND DC POWER.

NOTE:
210.52 (e) OUTDOOR RECEPTACLES. FOR A ONE-FAMILY DWELLING AND EACH UNIT OF A TWO-FAMILY DWELLING WHICH IS AT GRADE LEVEL AT LEAST ONE RECEPTACLE OUTLET ACCESSIBLE AT GRADE LEVEL SHALL BE INSTALLED AT THE FRONT AND BACK. (NORTH CAROLINA)
(MAXIMUM OF 6' 6" FROM GRADE LEVEL)

NOTE:
HIGH-EFFICACY LAMPS REQUIRED PER 2009 IECC TO BE 100% ON SITE BY OTHERS.

NOTE:
ALL INSULATION COMPONENTS FOR ATTICS WITH PULL-DOWN STAIRS TO BE COMPLETED 100% ON SITE BY OTHERS, PER STATE AND LOCAL JURISDICTION CODES.

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 31010
WILLIAM E FULTZ
01/28/22

FOUNDATION NOTES:
1. FOUNDATION WALLS TO BE CAPPED WITH 2 X 6 SILL PLATE WITH 1/2" DIA. ANCHOR BOLTS. THE BOLTS SHALL BE EMBEDDED IN FOUNDATIONS TO A DEPTH OF NOT LESS THAN 8" OF POURED IN PLACE CONCRETE. THERE SHALL BE A MINIMUM OF TWO ANCHOR BOLTS PER SECTION OF PLATE AND ANCHOR BOLTS SHALL BE PLACED 12" FROM THE END OF PLATE WITH INTERMEDIATE BOLTS SPACED A MAXIMUM OF 6' ON CENTER.
2. ALL DEBRIS, SOD, STUMPS AND ORGANIC MATERIAL SHALL BE REMOVED AND GROUND TO BE GRADED AS SMOOTH AS POSSIBLE. ENTIRE CRAWL AREA MAY BE COVERED WITH AN APPROVED VAPOR BARRIER.
3. MINIMUM APPLICABLE SOIL BEARING VALUE TO BE 2,000 P.S.F.
4. ALL ASPECTS OF FOUNDATION TO BE DESIGNED BY ENGINEER PER LOCAL CONDITIONS AND REQUIREMENTS.
5. (BASEMENT HEIGHT) PLUS FLOOR JOIST AND DECKING MUST BE DIVISIBLE BY 8-1/4" TO MEET HEAD CLEAREANCE REQUIREMENTS FOR 101" BASEMENT OPENING.

* PIER NOTES
1. PIERS FOR MARRIAGE WALL OPENINGS OF 4'-0" OR OVER ARE REQUIRED.

PORCH CONSTRUCTION
1. PORCH TO BE A MINIMUM OF 5'-4" X 5'-4"
2. PORCH JOISTS TO BE 2X8 OR LARGER

PORCH PIERS
TO BE 16" X 16" MIN CMU MASONRY.

DESIGN LOADS:
ROOF LIVE LOADS: 30 P.S.F.
FLOOR LIVE LOAD: 40 P.S.F.
WIND LOAD: 115 M.P.H.Vult

NOTE:
1). IF BASEMENT IS NOT CONDITIONED SPACE, STAIRWELL ENCLOSURE MUST BE INSULATED (ON SITE BY OTHERS) WITH R-11 (MINUMUM).
2). CHECK WITH THE SUPPLIER OF THE VENT FOR THE FREE AIR OF EACH VENT. MORE VENTS MAY BE REQUIRED THAN WHAT IS SHOWN TO MEET THE PROPER VENTILATION.
3). A GFCI PROTECTED RECEPTACLE REQUIRED IN CRAWLSPACE PER APPLICABLE NEC 210-8(4) AND 210-63. ON SITE BY OTHERS.
4). A SWITCHED LIGHTING OUTLET SHALL BE PROVIDED AT CRAWLSPACE ACCESS PER APPLICABLE NEC 210-70(C). ON SITE BY OTHERS.
5). AT LEAST ONE GFCI PROTECTED RECEPTACLE REQUIRED IN THE BASEMENT PER APPLICABLE NEC 210-8(5) AND 210-52(2)(g). RECEPTACLE TO BE INSTALLED ON SITE BY OTHERS.

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CONNECTION BETWEEN BATH GROUPS
TO BE INSTALLED IN FIELD BY OTHERS.
USE 3" MIN. SOIL DRAIN PIPING

NOTE:
WHEN DISHWASHER AND/OR GARBAGE DISPOSAL IS ADDED DRAIN SIZES WILL BE LISTED WITH (*).

NOTE:
1) VERTICAL PIPING SHALL BE SUPPORTED AS FOLLOWS:
a) PLASTIC PIPE
1-1/2" & LARGER SUPPORT AT 10' INTERVALS
1-1/4" & SMALLER SUPPORT AT 4' INTERVALS
2) HORIZONTAL PIPING SHALL BE SUPPORTED AS FOLLOWS:
a) PLASTIC PIPE (PVC)
SUPPORT AT 4' INTERVALS

WATER SUPPLY NOTES:
1). SHUT-OFF VALVES ARE TO BE PROVIDED AT THE FOLLOWING LOCATIONS:
a) AT THE WATER SUPPLY LINES TO EACH DWELLING PRIOR TO THE FIRST FIXTURE BRANCH TO CONTROL ALL FIXTURES IN THE DWELLING.
b) AT EACH INDIVIDUAL FIXTURE TO CONTROL THE FIXTURE WITHOUT INTERFERRING WITH THE WATER SUPPLY TO THE OTHER FIXTURES. (EXCEPT TUBS AND SHOWERS)
c) AT THE COLD SUPPLY TO EACH WATER HEATER.
2) WATER HEATERS SHALL BE PROVIDED WITH AN APPROVED TEMP. AND PRESSURE RELIEF VALVE AND SO LABELED BY THE MANUFACTURER ON THE WATER HEATER. THE OUTLET OF THE RELIEF VALVE SHALL NOT BE CONNECTED TO THE DRAINAGE SYSTEM AS A DIRECT WASTE, BUT SHALL BE PIPED TO A FLOOR DRAIN OF OTHER LOCATION THAT WILL REDUCE THE POSSIBILITY OF PERSONAL INJURY SHOULD THE VALVE DISCHARGE.
3) WATER HEATER TEMP. AND PRESSURE RELIEF VALVE ON THE HOT WATER INLET SHALL HAVE THE THERMO-BULB EXTENDING INTO THE SHELL OF THE TANK AS TO BE ACTUATED BY THE WATER IN THE TOP 6" OF THE TANK.

DISTANCE OF FIXTURE TRAP FROM VENT

SIZE OF FIXTURE DRAIN	DISTANCE TRAP TO VENT
1-1/2"	5' - 0"
2"	6' - 0"
3"	10' - 0"

NOTE:
ALL EXTERIOR HOSE BIBBS SHALL BE FROST-FREE AND INSTALLED WITH AN APPROVED ANTI-BACKFLOW DEVICE.

NOTE:
HOT & COLD WATER LINES ARE PEX TUBING OR CPVC PIPING. WASTE LINES ARE PVC.

GENERAL NOTES
1. ALL HORIZONTAL PIPING SHALL BE INSTALLED WITHIN PRACTICAL ALIGNMENT AND UNIFORM GRADE.
2-1/2" DIA. & LESS - 1/4" PITCH
3" DIA. - 1/8" PITCH
2. ALL EXTERIOR OPENINGS PROVIDED FOR THE PASSAGE OF PLUMBING SHALL BE SEALED TO PREVENT THE ENTRANCE OF RODENTS.
3. ALL PIPING SHALL BE SUPPORTED AT 4'-0" O.C. WITH 30 GA. GALV. STEEL STRAPS. THE BASE OF ALL VERTICAL RISERS SHALL ALSO BE SUPPORTED.
4. ALL VENTS SHALL TERMINATE NO LESS THAN 12" ABOVE THE ROOF AND SHALL BE ADEQUATELY FASTENED AND WEATHER PROOFED.
5. CLEARANCE AT CLEAN-OUTS SHALL BE 18" FOR 3" PIPE AND 12" FOR SMALLER PIPE FOR THE PURPOSE OF RODDING.
6. SHUT-OFF VALVES PROVIDED @ ALL FIXTURES.
7. CHECK LOCALITY FOR 1.6 GALLON FLUSH TOILET REQUIREMENT.

REVISION:	DATE:	BY:
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CUSTOMER/PROJECT:
ADDRESS:

IMPRESA BUILDING SYSTEMS of Greenwood SC, LLC

DRAWN BY:
CHECKED BY:
APPROVED BY:
ISSUE DATE:
PROJECT PHASE:
PROJECT NUMBER:
BOX NUMBER:
SCALE: N/A
GENERAL NOTES
SHEET: 1.0

DATE PRINTED

WINDOW SCHEDULE

CALLOUT	NOM. SIZE	R.O.	DAYLIGHT	CLEAR	U-VALUE	SHGC	EGRESS	NOTES
34	5/0 X 4/0	60" X 48"	16 SF	3.33 SF	0.31	0.28	NO	UNEVEN PANELS
43	2/6 X 2/0	30" X 24"	4 SF	1.65 SF	0.29	0.28	NO	AWNING
62	3/0 X 5/0	36" X 60"	12 SF	5.71 SF	0.31	0.28	YES	
66	3/0 X 4/0	36" X 48"	9.6 SF	2.87 SF	0.31	0.28	NO	TEMPERED

DOOR SCHEDULE

CALLOUT	NOM. SIZE	R.O.	DAYLIGHT	CLEAR	U-VALUE	SHGC	NOTES
3/0 20	3/0 X 6/8	38.5" X 83"	N/A	18.88 SF	0.28	N/A	20 MINUTE RATED DOOR
3/0 SL	4/0 X 6/8	54" X 83"	5.8 SF	18.88 SF	0.33	0.28	MAIN ENTRY DOOR WITH SIDELITE
SGD	6/0 X 6/8	72" X 82"	33.6 SF	16.8 SF	0.3	0.29	TEMPERED

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1/31/2022
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CUSTOMER/PROJECT:

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of Greenwood SC, LLC

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APPROVED BY:
ISSUE DATE:
PROJECT PHASE:
PROJECT NUMBER:
BOX NUMBER:
SCALE: N/A

SCHEDULES

SHEET:
2.0

DATE PRINTED

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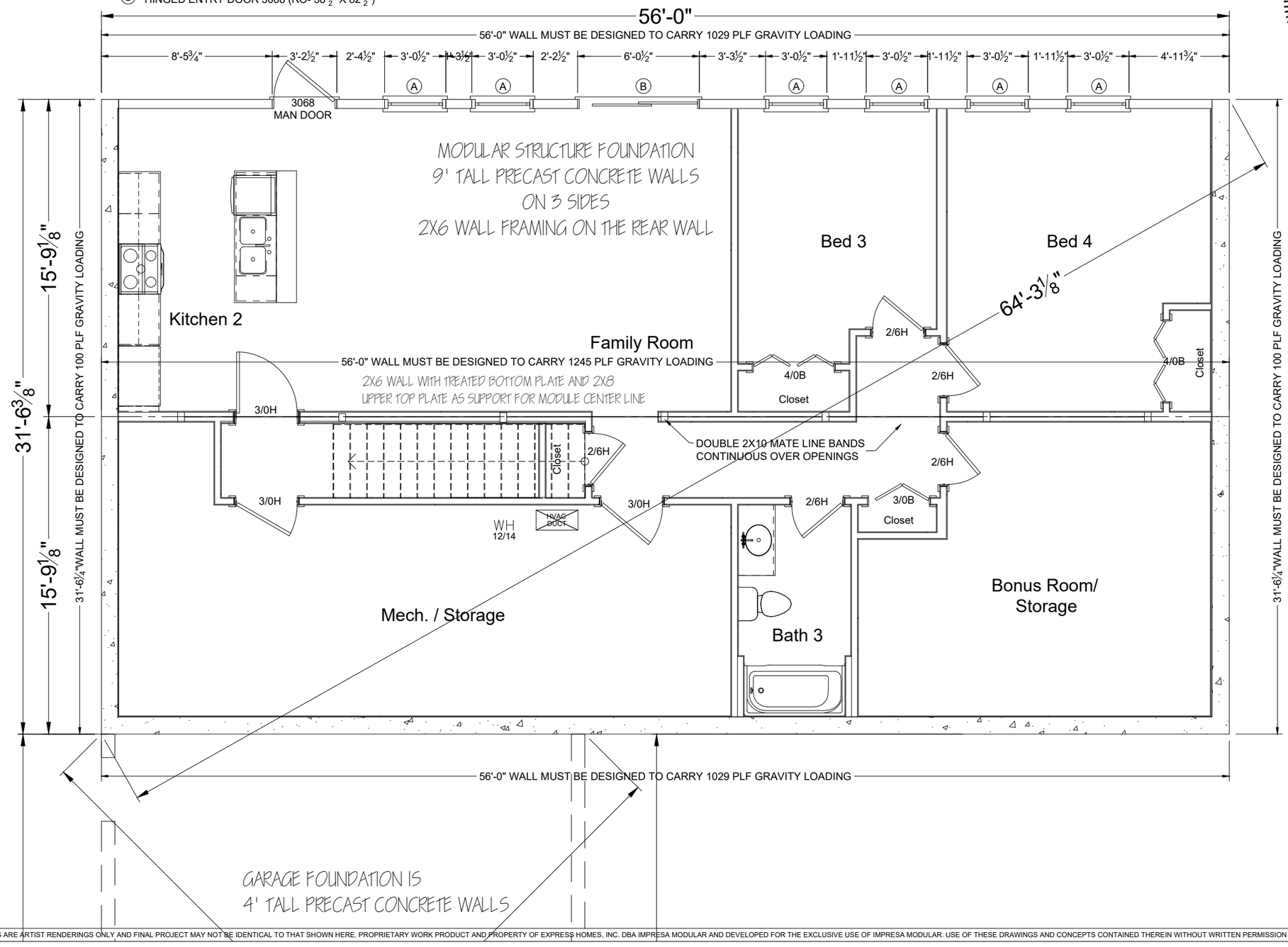
SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 31010
WILLIAM E FULTZ
01/28/22

Ⓐ PLYGEM 1500 BRICKMOULD SINGLE HUNG 3050 WINDOW (RO- 36" X 60")
Ⓑ PLYGEM PRO SERIES CLASSIC TWO PANEL SLIDING DOOR 60610 (RO-72"X82")
Ⓒ HINGED ENTRY DOOR 3068 (RO- 38 ½" X 82 ½")



REVISION:	DATE:	BY:	REVISION:	BY:	DATE:	BY:

CUSTOMER/PROJECT:
ADDRESS:

IMPRESA BUILDING SYSTEMS
of Greenwood SC, LLC

DRAWN BY:	
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ISSUE DATE:	
PROJECT PHASE:	
PROJECT NUMBER:	
BOX NUMBER:	
SCALE:	3/16" = 1'-0"

FOUNDATION PLAN

SHEET:
3.0

DATE PRINTED

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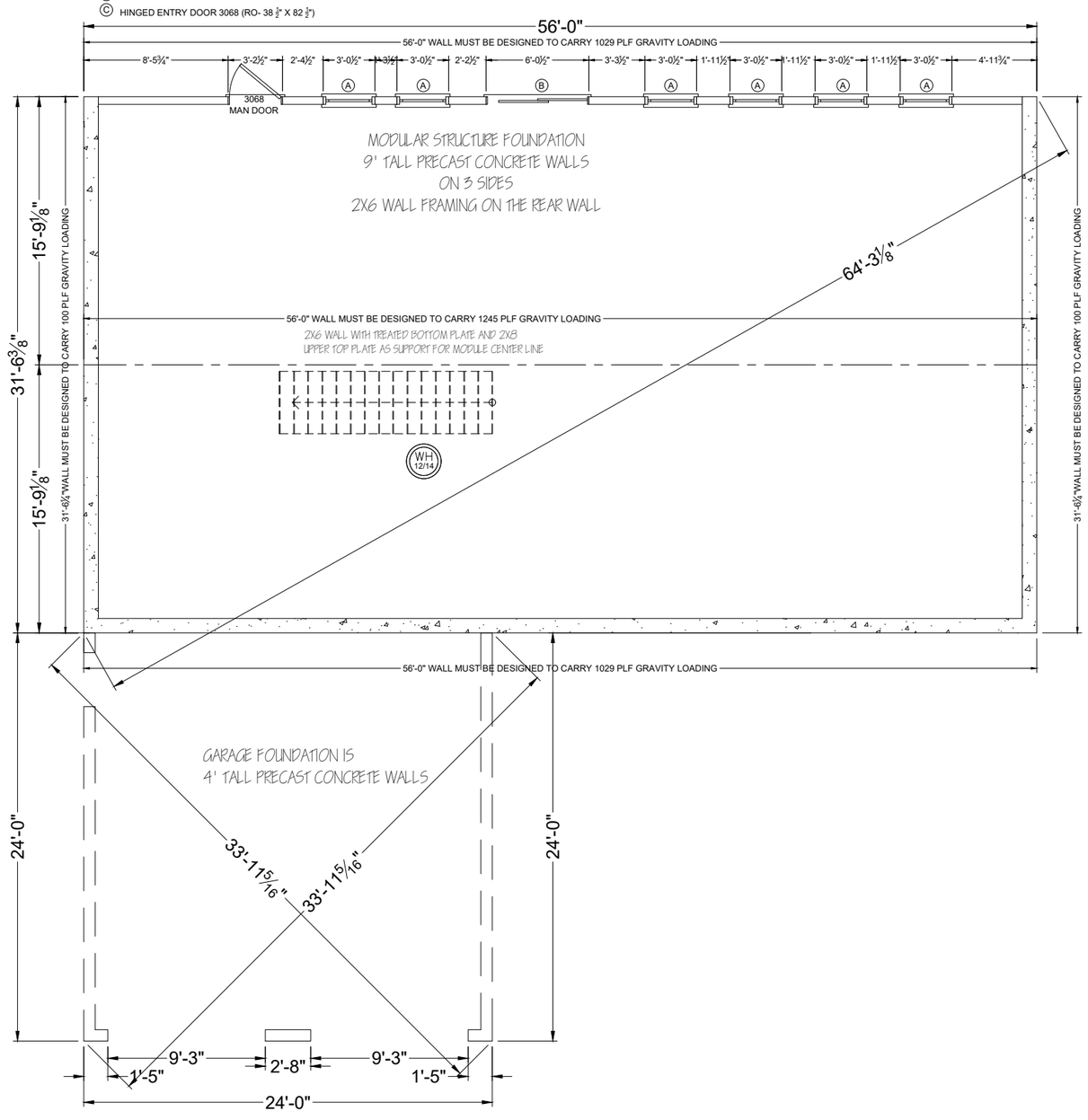
Ⓑ PLYGEM PRO SERIES CLASSIC TWO PANEL SLIDING DOOR 60610 (RO-72"X82")
Ⓒ HINGED ENTRY DOOR 3068 (RO- 38 ⅝" X 82 ⅝")



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IMPRESA BUILDING SYSTEMS of Greenwood SC, LLC

DRAWN BY:	
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PROJECT PHASE:	
PROJECT NUMBER:	
BOX NUMBER:	
SCALE:	1/8" = 1'-0"

FOUNDATION PLAN

SHEET: 3.1

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WILLIAM E. FULTZ
01/28/22

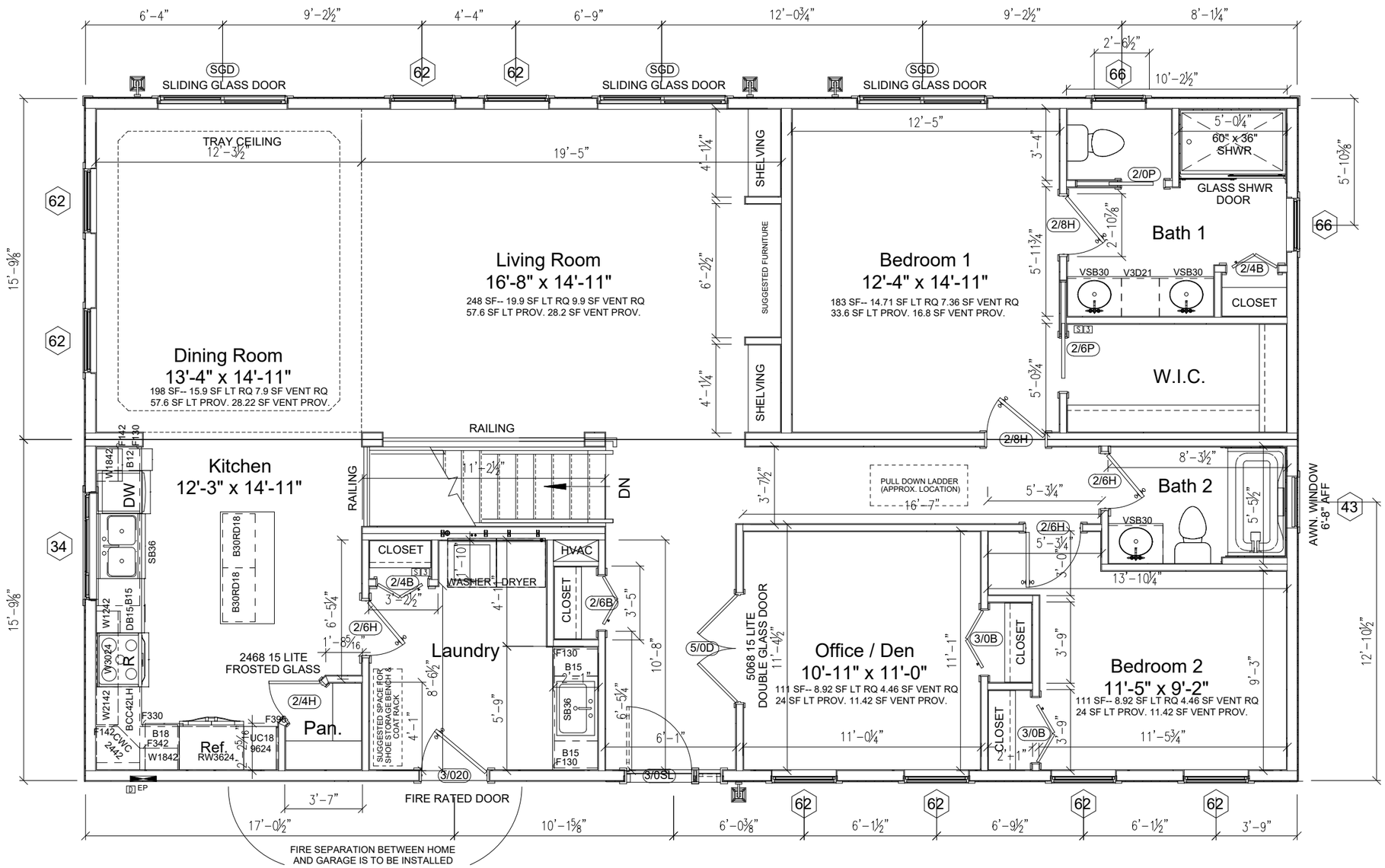
NOTES:
DATA PLATE TO BE INSTALLED IN PANEL BOX
STATE AND THIRD PARTY LABELS TO BE INSTALLED AS LOCATE ON PLANS

NOTES:
ALL ASPECTS OF HEATING AND AIR CONDITIONING TO BE 100% ON SITE BY OTHERS.

NOTES:
ALL ASPECTS OF WHOLE-HOUSE MECHANICAL VENTILATION TO BE 100% ON SITE BY OTHERS, IN ACCORDANCE WITH LOCAL CODES.

NOTE:
MAIN ENTRANCE DOORS SHALL BE NOT LESS THAN 3'-0" WIDE. ALL OTHER EXTERIOR DOORS SHALL BE NOT LESS THAN 2'-8" WIDE. ALL INTERIOR DOORS WHICH PROVIDE ACCESS TO HABITABLE ROOMS SHALL NOT BE LESS THAN 2'-6" WIDE, CORRIDORS TO BEDROOMS SHALL BE 3'-0" (MIN.).

[S] STATE LABEL
[3] 3RD PARTY LABEL
[D] DATA PLATE



REVISION:	DATE:	BY:	REVISION:	DATE:	BY:

CUSTOMER/PROJECT:
ADDRESS:

IMPRESA BUILDING SYSTEMS
of Greenwood SC, LLC

DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
ISSUE DATE:	
PROJECT PHASE:	
PROJECT NUMBER:	
BOX NUMBER:	
SCALE:	3/16" = 1'-0"

FIRST FLOOR PLAN ENLARGED

SHEET: 4.0

DATE PRINTED

ROOF DIAPHRAGM-
OPTION 1- 7/16" SHEATHING
FASTENED WITH 16 GA STAPLES 6" O.C.
IN ALL LOCATIONS EXCEPT OVERHANG
SHOULD BE 3" O.C.

OPTION 2- 7/16" SHEATHING
FASTENED WITH .12X 2" NAILS
6" O.C. EDGE AND BOUNDARY
9" O.C. FIELD
4" O.C. OVERHANG

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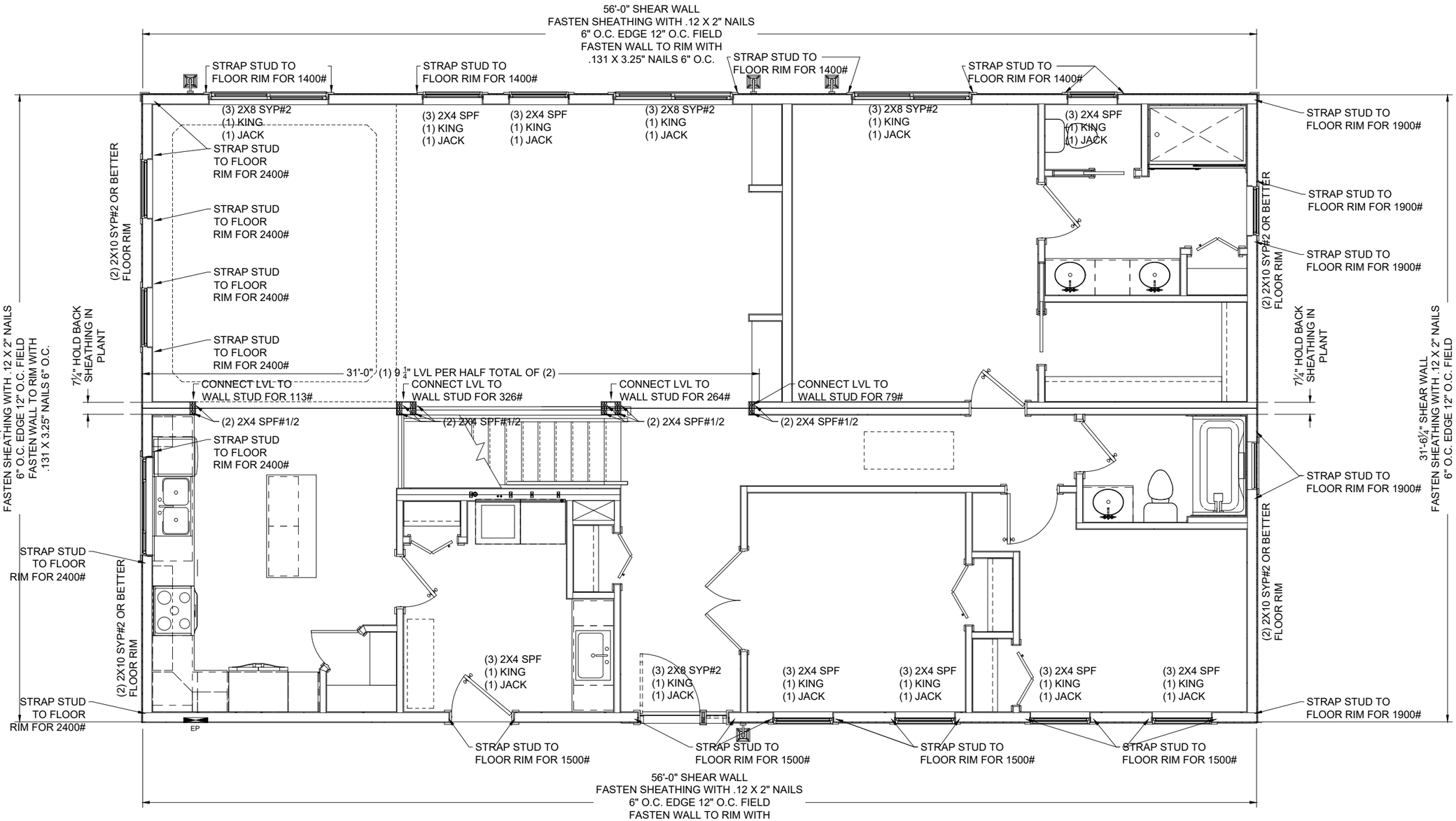

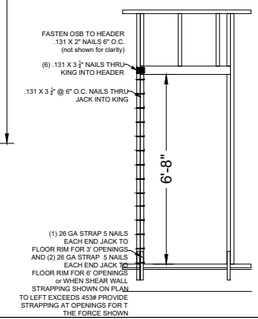

REVISION:	DATE:	BY:
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IMPRESA BUILDING SYSTEMS of Greenwood SC, LLC

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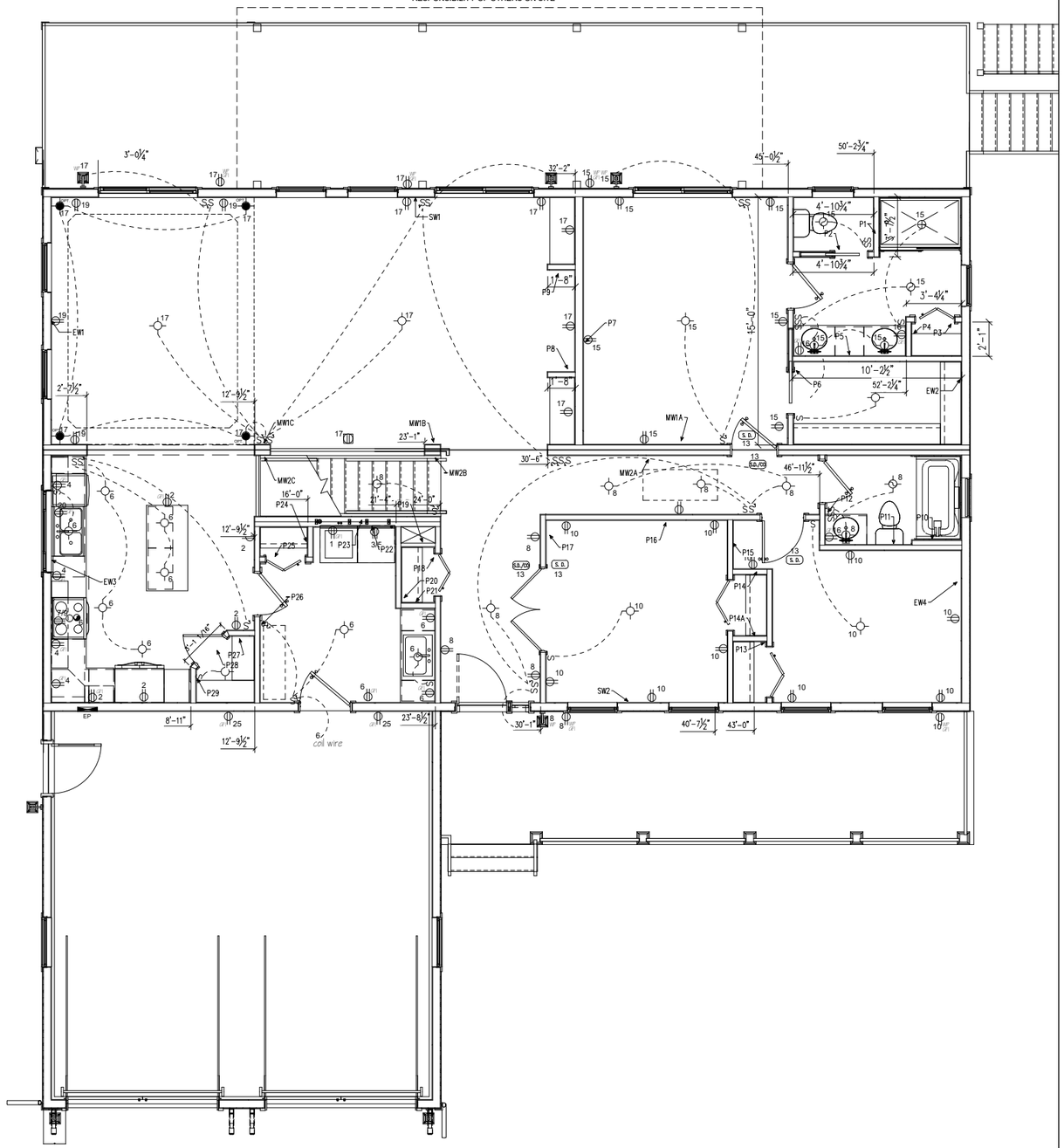
PROJECT NUMBER:	
BOX NUMBER:	
SCALE:	3/16" = 1'-0"

FIRST FLOOR PLAN ENLARGED WITH STRUCTURAL INFO

SHEET: 4.1

DATE PRINTED

RECEPTACLES AT GRADE LEVEL ARE THE
RESPONSIBILITY OF OTHERS ON SITE



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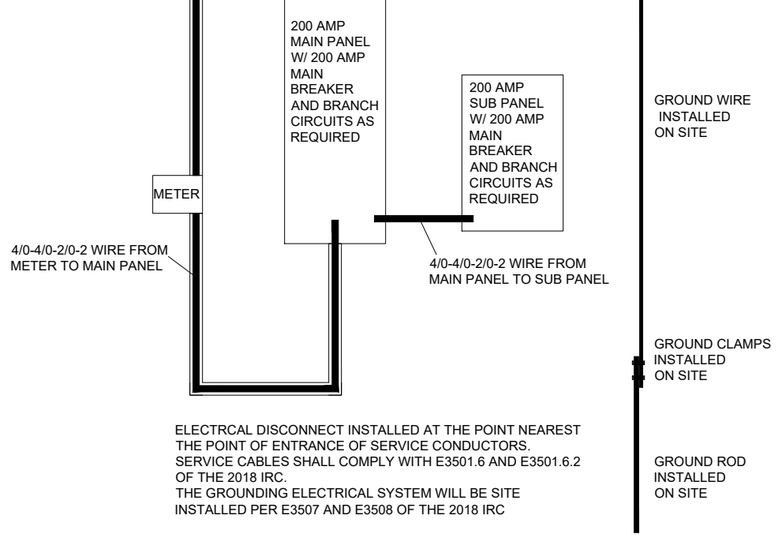
ENTRANCE SERVICE HEAD
(CONDUCTORS AND CONDUIT TO MATCH PANEL LOAD)



ELECTRCAL DISCONNECT INSTALLED AT THE POINT NEAREST THE POINT OF ENTRANCE OF SERVICE CONDUCTORS. SERVICE CABLES SHALL COMPLY WITH E3501.6 AND E3501.6.2 OF THE 2018 IRC.
THE GROUNDING ELECTRICAL SYSTEM WILL BE SITE INSTALLED PER E3507 AND E3508 OF THE 2018 IRC

REVISION:	DATE:	BY:	REVISION:	DATE:	BY:

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PROJECT PHASE:	
PROJECT NUMBER:	
BOX NUMBER:	
SCALE:	1/8" = 1'-0"

ELECTRICAL PLAN

SHEET: 5.0

DATE PRINTED

ELECTRIC PANEL SCHEDULE

200 AMP MAIN BREAKER DISCONNECT LOCATED IN PANEL. VOLTAGE: 120/240 VOLTS, SINGLE PHASE
PANEL FEEDER WIRE SIZE: #2/0 AWG COPPER OR #4/0 ALUMINUM (TYPE SE – STYLE SER)

SERVES	WIRE SIZE	BREAKER A/P	CIRCUIT #	CIRCUIT #	BREAKER A/P	WIRE SIZE	SERVES
CLOTHES WASHER – GFCI	#12–2 W/G	20/1	1	2	20/1	#12–2 W/G	SMALL APPLIANCE
CLOTHES DRYER	#10–3 W/G	30/2	3	4	20/1	#12–2 W/G	SMALL APPLIANCE
			5	6	15/1	#14–2 W/G	LIGHTS/OUTLETS – AFCI
KITCHEN RANGE	# 8–3 W/G	40/2	7	8	15/1	#14–2 W/G	LIGHTS/OUTLETS – AFCI
			9	10	15/1	#14–2 W/G	LIGHTS/OUTLETS – AFCI
MICROWAVE	#12–2 W/G	20/1	11	12	30/2	#10–2 W/G	WATER HEATER
SMOKE DETECTORS– AFCI	#14–2 W/G	15/1	13	14			
LIGHTS/OUTLETS – AFCI	#14–2 W/G	15/1	15	16	20/1	#12–2 W/G	BATHROOM OUTLETS
LIGHTS/OUTLETS – AFCI	#14–2 W/G	15/1	17	18	15/1	#14–2 W/G	DISPOSAL – (OPT.)
SMALL APPLIANCE – AFCI	#12–2 W/G	20/1	19	20	20/1	#12–2 W/G	DISHWASHER –
			21	22	20/1	#12–2 W/G	DISHWASHER – GFCI BASEMENT
			23	24	40/2	# 8–3 W/G	KITCHEN RANGE–BASEMENT
GARAGE OUTLETS	#12–2 W/G	20/1	25	26			
			27	28	15/1	#14–2 W/G	LIGHTS/OUTLETS – BASEMENT–GFCI/AFCI
			29	30	15/1	#14–2 W/G	LIGHTS/OUTLETS – BASEMENT–GFCI/AFCI
ALL BRANCH CIRCUIT CABLES TO BE TYPE NM–B COPPER w/ THHN INSULATION UNLESS OTHERWISE NOTED.			31	32	15/1	#14–2 W/G	LIGHTS/OUTLETS – BASEMENT–GFCI/AFCI
			33	34			
			35	36			

In areas other than kitchen and laundry areas, branch circuits that supply 120–volt, single–phase, 15– and 20–ampere outlets installed in family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreations rooms, closets, hallways, and similar rooms or areas shall be protected by any of the following: [210.12(A)]
A listed combination–type arc–fault circuit–interrupter, installed to provide protection of the entire branch circuit. [210.12(A)(1)]
A listed branch/feeder–type AFCI installed at the origin of the branch–circuit in combination with a listed outlet branch–circuit–type arc–fault circuit–interrupter installed at the first outlet box on the branch circuit. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit. [210.12(A)(2)]
A listed supplemental arc–protection circuit breaker installed at the origin of the branch circuit in combination with a listed outlet branch–circuit–type arc–fault circuit–interrupter installed at the first outlet box on the branch circuit where all of the following conditions are met:
The branch–circuit wiring shall be continuous from the branch–circuit overcurrent device to the outlet branch–circuit arc–fault circuit–interrupter.
The maximum length of the branch–circuit wiring from the branch–circuit overcurrent device to the first outlet shall not exceed 50 feet (15.2 m) for 14 AWG conductors and 70 feet (21.3 m) for 12 AWG conductors.
The first outlet box on the branch circuit shall be marked to indicate that it is the first outlet on the circuit. [210.12(A)(3)]
A listed outlet branch–circuit–type arc–fault circuit–interrupter installed at the first outlet on the branch circuit in combination with a listed branch–circuit overcurrent protective device where all of the following conditions are met:
The branch–circuit wiring shall be continuous from the branch–circuit overcurrent device to the outlet branch–circuit arc–fault circuit–interrupter.
The maximum length of the branch–circuit wiring from the branch–circuit overcurrent device to the first outlet shall not exceed 50 feet (15.2 m) for 14 AWG conductors and 70 feet (21.3 m) for 12 AWG conductors.
. The first outlet box on the branch circuit shall be marked to indicate that it is the first outlet on the circuit.
The combination of the branch–circuit overcurrent device and outlet branch–circuit AFCI shall be identified as meeting the requirements for a system combination–type AFCI and shall be listed as such. [210.12(A)(4)]
Where metal outlet boxes and junction boxes and RMC, IMC, EMT, Type MC or steel–armored Type AC cables meeting the requirements of Section E3908.8, metal wireways or metal auxiliary gutters are installed for the portion of the branch circuit between the branch–circuit overcurrent device and the first outlet, a listed outlet branch–circuit type AFCI installed at the first outlet shall be considered as providing protection for the remaining portion of the branch circuit. [210.12(A)(5)]
Where a listed metal or nonmetallic conduit or tubing or Type MC cable is encased in not less than 2 inches (50.8 mm) of concrete for the portion of the branch circuit between the branch–circuit overcurrent device and the first outlet, a listed outlet branch–circuit–type AFCI installed at the first outlet shall be considered as providing protection for the remaining portion of the branch circuit. [210.12(A)(6)]

Exception: AFCI protection is not required for an individual branch circuit supplying only a fire alarm system where the branch circuit is wired with metal outlet and junction boxes and RMC, IMC, EMT or steel–sheathed armored cable Type AC or Type MC meeting the requirements of Section E3908.8.

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 31010
WILLIAM E FULTZ
01/28/22

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ELECTRICAL LEGEND

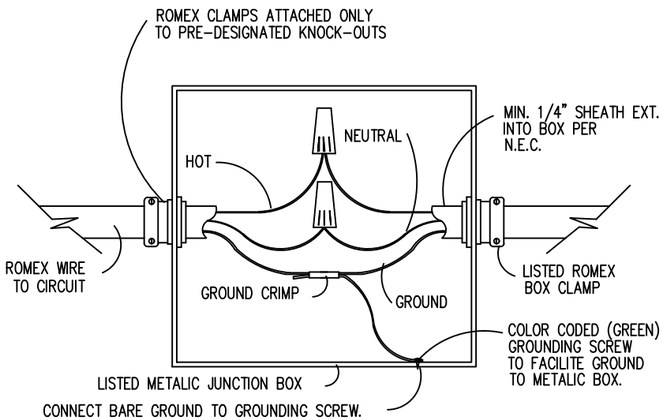
SYMBOL	DESCRIPTION	BREAKER SIZE	WIRE SIZE	WIRE TYPE
	POWER PANEL	200 A		
	DUPLEX RECEPTACLE	15 A	14–2–G	N.M. COPPER
S	SWITCH DUPLEX RECEPTACLE	15 A	14–2–G	N.M. COPPER
	RANGE RECEPTACLE	40 A	8–3	N.M. COPPER
D	DRYER RECEPTACLE	30 A	10–3	N.M. COPPER
	FLOOR RECEPTACLE	30 A	10–3	N.M. COPPER
S	SINGLE POLE SWITCH	15 A	14–2–G	N.M. COPPER
S_3	THREE WAY SWITCH	15 A	14–2–G	N.M. COPPER
S_4	FOUR WAY SWITCH	15 A	14–2–G	N.M. COPPER
S. D.	SMOKE DETECTOR	15 A	14–2–G	N.M. COPPER
S.D./CO	SMOKE DETECTOR/C02 DETECTOR COMBINATION	15 A	14–2–G	N.M. COPPER
J. B.	JUNCTION BOX			
	RANGE HOOD VENTED TO OUTSIDE	15 A	14–2–G	N.M. COPPER
	OVERHEAD LIGHT	15 A	14–2–G	N.M. COPPER
	LIGHT/FAN COMBINATION	15 A	14–2–G	N.M. COPPER
	EXTERIOR LIGHT	15 A	14–2–G	N.M. COPPER
D.C.	A.C. DISCONNECT	30 A	10–2–G	N.M. COPPER
	DUPLEX RECEPTACLE (KIT./DINING/BATH)	20 A	12–2–G	N.M. COPPER
F	FURNACE (PER MFG. INSTRUCTIONS)	70 A	4–4–G	N.M. COPPER
WH	WATER HEATER	25 A	10–2–G	N.M. COPPER
GFI	GROUND FAULT INTERRUPTER			
WP	WEATHER RESISTENT			

ALL ELECTRIC INSTALLED PER APPLICABLE ELECTRIC CODE

NOTE:
1). SMOKE DETECTOR TO BE SELF–CONTAINED AND NOT ON G.F.C.I. BREAKER DEVICE. SMOKE DETECTORS ARE TO BE INTERCONNECTED.
2). GROUNDING ELECTRODE SHALL BE FIELD INSTALLED ACCORDING TO SECTION 250 OF APPLICABLE N.E.C.

NOTE:
ALL ELECTRICAL OUTLETS ARE TO BE LISTED AS TAMPER–RESISTANT.

NOTE:
DISHWASHER DISCONNECT TO BE BY CORD AND PLUG PER SECT. 422.16 B.(2) OF ELECTRICAL CODE.



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ADDRESS:

IMPRESA BUILDING SYSTEMS of Greenwood SC, LLC

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APPROVED BY:
ISSUE DATE:
PROJECT PHASE:
PROJECT NUMBER:
BOX NUMBER:
SCALE: N/A

ELECTRICAL PANEL SCHEDULE AND NOTES

SHEET: 5.1

DATE PRINTED

ROOF VENTILATION CALCULATION:
56' X 31'-6"= 1764 SQ FT
HOME REQUIRES 11.76 SQ FT OF VENTILATION.
RIDGE
18 SQ X 56 LF= 1009 SQ IN
SOFFIT
6.2 X 112 =694 SQ IN

1009 + 694= 1703 SQ IN
1703/144= 11.82 SQ FT.

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Front Elevation
3/16"=1'-0"

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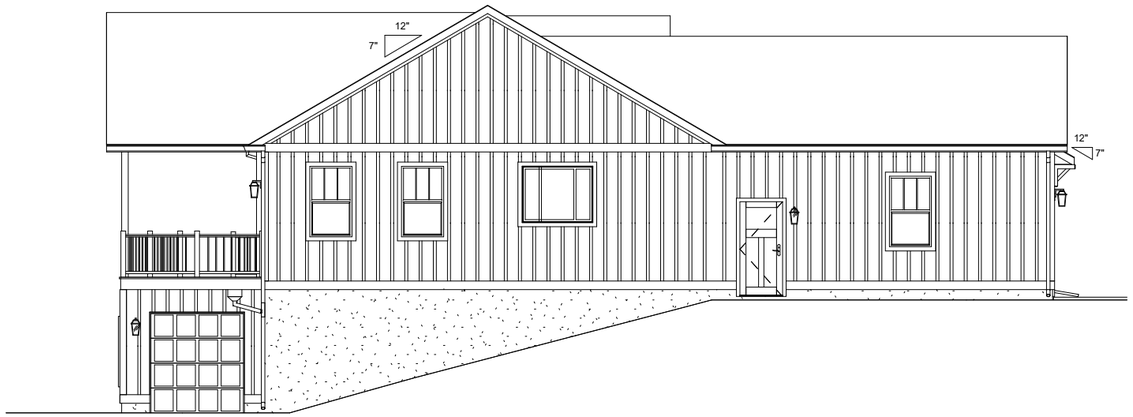
ISSUE DATE:	
PROJECT PHASE:	
PROJECT NUMBER:	
BOX NUMBER:	
SCALE:	3/16" = 1'-0"

FRONT ELEVATION

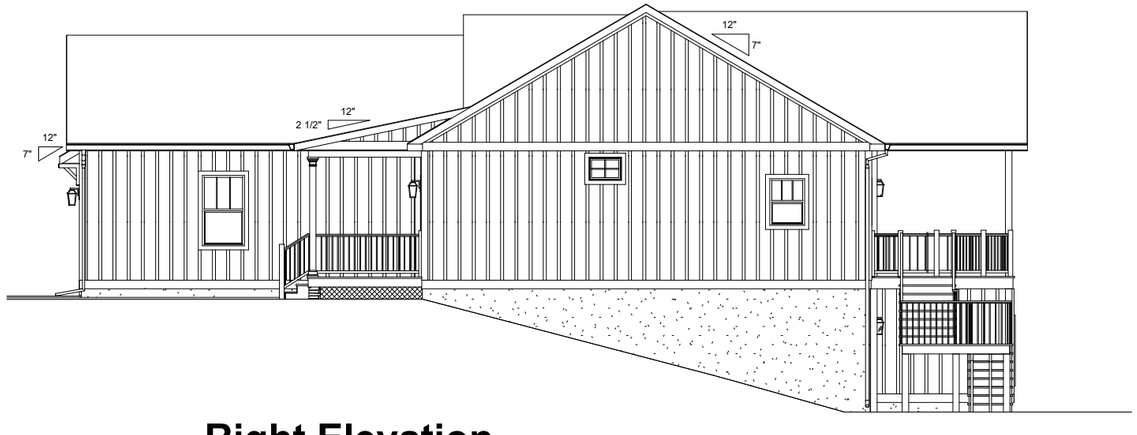
SHEET: 6.0

DATE PRINTED



Left Elevation
3/32"=1'-0"

Rear Elevation
3/32"=1'-0"



Right Elevation
3/32"=1'-0"

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PROJECT NUMBER:	
BOX NUMBER:	
SCALE:	3/32" = 1'-0"

OTHER ELEVATIONS

SHEET: 6.1

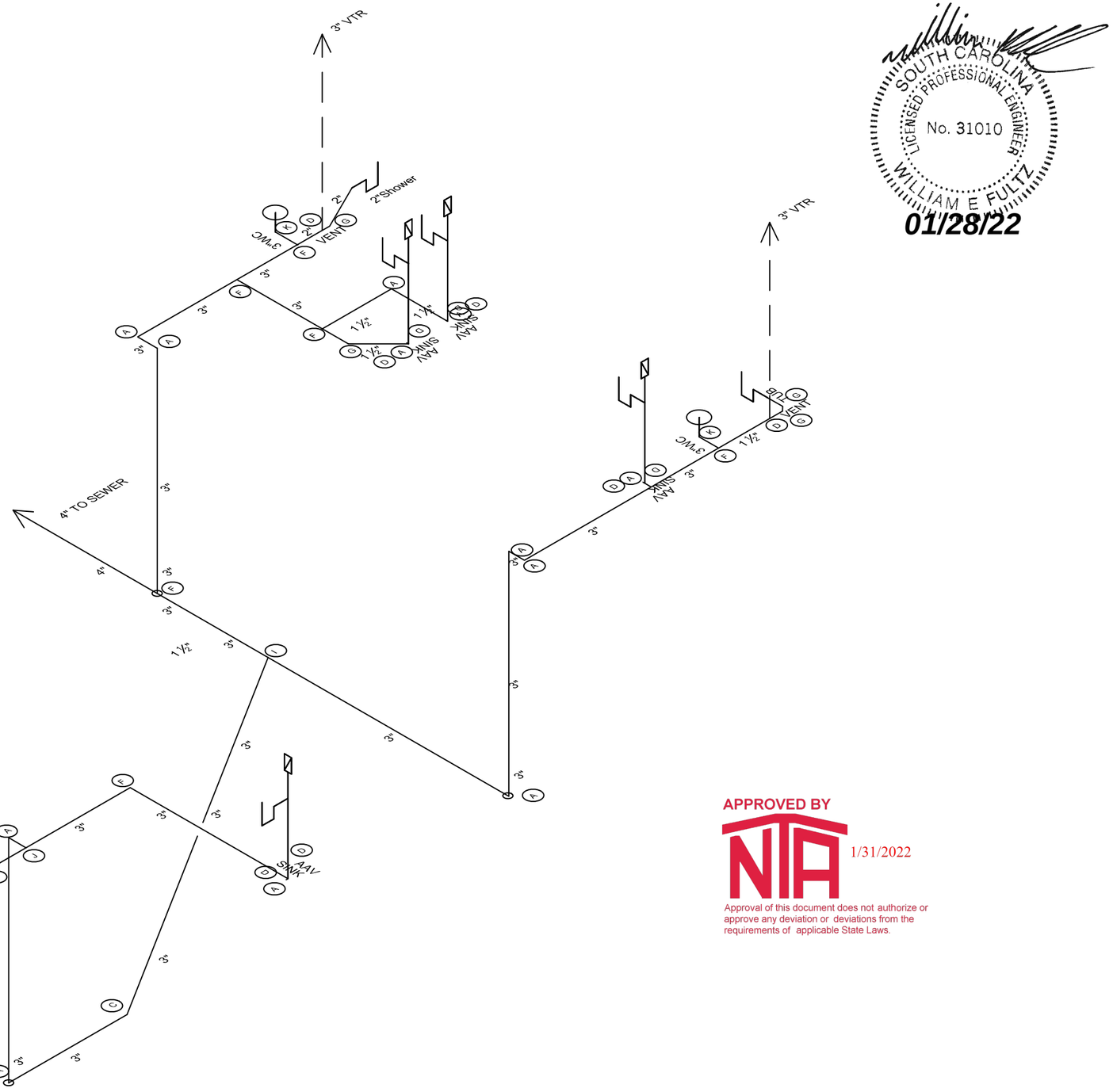
DATE PRINTED

LEGEND

DRAIN LINE

VENT LINE

A		1/4 BEND LONG TURN
B		DOUBLE 45 ° WYE
C		VENTING ELL
D		SANITARY TEE
E		DOUBLE SANITARY TEE
F		LONG TURN TEE WYE
G		1/8 BEND
H		DOUBLE 1/4 BEND
I		45 ° WYE
J		DBL. LONG TURN TEE WYE
K		CLOSET BEND ELBOW



CONNECTION BETWEEN BATH GROUPS
TO BE INSTALLED IN FIELD BY OTHERS.
USE 3" MIN. SOIL DRAIN PIPING.

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PROJECT NUMBER:	
BOX NUMBER:	
SCALE:	1/4" = 1'-0"

DRAIN ISOMETRIC

SHEET: 7.0

DATE PRINTED

NOTE:
WATER HAMMER ARRESTORS CONFORMING TO ASSE-1010 TO BE INSTALLED AT ALL QUICK CLOSING VALVES.

NOTE:
ANTI-SCALD DIVERTER SHALL BE INSTALLED ON ALL SHOWERS

NOTE:
ALL EXTERIOR HOSE BIBBS SHALL BE FROST-FREE AND INSTALLED WITH AN APPROVED ANTI-BACKFLOW DEVICE.

SHUT-OFF VALVES (TYP.) AT ALL FIXTURES & ON COLD WATER LINE LEADING INTO WATER HEATER

NOTE:
HOT & COLD WATER LINES ARE PEX TUBING.
WASTE LINES ARE PVC.

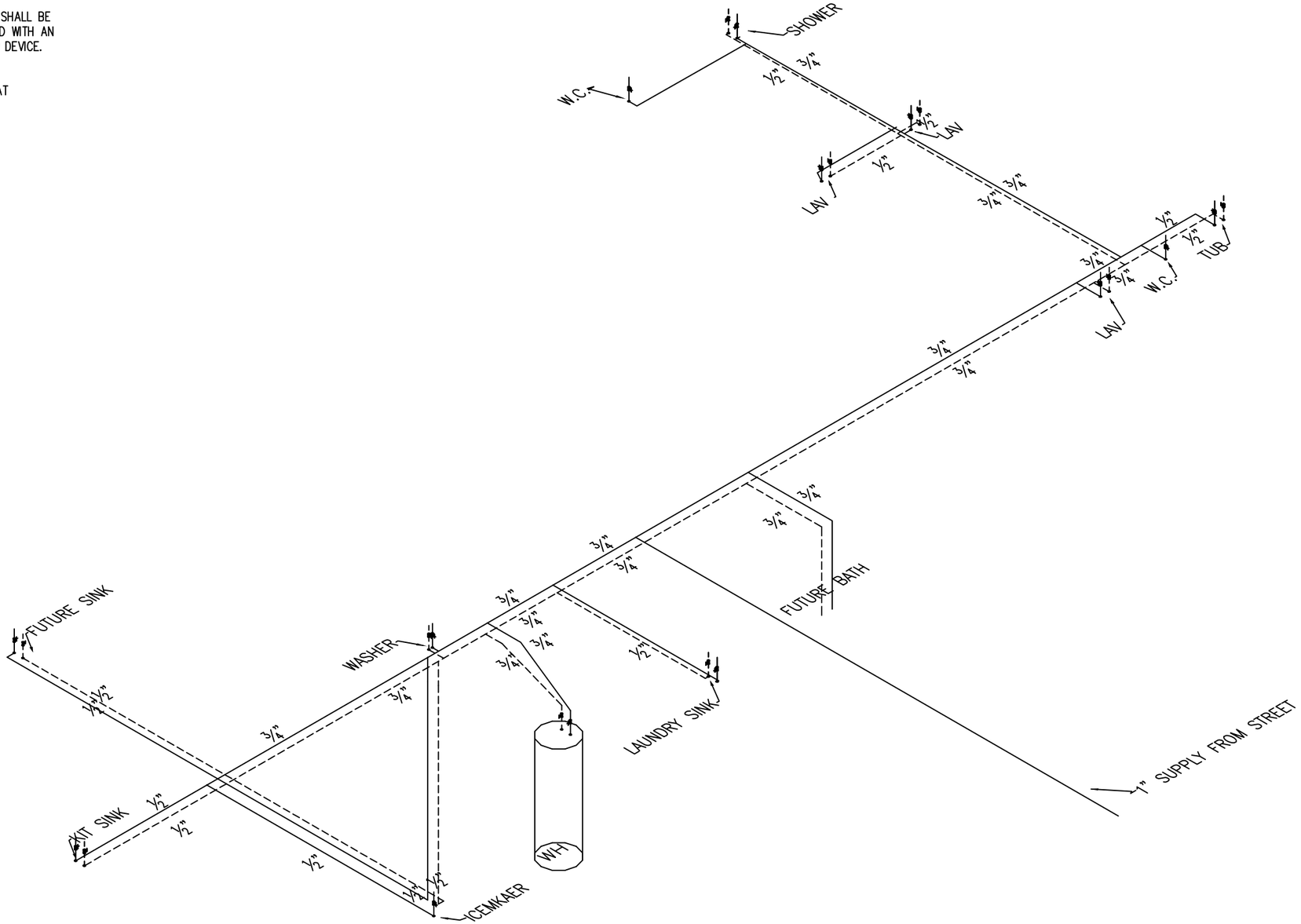
WATER HEATER:
TYPE ELECTRIC
CAPACITY 50 GAL.

SUPPLY MAIN GATE VALVE
THREADED AND MARKED FRESH WATER CONNECTION
VALVE MUST BE FULL-FLOW

LEGEND

COLD WATER LINE

HOT WATER LINE



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PROJECT NUMBER:	
BOX NUMBER:	
SCALE:	1/4" = 1'-0"

SUPPLY ISOMETRIC

SHEET: 7.1

DATE PRINTED

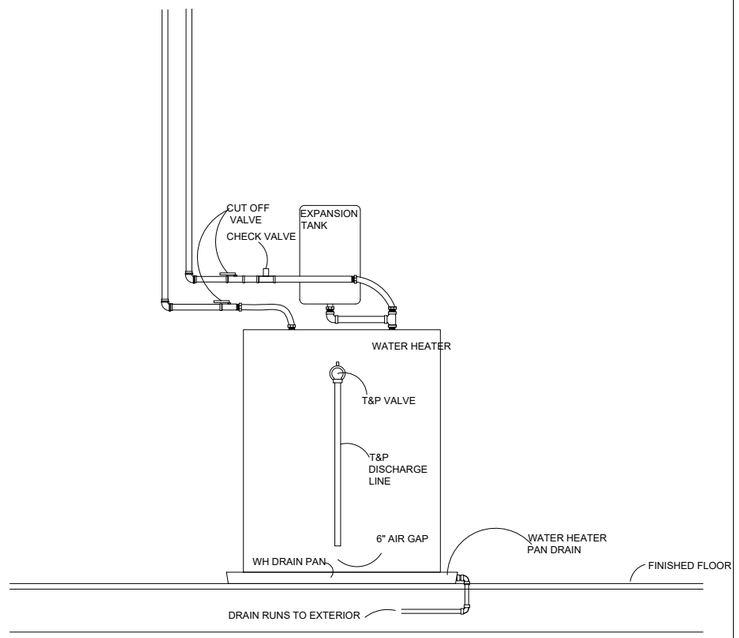
PLUMBING NOTES:

1. ALL INSTALLATION OF PIPING SHALL BE COMPLY WITH STATE, CITY AND LOCAL CODES
2. EACH PENETRATION OF A FIRE RESISTANT RATED ASSEMBLY BY A PIPE SHALL BE PROTECTED BY A THROUGH PENETRATION FIRE STOP SYSTEM THAT HAS BEEN TESTED ACCORDING TO ASTM E314 OR E199.
3. PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH IPC SECTION 308, AND SPACING OF HANGERS SHALL NOT EXCEED THE LIMITS SET FORTH IN TABLE 308.5. PIPES SHALL BE SUPPORTED WITHIN 1'-0" OF EACH ELBOW.
4. SANITARY PIPING SHALL BE PVC SCHEDULE 40 SOLID WALL PIPE AND DWV FITTING SYSTEM. PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 12454 PER ASTM D-1784 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM D-1785 AND ASTM D-2665. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D-2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F-1866. SOLVENT CEMENTS SHALL CONFORM TO ASTM D-2564. PRIMER SHALL CONFORM TO ASTM F-656.
5. WATER PIPING ABOVE FLOOR: PEX TUBING, SHALL COMPLY WITH ASTM F 876, ASTM F 877; CSA B137.5
6. WATER PIPING BELOW SLAB: TYPE 'K SOFT DRAWN COPPER TUBING, WITH NO JOINTS BELOW SLAB, ASTM B88.

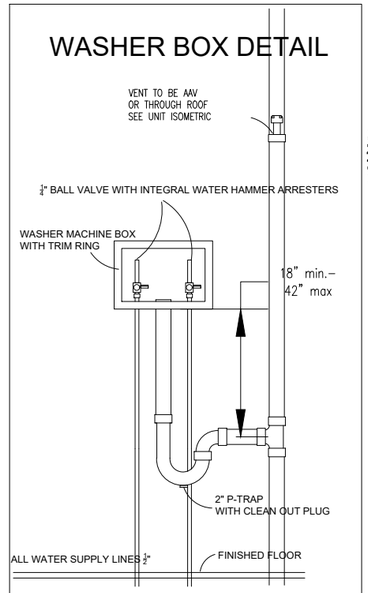
INSULATE ALL DOMESTIC HOT WATER AND HOT WATER RECIRCULATION PIPING IN ACCORDANCE WITH THE 2009 SOUTH CAROLINA INTERNATIONAL RESIDENTIAL ENERGY CONSERVATION CODE.

8. WATER HEATERS SHALL BE U.L. LISTED AND SHALL MEET OR EXCEED THE STANDBY LOSS REQUIREMENTS OF U.S. DEPT. OF ENERGY AND CURRENT EDITION OF ASHRAE/IESNA 90.1.
9. WATER HEATERS SHALL HAVE 150PSI WORKING PRESSURE AND BE EQUIPPED WITH EXTRUDED HIGH DENSITY ANODE ROD AND HIGH TEMPERATURE CUTOFF SWITCH. WATER HEATERS SHALL BE THERMOSTATICALLY CONTROLLED AND SET TO 120° UNLESS OTHERWISE NOTED.
10. WATER HEATER SHALL HAVE ASME RATED COMBINATION TEMPERATURE AND PRESSURE RELIEF VALVE IN TOP PORTION OF TANK PIPE RELIEF VALVE OUTLET TO FLOOR DRAIN, MOP SINK, INDIRECT WASTE RECEPTOR OR TO EXTERIOR.
11. SHUTOFF VALVES FOR WATER SUPPLY SHALL BE LOCATED AT THE FOLLOWING:
    - 11.1. AT THE WATER SUPPLY LINES TO EACH DWELLING UNIT PRIOR TO THE FIRST FIXTURE BRANCH CONTROL
    - 11.2. AT EACH INDIVIDUAL FIXTURE TO CONTROL THE FIXTURE WITHOUT INTERFERING WITH THE WATER SUPPLY TO THE OTHER FIXTURES
    - 11.3. AT THE COLD SUPPLY TO THE WATER HEATER

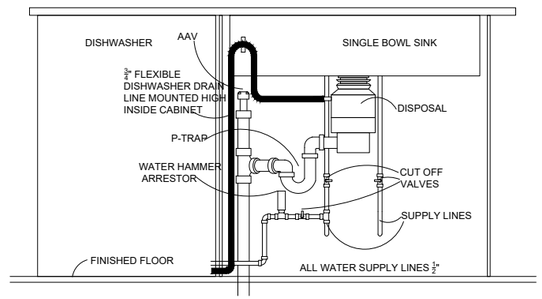
WATER HEATER DETAIL



WASHER BOX DETAIL



KITCHEN SINK DETAIL



DISTANCE OF FIXTURE TRAP FROM VENT	
PIPE SIZE	MAXIMUM DISTANCE
1 1/2"	5'-0"
2"	6'-0"
3"	10'-0"

WATER HEATER SPECIFICATION			
MARK	SIZE (GAL)	ELECTRICAL	MANUFACTURER
WH	50	4.5KW	A.O. SMITH

FIXTURE SPECIFICATION					
MARK	DESCRIPTION	DRAIN SIZE MIN.	SUPPLY SIZE MIN.		SPECIFICATION
			COLD	HOT	
LAV	LAVATORY-UNDERMOUNT	1 1/2"	1/2"	1/2"	UNDERMOUNT LAVATORY KP #1633 AND 2.2 GPM FAUCET WITH BRUSHED NICKEL FINISH, 12" LONG X ⅜" FLEX LINE SUPPLIES
WC	WATER CLOSET-TANK TYPE	3"	1/2"	--	STAINLESS STEEL SINGLE BOWL UNDERMOUNT SINK, 1 HOLE, ARC PULLDOWN FAUCET WITH 2.2 GPM, BRUSHED NICKEL FINISH, GARBAGE DISPOSAL, 12" LONG X ⅜" FLEX LINE SUPPLIES
SINK	STAINLESS STEEL UNDERMOUNT	1 1/2"	1/2"	1/2"	STAINLESS STEEL SINGLE BOWL UNDERMOUNT SINK, 1 HOLE, ARC PULLDOWN FAUCET WITH 2.2 GPM, BRUSHED NICKEL FINISH, GARBAGE DISPOSAL, 12" LONG X ⅜" FLEX LINE
TUB	BATHTUB	1 1/2"	1/2"	1/2"	CLARION SLIP RESISTANT STANDARD OUTLET, GEMLINE BRUSHED NICKEL TUB SHOWER TRIM WITH PRESSURE BALANCING VALVE, CHROME PLATED OVERFLOW VALVE
SHOWER	SHOWER PAN	2"	1/2"	1/2"	CLARION 60" X 36" SHOWER PAN BASE, GEMLINE BRUSHED NICKEL SHOWER TRIM WITH PRESSURE BALANCING VALVE SHOWER DRAIN WITH FLASHING COLLAR AND ROUND TOP ADJUSTABLE STRAINER HEAD
ET	EXPANSION TANK	--	3/4"	--	WATTS PLT5 POTABLE WATER EXPANSION TANK
ICEMAKER	REFRIGERATOR ICEMAKER BOX	--	1/2"	--	OATEY 391XX SERIES 6" X 6" LOW LEAD 1/4 TURN BRASS VALVE WITH INTEGRAL FACTORY INSTALLED WATER HAMMER
WASHER	WASHING MACHINE BOX	2"*	1/2"	1/2"	OATEY 3874X SERIES WITH ¼ TURN BALL VALVES WITH INTEGRAL FACTORY INSTALLED WATER HAMMER

* 2" TO THE LOCATION THAT THE DRAIN TURNS HORIZONTAL THEN 3" TO THE POINT IT MEETS THE MAIN BUILDING DRAIN

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SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 31010 WILLIAM E FULTZ 01/28/22

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PROJECT NUMBER:
BOX NUMBER:
SCALE: N/A

PLUMBING SCHEDULES

SHEET: 7.2

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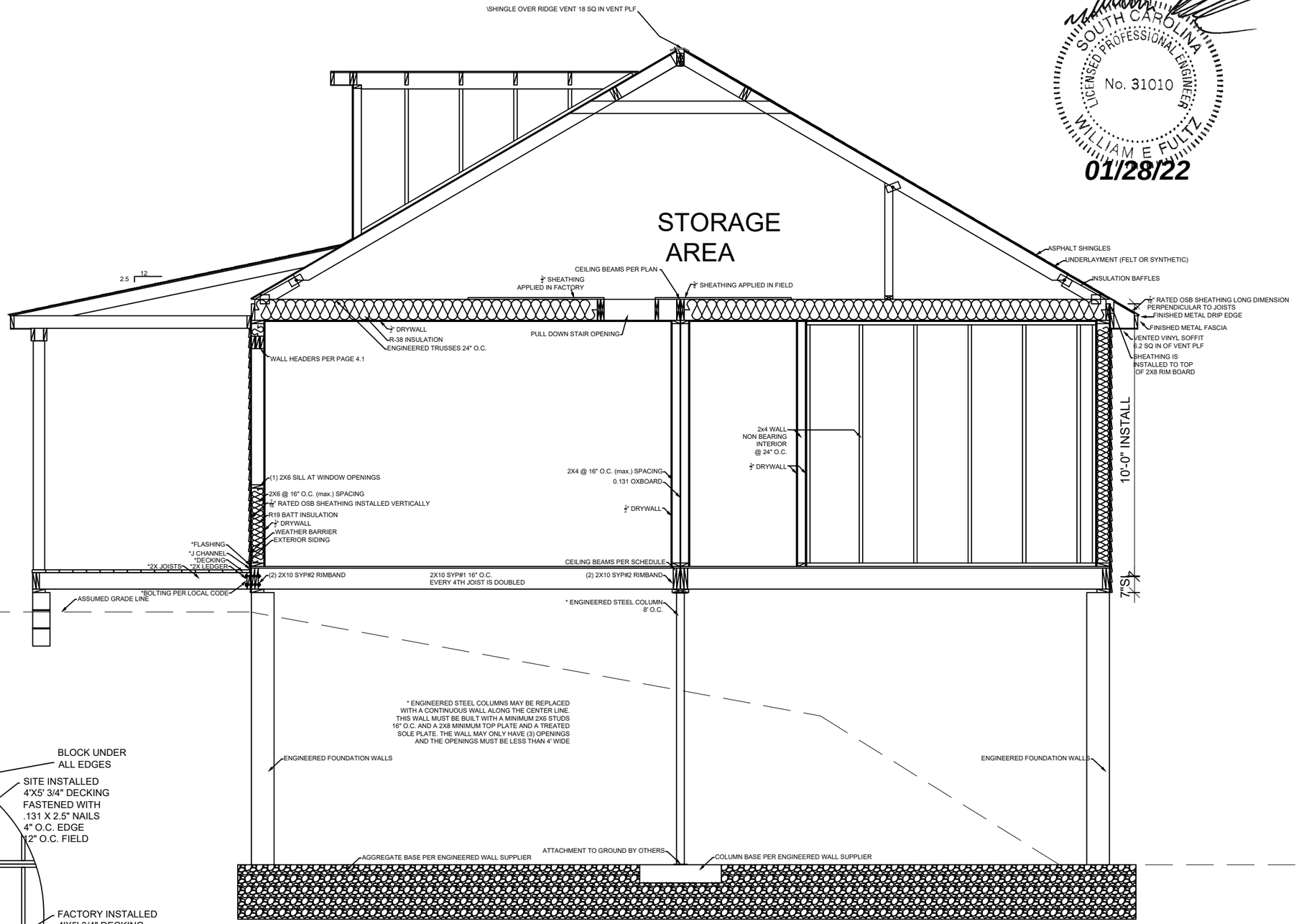

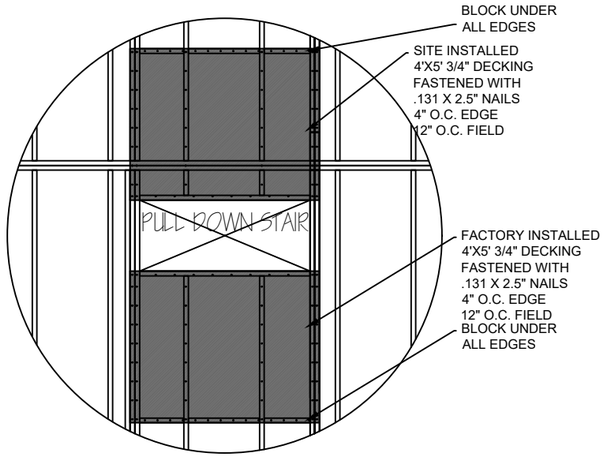

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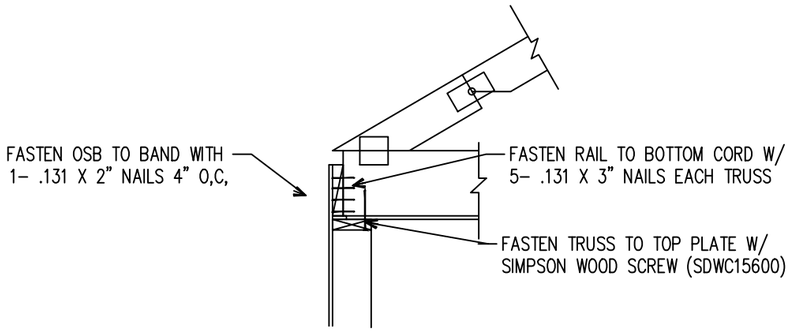
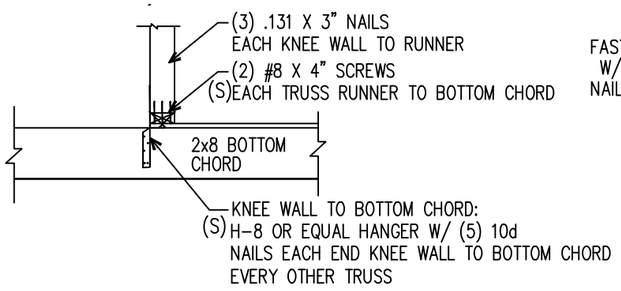
PROJECT NUMBER:
BOX NUMBER:
SCALE: NTS
BUILDING SECTION
SHEET: 8.0

DATE PRINTED

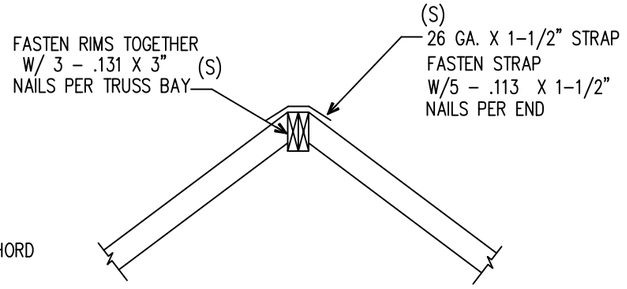
SEE PAGE 8.2 FOR REVERSE GABLE FRAMING



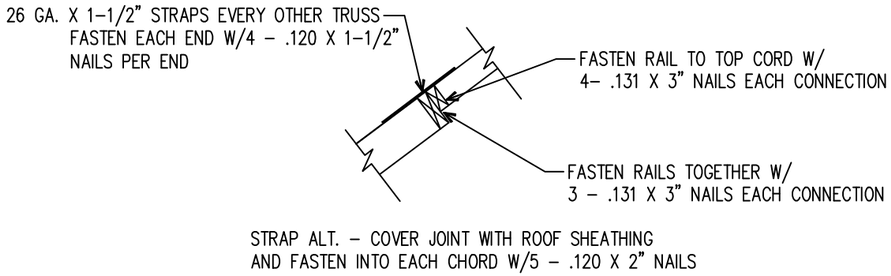
TRUSS HEEL CONNECTIONS – DETAIL A



KNEE WALL CONNECTIONS – DETAIL B

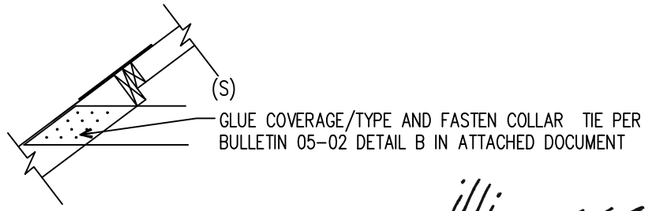


PEAK CONNECTIONS – DETAIL C

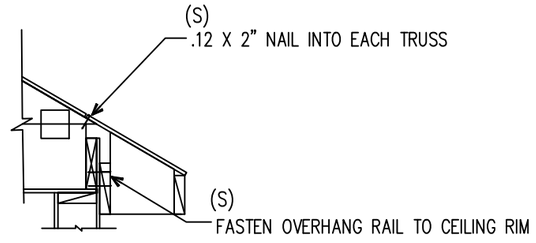


STRAP ALT. – COVER JOINT WITH ROOF SHEATHING
AND FASTEN INTO EACH CHORD W/5 – .120 X 2" NAILS

TOP CHORD FLIP – DETAIL D1



COLLAR TIE – DETAIL D2



OVERHANG CONNECTIONS – DETAIL E

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 31010 WILLIAM E FULTZ
01/28/22

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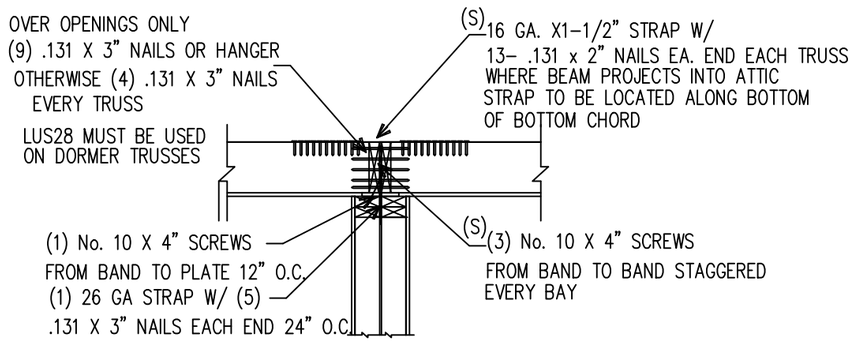
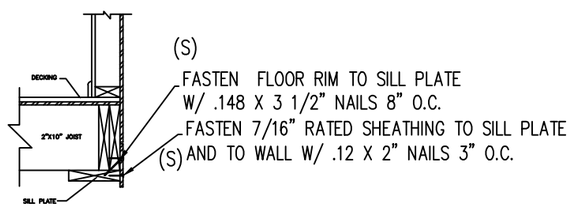
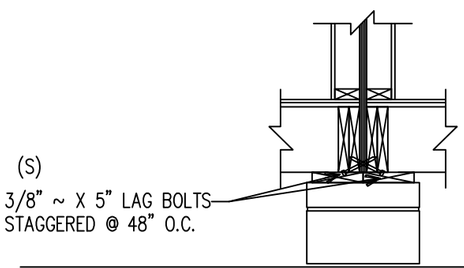


FLOOR CONNECTIONS – DETAIL F



FLOOR TO SILL CONNECTIONS – DETAIL G



BAND TO BAND CONNECTIONS – DETAIL H

(S) INDICATED SITE INSTALLED CONNECTION

DATE PRINTED

REVISION:	DATE:	BY:	REVISION:	DATE:	BY:

CUSTOMER/PROJECT:

ADDRESS:

IMPRESA BUILDING SYSTEMS of Greenwood SC, LLC

DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
ISSUE DATE:	
PROJECT PHASE:	
PROJECT NUMBER:	
BOX NUMBER:	
SCALE:	N/A

SITE CONNECTIONS

SHEET: 8.1

\SHINGLE OVER RIDGE VENT 18 SQ IN VENT PLF

FASTEN SHEATHING
TO TOP CHORD WITH
(1) .131 X 3 1/4" NAIL

REVERSE GABLE IS SITE BUILT
ALL CONSTRUCTION IS TO BE COMPLETED PER
THE 2018 SOUTH CAROLINA RESIDENTIAL CODE

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 31010
WILLIAM E FULTZ
01/28/22

APPROVED BY
NTA
1/31/2022
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STORAGE AREA

CEILING BEAMS PER PLAN

$\frac{3}{4}$" SHEATHING
APPLIED IN FACTORY

$\frac{3}{4}$" SHEATHING APPLIED IN FIELD

$\frac{1}{2}$" DRYWALL
R-38 INSULATION
ENGINEERED TRUSSES 24" O.C.

PULL DOWN STAIR OPENING

REVISION:	DATE:	BY:	REVISION:	DATE:	BY:

CUSTOMER/PROJECT:

ADDRESS:

IMPRESA BUILDING SYSTEMS
of Greenwood SC, LLC

DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
ISSUE DATE:	
PROJECT PHASE:	
PROJECT NUMBER:	
BOX NUMBER:	
SCALE:	NTS

REVERSE GABLE SECTION

SHEET: 8.2

DATE PRINTED

ER PAGE 4.1

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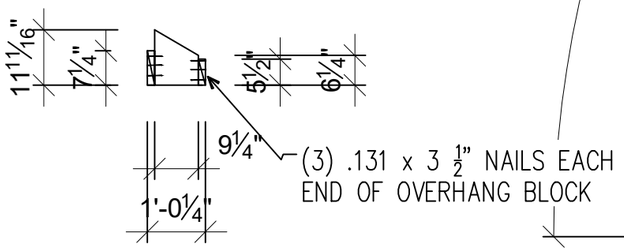
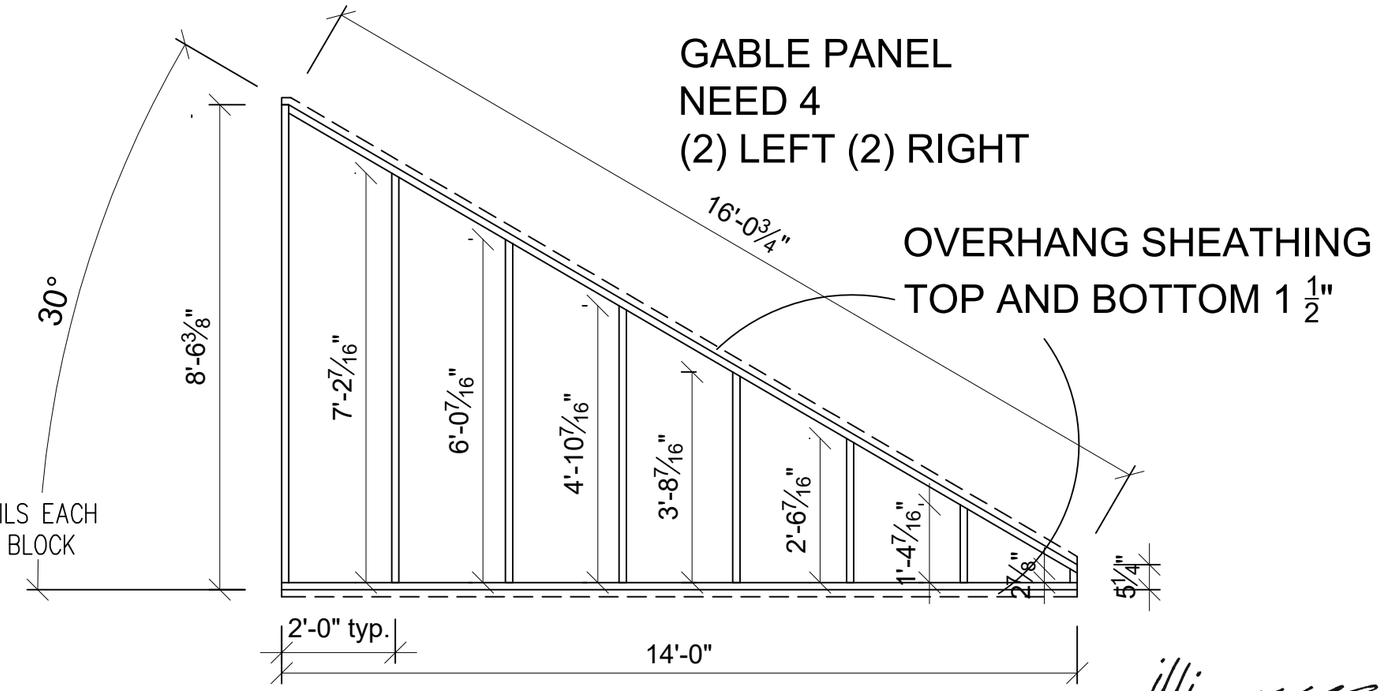
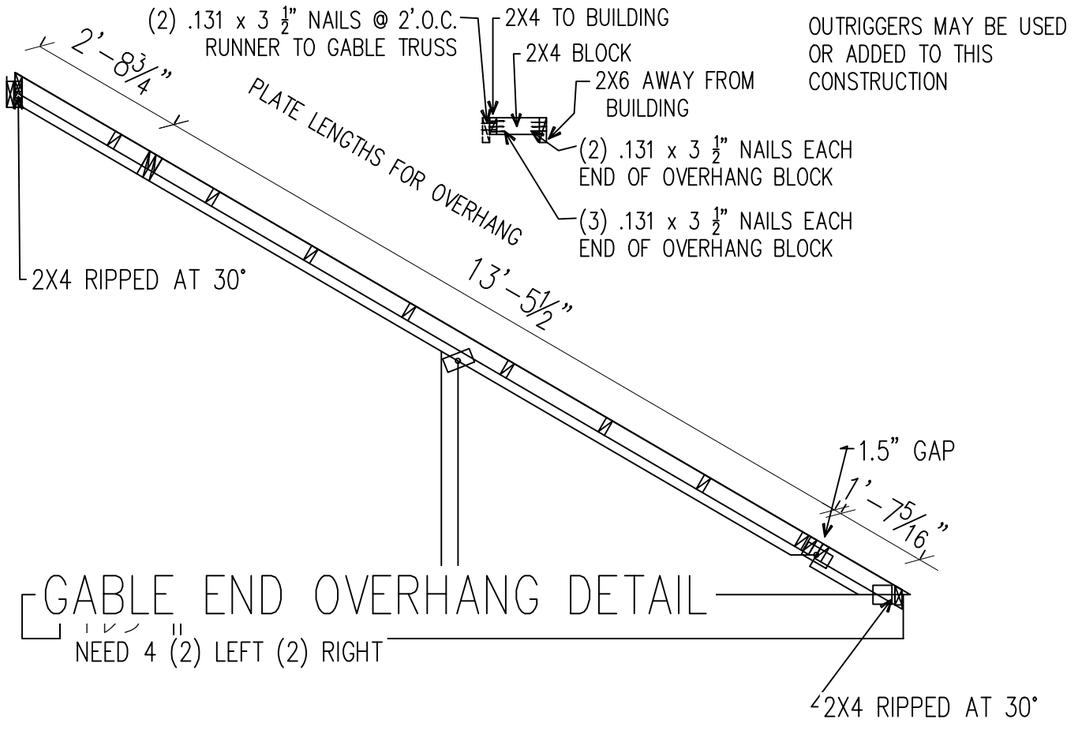
EAVE OVERHANG
SEE ROOF PLAN FOR LENGTHS



GABLE PANEL
NEED 4
(2) LEFT (2) RIGHT



OVERHANG SHEATHING TOP AND BOTTOM 1 1/2"



OUTRIGGERS MAY BE USED OR ADDED TO THIS CONSTRUCTION

GABLE END OVERHANG DETAIL
NEED 4 (2) LEFT (2) RIGHT

REVISION:	BY:
DATE:	REVISION:
BY:	DATE:
REVISION:	BY:
DATE:	

CUSTOMER/PROJECT:
ADDRESS:

IMPRESA BUILDING SYSTEMS of Greenwood SC, LLC

DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
ISSUE DATE:	
PROJECT PHASE:	
PROJECT NUMBER:	
BOX NUMBER:	
SCALE:	3/8" = 1'-0"

TRUSS DETAILS

SHEET: 8.3

DATE PRINTED

REScheck Software Version 4.6.4

Compliance Certificate

Project Lakespring Model

APPROVED BY NTA 1/31/2022

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Energy Code:	**2009 IECC**
Location:	**McCormick, South Carolina**
Construction Type:	**Single-family**
Project Type:	**New Construction**
Conditioned Floor Area:	**3,528 ft2**
Glazing Area	**26%**
Climate Zone:	**3 (2822 HDD)**
Permit Date:	
Permit Number:	

Construction Site:
Savannah Lakes Village
McCormick, SC

Owner/Agent:

Designer/Contractor:

Compliance: Passes using UA trade-off

Compliance: **2.1% Better Than Code** Maximum UA: **533** Your UA: **522** Maximum SHGC: **0.30** Your SHGC: **0.29**

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

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	U-Factor	UA
Ceiling 1: Flat Ceiling or Scissor Truss	1,764	38.0	0.0	0.030	53
Wall 1: Wood Frame, 16" o.c.	1,575	17.0	0.0	0.064	80
Window 1: Vinyl/Fiberglass Frame:Double Pane SHGC: 0.29	152			0.310	47
Door 1: Glass SHGC: 0.30	120			0.310	37
Door 2: Solid	54			0.280	15
Basement Rear Wall: Wood Frame Wall height: 9.0' Depth below grade: 9.0' Insulation depth: 9.0'	504	19.0	0.0	0.042	15
Window 2: Vinyl/Fiberglass Frame:Double Pane with Low-E SHGC: 0.28	90			0.310	28
Door 3: Glass SHGC: 0.30	40			0.310	12
Door 4: Solid	22			0.280	6
Basement End walls: Solid Concrete or Masonry Wall height: 9.0' Depth below grade: 4.5' Insulation depth: 1.5'	576	19.0	0.0	0.324	187
Basement front wall: Solid Concrete or Masonry Wall height: 9.0' Depth below grade: 8.0' Insulation depth: 3.0'	504	19.0	0.0	0.083	42

Compliance Statement: The proposed building design described here is consistent with the building plans, specifications, and other calculations submitted with the permit application. The proposed building has been designed to meet the 2009 IECC requirements in RES*check* Version 4.6.4 and to comply with the mandatory requirements listed in the RES*check* Inspection Checklist.

Jane Yates/Designer	Jane Yates	1-10-22
Name - Title	Signature	Date

APPROVED BY
NTA
1/31/2022
Approval of this document does not authorize or approve any deviation or deviations from the requirements of applicable State Laws.

Job	Truss	Truss Type	Qty	Ply	
107639	CCE79501	HINGED ATTIC	1	1	Impresa 315 NC Ref. #10014023

UFP Industries Inc., Grand Rapids, MI 49525, Weston Gorby — 8.430 e Jan 4 2021 MiTek Industries, Inc. Fri Sep 24 09:21:40 2021 Page 1 of 2

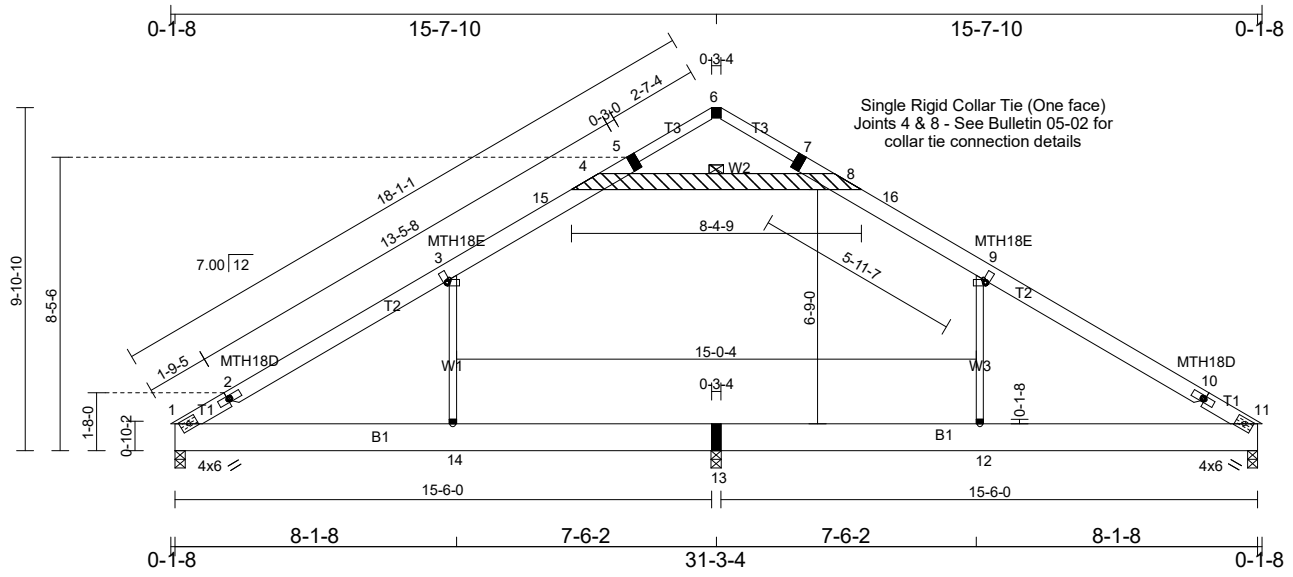

Plate Offsets (X,Y)-- [2:0-0-11,0-0-0], [3:0-0-11,0-1-2], [9:0-0-11,0-1-2], [10:0-0-11,0-0-0]

SPACING-: 2-0-0		**SPACING-:** 1-4-0		**SPACING-**	2-0-0	**CSI.**		**DEFL.**	in	(loc)	l/defl	L/d	**PLATES**	**GRIP**
LOADING (psf)		**LOADING** (psf)		Plate Grip DOL	1.15	TC	0.68	Vert(LL)	0.30	14	>624	240	MT20	197/144
TCLL	17.0	TCLL	25.5	Lumber DOL	1.15	BC	0.83	Vert(CT)	-0.44	14	>421	180	MT18HS	197/144
(Ground Snow=20.0)		(Ground Snow=30.0)		Rep Stress Incr	YES	WB	0.82	Horz(CT)	0.02	11	n/a	n/a		
TCDL	10.0	TCDL	15.0	Code	IBC2018/TPI2014	Matrix-R		Attic	-0.26	13-14	702	360	Weight: 211 lb	
BCLL	0.0 *	BCLL	0.0 *										FT = 0%	
BCDL	10.0	BCDL	15.0											

LUMBER-

TOP CHORD	2x6 SP No.2 or 2x6 SPF No.2 *Except* T3: 2x4 SP No.2 or 2x4 SPF No.2
BOT CHORD	2x10 SP No.2 or 2x10 SPF No.2
WEBS	2x6 SP No.2 or 2x6 SPF No.2 *Except* W3: 2x3 SP No.2 or 2x3 SPF Stud W1: 2x3 SPF No.3 or 2x3 SPF Stud

BRACING-

TOP CHORD	Structural wood sheathing directly applied or 4-10-5 oc purlins.
BOT CHORD	Rigid ceiling directly applied or 7-6-1 oc bracing.
WEBS	1 Row at midpt 4-8

REACTIONS. (lb/size) 1=1004/0-3-8 (min. 0-1-10), 11=1004/0-3-8 (min. 0-1-10), 13=439/0-3-8 (min. 0-1-8)
Max Horz 1=-277(LC 8)
Max Uplift 1=-300(LC 12), 11=-301(LC 13), 13=-63(LC 12)
Max Grav 1=1094(LC 23), 11=1096(LC 24), 13=864(LC 19)

FORCES. (lb) - Maximum Compression/Maximum Tension

TOP CHORD	1-2=-1274/296, 2-3=-1110/312, 3-15=-1035/389, 4-15=-927/395, 4-5=-221/72, 5-6=-131/85, 6-7=-130/84, 7-8=-223/72, 8-16=-924/395, 9-16=-1032/390, 9-10=-1106/309, 10-11=-1271/294
BOT CHORD	1-14=-180/1005, 13-14=-179/1005, 12-13=-179/1005, 11-12=-179/1005
WEBS	9-12=-202/254, 3-14=-203/255, 4-8=-825/384

REQUIRED FIELD JOINT CONNECTIONS - Maximum Compression (lb)/ Tension (lb)/ Shear (lb)/ Moment (lb-in)
4=825/384/93/6592, 5=182/76/90/0, 6=113/86/88/0, 7=183/75/91/0, 8=825/384/93/6573, 12=202/254/0/0, 13=179/1005/477/0, 14=203/255/0/0

NOTES-

1) Wind: ASCE 7-16; Vult=120mph (3-second gust) Vasd=95mph @24in o.c.; TCDL=4.0psf; BCDL=4.0psf; (Alt. 147mph @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(2E) 0-1-8 to 3-3-0, Interior(1) 3-3-0 to 12-3-8, Exterior(2R) 12-3-8 to 18-11-12, Interior(1) 18-11-12 to 28-0-4, Exterior(2E) 28-0-4 to 31-1-12 zone;C-C for members and forces & MWFRS for reactions shown; Lumber DOL=1.60 plate grip DOL=1.60
2) TCLL: ASCE 7-16; Pg=20.0 psf; Ps=17.0 psf (Lum DOL=1.15 Plate DOL=1.15); Is=1.0; Rough Cat C; Partially Exp. Ce=1.0; Cs=1.00; Ct=1.10; IBC 1607.11.2 minimum roof live load applied where required.

APPROVED BY
NTA
1/31/2022
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9/30/2021

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

3) Roof design snow load has been reduced to account for slope.
4) Unbalanced snow loads have been considered for this design.
5) All plates are MT20 plates unless otherwise indicated.
6) See HINGE PLATE DETAILS for plate placement.
7) Provisions must be made to prevent lateral movement of hinged member(s) during transportation.
8) All additional member connections shall be provided by others for forces as indicated.
9) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
10) * 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.
11) Ceiling dead load (5.0 psf) on member(s). 3-4, 8-9, 4-8
12) Bottom chord live load (30.0 psf) and additional bottom chord dead load (0.0 psf) applied only to room. 13-14, 12-13
13) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 300 lb uplift at joint 1, 301 lb uplift at joint 11 and 63 lb uplift at joint 13.
14) Fixity of member 4 - 8 has been changed.
15) This truss is designed in accordance with the 2018 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
16) Attic space shown is not designed for occupancy.

APPROVED BY
NTA
1/31/2022
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Job	Truss	Truss Type	Qty	Ply	Impresa 315 NC
108157	CCE79503	HINGED ATTIC	1	1	Ref. #10014542

UFP Industries Inc., Grand Rapids, MI 49525, Weston Gorby — 8.430 e Jan 4 2021 MiTek Industries, Inc. Thu Nov 4 09:48:08 2021 Page 1 of 2

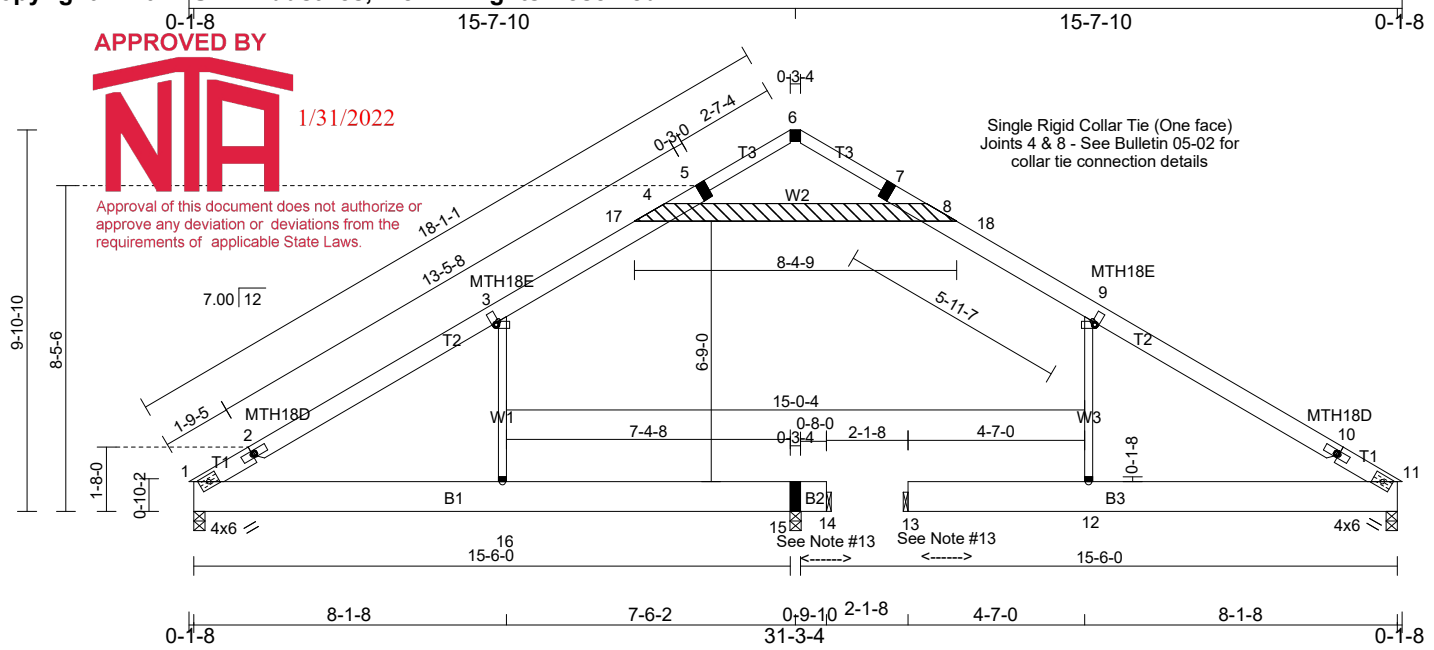

Plate Offsets (X,Y)-- [2:0-0-11,0-0-0], [3:0-0-11,0-1-2], [9:0-0-11,0-1-2], [10:0-0-11,0-0-0]

SPACING-: 2-0-0		SPACING-: 1-4-0		SPACING-	2-0-0	CSI.		DEFL.	in	(loc)	l/defl	L/d	PLATES	GRIP
LOADING (psf)		LOADING (psf)		Plate Grip DOL	1.15	TC	0.65	Vert(LL)	0.31	16	>610	240	MT20	197/144
TCLL	17.0	TCLL	25.5	Lumber DOL	1.15	BC	0.85	Vert(CT)	-0.47	16	>396	180	MT18HS	197/144
(Ground Snow=20.0)		(Ground Snow=30.0)		Rep Stress Incr	YES	WB	0.83	Horz(CT)	-0.01	1	n/a	n/a		
TCDL	10.0	TCDL	15.0	Code	IBC2018/TPI2014	Matrix-R							Weight: 203 lb	
BCLL	0.0 *	BCLL	0.0 *										FT = 0%	
BCDL	10.0	BCDL	15.0											

LUMBER-

TOP CHORD 2x6 SP No.2 or 2x6 SPF No.2 *Except* T3: 2x4 SP No.2 or 2x4 SPF No.2
BOT CHORD 2x10 SP No.2 or 2x10 SPF No.2
WEBS 2x6 SP No.2 or 2x6 SPF No.2 *Except* W3: 2x3 SP No.2 or 2x3 SPF Stud W1: 2x3 SPF No.3 or 2x3 SPF Stud

BRACING-

TOP CHORD Structural wood sheathing directly applied or 5-10-6 oc purlins.
BOT CHORD Rigid ceiling directly applied or 7-7-7 oc bracing.

REACTIONS. (lb/size) 1=908/0-3-8 (min. 0-1-8), 11=855/0-3-8 (min. 0-1-8), 15=238/0-3-8 (min. 0-1-8), 14=7/Mechanical, 13=242/Mechanical
Max Horz 14=706(LC 1), 13=-706(LC 1)
Max Uplift 1=-329(LC 9), 11=-284(LC 10), 15=-85(LC 9), 13=-163(LC 10)
Max Grav 1=927(LC 3), 11=855(LC 1), 15=479(LC 14), 14=30(LC 14), 13=391(LC 4)

FORCES. (lb) - Maximum Compression/Maximum Tension
TOP CHORD 1-2=-982/306, 2-3=-810/314, 3-17=-817/418, 4-17=-739/422, 4-5=-221/72, 5-6=-131/85, 6-7=-130/84 7-8=-223/72, 8-18=-717/424, 9-18=-817/421, 9-10=-810/361, 10-11=-942/345
BOT CHORD 1-16=-185/706, 15-16=-184/706, 14-15=-184/706, 12-13=-224/706, 11-12=-224/706
WEBS 9-12=-270/305, 3-16=-201/260, 4-8=-605/408

REQUIRED FIELD JOINT CONNECTIONS - Maximum Compression (lb)/ Tension (lb)/ Shear (lb)/ Moment (lb-in)
4=605/408/64/4037, 5=182/76/90/0, 6=113/86/88/0, 7=183/75/91/0, 8=605/408/64/5446, 12=270/305/0/0, 15=184/706/453/0, 16=201/260/0/0

NOTES-

1) Wind: ASCE 7-16; Vult=120mph (3-second gust) Vasd=95mph @24in o.c.; TCDL=4.0psf; BCDL=4.0psf; (Alt. 147mph @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(2E) 0-1-8 to 3-3-0, Interior(1) 3-3-0 to 12-3-8, Exterior(2R) 12-3-8 to 18-11-12, Interior(1) 18-11-12 to 28-0-4, Exterior(2E) 28-0-4 to 31-1-12 zone;C-C for members and forces & MWFRS for reactions shown; Lumber DOL=1.60 plate grip DOL=1.60

11/4/2021

The professional engineering seal indicates that a licensed professional engineer has designed the truss 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.

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

2) TCLL: ASCE 7-16; Pg=20.0 psf; Ps=17.0 psf (Lum DOL=1.15 Plate DOL=1.15); Is=1.0; Rough Cat C; Partially Exp.; Ce=1.0; Cs=1.00; Ct=1.10
3) Roof design snow load has been reduced to account for slope.
4) Unbalanced snow loads have been considered for this design.
5) All plates are MT20 plates unless otherwise indicated.
6) See HINGE PLATE DETAILS for plate placement.
7) Provisions must be made to prevent lateral movement of hinged member(s) during transportation.
8) All additional member connections shall be provided by others for forces as indicated.
9) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads.
10) * 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.
11) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 329 lb uplift at joint 1, 284 lb uplift at joint 11, 85 lb uplift at joint 15 and 163 lb uplift at joint 13.
12) Fixity of member 4 - 8 has been changed.
13) Provide support to resist a horizontal force of 706# at Joints 13 and 14.
14) This truss is designed in accordance with the 2018 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
15) Attic space shown is not designed for occupancy.
16) In the LOAD CASE(S) section, loads applied to the face of the truss are noted as front (F) or back (B).
17) 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.
18) 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.
19) Based on: CCE79501
20) Revision: Stair Cut Truss

APPROVED BY
NTA
1/31/2022
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2801 EAST BELTLINE RD, NE
GRAND RAPIDS, MI 49525

IM-Lake Spring Home-SC

Shear Walls, SLOT, Strapping, Diaphragm

Wind: 115mph Vult, Exp. C, **Seismic:** Ss = .410g, S1 = .105g ('C'), **Snow:** 10psf GSL, **Risk Category:** II

Loading PER ASCE 7-16 and 2018 NDS

Building System Engineering, LLC
247 Haddington Ln. Greenville, SC 29609
(864) 558-0827 wfultz@bseng.org

IM-Lake Spring Home-SC

The calculations presented in this package are done with the intention of adequately describing the loads acting on IM-Lake Spring Home and designing it to withstand those forces. However, Building System Engineering (BSE) did not design the foundation upon which this house sets or the attachments to that foundation. This is the responsibility of an on-site contractor (one who knows the soil conditions, foundation layout, etc).

BSE has given an accurate description of the uplift loads that must be resisted by the foundation. It is important that the foundation and hold downs be designed for these loads (see "Shear Wall Tie-Downs" and "Sliding and Overturning" sheet to obtain loads). The shear wall point tie-downs must be selected and installed by the builder on-site. Tie-down connection must span from the shear wall chords/columns to the foundation (unless otherwise noted).

Exterior end wall sheathing must be applied across mate wall joint to avoid endwall matewall tie-downs to the foundation. Continuous OSB to be used of the same type and fastener spacing as the rest of the wall it is attached to with multi-ply stud-columns on each end of the installed sheet. Minimum 16" wide continuous sheet required.

When the standard sliding and overturning detail is specified (i.e. wall OSB lap over the band and OSB strip installed on-site), then minimal shearwall point loads will not be required on the tie-down page. The racking loads will be resisted by OSB lap, floor and wall/ceiling dead weight. BSE considers a 600lb couple racking load to be the minimal threshold.

Sincerely,

William E. Fultz, PE

Hazards by Location

Search Information

Address: McCormick, SC 29835, USA

Coordinates: 33.9134577, -82.29345850000001

Elevation: 534 ft

Timestamp: 2021-10-05T17:54:42.296Z

Hazard Type: Wind

ASCE 7-16

MRI 10-Year	73 mph
MRI 25-Year	80 mph
MRI 50-Year	86 mph
MRI 100-Year	92 mph
Risk Category I	102 mph
Risk Category II	109 mph
Risk Category III	118 mph
Risk Category IV	123 mph

ASCE 7-10

MRI 10-Year	76 mph
MRI 25-Year	84 mph
MRI 50-Year	90 mph
MRI 100-Year	96 mph
Risk Category I	105 mph
Risk Category II	115 mph
Risk Category III-IV	120 mph

ASCE 7-05

ASCE 7-05 Wind Speed	90 mph

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Disclaimer

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer. Per ASCE 7, islands and coastal areas outside the last contour should use the last wind speed contour of the coastal area – in some cases, this website will extrapolate past the last wind speed contour and therefore, provide a wind speed that is slightly higher. NOTE: For queries near wind-borne debris region boundaries, the resulting determination is sensitive to rounding which may affect whether or not it is considered to be within a wind-borne debris region.

Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

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Hazards by Location

Search Information

Address: McCormick, SC 29835, USA

Coordinates: 33.9134577, -82.29345850000001

Elevation: 534 ft

Timestamp: 2021-10-05T17:55:26.603Z

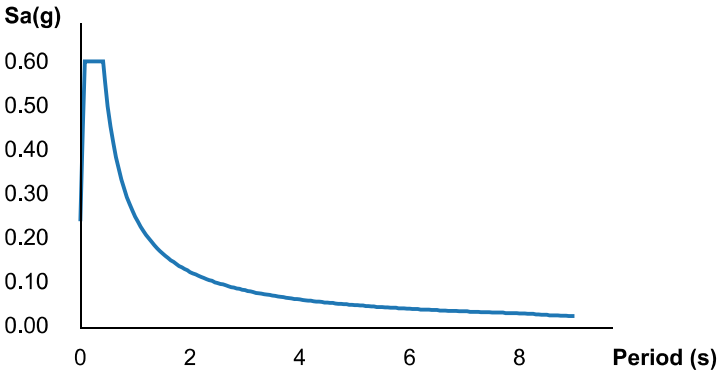
Hazard Type: Seismic

Reference Document: ASCE7-16

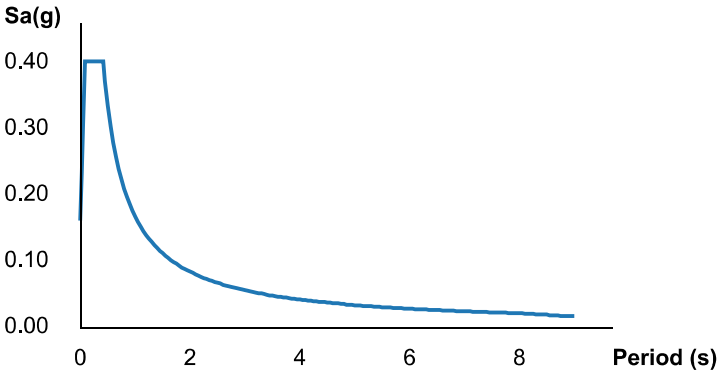
Risk Category: II

Site Class: D-default

MCER Horizontal Response Spectrum



Design Horizontal Response Spectrum



Basic Parameters

Name	Value	Description
S_S	0.41	MCE_R ground motion (period=0.2s)
S_1	0.105	MCE_R ground motion (period=1.0s)
S_{MS}	0.604	Site-modified spectral acceleration value
S_{M1}	0.251	Site-modified spectral acceleration value
S_{DS}	0.402	Numeric seismic design value at 0.2s SA
S_{D1}	0.167	Numeric seismic design value at 1.0s SA

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Additional Information

Name	Value	Description
SDC	C	Seismic design category
F_a	1.472	Site amplification factor at 0.2s
F_v	2.39	Site amplification factor at 1.0s

Hazards by Location

Search Information

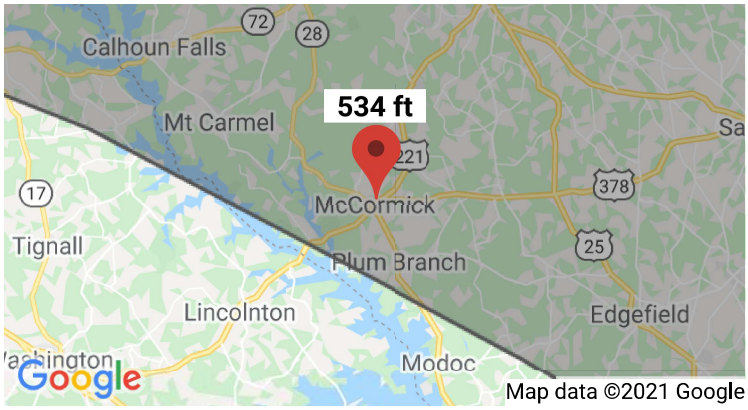
Address: McCormick, SC 29835, USA

Coordinates: 33.9134577, -82.29345850000001

Elevation: 534 ft

Timestamp: 2021-10-05T17:54:55.926Z

Hazard Type: Snow



ASCE 7-16		ASCE 7-10		ASCE 7-05	
Ground Snow Load	10 lb/sqft	Ground Snow Load	10 lb/sqft	Ground Snow Load	10 lb/sqft

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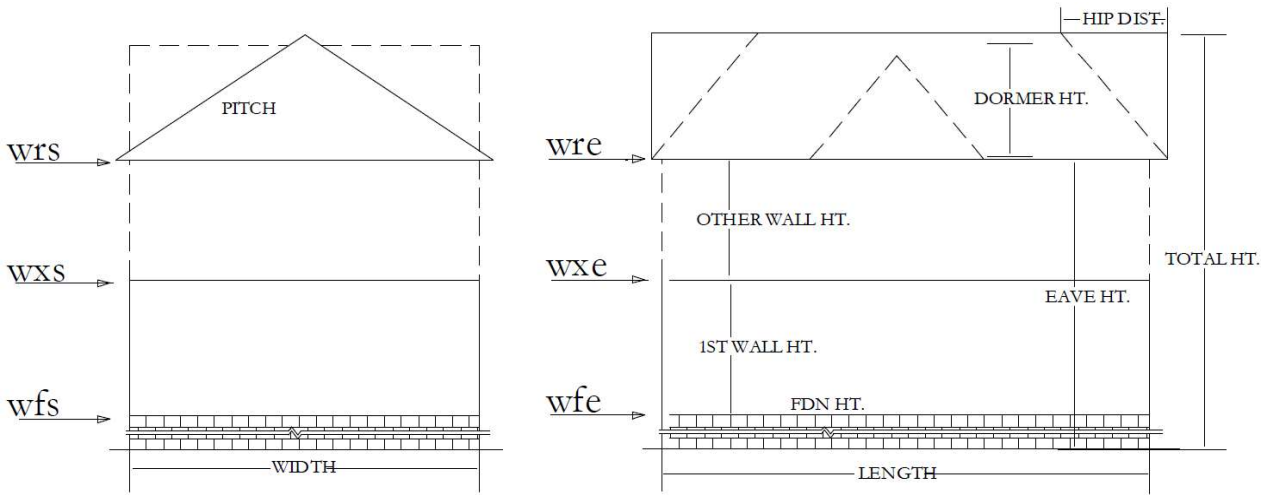
HORIZONTAL LOAD DEVELOPMENT

ASCE CODE 7-16

PROJECT SPECIFICATIONS

DIMENSIONS/SPECIFICATIONS — LOW-RISE STRUCTURE — S26.2

FDN HT =	6'	0"	6.00 ft	*NO. OF STORIES =*	1	
FDN TYPE =	BASEMENT			*HEIGHT OF PARAPET (IF APP.) =*	0.00 ft	
WIDTH=	31'	8"	31.67 ft			
LENGTH=	56'	0"	56.00 ft	*RISK CATEGORY=*	II	T1.5-1
				ROOF TYPE =	Gable	
ROOF BAND HEIGHT=	0'	10"	0.83 ft	*NOTE: Consider hips as gables*		
	0'	0"	0.00 ft	*HIP DIST. (0 FOR GABLE) =*	0'	0"
	0'	0"	0.00 ft	*BACK DORMER HT. =*	9'	2"
				FRONT DORMER HT. =	9'	2"
	0'	0"	0.00 ft			
	0'	0"	0.00 ft	*EAVE HT =*	16'	10"
				PITCH=	7	/12
	0'	0"	0.00 ft	*TRUSS HT. =*	9'	3"
	0'	0"	0.00 ft	*MEAN ROOF HT =*	21'	5"
				TOTAL HEIGHT=	26'	1"
1ST WALL HT. =	9'	0"	9.00 ft			
BAND 1ST TO FDN =	1'	0"	1.00 ft			



WIND SPECIFICATIONS

WIND SPEED (ULT)=	115 MPH	F26.5-1A-D	*TOPO. FACTOR, KZT =*	1.00	F26.8-1
EXPOSURE=	C	S26.7.3	*DIRECT. FACTOR, KD =*	0.85	T26.6-1
ENCLOSED (Y/N)? =	Y	S26.2	*GRD ELEV. (0 IF UNKNOWN) =*	0	FT
ANALYSIS TYPE =	LOW RISE	S26.1.2.1	GROUND ELEV. FACTOR, KE =	1.00	T26.9-1
HURRICANE REGION (Y/N)? =	N		*ENDZONE=*	3.2'	

SEISMIC SPECIFICATIONS

SOIL SITE CLASS =	D	S20.3	*STRUCTURE HEIGHT, hn =*	21.42 ft	S11.2
LOCATION ZIP (OPT) =					
SPECTRAL ACCEL., (Ss) =	g 0.41	S11.4.2			
SPECTRAL ACCEL., S1 =	g 0.11	S11.4.2	*SEISMIC RESIST. SYSTEM* =*	A15	
LONG. TRANS. PERIOD, TL =	8.00	F22-14	R = 6.50 Ω_o = 3.00	C_d = 4.00	

ht-framed walls sheathed with wood structural panels rated for shear or steel she

SNOW SPECIFICATIONS

*ASCE 7-10/16 Table 12.2-1 is used.

GROUND SNOW LOAD (pg) =	10.0 psf	F7.2-1			
SNOW THERMAL FACTOR (Ct) =	1	T7.3-2	SNOW IMPORTANCE (Is) =	1	T1.5-2
FLAT ROOF SNOW LOAD (pf) =	7.0 psf	S7.3.4, EQ7.3-1	SNOW EXPOSURE FACTOR (Ce) =	1	T7.3-1

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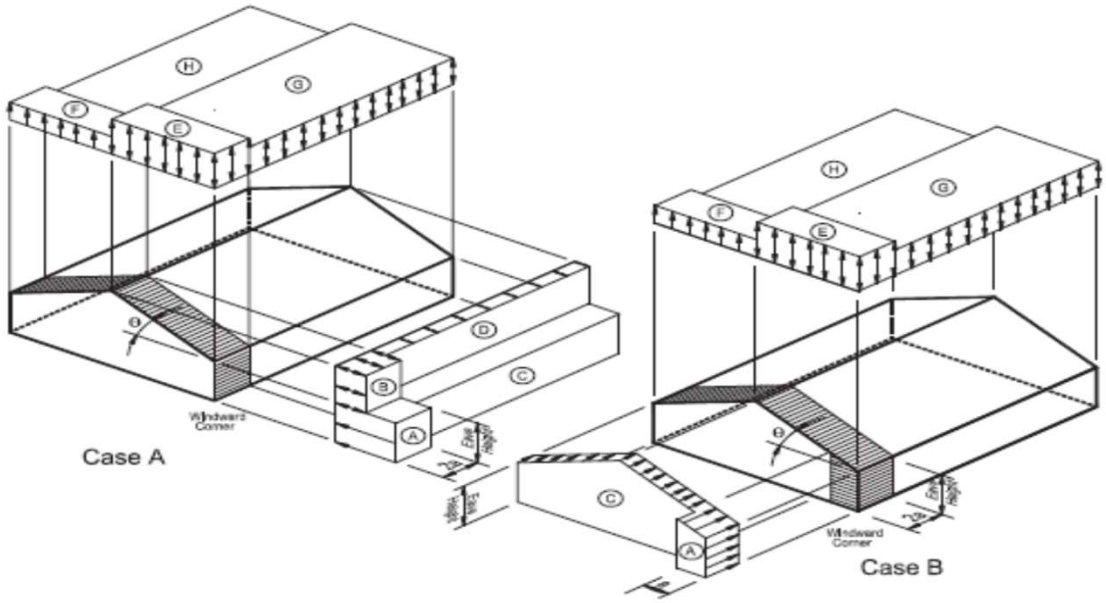
HORIZONTAL LOAD DEVELOPMENT (CONT)

ASCE CODE 7-16 *WIND LOADING*



TURN ON PARAPET LOADING? N

SHOW OH MWFRS VALUES? N

Vx (Par.) 7.5 k

Vy (Perp.) 14.3 k

LOADS ARE CALCULATED USING THE LOW RISE METHOD **ASD** Loading 0.6 applied S2.3, 2.4

PERPENDICULAR MWFRS - PSF					SLOPE
ZONE	END		INTERIOR		
	A	18.49	E	7.11	
	B	12.64	F	-11.22	
	C	14.70	G	6.16	
	D	10.12	H	-9.64	

PARALLEL MWFRS PSF					SLOPE
ZONE	END		INTERIOR		
	A	16.44	E	-19.76	
	B	0.00	F	-11.22	
	C	10.91	G	-13.75	
	D	0.00	H	-8.69	

ENDZONE (a) = 3.17

pw (wall) = 15.1 psf pr (roof) = 10.4 psf pw (wall) = 12.0 psf pr (roof) = 10.9 psf

WIND SIDEWALL LOADING Total

wrs =	((10.1-0)(10.5)+(5)(15.2)) =	181 plf	w1s =	((0)(15.2)+(0)(15.2)) =	0 plf
w3s =	((0)(15.2)+(0)(15.2)) =	0 plf	wfs =	(5)(15.2) =	76 plf
w2s =	((0)(15.2)+(0)(15.2)) =	0 plf			Base: 256 plf

WIND ENDWALL LOADING

wre =	((5.5)(11)+(5)(12.1)) =	120 plf	w1e =	((0)(12.1)+(0)(12.1)) =	0 plf
w3e =	((0)(12.1)+(0)(12.1)) =	0 plf	wfe =	(5)(12.1) =	60 plf
w2e =	((0)(12.1)+(0)(12.1)) =	0 plf			Base: 180 plf

Front Dormer Load: 911 lb Back Dormer Load: 911 lb

HORIZONTAL LOAD DEVELOPMENT (CONT)

ASCE CODE 7-16 *SEISMIC LOADING*

EFFECTIVE SEISMIC WEIGHT

SET SEISMIC BASE AT SILL PLATE OR FOOTER (GROUND) LEVEL?* GROUND
(SILL RECOMMENDED FOR SLABS/SHORT CRAWLSPACES, GROUND FOR PILINGS/FLEX. FOUNDATIONS)

*ROOF DEAD WEIGHT =***	15 psf	1773 rf sqft.	26.6 k		
FLAT ROOF SNOW LOAD =	7 psf	1773 rf sqft.	0.0 k		EQN. 7.3-1 10
PERMANENT EQUIPTMENT =	0 kips	Total Entered	0.0 k		
ROOF STORAGE LOAD =	0 psf	1773 rf sqft.	0.0 k		
1/2 OF WALL FROM BELOW =	12 psf	1753/2 wall sqft.	10.5 k	37.1 k	ASCE 12.7.2
			0.0 k		
			0.0 k		
		0 flr. sqft.	0.0 k		
			0.0 k	0.0 k	ASCE 12.7.2
			0.0 k		
			0.0 k		
		0 flr. sqft.	0.0 k		
			0.0 k	0.0 k	ASCE 12.7.2
			0.0 k		
			0.0 k		
		0 flr. sqft.	0.0 k		
			0.0 k	0.0 k	ASCE 12.7.2
1/2 OF 1ST WALL DEAD WEIGHT =	12 psf	1753/2 wall sqft.	10.5 k		
*1ST FLR. DEAD WEIGHT =***	20 psf	1773 flr. sqft.	35.5 k		
1ST FLR. STORAGE WEIGHT =	0 psf	0 flr. sqft.	0.0 k	46.0 k	ASCE 12.7.2
TOTAL WEIGHT =				83 k	

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**Add 1. floor dead load, 2. ceiling dead load from level below and 3. partition weight (10psf min) in large buildings (see ASCE 12.7.2.2)

Ss	=	0.410 g	V	=	5.144 kips**	
S1	=	0.105 g				
Fa	=	1.472	Cvr =	=	0.69	
Fv	=	2.380	Cv3 =	=	0.00	
Sds	=	0.402 g	Cv2 =	=	0.00	
Sd1	=	0.167 g	Cv1 =	=	0.00	
Cs	=	0.062	Cvf =	=	0.31	
R	=	6.500	ϱ (Redundancy)	=	1	S12.3.4.2
CAT	=	C				
S. Wt.	=	83 kips	Ie =	=	1.00	
Sms	=	0.604 g	Vy (Trans.)	=	5.14 kips	
Sm1	=	0.250 g	Vx (Long.)	=	5.14 kips	

*Fx = Cvx * V * ρ* 12.8-11 **ASD** Loading 0.7 applied S2.3, 2.4

SEISMIC SIDEWALL LOADING Total

wrs =	((0.7)(5.15)(1)(1000))/(56) =	45 plf	w1s =	((0)(5.15)(1)(1000))/(56) =	0 plf	
w3s =	((0)(5.15)(1)(1000))/(56) =	0 plf	wfs =	((0.31)(5.15)(1)(1000))/(56) =	20 plf	
w2s =	((0)(5.15)(1)(1000))/(56) =	0 plf				Base: 64 plf

SEISMIC ENDWALL LOADING

wrs =	((0.7)(5.15)(1)(1000))/(31.67) =	79 plf	w1s =	((0)(5.15)(1)(1000))/(31.67) =	0 plf	
w3s =	((0)(5.15)(1)(1000))/(31.67) =	0 plf	wfs =	((0.31)(5.15)(1)(1000))/(31.67) =	35 plf	
w2s =	((0)(5.15)(1)(1000))/(31.67) =	0 plf				Base: 114 plf

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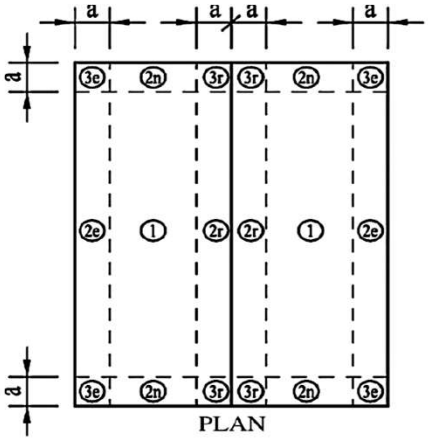
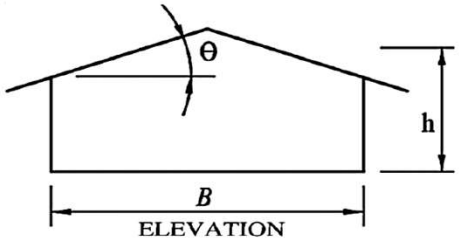
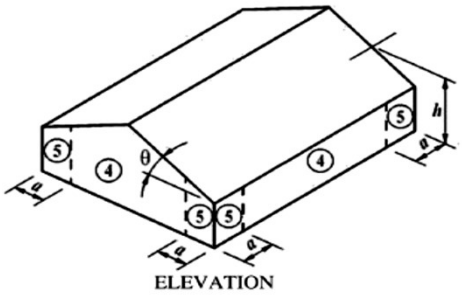
COMPONENT AND CLADDING LOAD DEVELOPMENT
ASCE CODE 7-16

MEAN ROOF HEIGHT (h) =	21 ft	WALL C+C EFFECTIVE AREA =	2 ft2
BUILDING TYPE:	Enclosed	INT. ROOF C+C EFFECTIVE AREA =	2 ft2
ROOF TYPE:	Gable	OH. ROOF C+C EFFECTIVE AREA =	2 ft2
ROOF PITCH, θ (deg) =	30.3	WIND SPEED =	115 mph
PITCH CATEGORY:	27 < θ ≤ 45	Qh =	26.3 psf
ZONE DIMENSION (a) =	3 ft	EXPOSURE:	C







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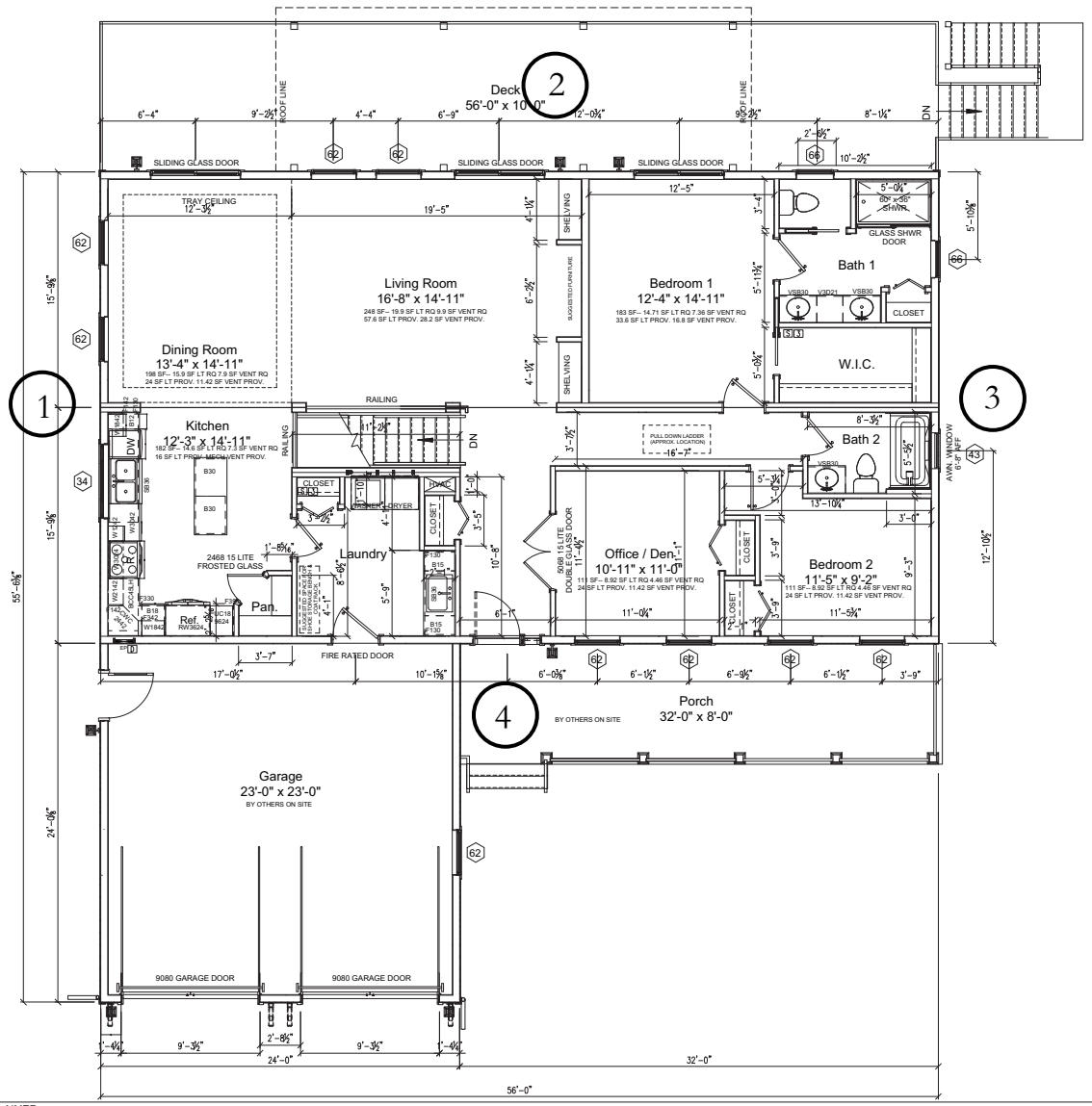
ASD Loading: 0.6 applied

C+C ZONE LOADS (all loads in psf)			
INTERIOR ZONE LOADS			OVERHANG LOADS
ZONE	(+) PRESSURE	(-) PRESSURE	
-	-	-	-
1	17.07	-31.30	-43.94
-	-	-	-
-	-	-	-
2e	17.07	-31.30	-43.94
2n	17.07	-34.46	-47.10
2r	17.07	-31.30	-43.94
-	-	-	-
-	-	-	-
3e	17.07	-53.42	-66.07
3r	17.07	-34.46	-47.10
4	18.65	-20.23	
5	18.65	-24.97	

NOTES:
1. C+C loading is inaccurate for open or partially open buildings, and roof pitches > 12/12.
2. Monoslope roof pitch must be < 30 deg.
3. Effective area of 10 sqft conservative for all applications.

SOFFIT PRESSURE	
Ps = Pw =	18.65

SHEARWALL LEGEND



NOTE:
MAIN ENTRANCE DOORS SHALL BE NOT LESS THAN 3'-0" WIDE. ALL OTHER EXTERIOR DOORS SHALL BE NOT LESS THAN 2'-8" WIDE. ALL INTERIOR DOORS WHICH PROVIDE ACCESS TO HABITABLE ROOMS SHALL NOT BE LESS THAN 2'-6" WIDE, CORRIDORS TO BEDROOMS SHALL BE 3'-0" (MIN.).

NOTE:
UP TO (2) 6'-0" X 6'-8" PATIO DOORS MAY BE SUBSTITUTED FOR (2) 2A WINDOWS WITH AN EXT. LIGHT AND CONTROLLING WALL SWITCH INSTALLED ON AN ADJACENT LIGHT CIRCUIT.
CEILING HEIGHT = 8'-0"
* = CLEARANCE REQUIRED BASED ON APPLICABLE N.E.C. 410.8 TO EDGE OF LIGHT FIXTURE.
☆- MARRIAGE WALL OPENINGS OF 4'-0" OR MORE REQUIRE PIER SUPPORT UNDER BOTH SIDES OF OPENINGS.
W.P. - LISTED FOR WET OR DAMP LOCATIONS.

NOTES:
DATA PLATE TO BE INSTALLED IN PANEL BOX
STATE AND THIRD PARTY LABELS TO BE INSTALLED AS LOCATE ON PLANS

NOTE:
FIRE EXTINGUISHER HAVING A RATING OF 2A: 10-B: C OR EQUIVALENT SHALL BE REQUIRED TO BE INSTALLED IN ALL KITCHEN AREAS FOR DWELLINGS WITHOUT SPRINKLER SYSTEMS PER APPLICABLE CODE.

NOTE:
REFER TO PAGE I-31 OF THE INSTALLATION MANUAL FOR DRYER VENT INSTALLATION.

NOTES:
ALL ASPECTS OF HEATING AND AIR CONDITIONING TO BE 100% ON SITE BY OTHERS.

NOTES:
ALL ASPECTS OF WHOLE-HOUSE MECHANICAL VENTILATION TO BE 100% ON SITE BY OTHERS, IN ACCORDANCE WITH LOCAL CODES.

[S] STATE LABEL
[3] 3RD PARTY LABEL
[D] DATA PLATE

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REVISION:	DATE:	BY:	REVISION:	DATE:	BY:

CUSTOMER/PROJECT:
ADDRESS:

IMPRESA BUILDING SYSTEMS of Greenwood SC, LLC

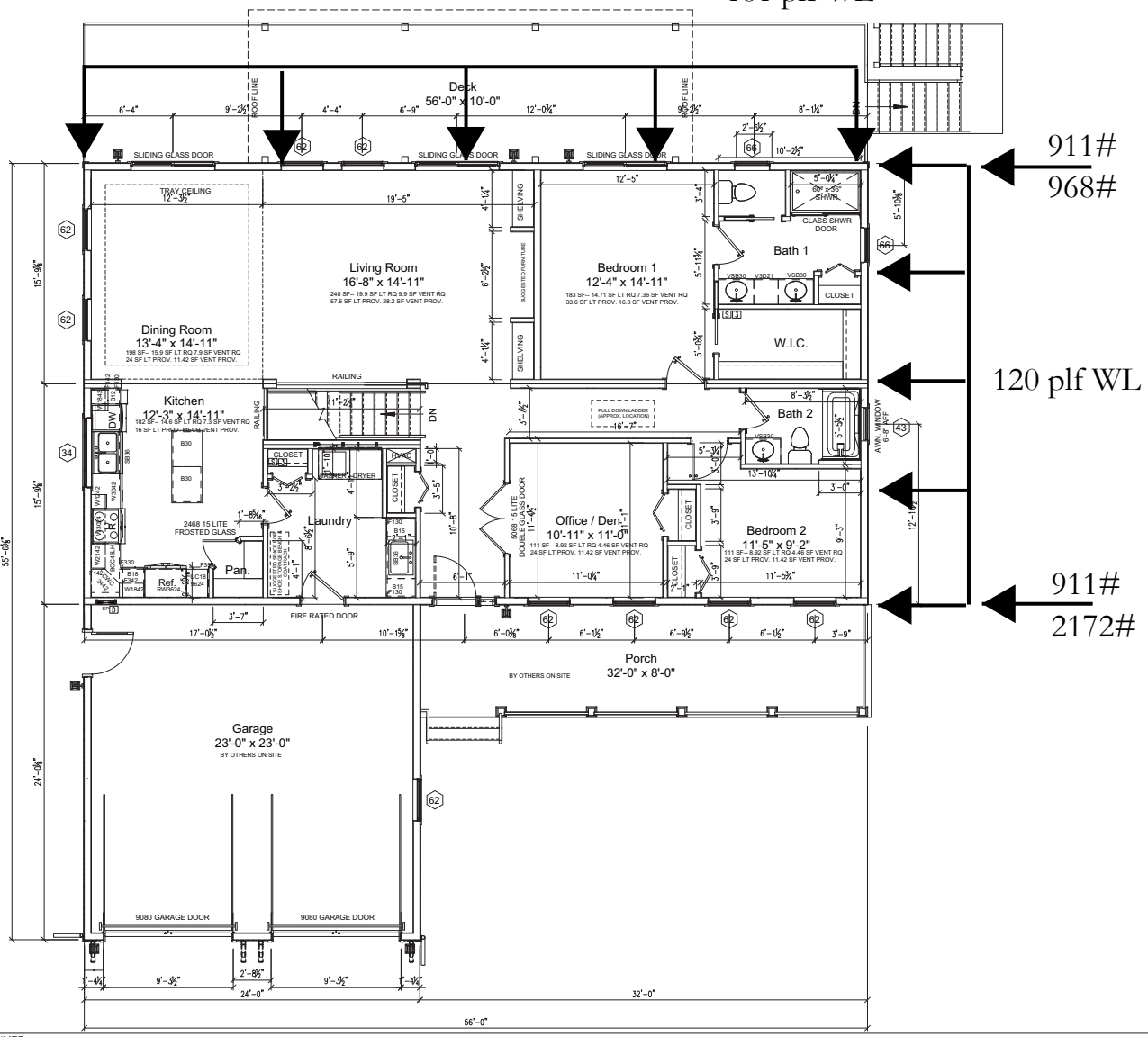
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
ISSUE DATE:	
PROJECT PHASE:	
PROJECT NUMBER:	
BOX NUMBER:	
SCALE:	1/8" = 1'-0"

FIRST FLOOR PLAN

SHEET: 4.2

DATE PRINTED

LATERAL LOADING



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CEILING HEIGHT = 8'-0"

* = CLEARANCE REQUIRED BASED ON APPLICABLE N.E.C. 410.8 TO EDGE OF LIGHT FIXTURE.

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[3] 3RD PARTY LABEL
[D] DATA PLATE

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REVISION: DATE: BY:
REVISION: DATE: BY:

CUSTOMER/PROJECT:
ADDRESS:

IMPRESA BUILDING SYSTEMS of Greenwood SC, LLC

DRAWN BY:
CHECKED BY:
APPROVED BY:
ISSUE DATE:
PROJECT PHASE:
PROJECT NUMBER:
BOX NUMBER:
SCALE: 1/8" = 1'-0"
FIRST FLOOR PLAN
SHEET: 4.2

DATE PRINTED

SHEARWALL LOADING

Number of Stories 1

1st LEVEL SHEARWALL LOADING

Number of Walls: 4

		Uniform	Tributary Distances		Point #1	Point #2	Point #3			
Wall	**1**	181 plf	56.00 ft					**1**	**5068 lb**	Wind Load
			/ 2					*Total Load = (181plf)(56ft/ 2)*		
		Uniform	Tributary Distances		Point #1	Point #2	Point #3			
Wall	**2**	120 plf	31.67 ft		911 lb	968 lb		**2**	**3779 lb**	Wind Load
			/ 2					*Total Load = (120plf)(31.67ft/ 2) + 911lb + 968lb*		
		Uniform	Tributary Distances		Point #1	Point #2	Point #3			
Wall	**3**	181 plf	56.00 ft					**3**	**5068 lb**	Wind Load
			/ 2					*Total Load = (181plf)(56ft/ 2)*		
		Uniform	Tributary Distances		Point #1	Point #2	Point #3			
Wall	**4**	120 plf	31.67 ft		911 lb	2172 lb		**4**	**4983 lb**	Wind Load
			/ 2					*Total Load = (120plf)(31.67ft/ 2) + 911lb + 2172lb*		

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SHEARWALL CALCULATIONS

PER ESR-1539 (01/2019) (use ASD loads)

CHECK WIND FASTEN SPACING/OSB OUT-OF-PLANE? YES

SHEAR LOAD TYPE: (3.5 to 1 for full value) Wind SHEAR WALL METHOD: Segmented

ENTER LENGTH OF FULL HEIGHT WALL SEGMENTS (DO NOT DOUBLE FOR SHEATHING BOTH SIDES):

SEGMENT 1:	3' 1"	SEGMENT 2:	3' 4"	SEGMENT 3:	5' 1"
SEGMENT 4:	8' 3"	SEGMENT 5:	0' 0"	SEGMENT 6:	0' 0"
SEGMENT 7:	0' 0"	SEGMENT 8:	0' 0"		
SUM OF SEGMENTS:	19' 9"	w/ ASPECT ADJ*:	19' 9"	AVE. SEGMENT:	4.94'

TOT. LENGTH OF WALL:	31' 8"		STUD TYPE:	SPF	
WALL HT. (h):	9' 0"		HORIZ. SHEATHING TO FRAMING?	NO	
MAX OPENING HT. (H):	6' 8"		FASTENER TYPE:	0.12	in Dia. Nail
STUD SPACING (S):	16.0 in o.c.		FASTENER LENGTH:	2.00	PEN. 1.56in
LOAD ON WALL (V):	5068 lb		SHEATHING TYPE:	Rated	
EST. TIE DOWN WIDTH?	YES	3.0 in	SHEATHING:	7/16	in
DOUBLE SHEATHING?	NO	(ply ONE side)	DIRECT TO FRAMING?	YES	
SHEAR LOAD (v):	257 plf	(per ply plane)	GRAVITY LOAD ON/IN WALL (D):	56 plf	

GYPSUM INCLUDED IN SHEAR ANALAYSIS: 1. None
(PER SDPWS 2005/2008 editions) Gyp? 1 0 plf

LOADING FACT. C_{LOAD}: 1

FRAMING FACT. C_{FRAME}: 0.92

ADD BOTTOM PLATE LENGTH BETWEEN OPENINGS (0 IS CONSERVATIVE): 0.00 ft

TOTAL BOTTOM-PLATE IN-PLANE SHEAR LENGTH: 19.75 ft

OSB wind pressure out-of-plane unity check

Bending 0.33	Shear 0.08	Deflection (L/120) 0.25	All values under unity		OK

Fastener spacing for suction

Zone 4	21 in max o.c.	Zone 5	17 in max o.c.	Suction field spacing 17in o.c.		OK

Segmented shearwall design

TOTAL (CUMULATIVE SHEATHING PLY) SHEAR WALL LOAD (vtot): 257 plf

Use 7/16" rated sheathing; direct to framing
PER ESR-1539 Table 8b = 262 plf
Fasten edges w/0.12 dia. x 2 in nails 6 in o.c.
Fasten field w/0.12 dia. x 2 in nails 12 in o.c.

SHEAR WALL NO. 1

Entire wall must be blocked (SDPWS Table 4.3.4) 262 plf >= 257 plf OK

MAX RACKING TENSION: 2400 LB
MAX RACKING COMPRESSION: 2600 LB

Base Plate Fastening

Out-of-plane shear base/top: 102 plf In-plane shear base plt: 257 plf Controlling shear in plate? 257 plf.

Bot face fasteners: (0.131) in diameter 8d nail 3.25 in long Allow load (w/ fact.): SPF (82 lb) (1.6) shear w/ 131 lb

Use (2) 8d (0.131) nails 3.25in long 12in o.c. from entire base plate to band.

*sum of segments adjusted for smaller shearwall aspect ratios. See SDPWS Table 4.3.4.

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SHEARWALL CALCULATIONS

PER ESR-1539 (01/2019) (use ASD loads)

CHECK WIND FASTEN SPACING/OSB OUT-OF-PLANE? YES

SHEAR LOAD TYPE: (3.5 to 1 for full value) Wind SHEAR WALL METHOD: Segmented

ENTER LENGTH OF FULL HEIGHT WALL SEGMENTS (DO NOT DOUBLE FOR SHEATHING BOTH SIDES):

SEGMENT 1:	3' 3"	SEGMENT 2:	4' 7"	SEGMENT 3:	5' 10"
SEGMENT 4:	4' 8"	SEGMENT 5:	6' 10"	SEGMENT 6:	0' 0"
SEGMENT 7:	0' 0"	SEGMENT 8:	0' 0"		
SUM OF SEGMENTS:	25' 2"	w/ ASPECT ADJ*:	25' 2"	AVE. SEGMENT:	5.03'

TOT. LENGTH OF WALL:	56' 0"		STUD TYPE:	SPF	
WALL HT. (h):	9' 0"		HORIZ. SHEATHING TO FRAMING?	NO	
MAX OPENING HT. (H):	6' 8"		FASTENER TYPE:	0.12	in Dia. Nail
STUD SPACING (S):	16.0 in o.c.		FASTENER LENGTH:	2.00	PEN. 1.56in
LOAD ON WALL (V):	3779 lb		SHEATHING TYPE:	Rated	
EST. TIE DOWN WIDTH?	YES	3.0 in	SHEATHING:	7/16	in
DOUBLE SHEATHING?	NO	(ply ONE side)	DIRECT TO FRAMING?	YES	
SHEAR LOAD (v):	150 plf	(per ply plane)	GRAVITY LOAD ON/IN WALL (D):	56 plf	

GYPSUM INCLUDED IN SHEAR ANALAYSIS: 1. None
(PER SDPWS 2005/2008 editions) Gyp? 1 0 plf

LOADING FACT. C_{LOAD}: 1

FRAMING FACT. C_{FRAME}: 0.92

ADD BOTTOM PLATE LENGTH BETWEEN OPENINGS (0 IS CONSERVATIVE): 0.00 ft
TOTAL BOTTOM-PLATE IN-PLANE SHEAR LENGTH: 25.17 ft

OSB wind pressure out-of-plane unity check

Bending 0.33	Shear 0.08	Deflection (L/120) 0.25	All values under unity		OK

Fastener spacing for suction

Zone 4	21 in max o.c.	Zone 5	17 in max o.c.	Suction field spacing 17in o.c.		OK

Segmented shearwall design

TOTAL (CUMULATIVE SHEATHING PLY) SHEAR WALL LOAD (vtot): 150 plf

Use 7/16" rated sheathing; direct to framing
PER ESR-1539 Table 8b = 262 plf
Fasten edges w/0.12 dia. x 2 in nails 6 in o.c.
Fasten field w/0.12 dia. x 2 in nails 12 in o.c.

SHEAR WALL NO. 2

Entire wall must be blocked (SDPWS Table 4.3.4) 262 plf >= 150 plf OK

MAX RACKING TENSION: 1400 LB
MAX RACKING COMPRESSION: 1600 LB

Base Plate Fastening

Out-of-plane shear base/top: 102 plf In-plane shear base plt: 150 plf Controlling shear in plate? 150 plf.

Bot face fasteners: (0.131) in diameter 8d nail 3.25 in long Allow load (w/ fact.): (82 lb) (1.6) SPF shear w/ 131 lb

Use (2) 8d (0.131) nails 3.25in long 12in o.c. from entire base plate to band.

*sum of segments adjusted for smaller shearwall aspect ratios. See SDPWS Table 4.3.4.

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SHEARWALL CALCULATIONS

PER ESR-1539 (01/2019) (use ASD loads)

CHECK WIND FASTEN SPACING/OSB OUT-OF-PLANE? YES

SHEAR LOAD TYPE: (3.5 to 1 for full value) Wind SHEAR WALL METHOD: Segmented

ENTER LENGTH OF FULL HEIGHT WALL SEGMENTS (DO NOT DOUBLE FOR SHEATHING BOTH SIDES):

SEGMENT 1:	4' 5"	SEGMENT 2:	8' 6"	SEGMENT 3:	11' 7"		
SEGMENT 4:	0' 0"	SEGMENT 5:	0' 0"	SEGMENT 6:	0' 0"		
SEGMENT 7:	0' 0"	SEGMENT 8:	0' 0"				
SUM OF SEGMENTS:	24' 6"	w/ ASPECT ADJ*:	24' 6"	AVE. SEGMENT:	8.17'		

TOT. LENGTH OF WALL:	31' 8"		STUD TYPE:	SPF	
WALL HT. (h):	9' 0"		HORIZ. SHEATHING TO FRAMING?	NO	
MAX OPENING HT. (H):	6' 8"		FASTENER TYPE:	0.12	in Dia. Nail
STUD SPACING (S):	16.0 in o.c.		FASTENER LENGTH:	2.00	PEN. 1.56in
LOAD ON WALL (V):	5068 lb		SHEATHING TYPE:	Rated	
EST. TIE DOWN WIDTH?	YES	3.0 in	SHEATHING:	7/16	in
DOUBLE SHEATHING?	NO	(ply ONE side)	DIRECT TO FRAMING?	YES	
SHEAR LOAD (v):	207 plf	(per ply plane)	GRAVITY LOAD ON/IN WALL (D):	56 plf	

GYPSUM INCLUDED IN SHEAR ANALAYSIS: 1. None
(PER SDPWS 2005/2008 editions) Gyp? 1 0 plf

LOADING FACT. C_{LOAD}: 1

FRAMING FACT. C_{FRAME}: 0.92

ADD BOTTOM PLATE LENGTH BETWEEN OPENINGS (0 IS CONSERVATIVE): 0.00 ft
TOTAL BOTTOM-PLATE IN-PLANE SHEAR LENGTH: 24.50 ft

OSB wind pressure out-of-plane unity check

Bending 0.33	Shear 0.08	Deflection (L/120) 0.25		All values under unity		OK

Fastener spacing for suction

Zone 4	21 in max o.c.	Zone 5	17 in max o.c.	Suction field spacing 17in o.c.		OK

Segmented shearwall design

TOTAL (CUMULATIVE SHEATHING PLY) SHEAR WALL LOAD (vtot): 207 plf

Use 7/16" rated sheathing; direct to framing
PER ESR-1539 Table 8b = 262 plf
Fasten edges w/0.12 dia. x 2 in nails 6 in o.c.
Fasten field w/0.12 dia. x 2 in nails 12 in o.c.

SHEAR WALL NO. 3

Entire wall must be blocked (SDPWS Table 4.3.4) 262 plf >= 207 plf OK

MAX RACKING TENSION: 1900 LB
MAX RACKING COMPRESSION: 2200 LB

Base Plate Fastening

Out-of-plane shear base/top: 102 plf In-plane shear base plt: 207 plf Controlling shear in plate? 207 plf.

Bot face fasteners: (0.131) in diameter 8d nail 3.25 in long Allow load (w/ fact.): SPF (82 lb) (1.6) shear w/ 131 lb

Use	**(2)**	**8d (0.131) nails 3.25in long 12in o.c. from entire base plate to band.**

*sum of segments adjusted for smaller shearwall aspect ratios. See SDPWS Table 4.3.4.

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SHEARWALL CALCULATIONS

PER ESR-1539 (01/2019) (use ASD loads)

CHECK WIND FASTEN SPACING/OSB OUT-OF-PLANE? YES

SHEAR LOAD TYPE: (3.5 to 1 for full value) Wind SHEAR WALL METHOD: Segmented

ENTER LENGTH OF FULL HEIGHT WALL SEGMENTS (DO NOT DOUBLE FOR SHEATHING BOTH SIDES):

SEGMENT 1:	15' 3"	SEGMENT 2:	6' 1"	SEGMENT 3:	2' 11"
SEGMENT 4:	3' 8"	SEGMENT 5:	3' 0"	SEGMENT 6:	0' 0"
SEGMENT 7:	0' 0"	SEGMENT 8:	0' 0"		
SUM OF SEGMENTS:	30' 11"	w/ ASPECT ADJ*:	30' 11"	AVE. SEGMENT:	6.18'

TOT. LENGTH OF WALL:	56' 0"		STUD TYPE:	SPF	
WALL HT. (h):	9' 0"		HORIZ. SHEATHING TO FRAMING?	NO	
MAX OPENING HT. (H):	6' 8"		FASTENER TYPE:	0.12	in Dia. Nail
STUD SPACING (S):	16.0 in o.c.		FASTENER LENGTH:	2.00	PEN. 1.56in
LOAD ON WALL (V):	4983 lb		SHEATHING TYPE:	Rated	
EST. TIE DOWN WIDTH?	YES	3.0 in	SHEATHING:	7/16	in
DOUBLE SHEATHING?	NO	(ply ONE side)	DIRECT TO FRAMING?	YES	
SHEAR LOAD (v):	161 plf	(per ply plane)	GRAVITY LOAD ON/IN WALL (D):	56 plf	

GYPSUM INCLUDED IN SHEAR ANALAYSIS: 1. None
(PER SDPWS 2005/2008 editions)

Gyp?	
1	0 plf

LOADING FACT. C_{LOAD}: 1

FRAMING FACT. C_{FRAME}: 0.92

ADD BOTTOM PLATE LENGTH BETWEEN OPENINGS (0 IS CONSERVATIVE): 0.00 ft

TOTAL BOTTOM-PLATE IN-PLANE SHEAR LENGTH: 30.92 ft

OSB wind pressure out-of-plane unity check

Bending 0.33	Shear 0.08	Deflection (L/120) 0.25	All values under unity		OK

Fastener spacing for suction

Zone 4	21 in max o.c.	Zone 5	17 in max o.c.	Suction field spacing 17in o.c.		OK

Segmented shearwall design

TOTAL (CUMULATIVE SHEATHING PLY) SHEAR WALL LOAD (vtot): 161 plf

Use 7/16" rated sheathing; direct to framing
PER ESR-1539 Table 8b = 262 plf
Fasten edges w/0.12 dia. x 2 in nails 6 in o.c.
Fasten field w/0.12 dia. x 2 in nails 12 in o.c.

SHEAR WALL NO. 4

Entire wall must be blocked (SDPWS Table 4.3.4) 262 plf >= 161 plf OK

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MAX RACKING TENSION: 1500 LB
MAX RACKING COMPRESSION: 1900 LB

Base Plate Fastening

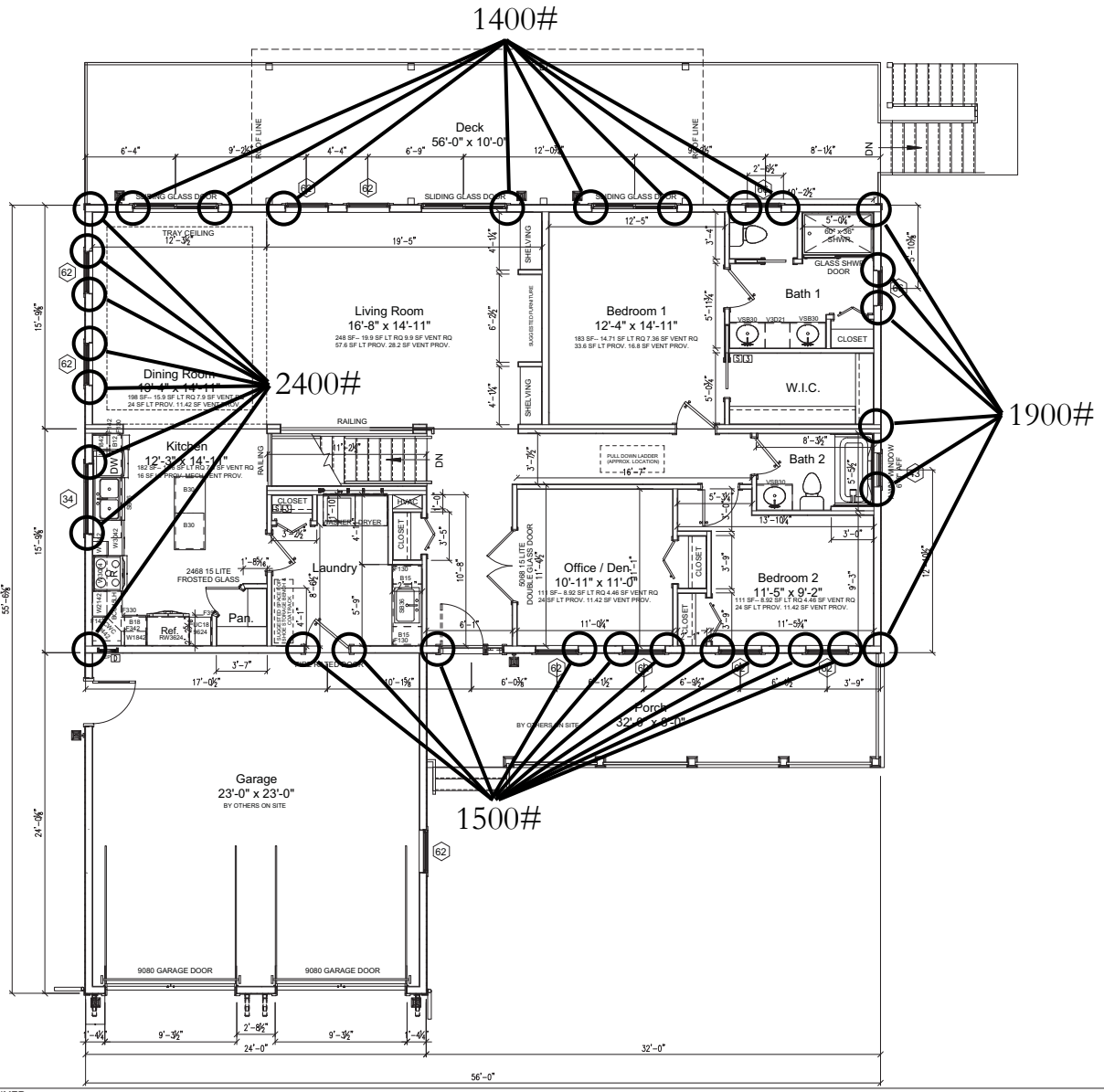
Out-of-plane shear base/top: 102 plf In-plane shear base plt: 161 plf Controlling shear in plate? 161 plf. SPF shear w/

Bot face fasteners: (0.131) in diameter 8d nail 3.25 in long Allow load (w/ fact.): (82 lb) (1.6) 131 lb

Use (2) 8d (0.131) nails 3.25in long 12in o.c. from entire base plate to band.

*sum of segments adjusted for smaller shearwall aspect ratios. See SDPWS Table 4.3.4.

SHEARWALL RACKING TIE DOWNS



NOTE:
MAIN ENTRANCE DOORS SHALL BE NOT LESS THAN 3'-0" WIDE. ALL OTHER EXTERIOR DOORS SHALL BE NOT LESS THAN 2'-8" WIDE. ALL INTERIOR DOORS WHICH PROVIDE ACCESS TO HABITABLE ROOMS SHALL NOT BE LESS THAN 2'-6" WIDE, CORRIDORS TO BEDROOMS SHALL BE 3'-0" (MIN.).

NOTE:
UP TO (2) 6'-0" X 6'-8" PATIO DOORS MAY BE SUBSTITUTED FOR (2) 2A WINDOWS WITH AN EXT. LIGHT AND CONTROLLING WALL SWITCH INSTALLED ON AN ADJACENT LIGHT CIRCUIT.

CEILING HEIGHT = 8'-0"

* = CLEARANCE REQUIRED BASED ON APPLICABLE N.E.C. 410.8 TO EDGE OF LIGHT FIXTURE.

☆- MARRIAGE WALL OPENINGS OF 4'-0" OR MORE REQUIRE PIER SUPPORT UNDER BOTH SIDES OF OPENINGS.

W.P. - LISTED FOR WET OR DAMP LOCATIONS.

NOTES:
DATA PLATE TO BE INSTALLED IN PANEL BOX

STATE AND THIRD PARTY LABELS TO BE INSTALLED AS LOCATE ON PLANS

NOTE:
FIRE EXTINGUISHER HAVING A RATING OF 2A: 10-B: C OR EQUIVALENT SHALL BE REQUIRED TO BE INSTALLED IN ALL KITCHEN AREAS FOR DWELLINGS WITHOUT SPRINKLER SYSTEMS PER APPLICABLE CODE.

NOTE:
REFER TO PAGE I-31 OF THE INSTALLATION MANUAL FOR DRYER VENT INSTALLATION.

NOTES:
ALL ASPECTS OF HEATING AND AIR CONDITIONING TO BE 100% ON SITE BY OTHERS.

NOTES:
ALL ASPECTS OF WHOLE-HOUSE MECHANICAL VENTILATION TO BE 100% ON SITE BY OTHERS, IN ACCORDANCE WITH LOCAL CODES.

[S] STATE LABEL
[3] 3RD PARTY LABEL
[D] DATA PLATE

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NTA
1/31/2022

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REVISION:	DATE:	BY:	REVISION:	DATE:	BY:

CUSTOMER/PROJECT:

ADDRESS:

IMPRESA BUILDING SYSTEMS of Greenwood SC, LLC

DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
ISSUE DATE:	
PROJECT PHASE:	
PROJECT NUMBER:	
BOX NUMBER:	
SCALE:	1/8" = 1'-0"

FIRST FLOOR PLAN

SHEET: 4.2

DATE PRINTED

Building System Engineering, LLC
247 Haddington Lane Greenville, Sc 29609
(864) 558-0827 wfultz@bseng.org

Shearwall Tie-Down Load Notice

The circles on the shearwall tie-down pages indicated the tie-down loads from the end of segment locations that must be strapped down. There are two types of circles:

◯ This "clear" circle means that a strap must extend from the shearwall stud column/chord on the current level to the floor band/girder.

● This "dark" circle means that a strap must extend from the shearwall stud column/chord on the current level to a stud column on the level below OR to the foundation. The strap must bypass the band/girder OR break over the band and have another strap extend from the band to the level/foundation below. **Summary: this must be a continuous tie-down from the current level to the foundation.**

□ This square means that a strap must extend from the floor band/girder on the current level to a stud column on the level below OR to the foundation. **Summary: this must be a continuous tie-down from the current level floor band to the foundation.**

NOTE: The above is one means to install the straps. In ALL cases, the straps may simply be installed on-site from the column to the foundation. If this is done, then the straps are not required to be installed by the modular manufacture.

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1/31/2022
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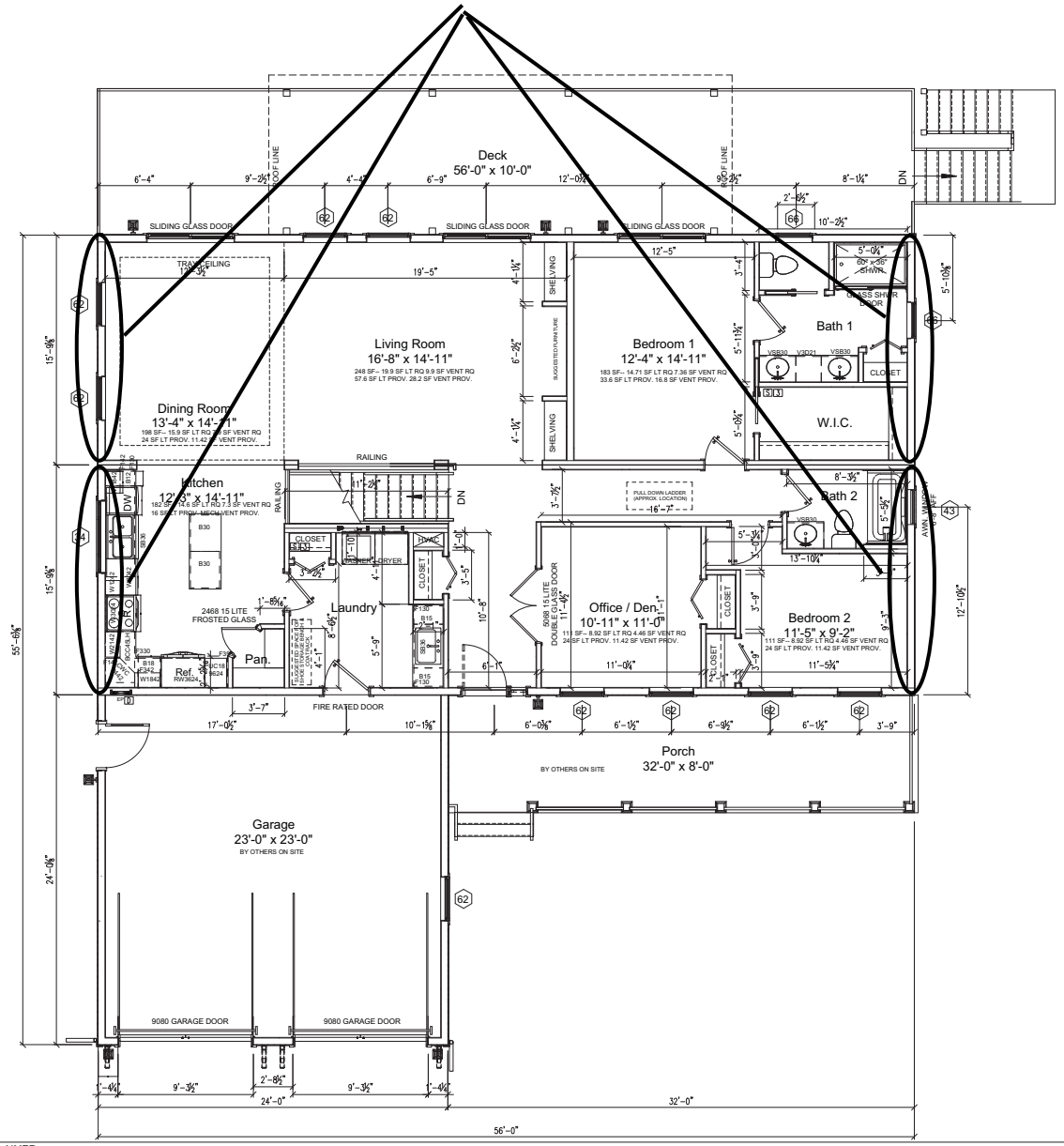
Civil and Structural Engineering for the Modular Industry in the following states:
WV VA MD TN KY NC SC GA FL MS AL LA TX PA NY AR

ENDWALL BAND LEGEND

ENDWALL BAND EB1-1



NOTE:
MAIN ENTRANCE DOORS SHALL BE NOT LESS THAN 3'-0" WIDE. ALL OTHER EXTERIOR DOORS SHALL BE NOT LESS THAN 2'-8" WIDE. ALL INTERIOR DOORS WHICH PROVIDE ACCESS TO HABITABLE ROOMS SHALL NOT BE LESS THAN 2'-6" WIDE, CORRIDORS TO BEDROOMS SHALL BE 3'-0" (MIN.).

NOTE:
UP TO (2) 6'-0" X 6'-8" PATIO DOORS MAY BE SUBSTITUTED FOR (2) 2A WINDOWS WITH AN EXT. LIGHT AND CONTROLLING WALL SWITCH INSTALLED ON AN ADJACENT LIGHT CIRCUIT.
CEILING HEIGHT = 8'-0"
* = CLEARANCE REQUIRED BASED ON APPLICABLE N.E.C. 410.8 TO EDGE OF LIGHT FIXTURE.
☆- MARRIAGE WALL OPENINGS OF 4'-0" OR MORE REQUIRE PIER SUPPORT UNDER BOTH SIDES OF OPENINGS.
W.P. – LISTED FOR WET OR DAMP LOCATIONS.

NOTES:
DATA PLATE TO BE INSTALLED IN PANEL BOX
STATE AND THIRD PARTY LABELS TO BE INSTALLED AS LOCATE ON PLANS

NOTE:
FIRE EXTINGUISHER HAVING A RATING OF 2A: 10–B: C OR EQUIVALENT SHALL BE REQUIRED TO BE INSTALLED IN ALL KITCHEN AREAS FOR DWELLINGS WITHOUT SPRINKLER SYSTEMS PER APPLICABLE CODE.

NOTE:
REFER TO PAGE I–31 OF THE INSTALLATION MANUAL FOR DRYER VENT INSTALLATION.

NOTES:
ALL ASPECTS OF HEATING AND AIR CONDITIONING TO BE 100% ON SITE BY OTHERS.

NOTES:
ALL ASPECTS OF WHOLE–HOUSE MECHANICAL VENTILATION TO BE 100% ON SITE BY OTHERS, IN ACCORDANCE WITH LOCAL CODES.

[S] STATE LABEL
[3] 3RD PARTY LABEL
[D] DATA PLATE

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REVISION: | DATE: | BY:
REVISION: | DATE: | BY:

CUSTOMER/PROJECT:
ADDRESS:

IMPRESA BUILDING SYSTEMS of Greenwood SC, LLC

DRAWN BY:
CHECKED BY:
APPROVED BY:
ISSUE DATE:
PROJECT PHASE:
PROJECT NUMBER:
BOX NUMBER:
SCALE: 1/8" = 1'-0"
FIRST FLOOR PLAN
SHEET: 4.2

DATE PRINTED

WoodWorks® SOFTWARE FOR WOOD DESIGN	COMPANY Jan. 5, 2022 16:08	PROJECT Endwall Band EB1-1

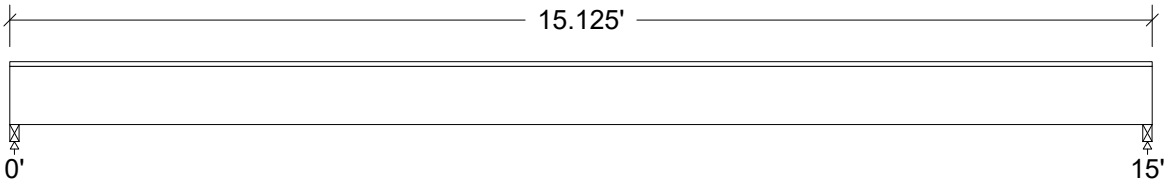
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 4)

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Wind	Point		3.17		4000		lbs
Load2	Wind	Point		6.17		-4000		lbs
Load3	Wind	Point		9.50		4000		lbs
Load4	Wind	Point		12.50		-4000		lbs
Self-weight	Dead	Full UDL				7.2		plf

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	54		54
Wind	1600		-1600
Factored:			
Uplift			-928
Total	992		54
Bearing:			
Capacity			
Beam	2542		2542
Support	2152		2152
Des ratio			
Beam	0.40		0.02
Support	0.47		0.03
Load comb	#2		#1
Length	1.50*		1.50*
Min req'd	1.50*		1.50*
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.13		1.13
Fcp sup	425		425

*Minimum bearing length setting used: 1-1/2" for end supports

Lumber n-ply, S. Pine, No.2, 2x10, 2-ply (3"x9-1/4")

Supports: All - Lumber n-ply Beam, S-P-F No.1/No.2

Total length: 15.13'; Clear span: 14.875'; Volume = 2.9 cu.ft.

Lateral support: top = continuous, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 80	Fv' = 280	psi	fv/Fv' = 0.29
Bending(+)	fb = 874	Fb' = 1280	psi	fb/Fb' = 0.68
Live Defl'n	0.08 = < L/999	0.50 = L/360	in	0.17
Total Defl'n	0.11 = < L/999	0.75 = L/240	in	0.15

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	175	1.60	1.00	1.00	-	-	-	-	1.00	1.00	3
Fb'+	750	1.60	1.00	1.00	1.000	1.067	-	1.00	1.00	1.00	3
Fcp'	565	-	1.00	1.00	-	-	-	-	1.00	1.00	-
E'	1.4 million		1.00	1.00	-	-	-	-	1.00	1.00	2
Emin'	0.51 million		1.00	1.00	-	-	-	-	1.00	1.00	2

CRITICAL LOAD COMBINATIONS:

```
 Shear     : LC #3  = D + 0.6W
 Bending(+): LC #3  = D + 0.6W
 Deflection: LC #2  = 0.6D + 0.6W  (live)
             LC #3  = D + 0.6W  (total)
 Bearing   : Support 1 - LC #2 = 0.6D + 0.6W
             Support 2 - LC #1 = D only
             Support 2 - LC #2 = 0.6D + 0.6W
 W=wind
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-16 2.4 / IBC 2018 1605.3.1
```

CALCULATIONS:

```
 V max = 1485, V design = 1485 lbs; M(+) = 3116 lbs-ft
   EIy = 138.50 lb-in^2/ply
 "Live" deflection is due to all non-dead loads (live, wind, snow…)
 Total deflection = 1.5 dead + "live"
```

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2018) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.
4. BUILT-UP BEAMS: it is assumed that each ply is a single continuous member (that is, no butt joints are present) fastened together securely at intervals not exceeding 4 times the depth and that each ply is equally top-loaded. Where beams are side-loaded, special fastening details may be required.
5. FIRE RATING: Joists, wall studs, and multi-ply members are not rated for fire endurance.
6. Also compliant with the ASCE 7-10 and 2015 NDS.
7. Total ply shown. Interconnect.

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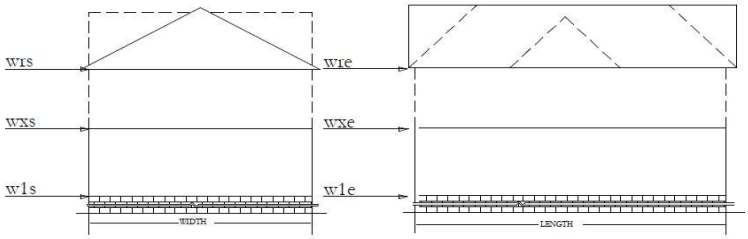
IM-Lake Spring Home-SC

SLIDING AND OVERTURNING
PER ASCE 7 (use ASD loads)

WIDTH: 31.67 ft | TOTAL HEIGHT: 26.08 ft | BOXES WIDE: 2
LENGTH: 56.00 ft | PITCH: 7/12 | WIND SPEED: 115 MPH
ENDZONE: 3.17 ft
STORIES ----------> 1



60% of structure min. dead weight for calcs

ROOF	32.7 kips	x.6 =	19.6 kips	20 kips
4TH	0.0 kips	x.6 =	0.0 kips	20 kips
3RD	0.0 kips	x.6 =	0.0 kips	20 kips
2ND	0.0 kips	x.6 =	0.0 kips	20 kips
1ST	23.9 kips	x.6 =	14.3 kips	34 kips
Total =	57 kips	x.6 =		34 kips

WIND LOADING

ON SIDEWALL	ON ENDWALL		
wrs = 181 PLF	wre = 120 PLF	Zone E+G (Trans):	6.3 psf
w4s = 0 PLF	w4e = 0 PLF	Zone F+H (Trans):	-9.8 psf
w3s = 0 PLF	w3e = 0 PLF		
w2s = 0 PLF	w2e = 0 PLF	Zone E+G (Long):	-14.4 psf
w1s = 76 PLF	w1e = 60 PLF	Zone F+H (Long):	-9.0 psf

SEISMIC LOADING

ON SIDEWALL	ON ENDWALL	HEIGHT
wrs = 45 PLF	wre = 79 PLF	16.8 ft
w4s = 0 PLF	w4e = 0 PLF	0.0 ft
w3s = 0 PLF	w3e = 0 PLF	0.0 ft
w2s = 0 PLF	w2e = 0 PLF	0.0 ft
w1s = 20 PLF	w1e = 35 PLF	6.0 ft

Pressure under building (MWFRS, pos. for up) =	0.0 psf	Max distance from either endwall for interior (applied all levels) =	56 ft
Wind load from dormers (total) =	1822 lb	MWFRS truss sidewall uplift: actual, estimate or ignore?	Estimate
Sliding friction coefficient	0.3		
Count full dead load for endwall sliding?	N	Est. interior uplift for 115 MPH is	79 plf
Interior shearwall from left plan end (0 for NA)=	0 ft	Total truss uplift value used (dead weight of truss accounted for):	79 plf

For results below, positive (+) indicates moment/shear connection needed, negative value (-) indicates dead load > applied.

LONGITUDINAL LOAD SLIDING, TRANSVERSE LOAD OVERTURNING (CONNECTIONS FOR SIDEWALLS)

1st W. Mom. (181plf(11ft)+0plf(-6ft)+0plf(-6ft)+0plf(-6ft)+0plf(-6ft)+-6.3psf(31.7ft/2)(3x31.7ft/4)+9.8psf(31.7ft/2)(31.7ft/4)-(33964lb/56ft)(31.7ft/2))/31.7ft+0psf(31.7ft/4) → **15 lb/ft**

1st W. Shear 120plf(31.7ft/2)/56ft +0plf(31.7ft/2)/56ft+0plf(31.7ft/2)/56ft+0plf(31.7ft/2)/56ft+60plf(31.7ft/2)/56ft+(1822lb/2)/56ft -33964lb(0.3/4)/56ft → **22 lb/ft**

1st S. Mom. (45plf(11ft)+0plf(-6ft)+0plf(-6ft)+0plf(-6ft)-(33964lb/56ft)(31.7ft/2))/31.7ft → **-288 lb/ft**

1st S. Shear 79plf(31.7ft/2)/56ft +0plf(31.7ft/2)/56ft+0plf(31.7ft/2)/56ft+0plf(31.7ft/2)/56ft+35plf(31.7ft/2)/56ft -33964lb(0.3/4)/56ft → **-13 lb/ft**

TRANSVERSE LOAD SLIDING, LONGITUDINAL LOAD OVERTURNING (CONNECTIONS FOR ENDWALLS)

1st W. Mom. (120plf(11ft)+0plf(-6ft)+0plf(-6ft)+0plf(-6ft)+14.4psf(56ft/2)(3x56ft/4)+9psf(56ft/2)(56ft/4)+58plf(11ft)-(33964lb/31.7ft)(56ft/2))/56ft → **0 lb/ft**

1st W. Shear (1)181plf(56ft/2)/31.7ft +0plf(56ft/2)/31.7ft+0plf(56ft/2)/31.7ft+0plf(56ft/2)/31.7ft+76plf(56ft/2)/31.7ft+(1822lb/2)/31.7ft -7600lb(0.3/4)/31.7ft → **237 lb/ft**

1st S. Mom. (79plf(11ft)+0plf(-6ft)+0plf(-6ft)+0plf(-6ft)-(33964lb/31.7ft)(56ft/2))/56ft → **0 lb/ft**

1st S. Shear (1)45plf(56ft/2)/31.7ft +0plf(56ft/2)/31.7ft+0plf(56ft/2)/31.7ft+0plf(56ft/2)/31.7ft+20plf(56ft/2)/31.7ft -7600lb(0.3/4)/31.7ft → **39 lb/ft**

SLIDING AND OVERTURNING
PER ASCE 7 (ASD loads only)

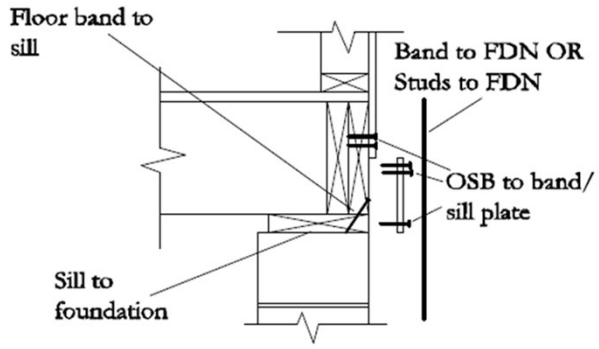
ALL SHEAR VALUES HAVE 1.6 **FACTOR, UPLIFT IS** 1.6
ALL LOADS MUST BE ENTERED POSITIVE (0 IF NO LOAD)

Blank

Blank

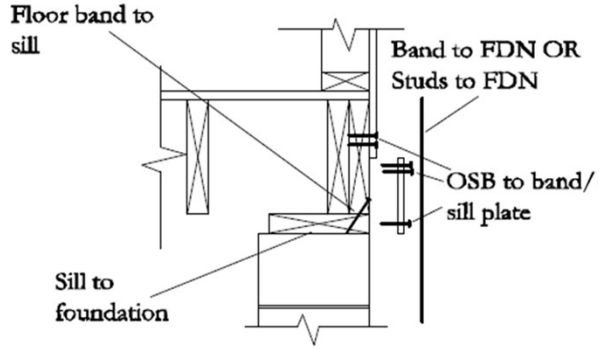
NOTE: 10d (.148) x 3.5" nails may be used for 16d nails shown below.

Sidewall to Foundation (below)



SWFDN_B	Uplift Load: 15plf	Shear Load: 22plf		
		Spacing	*plf*	
Floor band to sill				
Use (1) 16d (.162) x 3.5" toe-nail. Space		12.0"oc	159	Shear
OSB to bands/sill plate				
Use 7-8" min. OSB strip w/ (1) 8d (.131) x 2" nail spaced		3.0"oc		
staggered. OSB must extend at least 3" onto band(s)			384	Uplift
Sill to foundation (FDN)				
By others PER code requirement or FDN engineer				
Sill must be designed to carry loads, ELSE straps to FDN required				
-				
		-		
		-	-	-

Endwall to Foundation (below)



EWFDN_B	Uplift Load: 0plf	Shear Load: 237plf		
		Spacing	*plf*	
Floor band to sill				
Use (1) 16d (.162) x 3.5" toe-nail. Space		8.0"oc	239	Shear
OSB to bands/sill plate				
Use 7-8" min. OSB strip w/ (1) 8d (.131) x 2" nail spaced		3.0"oc		
staggered. OSB must extend at least 3" onto band(s)			384	Uplift
Sill to foundation (FDN)				
By others PER code requirement or FDN engineer				
Sill must be designed to carry loads, ELSE straps to FDN required				
-				
		-		
		-	-	-

NOTE: for "OSB to bands/sill plate" connections above, the 8d (.131) x 2" nails may be sustituted for (.120) x 2" nails (same as the shearwalls)

Building System Engineering, LLC IM-Lake Spring Home-SC William E. Fultz, PE
(803) 892-6006

DIAPHRAGM CALCULATIONS DIAPHRAGM METHOD TYPE: Simple
PER ESR-1539 (01/2019) (must use ASD loads)

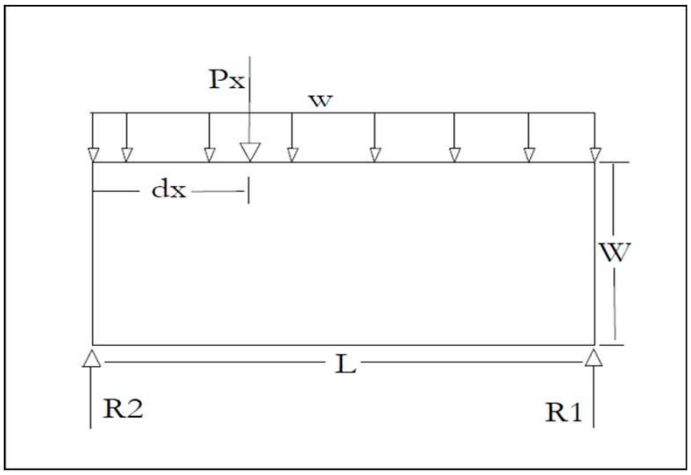
DIAPHRAGM LOCATION:	Roof	CHECK SUCTION FOR FASTENER SPACING?	YES
SHEAR LOAD TYPE:	Wind	ENTER DIAPHRAGM WIDTHS (W):	31' 6"
ENTER DIA.UNIFORM LOAD (w):	181 plf	ENTER DIA. LENGTH (L):	56' 0"

ENTER DIAPHRAGM POINT LOADS AND DISTANCE FROM LEFT END (BELOW):

P1	d1	P2	d2	P3	d3
0 lb	0.00 ft	0 lb	0.00 ft	0 lb	0.00 ft

FRAMING SPACING:	24.0 in o.c.	
FRAMING TYPE:	SPF	
DIRECT TO FRAMING?	YES	
2IN FRAMING USED?	YES	
LOADING FACTOR C_{LOAD}:	1	
FRAMING FACTOR C_{FRAME}:	0.82	
FASTENER TYPE:	16	ga Staple
FASTENER LENGTH:	1.50	1.06in
SHEATHING TYPE:	Rated	
SHEATHING:	7/16	in

CHECK CEILING DIAPHRAGM?	NO



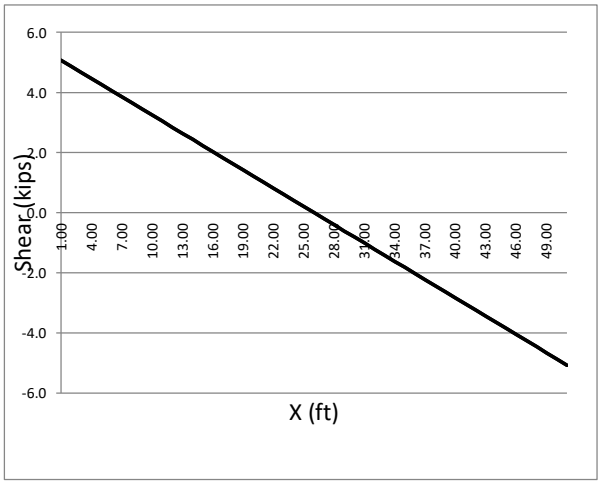
OSB wind pressure out-of-plane unity check

Bending 0.64	Shear 0.34	Deflection (L/120) 0.54	All values under unity	OK

NOTE: DIAPHRAGM SHEATHING MUST BE INSTALLED LONG DIMENSION ACROSS TOP-CHORDS/JOISTS.

R2 =	5068 lb	MAX MOMENT =	70952 lb-ft	SHEAR =	5068 lb	SHEAR R (W) =	161 plf
R1 =	5068 lb	CHORD TENSION =	2252 lb*	SHEAR F1 =	0 lb	SHEAR F1 (L) =	0 plf
				SHEAR F2 =	0 lb	SHEAR F2 (L) =	0 plf

*Strap/Block across vertical 2x6" (min) SYP No.2 fascia joint for tension load shown



BLOCKED[1]

APPROVED BY NTA 1/31/2022

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NO NOTES ON SHEAR BLOCKING

UNBLOCKED[1,3]

FOR 7/16" Rated; 2in Framing
PER ESR-1539 Table 6b = 172.2 plf
Fasten edges w/16 ga x 1.5 in staples 6 in o.c.
Fasten field w/16 ga x 1.5 in staples 6 in o.c.
Fasten boundary w/16 ga x 1.5 in staples 6 in o.c.
Fastener spacing for suction (below)

172 plf	>=	161 plf

DIAPHRAGM **ROOF**

1. TIGHTEN FASTENER SPACING TO NO LESS THAN SHOWN ON FASTENER SPACING FOR SUCTION

2. CONSIDER OPEN OVERHANG FOR SUCTION PRESSURES AND SHEATHING? YES

3. MAKE MANUAL NOTE: DIAPHRAGMS OVER 3:1 RATIO NEED BLOCKING AT END REMAINDERS

SIMPLIFIED FASTENER SPACING

Zone*	Field	Overhang
All 2's	5 in o.c.	4 in o.c.
All 3's	3 in o.c.	3 in o.c.

DETAILED FASTENER SPACING

Zone*	Field	Overhang
-	-	-
-	-	-
2e	6 in o.c.	4 in o.c.
2n	5 in o.c.	4 in o.c.
2r	6 in o.c.	4 in o.c.
-	-	-
-	-	-
3e	3 in o.c.	3 in o.c.
3r	5 in o.c.	4 in o.c.

OPTION #1

*NOTE: Refer to "Component & Cladding" for zone positions.

Building System Engineering, LLC IM-Lake Spring Home-SC William E. Fultz, PE
(803) 892-6006

DIAPHRAGM CALCULATIONS DIAPHRAGM METHOD TYPE: Simple
PER ESR-1539 (01/2019) (must use ASD loads)

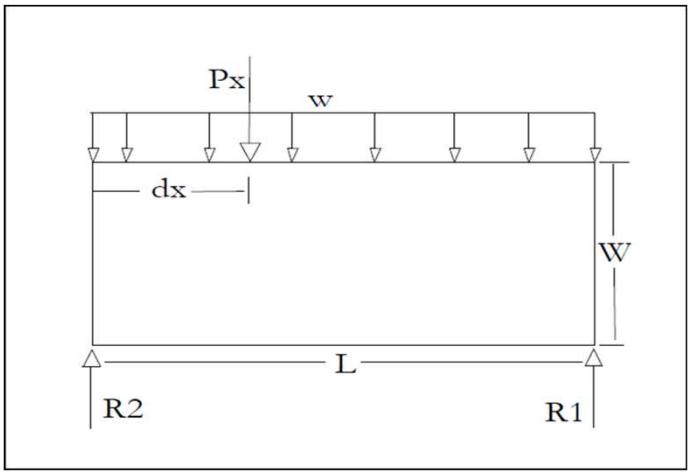
DIAPHRAGM LOCATION:	Roof	CHECK SUCTION FOR FASTENER SPACING?	YES
SHEAR LOAD TYPE:	Wind	ENTER DIAPHRAGM WIDTHS (W):	31' 6"
ENTER DIA.UNIFORM LOAD (w):	181 plf	ENTER DIA. LENGTH (L):	56' 0"

ENTER DIAPHRAGM POINT LOADS AND DISTANCE FROM LEFT END (BELOW):

P1	d1	P2	d2	P3	d3
0 lb	0.00 ft	0 lb	0.00 ft	0 lb	0.00 ft

FRAMING SPACING:	24.0 in o.c.	
FRAMING TYPE:	SPF	
DIRECT TO FRAMING?	YES	
2IN FRAMING USED?	YES	
LOADING FACTOR C_{LOAD}:	1	
FRAMING FACTOR C_{FRAME}:	0.92	
FASTENER TYPE:	0.12	in Dia. Nail
FASTENER LENGTH:	2.00	1.56in
SHEATHING TYPE:	Rated	
SHEATHING:	7/16	in

CHECK CEILING DIAPHRAGM?	NO



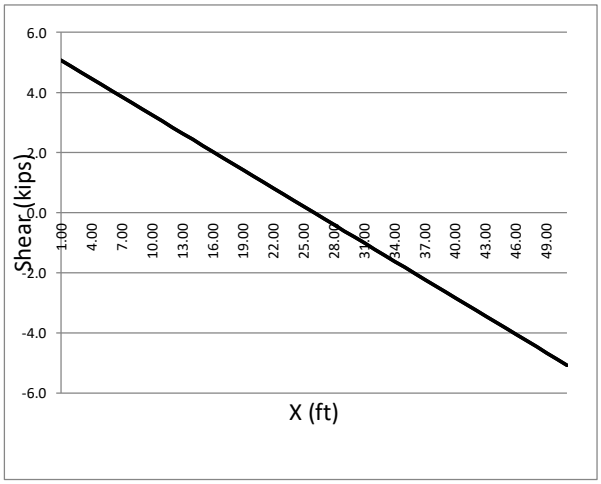
OSB wind pressure out-of-plane unity check

Bending 0.64	Shear 0.34	Deflection (L/120) 0.54	All values under unity		OK

NOTE: DIAPHRAGM SHEATHING MUST BE INSTALLED LONG DIMENSION ACROSS TOP-CHORDS/JOISTS.

R2 =	5068 lb	MAX MOMENT =	70952 lb-ft	SHEAR =	5068 lb	SHEAR R (W) =	161 plf
R1 =	5068 lb	CHORD TENSION =	2252 lb*	SHEAR F1 =	0 lb	SHEAR F1 (L) =	0 plf
				SHEAR F2 =	0 lb	SHEAR F2 (L) =	0 plf

*Strap/Block across vertical 2x6" (min) SYP No.2 fascia joint for tension load shown



BLOCKED[1]

NO NOTES ON SHEAR BLOCKING

UNBLOCKED[1,3]

FOR 7/16" Rated; 2in Framing
PER ESR-1539 Table 6b = 248.4 plf
Fasten edges w/0.12 dia. x 2 in nails 6 in o.c.
Fasten field w/0.12 dia. x 2 in nails 9 in o.c.
Fasten boundary w/0.12 dia. x 2 in nails 6 in o.c.
Fastener spacing for suction (below)

248 plf	>=	161 plf

DIAPHRAGM **ROOF**

SIMPLIFIED FASTENER SPACING

Zone*	Field	Overhang
All 2's	8 in o.c.	6 in o.c.
All 3's	5 in o.c.	4 in o.c.

DETAILED FASTENER SPACING

Zone*	Field	Overhang
-	-	-
-	-	-
2e	9 in o.c.	6 in o.c.
2n	8 in o.c.	6 in o.c.
2r	9 in o.c.	6 in o.c.
-	-	-
-	-	-
3e	5 in o.c.	4 in o.c.
3r	8 in o.c.	6 in o.c.

1. TIGHTEN FASTENER SPACING TO NO LESS THAN SHOWN ON FASTENER SPACING FOR SUCTION

2. CONSIDER OPEN OVERHANG FOR SUCTION PRESSURES AND SHEATHING? YES

3. MAKE MANUAL NOTE: DIAPHRAGMS OVER 3:1 RATIO NEED BLOCKING AT END REMAINDERS

OPTION #2

Refer to "Component & Cladding" for zone positions.

Building System Engineering, LLC
William E. Fultz, PE
(803) 892-6006

LOAD CHASE BASED ON TRUSS DATASHEET
PER ASCE 7-16
TRUSS NUMBER: CCE79501

NOTE: ALL LOADS INSTALLED MUST BE ASD LEVEL

BUILDING DATA

TOTAL WIDTH =	31.33 ft	15.7 ft/bx	NO. OF BOXES =	2	Double
MEAN ROOF HT. =	30.00 ft		OH LENGTH =	1.00 ft	
PITCH =	7/12		TRUSS SPACING =	24 in	
NO. OF STORIES =	1		WALL HEIGHTS =	9 ft	

DESIGNED TRUSS LOADS (PER DATA SHEET)

WIND:	Vult WIND SPEED=	120 MPH	---	*SNOW:*	GROUND SNOW LOAD =	20 psf	---
	EXPOSURE =	C	---	*DEAD:*	BOTTOM CHORD =	10 psf	---
LIVE:	BOTTOM CHORD =	20 psf	---		TOP CHORD =	10 psf	---
LIVE ROOF:	TOP CHORD =	17 psf	---				

SW GRV LOAD:	1096 lb	75 % LL	MW GRV LOAD (TOTAL):	864 lb	75 % LL
SW UP LOAD:	-301 lb	100 % WL	MW UP LOAD (TOTAL):	-63 lb	100 % WL

ACTUAL TRUSS LOADS (PER PROJECT) — ***SAME AS DESIGNED?*** YES

WIND:	Vult WIND SPEED=		120 MPH	*SNOW:*	GROUND SNOW LOAD =		20 psf
LIVE:	BOTTOM CHORD =		20 psf	*DEAD:*	BOTTOM CHORD =		10 psf
LIVE ROOF:	TOP CHORD =		17 psf		TOP CHORD =		10 psf

SW GRV LOAD:	**411 plf LL**	**137 plf DL**	MW GRV LOAD (TOTAL):	**324 plf LL**	**108 plf DL**
SW UP LOAD:	**-151 plf WL**		MW UP LOAD (TOTAL):	**-32 plf WL**	

CEILING

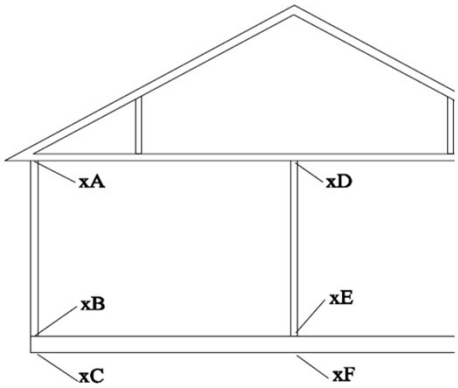
DEAD: ALL CEILINGS = 5 psf

WALL

DEAD: MATEWALL (ONE SIDE) = 7 psf
SIDEWALL = 7 psf

FLOOR *LIVE:*

		(SW LL)	(MW LL)	*DEAD:*		(SW DL)	(MW DL)
	40 psf				10 psf		
1ST FLOOR =	40 psf	313 plf	627 plf	1ST FLOOR =	10 psf	78 plf	157 plf



LOADS PER LEVEL (unfactored):

	Live	Dead	Total	Up*		Live	Dead	Total	Up*
1A:	411 plf	176 plf	**587 plf**	**-151 plf**	1D:	324 plf	186 plf	**510 plf**	**-32 plf**
1B:	411 plf	239 plf	**650 plf**	**-113 plf**	1E:	324 plf	312 plf	**636 plf**	**44 plf**
1C:	724 plf	317 plf	**1042 plf**	**-66 plf**	1F:	951 plf	469 plf	**1420 plf**	**138 plf**
	Sidewall, total load					**Matewall, total load both sides**			

*60% DEAD LOAD IN UPLIFTS
FDN W/ ASCE 7 ASD EQN. 4? YES
4. D+.75L+.75Lr/S/R

1C:	543 plf	317 plf	**861 plf**	**-66 plf**	1F:	713 plf	469 plf	**1182 plf**	**138 plf**

NOTE: the "x" refers to level loaded (i.e. "1A" means "1st floor, or level")

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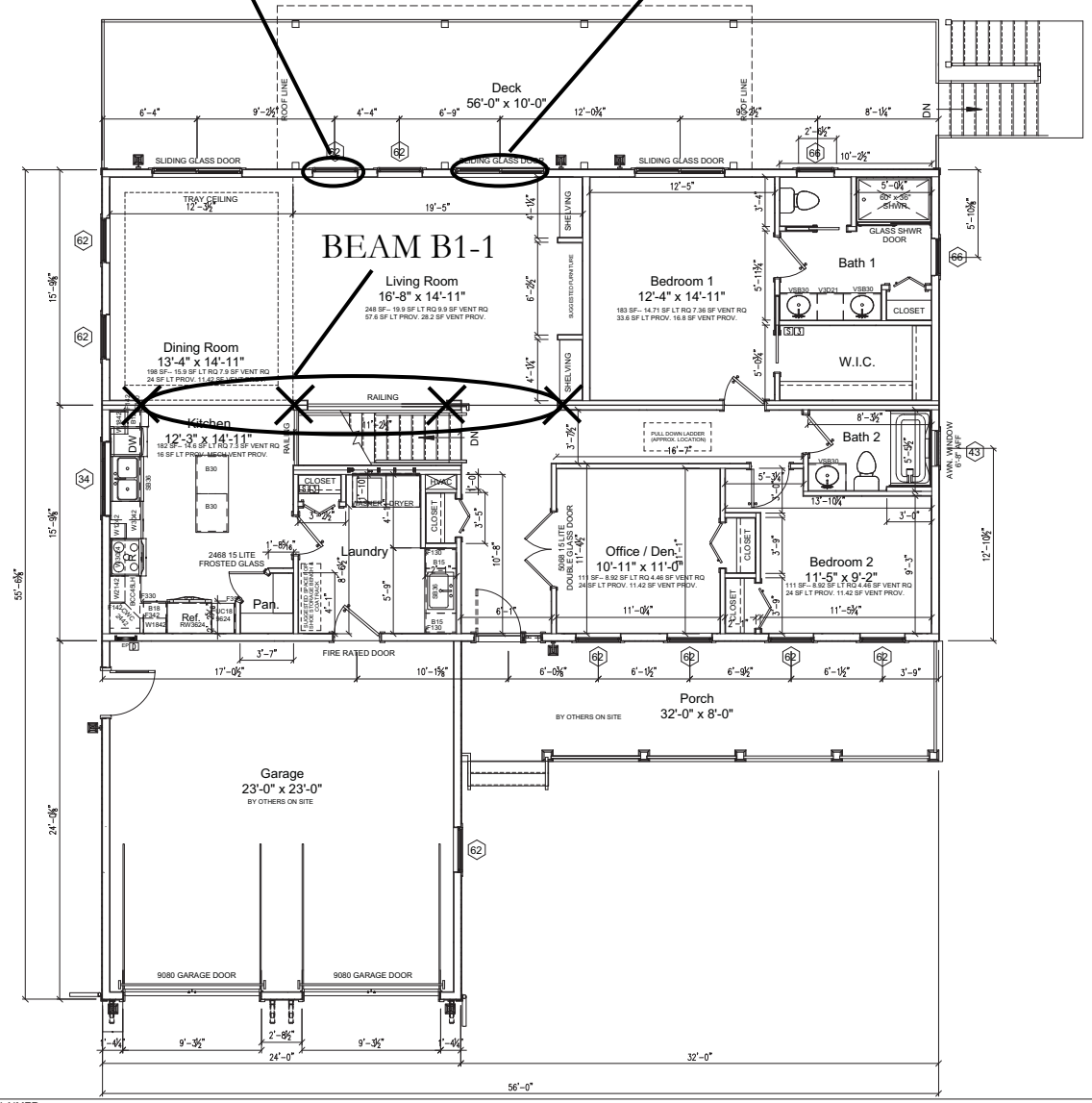
BEAM / HEADER LEGEND



NOTE:
MAIN ENTRANCE DOORS SHALL BE NOT LESS THAN 3'-0" WIDE. ALL OTHER EXTERIOR DOORS SHALL BE NOT LESS THAN 2'-8" WIDE. ALL INTERIOR DOORS WHICH PROVIDE ACCESS TO HABITABLE ROOMS SHALL NOT BE LESS THAN 2'-6" WIDE. CORRIDORS TO BEDROOMS SHALL BE 3'-0" (MIN.).

NOTE:
UP TO (2) 6'-0" X 6'-8" PATIO DOORS MAY BE SUBSTITUTED FOR (2) 2A WINDOWS WITH AN EXT. LIGHT AND CONTROLLING WALL SWITCH INSTALLED ON AN ADJACENT LIGHT CIRCUIT.
CEILING HEIGHT = 8'-0"
* = CLEARANCE REQUIRED BASED ON APPLICABLE N.E.C. 410.8 TO EDGE OF LIGHT FIXTURE.
☆- MARRIAGE WALL OPENINGS OF 4'-0" OR MORE REQUIRE PIER SUPPORT UNDER BOTH SIDES OF OPENINGS.
W.P. - LISTED FOR WET OR DAMP LOCATIONS.

NOTES:
DATA PLATE TO BE INSTALLED IN PANEL BOX
STATE AND THIRD PARTY LABELS TO BE INSTALLED AS LOCATE ON PLANS

NOTE:
FIRE EXTINGUISHER HAVING A RATING OF 2A: 10-B: C OR EQUIVALENT SHALL BE REQUIRED TO BE INSTALLED IN ALL KITCHEN AREAS FOR DWELLINGS WITHOUT SPRINKLER SYSTEMS PER APPLICABLE CODE.

NOTE:
REFER TO PAGE I-31 OF THE INSTALLATION MANUAL FOR DRYER VENT INSTALLATION.

NOTES:
ALL ASPECTS OF HEATING AND AIR CONDITIONING TO BE 100% ON SITE BY OTHERS.

NOTES:
ALL ASPECTS OF WHOLE-HOUSE MECHANICAL VENTILATION TO BE 100% ON SITE BY OTHERS, IN ACCORDANCE WITH LOCAL CODES.

[S] STATE LABEL
[3] 3RD PARTY LABEL
[D] DATA PLATE

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REVISION:	DATE:	BY:	REVISION:	DATE:	BY:

CUSTOMER/PROJECT:
ADDRESS:

IMPRESA BUILDING SYSTEMS of Greenwood SC, LLC

DRAWN BY:
CHECKED BY:
APPROVED BY:
ISSUE DATE:
PROJECT PHASE:
PROJECT NUMBER:
BOX NUMBER:
SCALE: 1/8" = 1'-0"

FIRST FLOOR PLAN

SHEET: 4.2

DATE PRINTED

WoodWorks® SOFTWARE FOR WOOD DESIGN

COMPANY	PROJECT
	Beam B1-1 (Gravity)
Jan. 5, 2022 16:33	

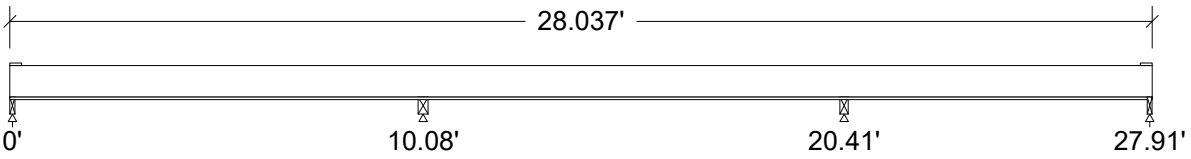
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 4)

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Full UDL	No			186.0		plf
Load2	Live	Full UDL	Yes			324.0		plf
Self-weight	Dead	Full UDL	No			7.5		plf

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:							
Dead	774		2257		1849		545
Live	1462		3931		3454		1182
Factored:							
Total	2236		6189		5303		1727
Bearing:							
Capacity							
Beam	3952		8388		7323		3803
Support	2236		6189		5303		2152
Des ratio							
Beam	0.57		0.74		0.72		0.45
Support	1.00		1.00		1.00		0.80
Load comb	#7		#5		#8		#7
Length	1.56		2.93		2.51		1.50*
Min req'd	1.56**		2.93**		2.51**		1.50*
Cb	1.00		1.13		1.15		1.00
Cb min	1.00		1.13		1.15		1.00
Cb support	1.13		1.13		1.13		1.13
Fcp sup	425		625		625		425

*Minimum bearing length setting used: 1-1/2" for end supports

**Minimum bearing length governed by the required width of the supporting member.

GP , 2.0E, 1.5, 3100(a), 1-1/2"x9-1/4", 2-ply (3"x9-1/4")

Supports: 1,4 - Lumber n-ply Beam, S-P-F No.1/No.2; 2,3 - Timber-soft Beam, D.Fir-L No.2;
Total length: 28.06'; Clear span: 9.875', 10.125', 7.313'; Volume = 5.4 cu.ft.
Lateral support: top = at end supports, bottom = continuous

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 148	Fv' = 290	psi	fv/Fv' = 0.51
Bending(+)	fb = 1315	Fb' = 1832	psi	fb/Fb' = 0.72
Bending(-)	fb = 1690	Fb' = 3100	psi	fb/Fb' = 0.55
Live Defl'n	0.14 = L/883	0.34 = L/360	in	0.41
Total Defl'n	0.22 = L/551	0.50 = L/240	in	0.44

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CV	Cfu	Cr	Cfrt	Ci	LC#
Fv'	290	1.00	-	1.00	-	-	-	-	1.00	-	5
Fb'+	3100	1.00	-	1.00	0.591	1.000	-	1.00	1.00	-	7
Fb'-	3100	1.00	-	1.00	1.000	1.000	-	1.00	1.00	-	5
Fcp'	845	-	-	1.00	-	-	-	-	1.00	-	-
E'	2.0 million		-	1.00	-	-	-	-	1.00	-	7
Eminy'	1.04 million		-	1.00	-	-	-	-	1.00	-	7

CRITICAL LOAD COMBINATIONS:

```
 Shear     : LC #5  = D + L (pattern: LL_)
 Bending(+): LC #7  = D + L (pattern: L_L)
 Bending(-): LC #5  = D + L (pattern: LL_)
 Deflection: LC #7  = D + L (pattern: L_L)  (live)
             LC #7  = D + L (pattern: L_L)  (total)
 Bearing   : Support 1 - LC #7 = D + L (pattern: L_L)
             Support 2 - LC #5 = D + L (pattern: LL_)
             Support 3 - LC #8 = D + L (pattern: _LL)
             Support 4 - LC #7 = D + L (pattern: L_L)
 D=dead L=live
 All LC's are listed in the Analysis output
 Load Patterns: s=S/2,  X=L+S or L+Lr,  _=no pattern load in this span
 Load combinations: ASD Basic from ASCE 7-16 2.4 / IBC 2018 1605.3.1
```

CALCULATIONS:

```
 V max = 3206, V design = 2746 lbs; M(+) = 4688 lbs-ft; M(-) = 6025 lbs-ft
   EIy = 197.86 lb-in^2/ply Apparent E approximates the effect of shear deflection.
 "Live" deflection is due to all non-dead loads (live, wind, snow…)
 Total deflection = 1.5 dead + "live"
 Lateral stability(+):  Lu = 27.94'  Le = 51.38'  RB = 25.2
                        Lu based on full length; b = full member width
```

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2018) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP BEAMS: it is assumed that each ply is a single continuous member (that is, no butt joints are present) fastened together securely at intervals not exceeding 4 times the depth and that each ply is equally top-loaded. Where beams are side-loaded, special fastening details may be required.
4. FIRE RATING: Joists, wall studs, and multi-ply members are not rated for fire endurance.
5. SCL: Structural composite lumber design has assumed: - dry service conditions - no preservative or fire-retardant treatment - no notches
6. BUILT-UP SCL: Contact manufacturer for connection details when side-loaded or when loads are not applied equally to all plies.
7. SCL: Deflection is calculated using an apparent modulus of elasticity E that incorporates the effect of shear deflection.
8. Also compliant with the ASCE 7-10 and 2015 NDS.
9. Total ply shown. Interconnect.

WoodWorks® SOFTWARE FOR WOOD DESIGN	**COMPANY** Jan. 5, 2022 16:34	**PROJECT** Beam B1-1 (Uplift)

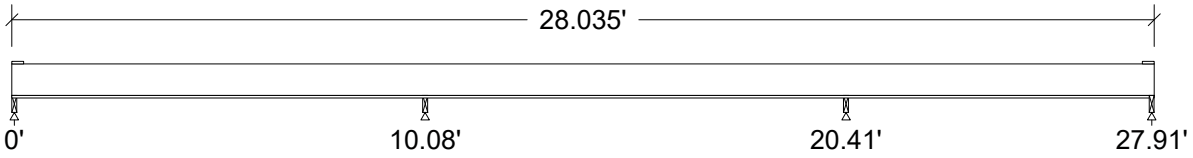
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 4)

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Wind	Full UDL	No			-54.0		plf
Self-weight	Dead	Full UDL	No			7.5		plf

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:							
Dead	30		88		72		21
Wind	-216		-630		-516		-152
Factored:							
Uplift	-112		-325		-266		-79
Total	30		88		72		21
Bearing:							
Capacity							
Beam	3803		4753		4753		3803
Support	2152		3164		3164		2152
Des ratio							
Beam	0.01		0.02		0.02		0.01
Support	0.01		0.03		0.02		0.01
Load comb	#1		#1		#1		#1
Length	1.50*		1.50*		1.50*		1.50*
Min req'd	1.50*		1.50*		1.50*		1.50*
Cb	1.00		1.25		1.25		1.00
Cb min	1.00		1.25		1.25		1.00
Cb support	1.13		1.13		1.13		1.13
Fcp sup	425		625		625		425

Strap down to 1st band for uplift shown.

*Minimum bearing length setting used: 1-1/2" for end supports and 1-1/2" for interior supports

GP , 2.0E, 1.5, 3100(a), 1-1/2"x9-1/4", 2-ply (3"x9-1/4")

Supports: 1,4 - Lumber n-ply Beam, S-P-F No.1/No.2; 2,3 - Timber-soft Beam, D.Fir-L No.2;
Total length: 28.06'; Clear span: 9.938', 10.188', 7.375'; Volume = 5.4 cu.ft.
Lateral support: top = at end supports, bottom = continuous

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 9	Fv' = 464	psi	fv/Fv' = 0.02
Bending(+)	fb = 87	Fb' = 1905	psi	fb/Fb' = 0.05
Bending(-)	fb = 61	Fb' = 4960	psi	fb/Fb' = 0.01
Live Defl'n	-0.01 = < L/999	0.34 = L/360	in	0.03
Total Defl'n	-0.01 = < L/999	0.50 = L/240	in	0.02

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CV	Cfu	Cr	Cfrt	Ci	LC#
Fv'	290	1.60	-	1.00	-	-	-	-	1.00	-	2
Fb'+	3100	1.60	-	1.00	0.384	1.000	-	1.00	1.00	-	2
Fb'-	3100	1.60	-	1.00	1.000	1.000	-	1.00	1.00	-	2
Fcp'	845	-	-	1.00	-	-	-	-	1.00	-	-
E'	2.0 million		-	1.00	-	-	-	-	1.00	-	2
Eminy'	1.04 million		-	1.00	-	-	-	-	1.00	-	2

CRITICAL LOAD COMBINATIONS:
Shear : LC #2 = 0.6D + 0.6W
Bending(+): LC #2 = 0.6D + 0.6W
Bending(-): LC #2 = 0.6D + 0.6W
Deflection: LC #2 = 0.6D + 0.6W (live)
LC #2 = 0.6D + 0.6W (total)
Bearing : Support 1 – LC #1 = D only
Support 2 – LC #1 = D only
Support 3 – LC #1 = D only
Support 4 – LC #1 = D only
Uplift : Support 1 – LC #2 = 0.6D + 0.6W
Support 2 – LC #2 = 0.6D + 0.6W
Support 3 – LC #2 = 0.6D + 0.6W
Support 4 – LC #2 = 0.6D + 0.6W
W=wind
All LC's are listed in the Analysis output
Load combinations: ASD Basic from ASCE 7-16 2.4 / IBC 2018 1605.3.1

CALCULATIONS:
V max = 171, V design = 171 lbs; M(+) = 311 lbs-ft; M(-) = 216 lbs-ft
EIy = 197.86 lb-in^2/ply Apparent E approximates the effect of shear deflection.
"Live" deflection is due to all non-dead loads (live, wind, snow…)
Total deflection = 1.5 dead + "live"
Lateral stability(+): Lu = 27.94' Le = 51.38' RB = 25.2
Lu based on full length; b = full member width

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2018) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP BEAMS: it is assumed that each ply is a single continuous member (that is, no butt joints are present) fastened together securely at intervals not exceeding 4 times the depth and that each ply is equally top-loaded. Where beams are side-loaded, special fastening details may be required.
4. FIRE RATING: Joists, wall studs, and multi-ply members are not rated for fire endurance.
5. SCL: Structural composite lumber design has assumed: - dry service conditions - no preservative or fire-retardant treatment - no notches
6. BUILT-UP SCL: Contact manufacturer for connection details when side-loaded or when loads are not applied equally to all plies.
7. SCL: Deflection is calculated using an apparent modulus of elasticity E that incorporates the effect of shear deflection.
8. Also compliant with the ASCE 7-10 and 2015 NDS.
9. Total ply shown. Interconnect.

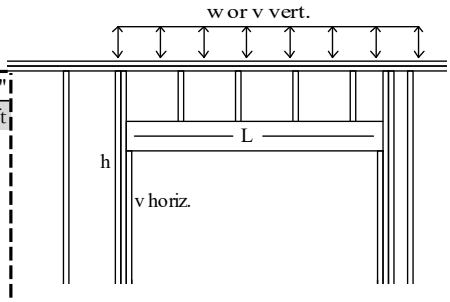
Building System Engineering (BSE), LLC Members x(080717) William E. Fultz, PE (803) 808-3491

HEADER WORKSHEET

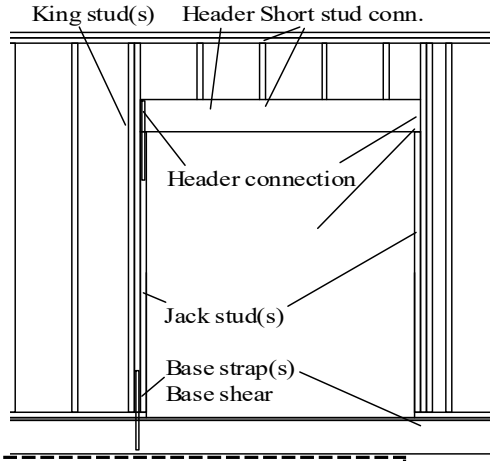
PER NDS 2015 **(must use ASD loads)** HEADER: H1-1

GRAVITY (w) = 176 plf Dead
411 plf Live
UPLIFT (v vert) = -151 plf Wind (Enter negative value)
O/PLANE (v horiz) = 21.0 psf Wind C+C Load? YES

INCLUDE CONNECTIONS: YES



COLUMN			**HEADER**		
WALL HT =	9' 0"	9.00 ft	HEADER LNGTH (L) =	3' 0"	3.00 ft
TYPE OF WOOD =	SPF No.1/2		TYPE OF WOOD =	SPF No.1/2	
STUD DIMENTIONS =	2x6"		HEADER DIMS. =	2x6"	
NUMBER OF KING PLY	1	"k" col.	NUMBER OF PLY =	2	
NUMBER OF JACK PLY	1	"j" col.			
KING STUD WIDTH (b)	1.50 in		HEADER WIDTH (b):	3.00 in	
STUD DEPTH (d):	5.50 in		HEADER DEPTH (d):	5.50 in	
WIND DEFL. LIM. =	L/	120	Live L/ 360	Total L/	240



LOAD ADJUSTMENT FACTORS:			LOAD ADJUSTMENT FACTORS:		
Cd_v:	Wind/Seismic	1.60	Cd:		1
Cd_w:	---	1.00			
Cm_c:	MC < 19%	1.00	Cm_c:	MC < 19%	1
Cm_b:	---	1.00	Cm_b:	---	1
Cm_E:	---	1.00	Cm_E:	---	1
			Cm_Fprp	---	1
Cf_b:	---	1.30			
Cf_c:	---	1.10	Cf:		1.4
Cr:	Repetitive no	1.00			
			Cr:	Repetitive no	1
Cp:	---	0.64			

Criterio	Analysis	Design	Analysis/Design
Shear	fv = 26	Fv' = 216	*0.12*
Bending	fb = 506	Fb' = 1820	*0.28*
Axial	fc = 107	Fc' = 805	*0.13*
Ax.Bear	fc_ = 107	Fc* = 1265	*0.08*
Eq. 3.9-3			*0.29*
Defl.	.11 in	0.90 in	*0.12*

Criterion	Analysis	Design	Analysis/Design
Shear	fv = 56	Fv' = 135	*0.41*
Bending	fb = 524	Fb' = 1225	*0.43*
Bearing	fbp = 196	Fbp' = 425	*0.46*
Defl. live	.01 in	0.10 in	*0.1*
Defl. total	.02 in	0.15 in	*0.13*

OK

USE (1) SPF No.1/2 PLY 2x6" KING + (1) JACK FOR 9 FT WALL HEIGHT	**USE (2) PLY 2x6" SPF No.1/2 LUMBER FOR 3 FT HEADER OPEN SPAN**

Short stud conn.: Uplift = -151 plf SPF osb to hdr. (0.113) in diameter 8d nail 2.00 in long
Fact. Load = (46 lb) (1.6)(1) = 74 lbs **Use (1) 8d (0.113) nail 2in long 5 in o.c. from OSB to header**

Header connection: End uplift = -227 lb SPF hdr. to king (0.131) in diameter 8d nails 3.00 in long
Fact. Load = (82 lb) (1.6)(.67) = 88 lbs **Use (6) 8d (0.131) nails 3in long from king to header plys**

Base straps: Uplift = -227 lb k/j to below 26ga typ. (table ref. 26) 5/side 5 nails max/side
Fact. Load = (400 lb) w/wind 400 lbs **(1) 26ga typ. strap(s) from k/j cols. to band/fdn w/ 5 nails per end**

Base shear: Shear = 142 lb SPF base to k/j (0.131) in diameter 8d nails 3.00 in long
Fact. Load = (60 lb) (1.6)(.67) = 64 lbs **Use (6) 8d (0.131) nails 3in long from base to k/j columns**

*NOTE: use full nail qouta on both end of straps. See Simpson Strong tie catalog for length and installation requirements.

NOTE: One ply of the vertical headers may counted as the sidewall truss rail if no splices are located above the wall opening.

 1/25/2022

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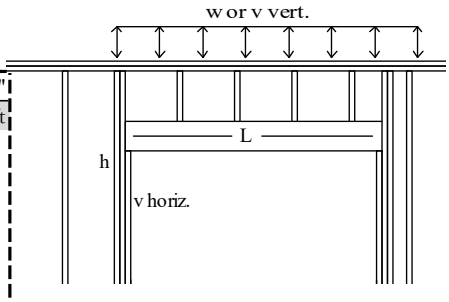
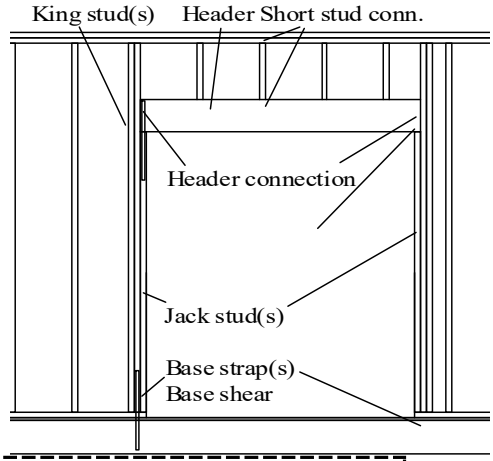
HEADER WORKSHEET

PER NDS 2015 **(must use ASD loads)** HEADER: H1-2

GRAVITY (w) = 176 plf Dead; 411 plf Live
UPLIFT (v vert) = -151 plf Wind (Enter negative value)
O/PLANE (v horiz) = 21.0 psf Wind C+C Load? YES
INCLUDE CONNECTION? YES



COLUMN			HEADER		
WALL HT =	9' 0"	9.00 ft	HEADER LNGTH (L) =	6' 0"	6.00 ft
TYPE OF WOOD =	SPF No.1/2		TYPE OF WOOD =	SPF No.1/2	
STUD DIMENTIONS =	2x6"		HEADER DIMS. =	2x6"	
NUMBER OF KING PLY	1	"k" col.	NUMBER OF PLY =	3	
NUMBER OF JACK PLY	1	"j" col.			
KING STUD WIDTH (b)	1.50 in		HEADER WIDTH (b):	4.50 in	
STUD DEPTH (d):	5.50 in		HEADER DEPTH (d):	5.50 in	
WIND DEFL. LIM. =	L/	120	Live L/ 360	Total L/	240



LOAD ADJUSTMENT FACTORS:			LOAD ADJUSTMENT FACTORS:		
Cd_v:	Wind/Seismic	1.60	Cd:		1
Cd_w:	---	1.00			
Cm_c:	MC < 19%	1.00	Cm_c:	MC < 19%	1
Cm_b:	---	1.00	Cm_b:	---	1
Cm_E:	---	1.00	Cm_E:	---	1
			Cm_Fprp	---	1
Cf_b:	---	1.30			
Cf_c:	---	1.10	Cf:		1.4
Cr:	Repetitive no	1.00			
			Cr:	Repetitive yes	1.15
Cp:	---	0.64			

Criterio	Analysis	Design	Analysis/Design
Shear	fv = 52	Fv' = 216	*0.24*
Bending	fb = 1012	Fb' = 1820	*0.56*
Axial	fc = 213	Fc' = 805	*0.26*
Ax.Bear	fc_ = 213	Fc* = 1265	*0.17*
Eq. 3.9-3			*0.6*
Defl.	.22 in	0.90 in	*0.25*

Criterion	Analysis	Design	Analysis/Design
Shear	fv = 90	Fv' = 135	*0.67*
Bending	fb = 1397	Fb' = 1409	*0.99*
Bearing	fbp = 261	Fbp' = 425	*0.61*
Defl. live	.14 in	0.20 in	*0.7*
Defl. total	.20 in	0.30 in	*0.67*

OK

USE (1) SPF No.1/2 PLY 2x6" KING + (1) JACK FOR 9 FT WALL HEIGHT	USE (3) PLY 2x6" SPF No.1/2 LUMBER FOR 6 FT HEADER OPEN SPAN

Short stud conn.: Uplift = -151 plf SPF osb to hdr. (0.113) in diameter 8d nail 2.00 in long
Fact. Load = (46 lb) (1.6)(1) = 74 lbs **Use (1) 8d (0.113) nail 2in long 5 in o.c. from OSB to header**

Header connection: End uplift = -453 lb SPF hdr. to king (0.131) in diameter 8d nails 3.00 in long
Fact. Load = (82 lb) (1.6)(.67) = 88 lbs **Use (6) 8d (0.131) nails 3in long from king to header plys**

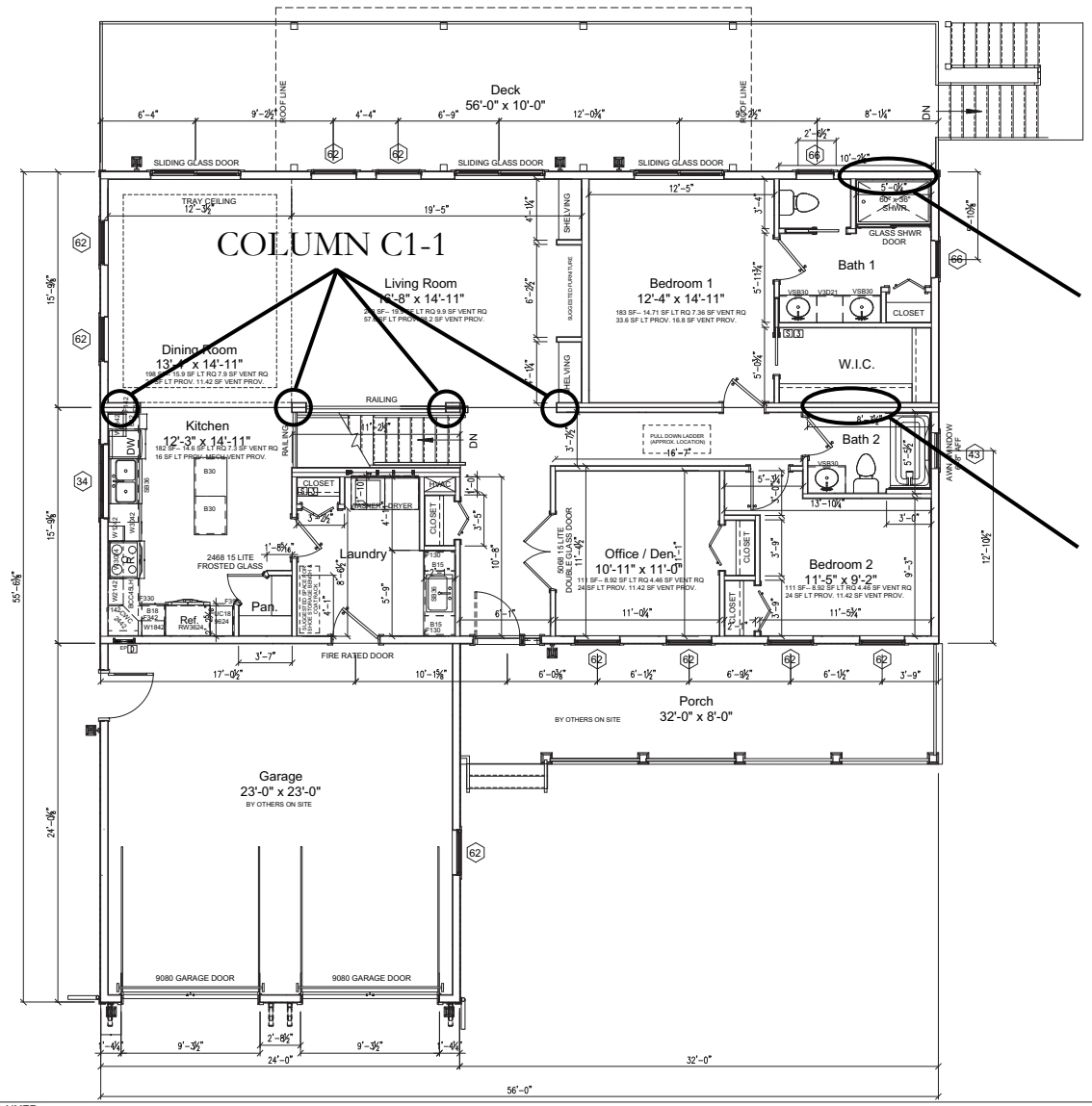
Base straps: Uplift = -453 lb k/j to below 26ga typ. (table ref. 26) 5/side 5 nails max/side
Fact. Load = (400 lb) w/wind 400 lbs **(2) 26ga typ. strap(s) from k/j cols. to band/fdn w/ 5 nails per end**

Base shear: Shear = 284 lb SPF base to k/j (0.131) in diameter 8d nails 3.00 in long
Fact. Load = (60 lb) (1.6)(.67) = 64 lbs **Use (6) 8d (0.131) nails 3in long from base to k/j columns**

*NOTE: use full nail qouta on both end of straps. See Simpson Strong tie catalog for length and installation requirements.

NOTE: One ply of the vertical headers may counted as the sidewall truss rail if no splices are located above the wall opening.

STUD / COLUMN LEGEND



EXTERIOR STUD ES1-1 (typ)

MATEWALL STUD MS1-1 (typ)

NOTE:
MAIN ENTRANCE DOORS SHALL BE NOT LESS THAN 3'-0" WIDE. ALL OTHER EXTERIOR DOORS SHALL BE NOT LESS THAN 2'-8" WIDE. ALL INTERIOR DOORS WHICH PROVIDE ACCESS TO HABITABLE ROOMS SHALL NOT BE LESS THAN 2'-6" WIDE, CORRIDORS TO BEDROOMS SHALL BE 3'-0" (MIN.).

NOTE:
UP TO (2) 6'-0" X 6'-8" PATIO DOORS MAY BE SUBSTITUTED FOR (2) 2A WINDOWS WITH AN EXT. LIGHT AND CONTROLLING WALL SWITCH INSTALLED ON AN ADJACENT LIGHT CIRCUIT.
CEILING HEIGHT = 8'-0"
* = CLEARANCE REQUIRED BASED ON APPLICABLE N.E.C. 410.8 TO EDGE OF LIGHT FIXTURE.
☆- MARRIAGE WALL OPENINGS OF 4'-0" OR MORE REQUIRE PIER SUPPORT UNDER BOTH SIDES OF OPENINGS.
W.P. - LISTED FOR WET OR DAMP LOCATIONS.

NOTES:
DATA PLATE TO BE INSTALLED IN PANEL BOX
STATE AND THIRD PARTY LABELS TO BE INSTALLED AS LOCATE ON PLANS

NOTE:
FIRE EXTINGUISHER HAVING A RATING OF 2A: 10-B: C OR EQUIVALENT SHALL BE REQUIRED TO BE INSTALLED IN ALL KITCHEN AREAS FOR DWELLINGS WITHOUT SPRINKLER SYSTEMS PER APPLICABLE CODE.

NOTE:
REFER TO PAGE I-31 OF THE INSTALLATION MANUAL FOR DRYER VENT INSTALLATION.

NOTES:
ALL ASPECTS OF HEATING AND AIR CONDITIONING TO BE 100% ON SITE BY OTHERS.

NOTES:
ALL ASPECTS OF WHOLE-HOUSE MECHANICAL VENTILATION TO BE 100% ON SITE BY OTHERS, IN ACCORDANCE WITH LOCAL CODES.

[S] STATE LABEL
[3] 3RD PARTY LABEL
[D] DATA PLATE

APPROVED BY
NTA
1/31/2022
Approval of this document does not authorize or approve any deviation or deviations from the requirements of applicable State Laws.

REVISION: | DATE: | BY:
REVISION: | DATE: | BY:

CUSTOMER/PROJECT:
ADDRESS:

IMPRESA BUILDING SYSTEMS of Greenwood SC, LLC

DRAWN BY:
CHECKED BY:
APPROVED BY:
ISSUE DATE:
PROJECT PHASE:
PROJECT NUMBER:
BOX NUMBER:
SCALE: 1/8" = 1'-0"
FIRST FLOOR PLAN
SHEET: 4.2

DATE PRINTED

Building System Engineering (BSE), LLC Members x(080717) William E. Fultz, PE
(803) 808-3491

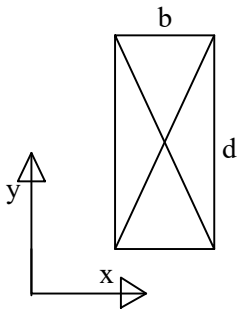
STUD WORKSHEET

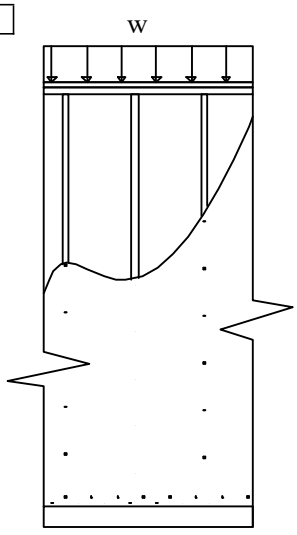
PER NDS 2015 **(must use ASD loads)** STUD: ES1-1

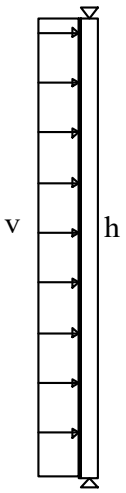
GRAVITY LOAD (w) =	411 plf	Dead	
	176 plf	Live	
UPLIFT (v vert) =	-151 plf	Wind	(Enter nagative value)
WIND LOAD (v) =	25 psf	Wind	C+C Load? YES

STUD HT =	9'	0"	9.00 ft
STUD SPACING =	16 in o.c.		

TYPE OF WOOD =	SPF No.1/2
STUD DIMENTIONS =	2x6"
NUMBER OF PLY =	1
BAND TYPE =	SYP No.2
STUD WIDTH (b):	1.50 in
STUD DEPTH (d):	5.50 in
WIND DEFL. LIM. =	L/ 120
Wall Wt. =	56 plf







NOTE: Stud ply not shown. Read full description below.

LOAD ADJUSTMENT FACTORS:

Cd_v:	Wind/Seismic	1.60
Cd_w:	---	1.00
Cm_c:	MC < 19%	1.00
Cm_b:	---	1.00
Cm_E:	---	1.00
Cf_b:	---	1.30
Cf_c:	---	1.10
Sheathing both sides?		YES
Cr:	Repetitive yes	1.35
Cp:	---	0.64

Criterion	Analysis	Design	Analysis/Design
Shear	fv = 27	Fv' = 216	*0.13*
Bending	fb = 536	Fb' = 2457	*0.22*
Axial	fc = 95	Fc' = 805	*0.12*
Axial Bearing	fc_ = 95	Fc* = 1265	*0.08*
Eq. 3.9-3			*0.24*
Deflection	.12 in	0.90 in	*0.13*

OK

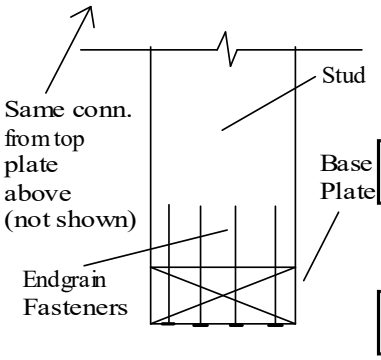
APPROVED BY NTA 1/31/2022

Approval of this document does not authorize or approve any deviation or deviations from the requirements of applicable State Laws.

USE (1) SPF No.1/2 PLY 2x6" STUD 16 IN O.C.
FOR 9 FT WALL HEIGHT

INCLUDE WIND ZONE 4 AND 5 STATEMENT? NO
USE SAME NUMBER OF PLY EACH SIDE? NO

INCLUDE END FASTENING? YES
INCLUDE STUD STRAPING FOR UPLIFT? YES



Wind shear load on end of member = 150 lb
SPF wood shear taken by (0.131) in diameter 8d nails 3.00 in long
Allowable load (with factors) = (82 lb) (1.6)(.67) 88 lbs

Use (3) 8d (0.131) nails 3 in long from base/top plate to end grain.

Wind uplift at base of wall = -117 lb
Strap type LSTA12 (table ref. 12) Spacing 32 in o.c. 4 nails 5 max/side

(1) LSTA12 strap spaced 32 in o.c. w/(4) 10d (.148) nails per end = 239 plf
239 plf >= 117 lb

Strap uplift loads must extend from studs to foundation. Straps may be "broken" over bands.

Or, in place of the LSTA12 shown above, use Sliding and Overturning Detail shown in calcs w/wall sheathing.

Building System Engineering (BSE), LLC Members x(080717) William E. Fultz, PE
(803) 808-3491

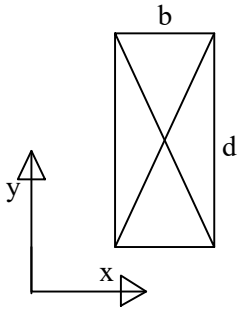
STUD WORKSHEET

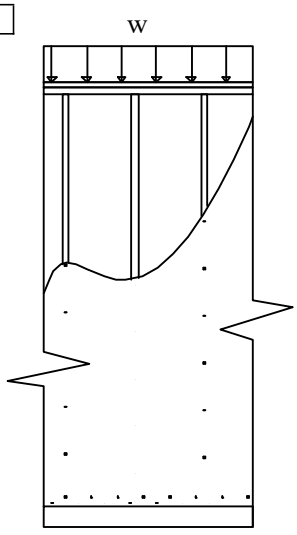
PER NDS 2015 **(must use ASD loads)** STUD: MS1-1

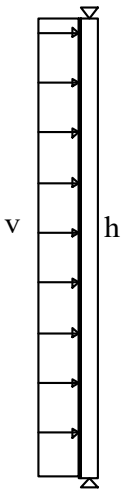
GRAVITY LOAD (w) =	162 plf	Dead	
	93 plf	Live	
UPLIFT (v vert) =	-16 plf	Wind	(Enter nagative value)
WIND LOAD (v) =	10 psf	Wind	C+C Load? YES

STUD HT =	9'	0"	9.00 ft
STUD SPACING =	16 in o.c.		

TYPE OF WOOD =	SPF No.1/2
STUD DIMENTIONS =	2x4"
NUMBER OF PLY =	1
BAND TYPE =	SYP No.2
STUD WIDTH (b):	1.50 in
STUD DEPTH (d):	3.50 in
WIND DEFL. LIM. =	L/ 120
Wall Wt. =	56 plf







NOTE: Stud ply not shown. Read full description below.

LOAD ADJUSTMENT FACTORS:

Cd_v:	Wind/Seismic	1.60
Cd_w:	---	1.00
Cm_c:	MC < 19%	1.00
Cm_b:	---	1.00
Cm_E:	---	1.00
Cf_b:	---	1.50
Cf_c:	---	1.15
Sheathing both sides?		YES
Cr:	Repetitive yes	1.50
Cp:	---	0.31

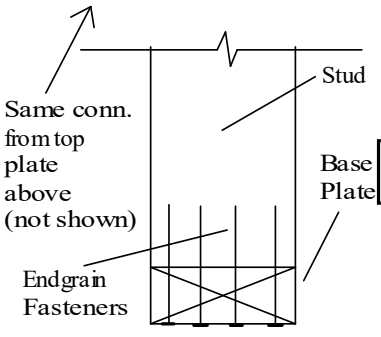
Criterion	Analysis	Design	Analysis/Design
Shear	fv = 17	Fv' = 216	*0.08*
Bending	fb = 529	Fb' = 3150	*0.17*
Axial	fc = 65	Fc' = 405	*0.16*
Axial Bearing	fc_ = 65	Fc* = 1323	*0.05*
Eq. 3.9-3			*0.2*
Deflection	.18 in	0.90 in	*0.2*

OK

USE (1) SPF No.1/2 PLY 2x4" STUD 16 IN O.C.
FOR 9 FT WALL HEIGHT

INCLUDE WIND ZONE 4 AND 5 STATEMENT? NO
USE SAME NUMBER OF PLY EACH SIDE? YES

INCLUDE END FASTENING? YES
INCLUDE STUD STRAPING FOR UPLIFT? NO



Wind shear load on end of member = 60 lb

SPF wood shear taken by (0.131) in diameter 8d nails 3.00 in long

Allowable load (with factors) = (82 lb) (1.6)(.67) 88 lbs

Use (3) 8d (0.131) nails 3 in long from base/top plate to end grain.

USE SAME NUMBER OF PLY EACH SIDE

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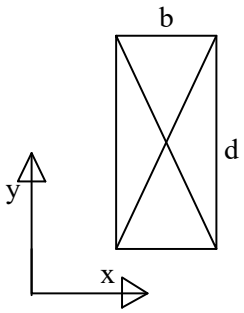
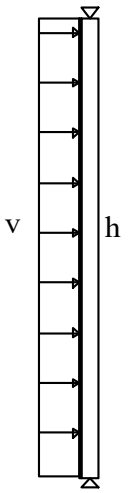
COLUMN WORKSHEET

PER NDS 2015 **(must use ASD loads)** COLUMN: C1-1

GRAVITY LOAD (w) =	1129 lb	Dead		
	1966 lb	Live		
WIND LOAD (v) =	10 plf	Wind	C+C Load?	YES
STUD HT =	9'	0"	9.00 ft	

COLUMN TYPE =	SPF No.1/2	
COL. DIMENTIONS =	2x4"	
NUMBER OF PLY =	2	
BAND TYPE =	SYP No.2	
COLUMN WIDTH (b):	3.00 in	
COLUMN DEPTH (d):	3.50 in	
WIND DEFL. LIM. =	L/	120
BASE/TOP PLATE =	SYP No.2	





LOAD ADJUSTMENT FACTORS:

Cd_v:	Wind/Seismic	1.60
Cd_w:	---	1.00
Cm_c:	MC < 19%	1.00
Cm_b:	---	1.00
Cm_E:	---	1.00
Cm_Fprp	---	1
Cf_b:	---	1.50
Cf_c:	---	1.15
Cr:	Repetitive no	1.00
Cp:	---	0.31

NOTE: Column ply not shown. Read full description below.

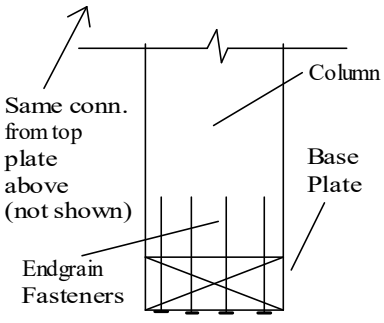
Criterion	Analysis	Design	Analysis/Design
Shear	fv = 6	Fv' = 216	*0.03*
Bending	fb = 198	Fb' = 2100	*0.09*
Axial	fc = 295	Fc' = 405	*0.73*
Axial Bearing	fc_ = 295	Fc* = 1323	*0.22*
Plt. Bearing	fbp = 295	Fbp' = 565	*0.52*
Eq. 3.9-3			*0.54*
Deflection	.07 in	0.90 in	*0.08*

OK

USE (2) SPF No.1/2 PLY 2x4" COLUMN
FOR 9 FT WALL HEIGHT
BASE/TOP PLATE OF SYP No.2 IS ADEQUATE

INCLUDE NDS CONNECTION STATEMENT? NO
USE SAME NUMBER OF PLY EACH SIDE? YES

INCLUDE END FASTENING? YES



Wind shear load on end of member = 45 lb

SPF	wood shear taken by	(0.131) in diameter	8d	nails	3.00 in	long
Allowable load (with factors) =		(82 lb) (1.6)(.67)			88 lbs	

Use (3) 8d (0.131) nails 3 in long from base/top plate to end grain and evenly distribute between column ply

USE SAME NUMBER OF PLY EACH SIDE

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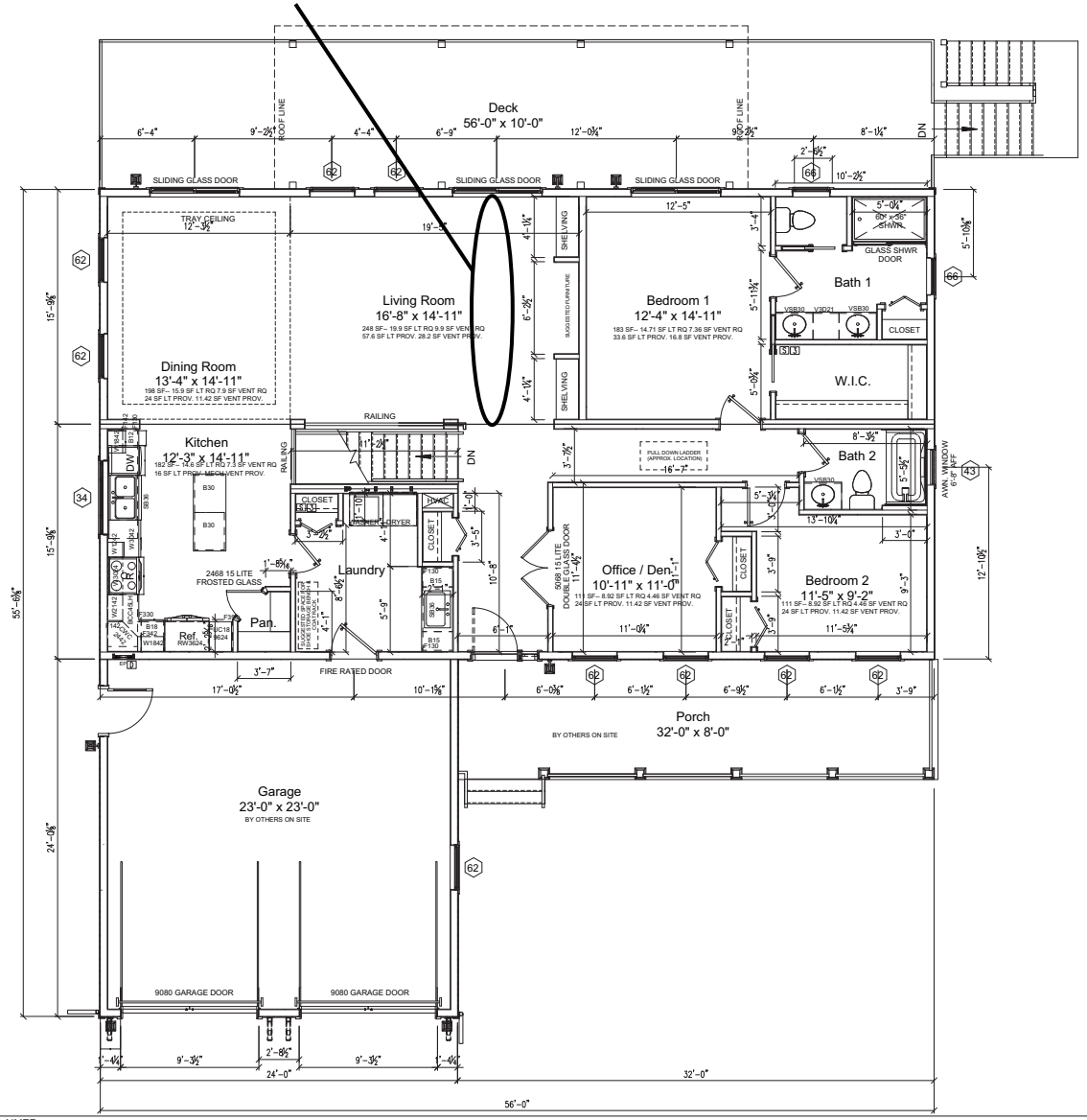
FLOOR JOIST LEGEND

FLOOR JOIST J1-1 (typ)



NOTE:
MAIN ENTRANCE DOORS SHALL BE NOT LESS THAN 3'-0" WIDE. ALL OTHER EXTERIOR DOORS SHALL BE NOT LESS THAN 2'-8" WIDE. ALL INTERIOR DOORS WHICH PROVIDE ACCESS TO HABITABLE ROOMS SHALL NOT BE LESS THAN 2'-6" WIDE, CORRIDORS TO BEDROOMS SHALL BE 3'-0" (MIN.).

NOTE:
UP TO (2) 6'-0" X 6'-8" PATIO DOORS MAY BE SUBSTITUTED FOR (2) 2A WINDOWS WITH AN EXT. LIGHT AND CONTROLLING WALL SWITCH INSTALLED ON AN ADJACENT LIGHT CIRCUIT.
CEILING HEIGHT = 8'-0"
* = CLEARANCE REQUIRED BASED ON APPLICABLE N.E.C. 410.8 TO EDGE OF LIGHT FIXTURE.
☆- MARRIAGE WALL OPENINGS OF 4'-0" OR MORE REQUIRE PIER SUPPORT UNDER BOTH SIDES OF OPENINGS.
W.P. - LISTED FOR WET OR DAMP LOCATIONS.

NOTES:
DATA PLATE TO BE INSTALLED IN PANEL BOX
STATE AND THIRD PARTY LABELS TO BE INSTALLED AS LOCATE ON PLANS

NOTE:
FIRE EXTINGUISHER HAVING A RATING OF 2A: 10-B: C OR EQUIVALENT SHALL BE REQUIRED TO BE INSTALLED IN ALL KITCHEN AREAS FOR DWELLINGS WITHOUT SPRINKLER SYSTEMS PER APPLICABLE CODE.

NOTE:
REFER TO PAGE I-31 OF THE INSTALLATION MANUAL FOR DRYER VENT INSTALLATION.

NOTES:
ALL ASPECTS OF HEATING AND AIR CONDITIONING TO BE 100% ON SITE BY OTHERS.

NOTES:
ALL ASPECTS OF WHOLE-HOUSE MECHANICAL VENTILATION TO BE 100% ON SITE BY OTHERS, IN ACCORDANCE WITH LOCAL CODES.

[S] STATE LABEL
[3] 3RD PARTY LABEL
[D] DATA PLATE

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REVISION:	DATE:	BY:	REVISION:	DATE:	BY:

CUSTOMER/PROJECT:
ADDRESS:

IMPRESA BUILDING SYSTEMS of Greenwood SC, LLC

DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
ISSUE DATE:	
PROJECT PHASE:	
PROJECT NUMBER:	
BOX NUMBER:	
SCALE:	1/8" = 1'-0"

FIRST FLOOR PLAN

SHEET: 4.2

DATE PRINTED

Building System Engineering (BSE), LLC Members x(080717) William E. Fultz, PE
(803) 808-3491

JOIST WORKSHEET

PER NDS 2015 **(must use ASD loads)** JOIST: J1-1

GRAVITY (w) =

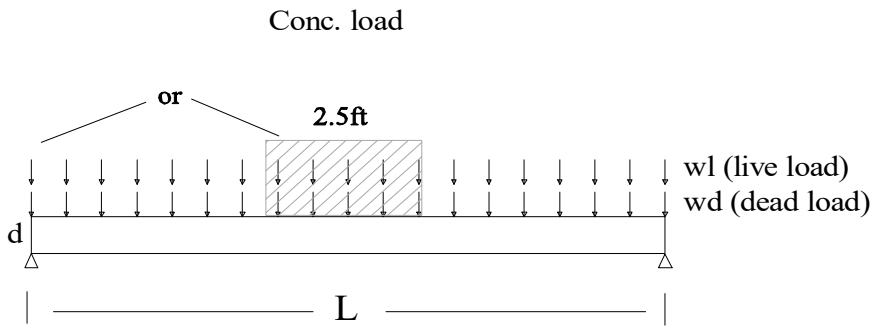
10 psf	Dead
40 psf	Live (uniform)
0 lb	Live (concentrated)

NOTE: "Live (uniform)" and "Live (concentrated)" my have values at the same time. Worst case of both cases will be taken exclusive of the other. Dead load applies to both.

JOIST

JOIST CLEAR SPAN (L) =	15'	3"
		15.25 ft
JOIST SPACING =	16 in o.c.	
TYPE OF WOOD =	SPF No.1/2	
HEADER DIMS. =	2x10"	
NUMBER OF PLY =	1	
HEADER WIDTH (b):	1.50 in	
HEADER DEPTH (d):	9.25 in	
Live L/ 360	Total L/	240

NOTE: SELF WEIGHT NOT INCLUDED

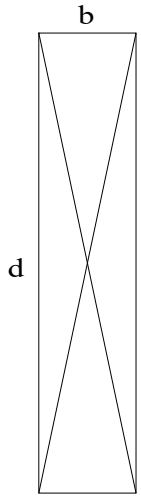


LOAD ADJUSTMENT FACTORS:

Cd:		1
Cm_c:	MC < 19%	1
Cm_b:	---	1
Cm_E:	---	1
Cm_Fprp	---	1
Cf:		1.1
Cr:	Repetitive yes	1.15

Criterion	Analysis	Design	Analysis/Design
Shear	fv = 49	Fv' = 135	*0.36*
Bending	fb = 1087	Fb' = 1107	*0.98*
Defl. live	.47 in	0.51 in	*0.92*
Defl. total	.59 in	0.76 in	*0.78*

OK



USE (1) PLY 2x10" SPF No.1/2 LUMBER SPACED 16 IN O.C. (OR, SYP No.1)
FOR 15.25 FT JOIST CLEAR SPAN
CONNECT JOIST ENDS FOR WORST CASE REACTION BELOW

WORST CASE REACTION ON END OF JOIST =	508 lb
INCLUDE END CONNECTIONS?	YES
INCLUDE HANGER STATEMENT?	YES

Joist end connection: End shear = 508 lb SPF jst. To band (0.148) in diameter 10d nails 3.25 in long
Fact. Load = (100 lb) (1)(.67) = 67 lbs **Use (8) 10d (0.148) nails 3.25in long from band to joist end***

OPTION #1: Above

OPTION #2: Use ESR-1035 specified OJ2000 for the floor joist. Fasten ends to band PER ESR 501 report.

*NOTE: Simpson strong-tie or other approved joist hanger may be used in place of nailing shown above.

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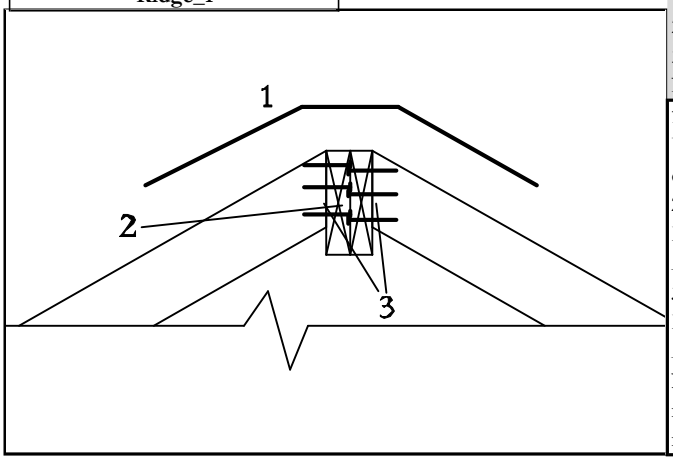
TRUSS CONNECTION WORKSHEET

ASCE 7-16	TRUSS NO.	CCE79501, 79502	WIND SPEED:	120 mph	EXPOSURE:	C
	SPACING:	24 in o.c.	Vasd OR Vult:	Vult	ALL LUMBER	SPF

(S) = Shear, (T) = Tension

Ridge_1



	Load Value	*Load Type*
1. TOP-CHORD TO TOP-CHORD (T)	98 lb	Wind/Sesmic
2. RIDGE TO RIDGE (NOT SHOWN) (S)	173 lb	Live/Dead
3. T-C TO RIDGE (S)	173 lb	Live/Dead
NA		-

1. TOP-CHORD TO TOP-CHORD (T)
Use (1) 26ga typ. strap with (5) 8d (.113) x 1.5in nails/end. Nail quota in chords. Apply every truss . Ridge ply gap <= 1in. 400 lb

2. RIDGE TO RIDGE (NOT SHOWN) (S)
Fasten together w/ (3) 8d (.131) x 3in nails from rail to rail.
Apply every bay staggered. Block mateline gap 36in o.c. min. 246 lb

3. T-C TO RIDGE (S)
Face fasten from ridge ply to top-chord w/ (4) 8d (.131) x 3.25in nails.
Apply every truss evenly spaced. Do NOT split top-chord end. 220 lb

NA
x
x x

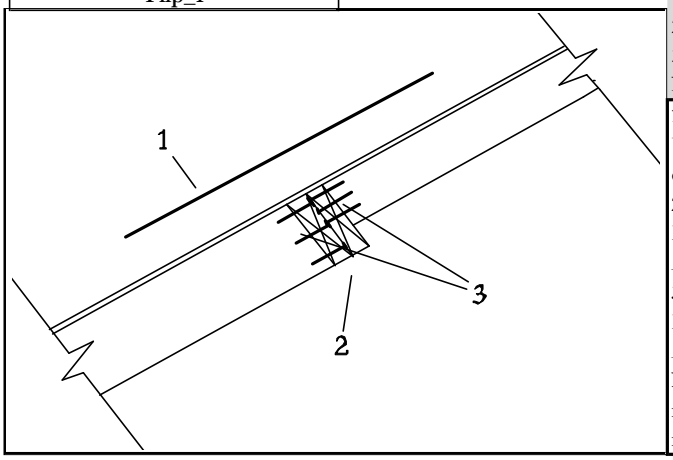
1. (400lb, Est. value)(5/5, F. Ratio)(1/1, Truss)(1.6/1.6, Dur.)
2. (82lb, NDS. Shear: T11R(2005), With.: T11.2C(2005), HeadPT: Est.)(3, F. Tot.)(1, Dur.)(1/1, Truss)
3. (82lb, NDS. Shear: T11R(2005), With.: T11.2C(2005), HeadPT: Est.)(4, F. Tot.)(1, Dur.)(0.67, EG Fac.)(1/1, Truss)

NA x

Notes to above: NA

(S) = Shear, (T) = Tension

Flip_1



	Load Value	*Load Type*
1. TOP-CHORD TO TOP-CHORD (T)	87 lb	Wind/Sesmic
2. RAIL TO RAIL (NOT SHOWN) (S)	188 lb	Live/Dead
3. TOP-CHORD TO RAIL (S)	188 lb	Live/Dead
NA		-

1. TOP-CHORD TO TOP-CHORD (T)
Use (1) 26ga typ. strap with (4) 8d (.113) x 1.5in nails/end. Nail quota in chords. Apply every other truss . Ridge ply gap <= 1in. 160 lb

2. RAIL TO RAIL (NOT SHOWN) (S)
Fasten together w/ (3) 8d (.131) x 3in nails from rail to rail.
Apply every bay staggered. Block mateline gap 36in o.c. min. 246 lb

3. TOP-CHORD TO RAIL (S)
Face fasten from ridge ply to top-chord w/ (4) 8d (.131) x 3in nails.
Apply every truss evenly spaced. Do NOT split top-chord end. 220 lb

NA
x
x x

1. (400lb, Est. value)(4/5, F. Ratio)(1/2, Truss)(1.6/1.6, Dur.)
2. (82lb, NDS. Shear: T11R(2005), With.: T11.2C(2005), HeadPT: Est.)(3, F. Tot.)(1, Dur.)(1/1, Truss)
3. (82lb, NDS. Shear: T11R(2005), With.: T11.2C(2005), HeadPT: Est.)(4, F. Tot.)(1, Dur.)(0.67, EG Fac.)(1/1, Truss)

NA x

Notes to above: NA

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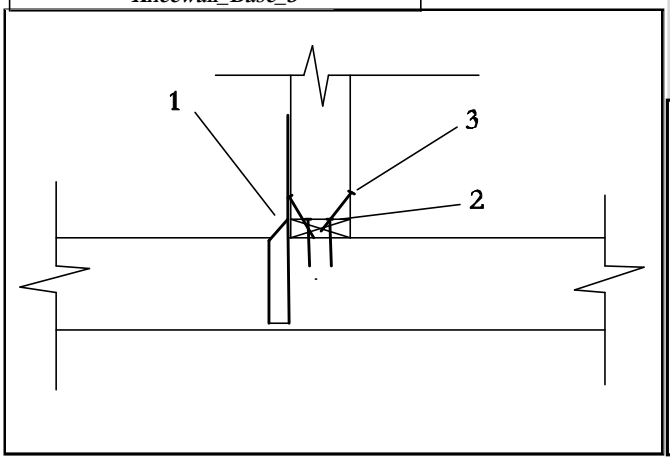
TRUSS CONNECTION WORKSHEET (CONT)

ASCE 7-16	TRUSS NO.	CCE79501, 79502	WIND SPEED:	120	EXPOSURE:	C
	SPACING:	24 in o.c.	Vasd OR Vult:	Vult	ALL LUMBER	SPF

(S) = Shear, (T) = Tension

Kneewall_Base_3



	Load Value	*Load Type*
1. KNEEWALL TO BOT-CHORD (T)	255 lb	Wind/Sesmic
2. BOT RUNNER TO BC (S)	200 lb	Wind/Sesmic
3. KNEEWALL TO RUNNER (S)	200 lb	Wind/Sesmic
NA		-

1. KNEEWALL TO BOT-CHORD (T)
Use (1) H8 (or equal) hanger(s) w/ (5) 8d (.131) x 3in
fasteners each end to bottom chord. Apply every other truss. 283 lb

2. BOT RUNNER TO BC (S)
Runner to kneewall end-grain w/ (2) No. 8 (.164) x 4in screws.
Apply every truss evenly spaced. Do NOT split top-chord end. 250 lb

3. KNEEWALL TO RUNNER (S)
Toe from kneewall to runner w/ (2) 8d (.131) x 3.25in nails.
Apply every truss evenly spaced each side of member. 218 lb

NA
x
x x

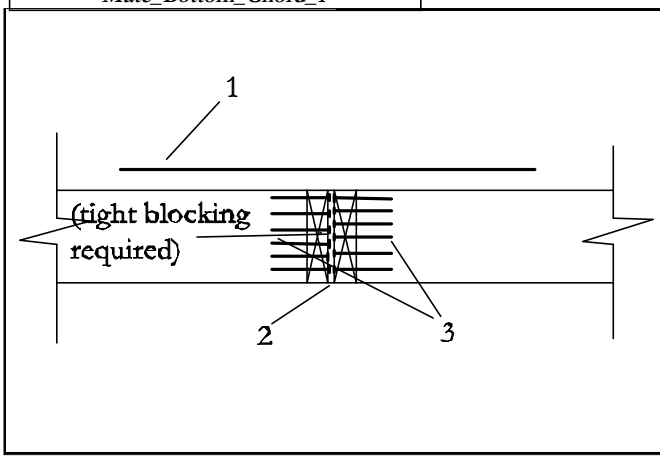
1. (565lb, SST Conn. Cat. C-2013 Pg. 182)(1, F. Tot.)(1.6/1.6, Dur.)(1/2, Truss)
2. (78lb, NDS. Shear: T11L(2005), With.: T11.2B(2005), HeadPT: Est.)(2, F. Tot.)(1.6, Dur.)(1/1, Truss)
3. (82lb, NDS. Shear: T11R(2005), With.: T11.2C(2005), HeadPT: Est.)(2, F. Tot.)(1.6, Dur.)(0.83, TN Fac.)(1/1, Truss)

NA x

Notes to above: Conn. 1 Above: Or use (1) 26ga x 1.5" strap w/ (8) 15ga staples each end. Install at slight angle.

(S) = Shear, (T) = Tension

Mate_Bottom_Chord_1



	Load Value	*Load Type*
1. BOTTOM CHORD TENSION TIE (T)	1005 lb	Live/Dead
2. BAND TO BAND (NOT SHOWN) (S)	150 lb	Live/Dead
3. BOTTOM CHORD TO BAND(S)	477 lb	Live/Dead
NA		-

1. BOTTOM CHORD TENSION TIE (T)
Use (1) CS16 strap with (11) 10d (.148) x 2.5in nails/end. Nail quota in
chords. Apply every truss . Ridge ply gap <= 1in. 1066 lb

2. BAND TO BAND (NOT SHOWN) (S)
Fasten together w/ (3) No. 10 (.190) x 4in screws from band to band.
Apply every bay staggered. Block mateline gap 36in o.c. min. 297 lb

3. BOTTOM CHORD TO BAND(S)
Face fasten from band to bottom-chord w/ (9) 8d (.131) x 3in nails.
Apply every truss evenly spaced. Do NOT split top-chord end. 494 lb

NA
x
x x

1. (1705lb, SST Conn. Cat. C-2013 Pg. 175)(11/11, F. Ratio)(1/1, Truss)(1/1.6, Dur.)
2. (99lb, NDS. Shear: T11L(2005), With.: T11.2B(2005), HeadPT: Est.)(3, F. Tot.)(1, Dur.)(1/1, Truss)
3. (82lb, NDS. Shear: T11R(2005), With.: T11.2C(2005), HeadPT: Est.)(9, F. Tot.)(1, Dur.)(0.67, EG Fac.)(1/1, Truss)

NA x

Notes to above: NOTE: For dormer truss, use hanger rated for 606lb in place of (9) nails shown above for shear load on connection 3.
NOTE: (13) 8d (.131) x 2.5" nails may be used in place of the 10d nails shown in connection 1.

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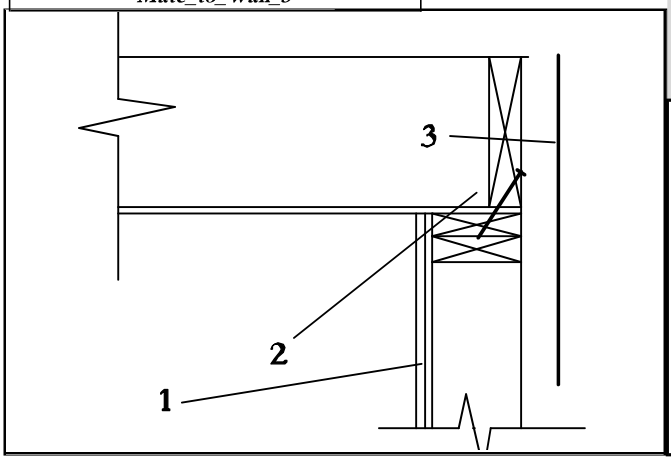
TRUSS CONNECTION WORKSHEET (CONT)

ASCE 7-16	TRUSS NO.	CCE79501, 79502	WIND SPEED:	120	EXPOSURE:	C
	SPACING:	24 in o.c.	Vasd OR Vult:	Vult	ALL LUMBER	SPF

(S) = Shear, (T) = Tension

Mate_to_Wall_3



	Load Value	*Load Type*
1. OSB NOTE	200 lb	Wind/Sesmic
2. MATE BAND TO TOP-PLATE (S)	200 lb	Wind/Sesmic
3. MATE BAND TO WALL STRAP (T)		-
NA		-

1. OSB NOTE
OSB sheathing either omitted OR placed on inside of wall under the gypsum wall board. See manufacture's plans. x

2. MATE BAND TO TOP-PLATE (S)
Toe through band to top-plate w/ (1) No. 10 (.190) x 4in screws min and space 12 in o.c. 263 lb

3. MATE BAND TO WALL STRAP (T)
Use (1) 26ga typ. strap with (5) 8d (.113) x 1.5in nails/end. Nail quota in band or wall stud. Apply 24 in o.c. 250 lb

NA
x
x

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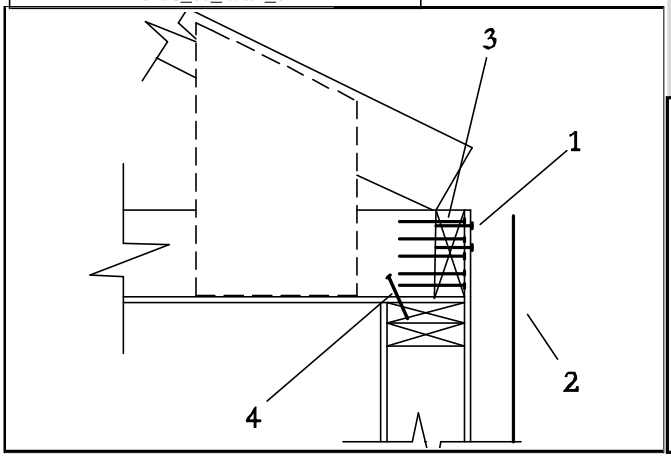
1. x
2. (99lb, NDS. Shear: T11L(2005), With.: T11.2B(2005), HeadPT: Est.)(1, F. Tot.)(24in o.c./12in, Truss)(1.6, Dur.)(0.83, TN Fa
3. (400lb, Est. value)(5/5, F. Ratio)(24in o.c./24in, Truss)(1/1.6, Dur.)

NA x

Notes to above: Conn. 3: 8d (.131) nails may be replaced with (7) 16ga staples each end.

(S) = Shear, (T) = Tension

Side_to_Wall_5



	Load Value	*Load Type*
1. WALL OSB TO TRUSS BAND (S)	355 lb	Wind/Sesmic
2. WALL STRAP TO TRUSS BAND (T)	355 lb	Wind/Sesmic
3. BAND TO TRUSS END (S)	200 lb	Wind/Sesmic
4. TOP PLATE TO TRUSS (S)		-

1. WALL OSB TO TRUSS BAND (S)
Use (1) 8d (.131) x 2in nails from top of full height lapped OSB to band min and space 4 in o.c. staggered. Full ht. lap on wall. 576 lb

2. WALL STRAP TO TRUSS BAND (T)
#N/A
band or wall stud. Apply in o.c. #N/A

3. BAND TO TRUSS END (S)
Face fasten from band to bottom/top-chord w/ (5) 8d (.131) x 3.25in nails. Apply every truss evenly spaced. Do NOT split chord end(s). 440 lb

4. TOP PLATE TO TRUSS (S)
Use (1) SDWC15600 x 6" toe-screw from bottom chord into top plate. Apply every truss. 203 lb

1. (60lb, NDS. Shear: T11R(2005), With.: T11.2C(2005), HeadPT: Est.)(1, F. Tot.)(24in o.c./4in, Truss)(1.6, Dur.)
2. #N/A
3. (82lb, NDS. Shear: T11R(2005), With.: T11.2C(2005), HeadPT: Est.)(5, F. Tot.)(1.6, Dur.)(0.67, EG Fac.)(1/1, Truss)
4. (99lb, NDS. Shear: T11L(2005), With.: T11.2B(2005), HeadPT: Est.)(3, F. Tot.)(1, Dur.)(0.83, TN Fac.)(1/1, Truss)

Notes to above: Conn.2: Strap not required. Conn. 1: OR .120 nails may be used.

Single top-plate may be used in place of the double shown above.

Building System Engineering, LLC
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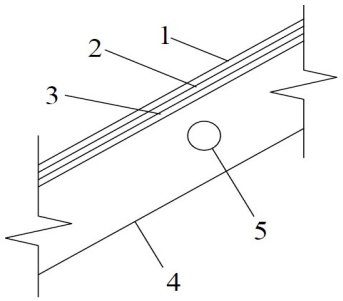
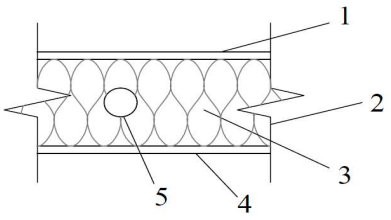
GENERAL PROJECT DEAD WEIGHT (EST.)

NO. OF BOXES WIDE=	2	NO. OF STORIES =	1	SINGLE BOX WIDTH (actual or ave.)=	15 '	6 "	16 31
TRUSS TYPE=	Knee-wall			WALL HT. (actual or ave.)=	9	0 "	9
DIST. BETWEEN SW & KW=*	8 '	0 "	8.00 ft	TRUSS SPACING=			24 in o.c.
TRUSS PITCH=	7/12			CEILING JOIST SPACING =			24 in o.c.
				WALL STUD SPACING=			16 in o.c.
				FLOOR JOIST SPACING =			16 in o.c.

TRUSS TOP CHORD SYSTEM			
1. SHINGLES=	Fiberglass Shingles		3.0 psf
2. ROOFING PAPER=	Felt Paper		0.35 psf
3. SHEATHING (OSB or PLY)=	1/2		1.7 psf
4. TRUSS TOP CHORD=	2x6		1.1 psf
5. MECHANICAL/ELECTR.=	0.0 psf		0.0 psf
6. MISC (user defined) =			1.00 psf
TOP-CHORD TOTAL (Horiz. Proj.) =		**8.3 psf**	



TRUSS BOTTOM CHORD SYSTEM			
1. SHEATHING (OSB or PLY)=	-		0.0 psf
2. TRUSS BOTTOM CHORD=	2x10		1.9 psf
3. INSULATION=	9.25" Fiberglass Batt		0.37 psf
4. CEILING GYPSUM=	1/2		2.20 psf
5. MECHANICAL/ELECTR.=	0.0 psf		0.0 psf
6. MISC (user defined) =			2.00 psf
BOTTOM CHORD TOTAL =		**6.4 psf**	



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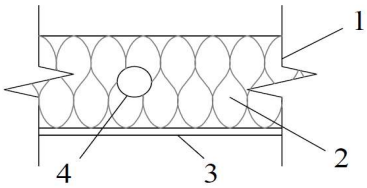
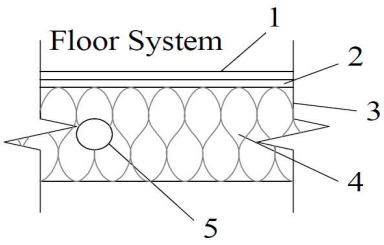
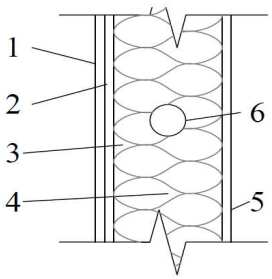


FLOOR SYSTEM			
1. FLOORING=	Carpet & Pad		2.0 psf
2. SHEATHING (OSB or PLY)=	3/4		2.5 psf
3. FLOOR JOISTS=	2x10		2.8 psf
4. INSULATION=	9.25" Fiberglass Batt		0.37 psf
5. MECHANICAL/ELECTR.=	1.0 psf		1.0 psf
6. MISC (user defined) =			0.00 psf
ADD DOUBLE BAND EACH SIDE?			Yes
CEILING TOTAL =		**9.4 psf**	



EXTERIOR WALL SYSTEM			
1. SIDING=	Vinyl Siding		1.0 psf
2. SHEATHING (OSB or PLY)=	1/2		1.7 psf
3. WALL STUDS=	2x6		1.7 psf
4. INSULATION=	5.5" Fiberglass Batt		0.22 psf
5. WALL GYPSUM=	1/2		2.20 psf
6. MECHANICAL/ELECTR.=	0.0 psf		0.0 psf
7. MISC (user defined) =			1.00 psf
EXTERIOR WALL SYSTEM TOTAL=		**7.8 psf**	



* Kneewall distance must be less than box width.

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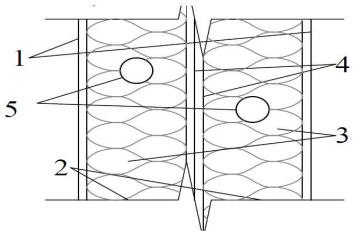
GENERAL PROJECT DEAD WEIGHT (EST., CONT.)

MATEWALL SYSTEM

1. WALL GYPSUM=	1/2		2.20 psf
2. WALL STUDS=	2x4		1.1 psf
3. INSULATION=	9.25" Fiberglass Batt		0.37 psf
4. SHEATHING (OSB or PLY)=	-		0.0 psf
5. MECHANICAL/ELECTR.=	0.0 psf		0.0 psf
6. MISC (user defined) =			0.00 psf
MATEWALL SYSTEM BOTH SIDES=		**7.2 psf**	



SIDE/MATEWALL DEAD LOAD CHASE

	SIDEWALL	MATEWALL*		SIDEWALL	
UNDER TOP-CHORD	**79 plf**	**98 plf**		**79 plf**	Total:
SUM TOTAL:	**79 plf**	**98 plf**		**79 plf**	257 plf
UNDER BOTTOM-CHORD	**50 plf**	**100 plf**		**50 plf**	Total:
SUM TOTAL:	**129 plf**	**198 plf**		**129 plf**	456 plf
UNDER 1st LVL FlOOR	**143 plf**	**210 plf**		**143 plf**	Total:
SUM TOTAL:	**271 plf**	**408 plf**		**271 plf**	950 plf

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ENDWALL DEAD LOAD CHASE

	ENDWALL		ENDWALL
UNDER BOTTOM-CHORD	**35 plf**		
SUM TOTAL:	**35 plf**		
		UNDER 1st LVL FlOOR	**76 plf**
		SUM TOTAL:	**111 plf**

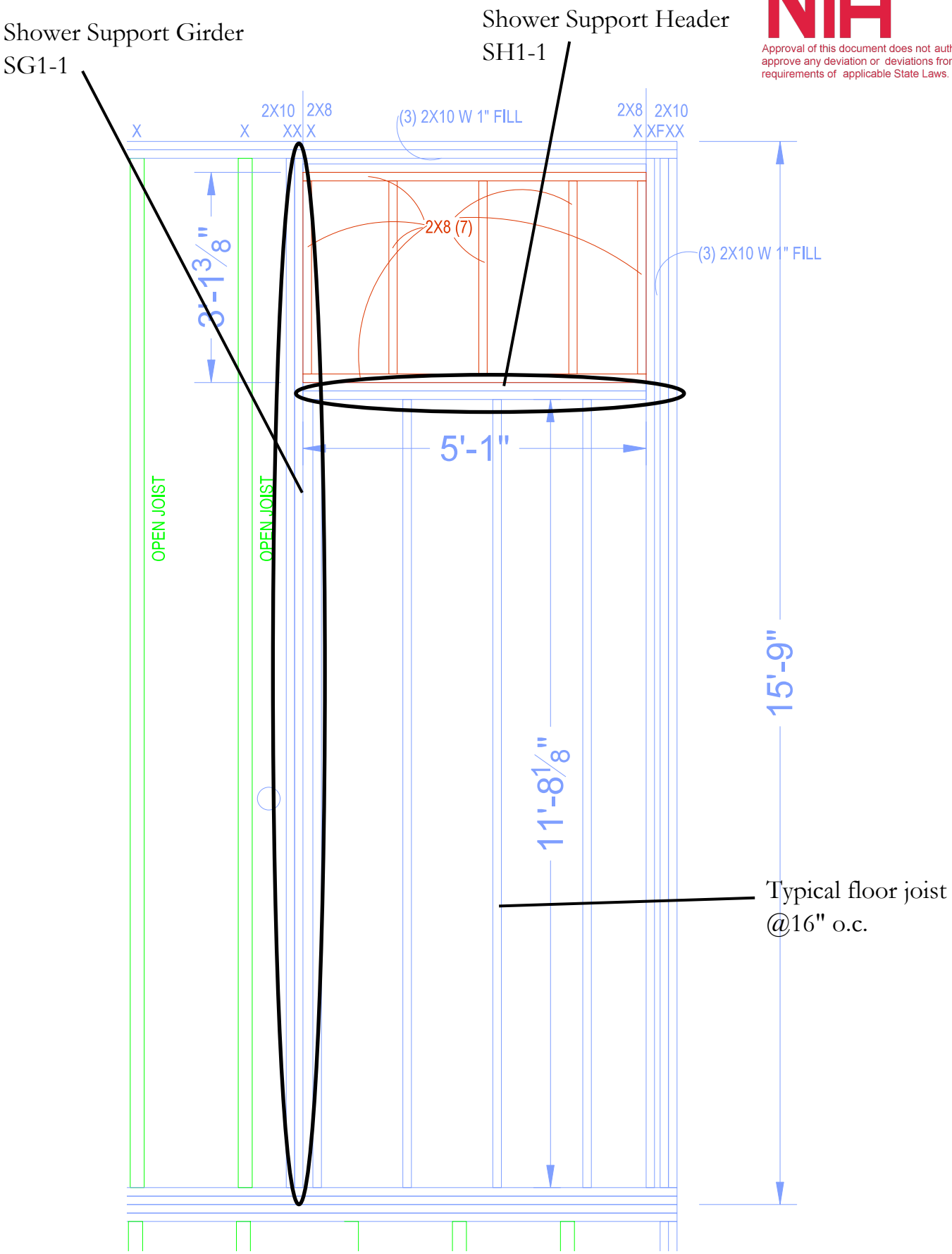
INCLUDE DOUBLE PLY ENDWALL BANDS IN ENDWALL WEIGHT? Yes

Side Wall OSB Point Resisting Aspect Ratio? 1 (height) : 1.0 (width)
Side Wall Point Load Resistance (w/ 40% ASCE reduction for wind loading)
(2)(271plf)(9ft x 1/1)(.6) = 2927 lb

Corner of Wall OSB Point Resisting Aspect Ratio? 1 (height) : 1.0 (width)
Corner of Wall Point Load Resistance (w/ 40% reduction for wind loading)
[(271plf)(9ft x 1/1) + (111plf)(15.5ft/2)](.6) = 1980 lb

1980lb (conservative 1:1 ratio) > 928lb from joist reaction on page 18, OK

Shower Floor Framing Legend



WoodWorks® SOFTWARE FOR WOOD DESIGN	COMPANY Nov. 3, 2021 12:46	PROJECT SG1-1 Beam1

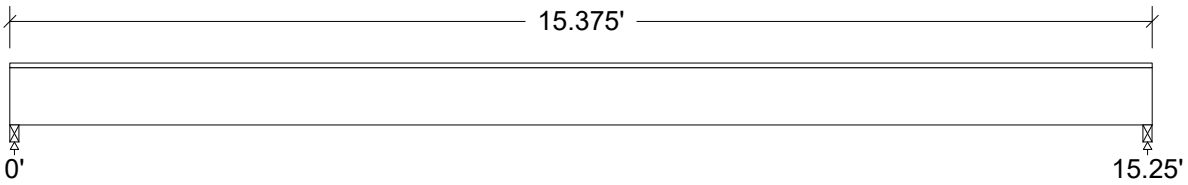
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 1)

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Full Area				10.00(1.00')		psf
Load2	Live	Full Area				40.00(1.00')		psf
Load3	Dead	Point		3.17		218		lbs
Load4	Live	Point		3.17		816		lbs

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	251		121
Live	957		474
Factored:			
Total	1208		595
Bearing:			
Capacity			
Beam	2542		2542
Support	3164		3164
Des ratio			
Beam	0.48		0.23
Support	0.38		0.19
Load comb	#2		#2
Length	1.50*		1.50*
Min req'd	1.50*		1.50*
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.13		1.13
Fcp sup	625		625

*Minimum bearing length setting used: 1-1/2" for end supports

Lumber n-ply, S. Pine, No. 1, 2x10, 2-ply (3"x9-1/4")

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 15.38'; Clear span: 15.125'; Volume = 3.0 cu.ft.

Lateral support: top = continuous, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 63	Fv' = 175	psi	fv/Fv' = 0.36
Bending(+)	fb = 982	Fb' = 1050	psi	fb/Fb' = 0.94
Live Defl'n	0.35 = L/529	0.51 = L/360	in	0.68
Total Defl'n	0.44 = L/420	0.76 = L/240	in	0.57

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	Cn	LC#
Fv'	175	1.00	1.00	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	1000	1.00	1.00	1.00	1.000	1.050	-	1.00	1.00	1.00	-	2
Fcp'	565	-	1.00	1.00	-	-	-	-	1.00	1.00	-	-
E'	1.6 million	1.00	1.00	1.00	-	-	-	-	1.00	1.00	-	2
Emin'	0.58 million	1.00	1.00	1.00	-	-	-	-	1.00	1.00	-	2

CRITICAL LOAD COMBINATIONS:

```
 Shear     : LC #2  = D+L
 Bending(+): LC #2  = D+L
 Deflection: LC #2  = D+L  (live)
             LC #2  = D+L  (total)
 Bearing   : Support 1 - LC #2 = D+L
             Support 2 - LC #2 = D+L
 D=dead L=live S=snow W=wind I=impact Lr=roof live Lc=concentrated E=earthquake
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-16 2.4 / IBC 2018 1605.3.2
```

CALCULATIONS:

```
 V max = 1205, V design = 1163 lbs; M(+) = 3501 lbs-ft
 EI = 158.29e06 lb-in^2/ply
 "Live" deflection is due to all non-dead loads (live, wind, snow…)
 Total deflection = 1.0 dead + "live"
```

Design Notes:

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2018), the National Design Specification (NDS 2018), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.
4. BUILT-UP BEAMS: it is assumed that each ply is a single continuous member (that is, no butt joints are present) fastened together securely at intervals not exceeding 4 times the depth and that each ply is equally top-loaded. Where beams are side-loaded, special fastening details may be required.
5. FIRE RATING: Joists, wall studs, and multi-ply members are not rated for fire endurance.
6. Also compliant with the ASCE 7-10 and 2015 NDS.
7. Total ply shown. Interconnect.

WoodWorks® SOFTWARE FOR WOOD DESIGN	**COMPANY** Nov. 3, 2021 12:44	**PROJECT** SH1-1 Beam1

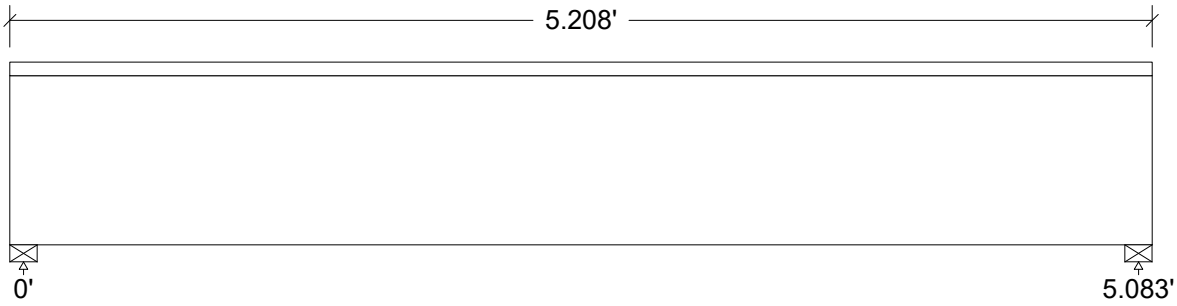
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 1)

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Full Area				10.00(7.83')		psf
Load2	Live	Full Area				40.00(7.83')		psf
Self-weight	Dead	Full UDL				5.6		plf

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	218		218
Live	816		816
Factored:			
Total	1034		1034
Bearing:			
Capacity			
Beam	1912		1912
Support	3164		3164
Des ratio			
Beam	0.54		0.54
Support	0.33		0.33
Load comb	#2		#2
Length	1.50*		1.50*
Min req'd	1.50*		1.50*
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.13		1.13
Fcp sup	625		625

*Minimum bearing length setting used: 1-1/2" for end supports

Lumber n-ply, S-P-F, No.1/No.2, 2x10, 2-ply (3"x9-1/4")

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 5.21'; Clear span: 4.958'; Volume = 1.0 cu.ft.

Lateral support: top = continuous, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 37	Fv' = 135	psi	fv/Fv' = 0.27
Bending(+)	fb = 360	Fb' = 962	psi	fb/Fb' = 0.37
Live Defl'n	0.02 = < L/999	0.17 = L/360	in	0.10
Total Defl'n	0.02 = < L/999	0.25 = L/240	in	0.08

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	Cn	LC#
Fv'	135	1.00	1.00	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	875	1.00	1.00	1.00	1.000	1.100	-	1.00	1.00	1.00	-	2
Fcp'	425	-	1.00	1.00	-	-	-	-	1.00	1.00	-	-
E'	1.4 million		1.00	1.00	-	-	-	-	1.00	1.00	-	2
Emin'	0.51 million		1.00	1.00	-	-	-	-	1.00	1.00	-	2

CRITICAL LOAD COMBINATIONS:

```
 Shear     : LC #2  = D+L
 Bending(+): LC #2  = D+L
 Deflection: LC #2  = D+L  (live)
             LC #2  = D+L  (total)
 Bearing   : Support 1 - LC #2 = D+L
             Support 2 - LC #2 = D+L
 D=dead L=live S=snow W=wind I=impact Lr=roof live Lc=concentrated E=earthquake
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-16 2.4 / IBC 2018 1605.3.2
```

CALCULATIONS:

```
 V max = 1010, V design = 679 lbs; M(+) = 1283 lbs-ft
 EI = 138.50e06 lb-in^2/ply
 "Live" deflection is due to all non-dead loads (live, wind, snow…)
 Total deflection = 1.0 dead + "live"
```

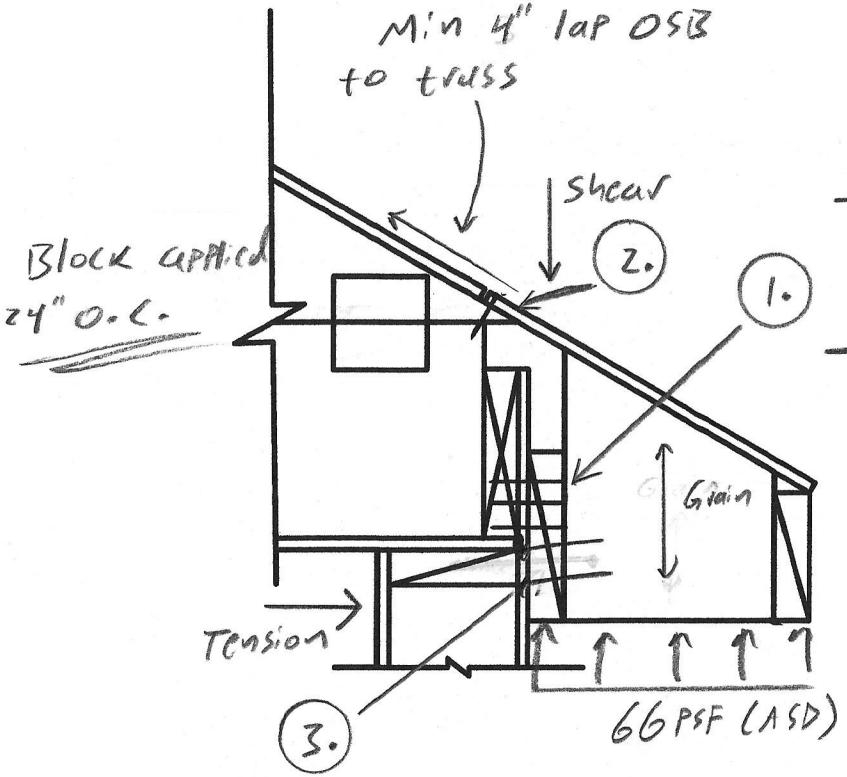
Design Notes:

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2018), the National Design Specification (NDS 2018), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.
4. BUILT-UP BEAMS: it is assumed that each ply is a single continuous member (that is, no butt joints are present) fastened together securely at intervals not exceeding 4 times the depth and that each ply is equally top-loaded. Where beams are side-loaded, special fastening details may be required.
5. FIRE RATING: Joists, wall studs, and multi-ply members are not rated for fire endurance.
6. Also compliant with the ASCE 7-10 and 2015 NDS.
7. Total ply shown. Interconnect.

Sidewall OH Connection

Shear @ block: 66PSF × 2ft × 1ft = 132lb

Tension @ block: 132lb × .5ft/1ft = 66lb



→ Conn. (1.): Use (2) 8d (.131) × 3.25" nails (82lb × 2 × 1.6 = 262lb > 132lb, ok)

→ Conn. (2.): Use (1) 8d (.120) × 2" nails (50lb × 1 × 1.6 = 80lb > 66lb, ok)

→ Conn. (3.): Use (2) 8d (.131) × 3.25" nails from rail into OH block side (21lb × 2 × 1.6 × 1.5in = 100lb > 66lb, ok)

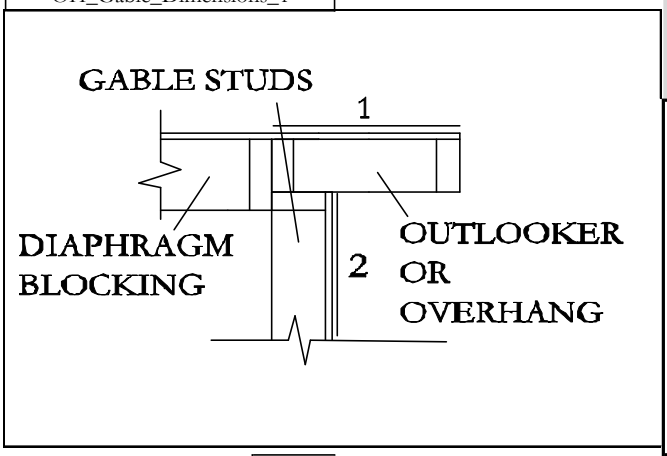
GABLE AND OVERHANG CONNECTION WORKSHEET

ASCE 7-16	TRUSS NO.	JOB: Lake Springs	WIND SPEED:	115 mph	EXPOSURE:	C
			Vasd OR Vult:	Vasd	ALL LUMBER	SPF

All load values ASD U.O.N.

(S) = Shear, (T) = Tension

OH_Gable_Dimensions_1



	Load Value	Load Type
1. OVERHANG LENGTH	1.00 ft	Wind/Sesmic
2. MAX GABLE HEIGHT (approx.)	8.75 ft	Wind/Sesmic
NA		-
NA		-

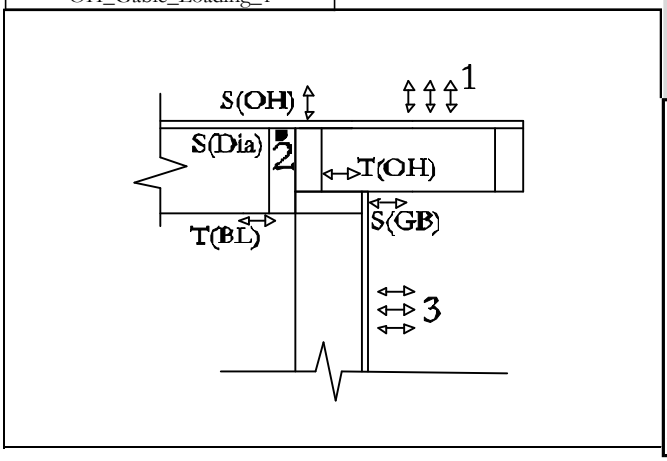
1. OVERHANG LENGTH
Total length (from support to tip) is 8.75 ft.
2. MAX GABLE HEIGHT (approx.)
Approx. max gable height at ridge is 8.75ft from nearest support below.
NOTE: Roof sheathing must extend fully over outlookers AND across min (1) truss bay. Roof sheathing should be staggered 4ft o.c. (for example: every overhang should have 7ft and 3ft OSB sheets alternating for 1ft overhang)
x
x
x
x
x

Gable stud spacing:	24in oc	Outlooker spacing:	24in oc	Blocking spacing:	24in oc
Gable panal length top:	30.00 ft (for shear determination)	Outlooker depth:	3.50 in	Block depth:	3.50 in
Gable panal length base:	30.00 ft (for shear determination)				

Notes to above: _____

(S) = Shear, (T) = Tension

OH_Gable_Loading_1



	Load Value	Load Type
1. MAX OH PRESSURE	66 psf	Wind/Sesmic
2. DIA. SHEAR LOAD (REACTION)	5100 lb	Wind/Sesmic
3. MAIN GABLE PRESSURE	21 psf	Wind/Sesmic
NA		-

1. MAX OH PRESSURE
Total OH pressure is 66 psf.
2. DIA. SHEAR LOAD (REACTION)
Shear load at base and top of gable from roof diaphragm is 5100 lb.
3. MAIN GABLE PRESSURE
Zone 4 gable pressure is 21psf.

i. Shear for Outlookers, S(OH), (OUT-OF-PLANE)	------->	S(OH)	**99 plf**
ii. Shear for Gable Stud, S(GB), (OUT-OF-PLANE)	------->	S(GB)	**92 plf**
iii. Shear for Gable Top, S(DiaT), (IN-PLANE)	------->	S(DiaT)	**170 plf**
iv. Shear for Gable Base, S(DiaB), (IN-PLANE)	------->	S(DiaB)	**170 plf**
v. Tension on Underside of Outlookers, T(OH)	------->	T(OH)	**158 plf**
vi. Tension at Underside of Truss Blocking, T(BL)	------->	T(BL)	**158 plf**

i. (66psf)(1ft)+(66psf/2)(2ft truss o.c. max/2)
ii. (21psf)(8.75ft/2)
iii. (5100lb)/(30ft)
iv. (5100lb)/(30ft)
v. (66psf)(1ft)(1ft/2)/((3.5in-1in)/12)
vi. (66psf)(1ft)(1ft/2)/((3.5in-1in)/12)

Notes to above: _____

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Greenville, SC 29609

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wfultz@bseng.org

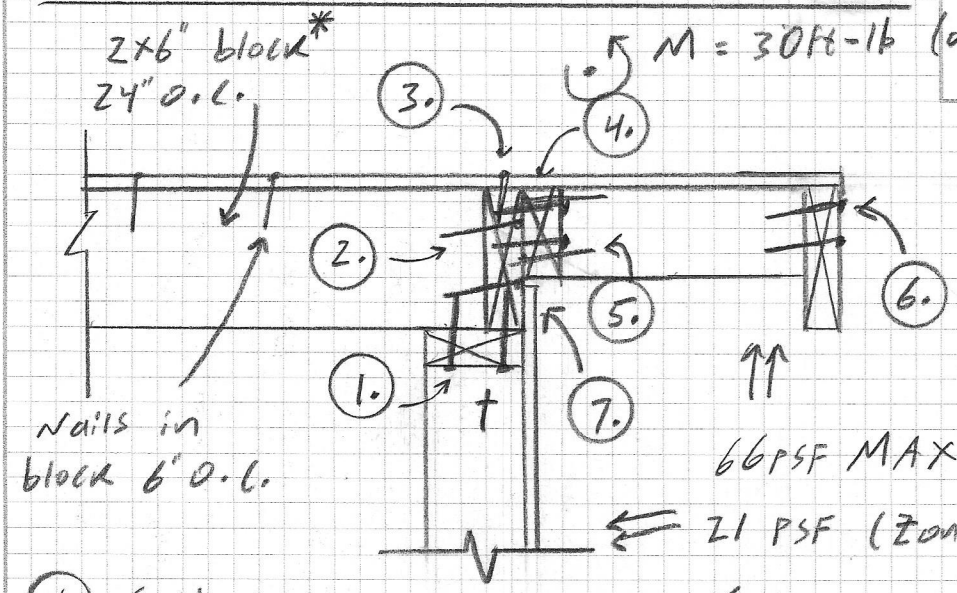
SHEET _____ OF _____

SEAL

JOB IMP - Lake Springs - SC

BY WF DATE 01/25/22 SCALE NTS

Top Chord to OH Runner Conn:



(1.) Gable top-plate to truss/block

Use (1) nail each block & (1) nail in truss top-chord 24" O.C. Nails are 8d (.131) x 3".
(82lb x 1.6 x [12/24 + 12/24]) = 131 plf > 95 plf, Ok

(2.) Top Chord to block

Use (2) 8d (.131) x 3" nails from end truss into block end-grain.

(3.) Roof OSB to gable top-chord

Use (1) 8d (.120) x 2" nail 4" O.C.
(50lb x 1.6 x 12/4 x 30ft = 7200lb > 5100lb, Ok)

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JOB IMP - Lake Springs - SC

BY WF DATE 01/25/22 SCALE NTS

Top Chord to OH Runner Conn:

(4.) OH Runner to gable top-chord

Use (2) 8d (.131) x 3" nails 24" o.c.
(821lb x 1.6 x 12/24 x 2 = 131 plf > 99 plf, ok)

(5.) OH Runner to OH outlooker end-grain

Use (3) 8d (.131) x 3" nails
(821lb x 1.6 x 3 x .67 x 12/24 = 131 plf > 99 plf, ok)

(6.) Fascia to OH outlooker end-grain

Use (2) 8d (.131) x 3" nails

(7.) 1½" OSB lap onto gable top-chord

Fasten w/ (1) 8d (.120) x 2" nail 4" o.c.
w/ slight stagger
(501lb x 1.6 x 12/4 x 30ft = 7200lb > 5100lb, ok)

→ * 2x6" block may be eliminated if double ply gable top-chord used.

→ ** 7/16" OSB holds overhang moment load.
(385 lb-in/ft > 360 lb-in/ft, ok)

→ † (3) 8d (.131) x 3" nails into stud from plate.

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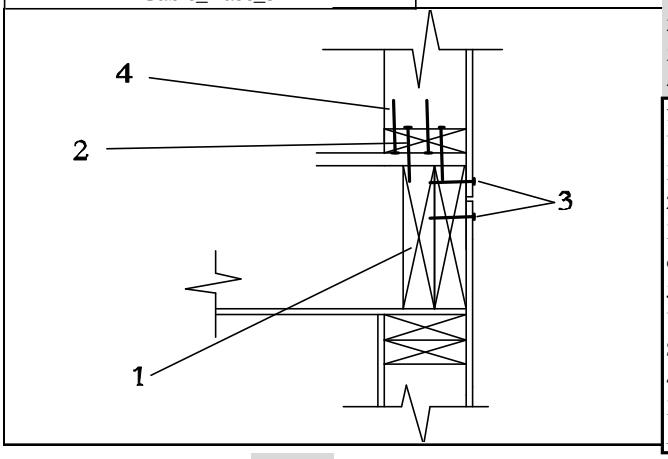
GABLE AND OVERHANG CONNECTION WORKSHEET (CONT)

ASCE 7-16	TRUSS NO.	JOB: Lake Springs	WIND SPEED:	115	EXPOSURE:	C
			Vasd OR Vult:	Vasd	ALL LUMBER	SPF

(S) = Shear, (T) = Tension

Gable_Base_3



	Load Value	*Load Type*
1.		-
2.	92 plf	Wind/Sesmic
3.	170 plf	Wind/Sesmic
4.	92 plf	Wind/Sesmic

1. ENDWALL BAND NOTES
Use a (2) ply bottom-chord for gable end.
Fasten plys together w/ (2) 8d (.131) x 3in nails 8in o.c. or equivalent x

2. INSERT BASE TO DOUBLE B-CHORDS (S), [S(GB)]
Fasten together w/ (2) 16d (.162) x 3.5in nails from insert panel base-plate to double bottom chords. Apply every stud bay evenly spaced. 119 lb

3. OSB TO BOTTOM CHORDS (S), [max of S(DiaB) or S(OH)]
Use (1) 8d (.113) x 2in nails from 1.5in lapped OSB to bottom chord(s).
Space 4 in o.c. staggered. Apply both sides of OSB joint. 221 lb

4. INSERT TOP- PLATE TO GABLE STUD (S), [S(GB)]
Face fasten from runner to stud end w/ (3) 8d (.131) x 3in nails.
Apply every stud evenly spaced. Do NOT split end. 132 lb

Gable stud spacing: 24in oc

1. NA
2. (120lb, NDS. Shear: T12N, With.: T12.2C, HeadPT: T12.2F)(0.62, only 1in pen)(2, F. Tot.)(1, Dur.)(1/(1*24/12))
3. (46lb, NDS. Shear: T12R, With.: T12.2C, HeadPT: T12.2F)(1, F. Tot.)(1.6, Dur.)(12in/4in o.c.)
4. (82lb, NDS. Shear: T12N, With.: T12.2C, HeadPT: T12.2F)(3, F. Tot.)(1.6, Dur.)(0.67, EG Fac.)(1/(1*24/12), Stud)

Notes to above: For conn. 3, (.113) nails may be substituted for (.120) nails.
For conn. 2, 16d nails may be substituted with No.10 x 3.5" screws.

Blank

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TECO BUILDING CONFIDENCE

TECH TIP

Design Capacities for Oriented Strand Board

Allowable Stress Design (ASD)

The design values in this document correspond with those published in the 2005 edition of the AF&PA American Wood Council's *Allowable Stress Deign (ASD)/LRFD Manual for Engineered Wood Construction*. TECO has chosen to do so to provide harmony among users--architects, engineers, specifiers and the regulatory community. These are "Industry Recommended" values, but are not rigorously evaluated for on-going verification.

Load capacities, which are presented here for allowable stress design (ASD) (Table A), are applicable to commodity OSB panels qualified in accordance with TECO test protocol. Nominal panel thickness (Table B) assists in calculation of geometric cross-sectional properties. The applicable section properties (Table C) can be divided into load capacity to determine design strength and stiffness. Load capacities in Table A are based on normal duration of load for untreated panels under dry conditions. Because these values are OSB-specific, the appropriate panel grade and construction adjustment factors, C_G, have already been applied. Designers must be careful to avoid making the C_G adjustments again.

Adjustment factors for other conditions of use are permitted in accordance with applicable code provisions. The *National Design Specification for Wood Construction* (NDS) provides guidance on the use of adjustment factors.

General Design Information

Methods presented in this section may be used to calculate uniform load capacity of structural-use panels in floor, roof and wall applications. The design capacities presented in Table A include the grade and construction factor, C_G. Other applicable adjustment factors as specified in Section 9.3 of the 2005 edition of the ANSI/AF&PA NDS-2005, National Design Specifications (NDS) for Wood Construction ASD/LRFD and Section C9.3 of the 2005 Edition of the AF&PA American Wood Councils' *Commentary National Design Specification (NDS) for Wood Construction ASD/LRFD*, should be applied to the design capacities.

There are three possible span conditions to consider when computing the uniform load capacities of structural-use panels depending on the size and orientation of the panel and the spacing of the framing support members. These include single-span, two-span and three-span (see below). For normal framing practice and standard panel size (i.e., 4x8 foot), when the panel strength axis is perpendicular to framing supports, the three-span condition is used for support spacing up to and including 32 inches on center. Use the two-span condition for support spacing greater than 32 inches on center but no greater than 48 inches on center. When the panel strength axis is placed parallel to framing supports, the three-span condition is used for support spacing up to and including 16 inches on center. Use the two-span condition for support spacing greater than 16 inches but no greater than 24 inches on center. Use the single-span condition for support spacing greater than 24 inches on center.

The formulas presented are for computing uniform loads on structural-use panels applied over conventional framing. These equations are based on standard beam formulas altered to accept the mixed units. For support spacing less than 48 inches, nominal two-inch framing members are assumed. For support spacing 48 inches and greater, nominal four-inch framing members are assumed. Since the formulas assume that no blocking is used, the formulas are for one-way "beam" action rather than two-way "plate" action. The resulting load is for the structural panels only and does not account for the design of the framing support members. The resulting loads calculated from the equations are assumed to apply to full size panels in standard sheathing applications. Considerations for concentrated loads should be made in compliance with local building codes and maximum span recommendations.

Table A
Wood Structural Panel Design Capacities Based on Span Ratings[(a)]

Span Rating	Strength						Planar Shear	Stiffness and Rigidity				
	Bending $F_b S$ (lb-in/ft of width)	**Axial Tension** $F_t A$ (lb/ft of width)	**Axial Compression** $F_c A$ (lb/ft of width)	**Shear through the thickness** [(b)] $F_v t_v$ (lb/in of shear-resisting panel length)			**Planar Shear** F_s (lb/Q) (lb/ft of width)	**Bending** EI ($lb\text{-}in^2$/ft of width)	**Axial**[(a1)] EA (lb/ft of width x 10^6)		**Rigidity through the thickness** $G_v t_v$ (lb/in of panel depth)	
	Capacities relative to strength axis [(c)]											
	0°	90°	0°	90°	0°	90°	0° / 90°	0° / 90°	0°	90°	0°	90°	0° / 90°
Sheathing Span®													
24/0	300	97	2,300	780	2,850	2,500	155	130	60,000	11,000	3.35	2.50	77,500
24/16	385	115	2,600	1,300	3,250	2,500	165	150	78,000	16,000	3.80	2.70	83,500
32/16	445	165	2,800	1,650	3,550	3,100	180	165	115,000	25,000	4.15	2.70	83,500
40/20	750	270	2,900	2,100	4,200	4,000	195	205	225,000	56,000	5.00	2.90	88,500
48/24	1,000	405	4,000	2,550	5,000	4,300	220	250	400,000	91,500	5.85	3.30	96,000
Floor Span®													
16 oc	500	180	2,600	1,900	4,000	3,600	170	205	150,000	34,000	4.50	2.70	83,500
20 oc	575	250	2,900	2,100	4,200	4,000	195	205	210,000	40,500	5.00	2.90	87,000
24 oc	770	385	3,350	2,550	5,000	4,300	215	250	300,000	80,500	5.85	3.30	93,000
32 oc	1,050	685	4,000	3,250	6,300	6,200	230	300	650,000	235,000	7.50	4.20	110,000
48 oc	1,900	1,200	5,600	4,750	8,100	6,750	305	385	1,150,000	495,000	8.20	4.60	155,000

(a) The design values in this table correspond with those published in the 2005 edition of the AF&PA American Wood Council's *Allowable Stress Deign (ASD)/LRFD Manual for Engineered Wood Construction* Tables M9.2.1- M9.2.4, which are available from the AF&PA American Wood Council.

(a1) In late January 2008, revised Axial EA 90° (perpendicular) values were submitted for modification to AF&PA based on an industry-wide consensus. The appropriate panel grade and construction adjustment factor, C_G, has already been incorporated into these design values—do not apply the C_G factor a second time. These values do not apply to Structural I panels. See Tables M9.2.1 – M9.2.4 for the appropriate multipliers for Structural I panels.

(b) Shear through the thickness design capacities are limited to sections two feet or less in width; wider sections may require further reductions.

(c) Strength axis is defined as the axis parallel to the face and back orientation of the flakes, which is generally the long panel direction, unless otherwise marked.

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SHEET ____ OF ____

SEAL

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 31010 WILLIAM E FULTZ

01/25/22

JOB IMP-Lake Springs-SC

BY WF DATE 12/10/19 SCALE NTS

26GA STRAP:

7-NAILS | 5-NAILS

CHECKED FOR BOTH .148 & .120 NAILS

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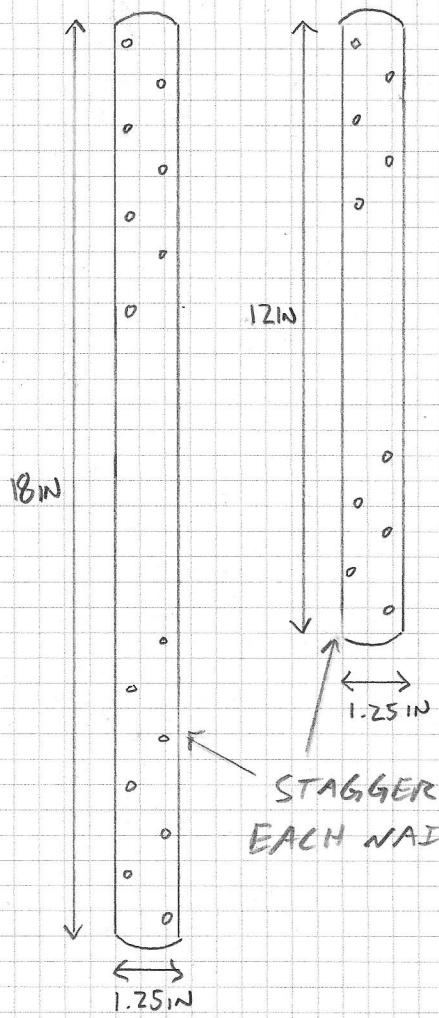
STRAP #1 STRAP #2



STRAP #1:

TENSILE CAPACITY: 33,000 PSI × [(1.25 × 0.0187) − (0.148 × 0.0187)] = 680 lbs

(7) 1 3/4" × 0.120" ROOFING NAILS:

(7 × 43# × 1.6 = 481 lbs)

STRAP #2:

TENSILE CAPACITY: 697 lbs

(5) 1 3/4" × 0.120" ROOFING NAILS:

(5 × 43# × 1.6 = 344 lbs)

1.75 REDUCTION FACTOR ON STEEL

7- NAILS EA. END	=	390 LB WL
5- NAILS EA. END	=	340 LB WL

NOTE: (10) 16ga x 1.5" staples each end will give 381lb tension capacity. See staple calculation after nail design. OK. 1.75 reduction not need to large quantity of small fasteners.

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FASTENER SINGLE SHEAR, *D < 0.25in*
PER NDS 2015

SHANK DIAMETER (D, one leg if staple):	0.120 in	3/25 in	FASTENER TYPE:
DOWEL BENDING YIELD STRENGTH (Fyb):	80000 psi		Nail
REDUCTION TERM (Rd):	2.2		

DOWEL BEARING STRENGTH

→ SIDE MEMBER (Fes):	40000 psi	k1 =	2.5516029
→ MAIN MEMBER (Fem):	3350 psi	k2 =	0.5121036
DOWEL BEARING STRENGTH RATIO (Re):	0.08375	k3 =	33.930635

SIDE MEMBER PENETRATION (ls):	0.02 in	
MAIN MEMBER PENETRATION (lm):	1.50 in	
BEARING LENGTH RATIO (Rt):	75	

SHEAR VALUE CHECK:

Failure Mode	Shear
Im	274 lb
Is	44 lb
II	111 lb
IIIm	120 lb
IIIs	60 lb
IV	84 lb

MINIMUM SHEAR VALUE (Zmax): 43.6 lb (one leg)

Nail = 43 lb shear

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FASTENER SINGLE SHEAR, *D < 0.25in*
PER NDS 2015

SHANK DIAMETER (D, one leg if staple):	0.148 in	4/27 in	FASTENER TYPE:
DOWEL BENDING YIELD STRENGTH (Fyb):	80000 psi		Nail
REDUCTION TERM (Rd):	2.2		

DOWEL BEARING STRENGTH

→ SIDE MEMBER (Fes):	40000 psi	k1 =	2.5516029
→ MAIN MEMBER (Fem):	3350 psi	k2 =	0.5324644
DOWEL BEARING STRENGTH RATIO (Re):	0.08375	k3 =	41.924305

SIDE MEMBER PENETRATION (ls):	0.02 in	
MAIN MEMBER PENETRATION (lm):	1.50 in	
BEARING LENGTH RATIO (Rt):	75	

SHEAR VALUE CHECK:

Failure Mode	Shear
Im	338 lb
Is	54 lb
II	137 lb
IIIm	154 lb
IIIs	91 lb
IV	128 lb

MINIMUM SHEAR VALUE (Zmax): 53.8 lb (one leg)

Nail = 53 lb shear

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FASTENER SINGLE SHEAR, *D < 0.25in*
PER NDS 2015

SHANK DIAMETER (D, one leg if staple):	0.064 in	5/78 in	FASTENER TYPE:	
DOWEL BENDING YIELD STRENGTH (Fyb):	100000 psi		Staple	
REDUCTION TERM (Rd):	2.2			
DOWEL BEARING STRENGTH				
→ SIDE MEMBER (Fes):	50000 psi		k1 =	1.514222
→ MAIN MEMBER (Fem):	3350 psi		k2 =	0.4921244
DOWEL BEARING STRENGTH RATIO (Re):	0.067		k3 =	22.491912
SIDE MEMBER PENETRATION (ls):	0.02 in			
MAIN MEMBER PENETRATION (lm):	1.00 in			
BEARING LENGTH RATIO (Rt):	55.55555556			

SHEAR VALUE CHECK:

Failure Mode	Shear
Im	97 lb
Is	26 lb
II	40 lb
IIIm	42 lb
IIIs	19 lb
IV	27 lb

MINIMUM SHEAR VALUE (Zmax): 19.1 lb (one leg)

Staple = 38 lb shear

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SHEET ____ OF ____

SEAL

JOB IMP – Lake Springs – SC

BY WF DATE 01/25/22 SCALE NTS

Roof Fastener Spacing Check:*

Sheathing = 7/16" OSB
Truss spacing = 24" O.C. (SPF)
Fastener = (.120) x 2" nail
Fastener WD value = 194lb/in x 1.5 x 1.6 = 45 lb/nail

Zone 1:

$$\text{Spacing} = x = \frac{45\,\text{lb/nail}}{(34.9 \times .6 \times 1.3)\,\text{PSF}\,(2\,\text{ft})} = .72\,\text{ft/nail} = 9\,\text{in/nail}$$ **

Zone 2 (worst):

$$\text{Spacing} = x = \frac{45\,\text{lb/nail}}{(40.2 \times .6 \times 1.3)\,\text{PSF}\,(2\,\text{ft})} = .71\,\text{ft/nail} = 9\,\text{in/nail}$$ **

Zone 3 (worst):

$$\text{Spacing} = x = \frac{45\,\text{lb/nail}}{(53.9 \times .6 \times 1.3)\,\text{PSF}\,(2\,\text{ft})} = .53\,\text{ft/nail} = 6\,\text{in/nail}$$ **

OH Similar

* Values taken from ASCE 7-16 Fig. 30.4-1

** Spacing varies an inch or so based on additional tributary area reduction required in the code. Program accounts for this.

Net Design Wind Pressure, p_{net30}, in lb/ft^2, for Exposure B at h = 30 ft, V= 95–130 mph

	Zone	Effective Wind Area (ft^2)	Basic Wind Speed (mph) 95		100		105		110		115		120		
Gable Roof > 20 to 27 Degrees	1	10	9.8	−23.1	10.9	−25.6	12.0	−28.2	13.2	−31.0	14.4	−33.9	15.7	−36.9	1
	1	20	8.9	−23.1	9.8	−25.6	10.8	−28.2	11.9	−31.0	13.0	−33.9	14.1	−36.9	1
	1	50	7.6	−19.6	8.4	−21.7	9.3	−24.0	10.2	−26.3	11.1	−28.8	12.1	−31.3	1
	1	100	6.6	−17.0	7.3	−18.8	8.1	−20.7	8.9	−22.8	9.7	−24.9	10.5	−27.1	1
	2e	10	9.8	−23.1	10.9	−25.6	12.0	−28.2	13.2	−31.0	14.4	−33.9	15.7	−36.9	1
	2e	20	8.9	−23.1	9.8	−25.6	10.8	−28.2	11.9	−31.0	13.0	−33.9	14.1	−36.9	1
	2e	50	7.6	−19.6	8.4	−21.7	9.3	−24.0	10.2	−26.3	11.1	−28.8	12.1	−31.3	1
	2e	100	6.6	−17.0	7.3	−18.8	8.1	−20.7	8.9	−22.8	9.7	−24.9	10.5	−27.1	1
	2n	10	9.8	−36.9	10.9	−40.9	12.0	−45.0	13.2	−49.4	14.4	−54.0	15.7	−58.8	1
	2n	20	8.9	−32.3	9.8	−35.8	10.8	−39.5	11.9	−43.3	13.0	−47.3	14.1	−51.5	1
	2n	50	7.6	−26.2	8.4	−29.1	9.3	−32.1	10.2	−35.2	11.1	−38.5	12.1	−41.9	1
	2n	100	6.6	−21.7	7.3	−24.0	8.1	−26.5	8.9	−29.0	9.7	−31.7	10.5	−34.6	1
	2r	10	9.8	−36.9	10.9	−40.9	12.0	−45.0	13.2	−49.4	14.4	−54.0	15.7	−58.8	1
	2r	20	8.9	−32.3	9.8	−35.8	10.8	−39.5	11.9	−43.3	13.0	−47.3	14.1	−51.5	1
	2r	50	7.6	−26.2	8.4	−29.1	9.3	−32.1	10.2	−35.2	11.1	−38.5	12.1	−41.9	1
	2r	100	6.6	−21.7	7.3	−24.0	8.1	−26.5	8.9	−29.0	9.7	−31.7	10.5	−34.6	1
	3e	10	9.8	−36.9	10.9	−40.9	12.0	−45.0	13.2	−49.4	14.4	−54.0	15.7	−58.8	1
	3e	20	8.9	−32.3	9.8	−35.8	10.8	−39.5	11.9	−43.3	13.0	−47.3	14.1	−51.5	1
	3e	50	7.6	−26.2	8.4	−29.1	9.3	−32.1	10.2	−35.2	11.1	−38.5	12.1	−41.9	1
	3e	100	6.6	−21.7	7.3	−24.0	8.1	−26.5	8.9	−29.0	9.7	−31.7	10.5	−34.6	1
	3r	10	9.8	−47.5	10.9	−52.6	12.0	−58.0	13.2	−63.7	14.4	−69.6	15.7	−75.8	1
	3r	20	8.9	−38.8	9.8	−43.0	10.8	−47.4	11.9	−52.0	13.0	−56.8	14.1	−61.9	1
	3r	50	7.6	−27.2	8.4	−30.2	9.3	−33.3	10.2	−36.5	11.1	−39.9	12.1	−43.5	1
	3r	100	6.6	−27.2	7.3	−30.2	8.1	−33.3	8.9	−36.5	9.7	−39.9	10.5	−43.5	1
Gable Roof > 27 to 45 Degrees	1	10	14.9	−27.2	16.5	−30.2	18.2	−33.3	19.9	−36.5	21.8	−39.9	23.7	−43.5	2
	1	20	13.2	−23.1	14.6	−25.6	16.1	−28.2	17.7	−31.0	19.3	−33.9	21.1	−36.9	2
	1	50	11.0	−17.6	12.2	−19.5	13.5	−21.5	14.8	−23.6	16.1	−25.8	17.6	−28.1	2
	1	100	9.4	−13.5	10.4	−14.9	11.4	−16.5	12.5	−18.1	13.7	−19.8	14.9	−21.5	1
	2e	10	14.9	−27.2	16.5	−30.2	18.2	−33.3	19.9	−36.5	21.8	−39.9	23.7	−43.5	2
	2e	20	13.2	−23.1	14.6	−25.6	16.1	−28.2	17.7	−31.0	19.3	−33.9	21.1	−36.9	2
	2e	50	11.0	−17.6	12.2	−19.5	13.5	−21.5	14.8	−23.6	16.1	−25.8	17.6	−28.1	2
	2e	100	9.4	−13.5	10.4	−14.9	11.4	−16.5	12.5	−18.1	13.7	−19.8	14.9	−21.5	1
	2n	10	14.9	−30.0	16.5	−33.2	18.2	−36.6	19.9	−40.2	21.8	−44.0	23.7	−47.9	2
	2n	20	13.2	−26.8	14.6	−29.7	16.1	−32.8	17.7	−35.9	19.3	−39.3	21.1	−42.8	2
	2n	50	11.0	−22.6	12.2	−25.0	13.5	−27.6	14.8	−30.3	16.1	−33.1	17.6	−36.1	2
	2n	100	9.4	−19.4	10.4	−21.5	11.4	−23.7	12.5	−26.0	13.7	−28.5	14.9	−31.0	1
	2r	10	14.9	−27.2	16.5	−30.2	18.2	−33.3	19.9	−36.5	21.8	−39.9	23.7	−43.5	2
	2r	20	13.2	−23.1	14.6	−25.6	16.1	−28.2	17.7	−31.0	19.3	−33.9	21.1	−36.9	2
	2r	50	11.0	−17.6	12.2	−19.5	13.5	−21.5	14.8	−23.6	16.1	−25.8	17.6	−28.1	2
	2r	100	9.4	−13.5	10.4	−14.9	11.4	−16.5	12.5	−18.1	13.7	−19.8	14.9	−21.5	1
	3e	10	14.9	−36.8	16.5	−40.8	18.2	−44.9	19.9	−49.3	21.8	−53.9	23.7	−58.7	2
	3e	20	13.2	−32.6	14.6	−36.1	16.1	−39.8	17.7	−43.7	19.3	−47.8	21.1	−52.0	2
	3e	50	11.0	−27.1	12.2	−30.0	13.5	−33.1	14.8	−36.3	16.1	−39.7	17.6	−43.2	2
	3e	100	9.4	−22.9	10.4	−25.3	11.4	−27.9	12.5	−30.7	13.7	−33.5	14.9	−36.5	1
	3r	10	14.9	−30.0	16.5	−33.2	18.2	−36.6	19.9	−40.2	21.8	−44.0	23.7	−47.9	2
	3r	20	13.2	−26.8	14.6	−29.7	16.1	−32.8	17.7	−35.9	19.3	−39.3	21.1	−42.8	2
	3r	50	11.0	−22.6	12.2	−25.0	13.5	−27.6	14.8	−30.3	16.1	−33.1	17.6	−36.1	2
	3r	100	9.4	−19.4	10.4	−21.5	11.4	−23.7	12.5	−26.0	13.7	−28.5	14.9	−31.0	1

Notes: Plus and minus signs signify pressures acting toward and away from the surfaces, respectively. For effective wind areas b those given above, the load may be interpolated; otherwise, use the load associated with the lower effective area. Gray shading is that the final value, including all permitted reductions, used in the design shall not be less than that required by Section 30.2.2. Metric conversions: 1.0 ft = 0.3048 m: 1.0 ft^2 = 0.0929 m^2; 1.0 lb/ft^2 = 0.0479 kN/m^2.

FIGURE 30.4-1 (*Continued*). Components and Cladding, Part 2 [$h \le 60$ ft ($h \le 18.3$ m)]: Design Wind Pressures for Enc Buildings—Walls and Roofs

Multiply by 1.3 for a 22ft MRH for Exp. 'C'

IM-Lake Springs-SC

Attic Opening Floor Decking Check

Wind: 115mph Vult, Exp. C, **Seismic:** Ss = .410g, S1 = .105g ('C'), **Snow:** 10psf GSL, **Risk Category:** II

Loading PER ASCE 7-16 and 2015-2018 NDS

Cut Attic Stairway Opening Legend

APPROVED BY NTA 1/31/2022

Approval of this document does not authorize or approve any deviation or deviations from the requirements of applicable State Laws.

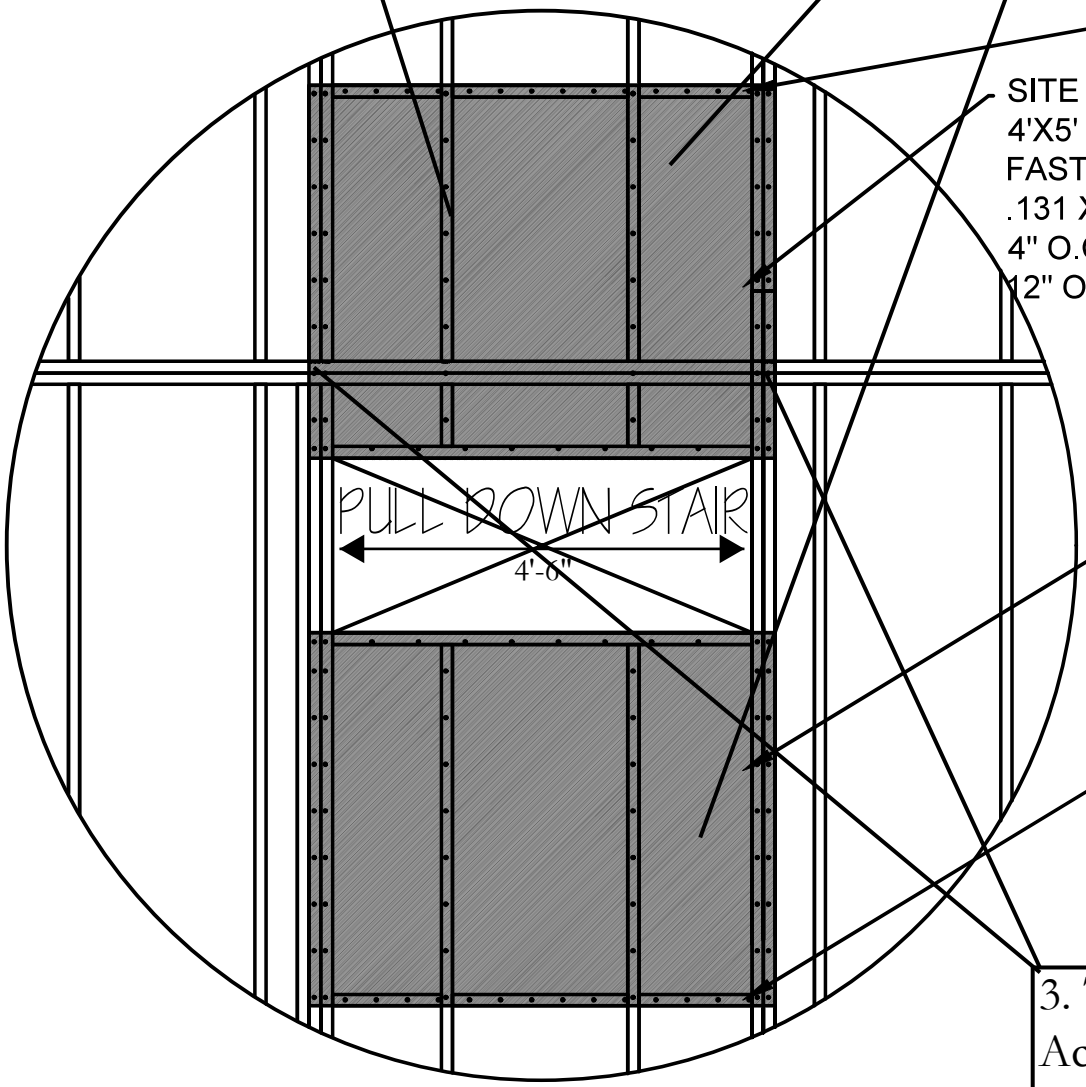
2. Single Truss Load into Decking Check (typ)

1. Roof Decking Check

706lb (TL) PER truss:
Or, 353plf TL

BLOCK UNDER ALL EDGES

SITE INSTALLED 4'X5' 3/4" DECKING FASTENED WITH .131 X 2.5" NAILS 4" O.C. EDGE 12" O.C. FIELD



FACTORY INSTALLED 4'X5' 3/4" DECKING FASTENED WITH .131 X 2.5" NAILS 4" O.C. EDGE 12" O.C. FIELD

BLOCK UNDER ALL EDGES

3. Tension Across Matewall Check

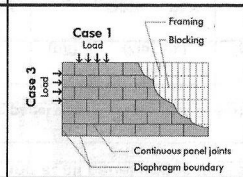
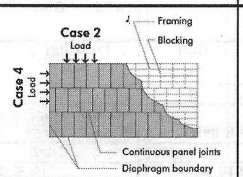
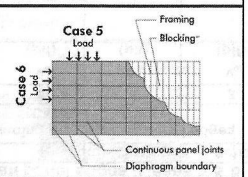
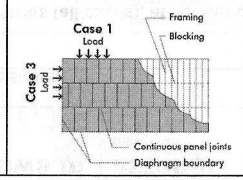
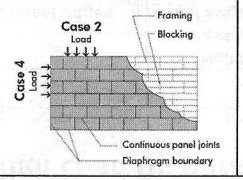
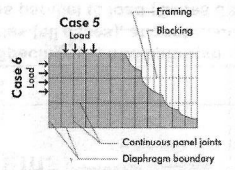
706lb (TL) PER truss:
Or, 353plf TL

Table 4.2A Nominal Unit Shear Capacities for Wood-Frame Diaphragms

Blocked Wood Structural Panel Diaphragms[1,2,3,4,5]

Sheathing Grade	Common Nail Size	Minimum Fastener Penetration in Framing Member or Blocking (in.)	Minimum Nominal Panel Thickness (in.)	Minimum Nominal Width of Nailed Face at Adjoining Panel Edges and Boundaries (in.)	A SEISMIC: Nail Spacing (in.) at diaphragm boundaries (all cases), at continuous panel edges parallel to load (Cases 3 & 4), and at all panel edges (Cases 5 & 6)												B WIND: Nail Spacing (in.) at diaphragm boundaries (all cases), at continuous panel edges parallel to load (Cases 3 & 4), and at all panel edges (Cases 5 & 6)			
					6			4			2-1/2			2			6	4	2-1/2	2
					Nail Spacing (in.) at other panel edges (Cases 1, 2, 3, & 4)												Nail Spacing (in.) at other panel edges (Cases 1, 2, 3, & 4)			
					6			6			4			3			6	6	4	3
					v_s (plf)	G_a (kips/in.)		v_s (plf)	G_a (kips/in.)		v_s (plf)	G_a (kips/in.)		v_s (plf)	G_a (kips/in.)		v_w (plf)	v_w (plf)	v_w (plf)	v_w (plf)
						OSB	PLY		OSB	PLY		OSB	PLY		OSB	PLY				
Structural I	6d	1-1/4	5/16	2	370	15	12	500	8.5	7.5	750	12	10	840	20	15	520	700	1050	1175
				3	420	12	9.5	560	7.0	6.0	840	9.5	8.5	950	17	13	590	785	1175	1330
	8d	1-3/8	3/8	2	540	14	11	720	9.0	7.5	1060	13	10	1200	21	15	755	1010	1485	1680
				3	600	12	10	800	7.5	6.5	1200	10	9.0	1350	18	13	840	1120	1680	1890
	10d	1-1/2	15/32	2	640	24	17	850	15	12	1280	20	15	1460	31	21	895	1190	1790	2045
				3	720	20	15	960	12	9.5	1440	16	13	1640	26	18	1010	1345	2015	2295
Sheathing and Single-Floor	6d	1-1/4	5/16	2	340	15	10	450	9.0	7.0	670	13	9.5	760	21	13	475	630	940	1065
				3	380	12	9.0	500	7.0	6.0	760	10	8.0	860	17	12	530	700	1065	1205
			3/8	2	370	13	9.5	500	7.0	6.0	750	10	8.0	840	18	12	520	700	1050	1175
				3	420	10	8.0	560	5.5	5.0	840	8.5	7.0	950	14	10	590	785	1175	1330
	8d	1-3/8	3/8	2	480	15	11	640	9.5	7.5	960	13	9.5	1090	21	13	670	895	1345	1525
				3	540	12	9.5	720	7.5	6.0	1080	11	8.5	1220	18	12	755	1010	1510	1710
			7/16	2	510	14	10	680	8.5	7.0	1010	12	9.5	1150	20	13	715	950	1415	1610
				3	570	11	9.0	760	7.0	6.0	1140	10	8.0	1290	17	12	800	1065	1595	1805
			15/32	2	540	13	9.5	720	7.5	6.5	1060	11	8.5	1200	19	13	755	1010	1485	1680
				3	600	10	8.5	800	6.0	5.5	1200	9.0	7.5	1350	15	11	840	1120	1680	1890
	10d	1-1/2	15/32	2	580	25	15	770	15	11	1150	21	14	1310	33	18	810	1080	1610	1835
				3	650	21	14	860	12	9.5	1300	17	12	1470	28	16	910	1205	1820	2060
			19/32	2	640	21	14	850	13	9.5	1280	18	12	1460	28	17	895	1190	1790	2045
				3	720	17	12	960	10	8.0	1440	14	11	1640	24	15	1010	1345	2015	2295

1. Nominal unit shear capacities shall be adjusted in accordance with 4.2.3 to determine ASD allowable unit shear capacity and LRFD factored unit resistance. For general construction requirements see 4.2.6. For specific requirements, see 4.2.7.1 for wood structural panel diaphragms. See Appendix A for common nail dimensions.
2. For species and grades of framing other than Douglas-Fir-Larch or Southern Pine, reduced nominal unit shear capacities shall be determined by multiplying the tabulated nominal unit shear capacity by the Specific Gravity Adjustment Factor = [1-(0.5-G)], where G = Specific Gravity of the framing lumber from the *NDS* (Table 12.3.3A). The Specific Gravity Adjustment Factor shall not be greater than 1.
3. Apparent shear stiffness values, G_a, are based on nail slip in framing with moisture content less than or equal to 19% at time of fabrication and panel stiffness values for diaphragms constructed with either OSB or 3-ply plywood panels. When 4-ply or 5-ply plywood panels or composite panels are used, G_a values shall be permitted to be multiplied by 1.2.
4. Where moisture content of the framing is greater than 19% at time of fabrication, G_a values shall be multiplied by 0.5.
5. Diaphragm resistance depends on the direction of continuous panel joints with respect

	Cases 1&3: Continuous Panel Joints Perpendicular to Framing	**Cases 2&4**: Continuous Panel Joints Parallel to Framing	**Cases 5&6**: Continuous Panel Joints Perpendicular and Parallel to Framing
Long Panel Direction Perpendicular to Supports			
Long Panel Direction Parallel to Supports[a]			

anel span rating for out-of-plane loads may be lower than the span rating with the long panel direction perpendicular to supports See Section 3.2.2 and Section 3.2.3)

1. Roof Decking Check:
Shear load applied: (353plf x 4.5ft/2)/4ft = 198plf TL (ASD)
|
Decking Resistance: 1010plf/2.0 = 505plf WL (ASD)
= 505plf/1.6 = 315plf TL (ASD)
305plf > 198plf TL (ASD), OK.

LATERAL FORCE-RESISTING SYSTEM

4

AMERICAN WOOD COUNCIL

SPECIAL DESIGN PROVISIONS FOR WIND AND SEISMIC

Table 12Q COMMON, BOX, or SINKER STEEL WIRE NAILS: Reference Lateral Design Values, Z, for Single Shear (two member) Connections[1,2,3]

for sawn lumber or SCL with wood structural panel side members with an effective G=0.50 (tabulated lateral design values are calculated based on an assumed length of nail penetration, p, into the main member equal to 10D)

Side Member Thickness t_s in.	Nail Diameter D in.	Common Wire Nail	Box Nail	Sinker Nail	G=0.67 Red Oak	G=0.55 Mixed Maple Southern Pine	G=0.5 Douglas Fir-Larch	G=0.49 Douglas Fir-Larch (N)	G=0.46 Douglas Fir(S) Hem-Fir(N)	G=0.43 Hem-Fir	G=0.42 Spruce-Pine-Fir	G=0.37 Redwood (open grain)	G=0.36 Eastern Softwoods Spruce-Pine-Fir(S) Western Cedars Western Woods	G=0.35 Northern Species
		Pennyweight			lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
3/8	0.099		6d	7d	47	45	43	43	42	40	40	38	37	37
	0.113	6d	8d	8d	60	56	54	54	52	51	50	47	47	46
	0.120			10d	67	62	60	60	58	56	56	52	52	51
	0.128		10d		75	70	68	67	65	63	63	59	58	57
	0.131	8d			78	73	71	70	68	66	65	61	61	60
	0.135		16d	12d	83	78	75	74	72	70	69	65	64	63
	0.148	10d	20d	16d	94	88	85	84	82	79	78	73	72	71
7/16	0.099		6d	7d	50	47	45	45	44	43	42	40	40	39
	0.113	6d	8d	8d	62	58	56	56	55	53	52	49	49	48
	0.120			10d	69	65	63	62	60	59	58	55	54	53
	0.128		10d		77	72	70	69	68	66	65	61	60	59
	0.131	8d			80	75	73	72	70	68	67	63	63	62
	0.135		16d	12d	85	80	77	76	74	72	71	67	66	65
	0.148	10d	20d	16d	96	90	87	86	84	81	80	76	75	73
	0.162	16d	40d		114	106	102	101	99	96	95	89	88	86
15/32	0.099		6d	7d	51	48	47	46	45	44	44	41	41	40
	0.113	6d	8d	8d	64	60	58	57	56	54	54	51	50	49
	0.120			10d	70	66	64	63	62	60	59	56	55	54
	0.128		10d		78	74	71	71	69	67	66	62	62	61
	0.131	8d			82	77	74	73	72	70	69	65	64	63
	0.135		16d	12d	86	81	78	77	76	73	72	68	67	66
	0.148	10d	20d	16d	97	91	88	87	85	83	82	77	76	75
	0.162	16d	40d		115	108	104	103	100	97	96	90	89	88
19/32	0.099		6d	7d	58	55	53	53	51	50	50	47	46	46
	0.113	6d	8d	8d	70	66	64	64	62	61	60	57	56	55
	0.120			10d	77	73	70	70	68	66	66	62	61	60
	0.128		10d		85	80	78	77	75	73	72	68	68	67
	0.131	8d			88	83	80	80	78	76	75	71	70	69
	0.135		16d	12d	93	87	84	84	82	79	79	74	73	72
	0.148	10d	20d	16d	104	98	95	94	92	89	88	83	82	81
	0.162	16d	40d		121	114	110	109	107	103	102	96	95	94
	0.177			20d	137	128	124	123	120	116	115	108	107	105
	0.192	20d		30d	142	133	128	127	124	120	119	112	111	109
23/32	0.099		6d	7d	62	58	55	55	53	51	51	47	47	46
	0.113	6d	8d	8d	78	74	72	71	69	67	66	62	61	60
	0.120			10d	85	80	78	77	76	73	73	69	68	67
	0.128		10d		93	88	85	85	83	80	80	75	75	74
	0.131	8d			96	91	88	87	86	83	82	78	77	76
	0.135		16d	12d	101	95	92	91	89	87	86	81	81	79
	0.148	10d	20d	16d	113	106	103	102	100	97	96	91	90	89
	0.162	16d	40d		130	122	118	117	115	111	110	104	103	102
	0.177			20d	145	137	132	131	128	124	123	116	115	113
	0.192	20d		30d	150	141	136	135	132	128	127	120	118	116
1	0.099[5]		6d	7d	62	58	55	55	53	51	51	47	47	46
	0.113[5]	6d[4]	8d	8d	81	75	72	71	69	67	66	62	61	60
	0.120[5]			10d	92	85	81	81	78	76	75	69	69	67
	0.128		10d		104	97	93	92	89	86	85	79	78	77
	0.131	8d			109	101	97	96	93	90	89	83	82	80
	0.135		16d	12d	116	108	103	102	99	96	94	88	87	85
	0.148	10d	20d	16d	132	123	118	116	113	109	108	100	99	97
	0.162	16d	40d		154	146	141	139	135	131	129	120	119	116
	0.177			20d	169	160	155	154	151	146	145	137	136	134
	0.192	20d		30d	174	164	159	158	155	150	149	141	140	138
1-1/8	0.128[5]		10d		104	97	93	92	89	86	85	79	78	77
	0.131[5]	8d			109	101	97	96	93	90	89	83	82	80
	0.135[5]		16d	12d	116	108	103	102	99	96	94	88	87	85
	0.148[5]	10d	20d	16d	132	123	118	116	113	109	108	100	99	97
	0.162	16d	40d		158	147	141	139	135	131	129	120	119	116
	0.177			20d	181	170	163	161	157	151	149	139	137	135
	0.192	20d		30d	186	176	170	168	163	157	155	145	143	140
1-1/4	0.148	10d	20d	16d	132	123	118	116	113	109	108	100	99	97
	0.162	16d	40d		158	147	141	139	135	131	129	120	119	116
	0.177			20d	183	170	163	161	157	151	149	139	137	135
	0.192	20d		30d	191	177	170	168	163	157	155	145	143	140

1. Tabulated lateral design values, Z, shall be multiplied by all applicable adjustment factors (see Table 11.3.1).
2. Tabulated lateral design values, Z, [illegible] side grain with nail axis perpendicular to wood fibers; nail [illegible] D ≤ 0.142", 90,000 psi for 0.142" < D ≤ 0.177", 80,000 psi
3. [illegible] shall be multiplied by p/10D or lateral design values shall be [illegible] te 3.
4. [illegible] ootnote 3.
5.

2. Single Truss Load into Decking Check (typ)
3. Load Applied PER truss: 706lb TL
4. Load Resisted PER Decking Nail Count: 82lb x 9nails (3 between edges, 2 each end of sheathing and min 4 in blocks beside joist) =738lb > 706lb, OK

CS/CMST/CMSTC

Coiled Straps

CMSTC provides coined nail slots for lower profile when installed with 0.148" x 3¼" sinkers; it can be cut to length. CS are continuous utility straps which can be cut

3. Tension Across Matewall Check:
Tension from diaphragm reaction: 794lb TL
Tension from strap (1 PER bottom chord as noted in plan set conn. detail) = 2 x 1705lb/1.6 = 2132lb > 794lb, OK

may cause strap to buckle outward.

- Refer to the applicable code for minimum nail penetration and minimum wood edge and end distances.
- The table shows the maximum allowable loads and the nails required to obtain them. Fewer nails may be used; reduce the allowable load as shown in the Straps and Ties General Notes on pp. 260–261.
- For lap slice and alternate nailing information, refer to p. 268.
- The cut length of the strap shall be equal to twice the "End Length" noted in the table plus the clear span dimension.
- CMST only — Use every other round hole if the wood tends to split. Use round and triangle holes for comparable MST loads, providing wood does not tend to split.
- CS straps are available in 25' lengths; order CS14-R, CS16-R or CS20-R.
- For stainless steel, order CS16SS-R.

Codes: See p. 12 for Code Reference Key Chart

APPROVED BY NTA 1/31/2022

Approval of this document does not authorize or approve any deviation or deviations from the requirements of applicable State Laws.

These products are available with additional corrosion protection. For more information, see p. 15.

SS For stainless-steel fasteners, see p. 21.

SD Many of these products are approved for installation with Strong-Drive® SD Connector screws. See pp. 335–337 for more information.

Model No.	Total L	Ga.	DF/SP		SPF/HF		Allowable Tension Loads (160)	Code Ref.
			Fasteners (in.)	End Length	Fasteners (in.)	End Length		
CMST12	40'	12	(74) 0.162 x 2½	33"	(84) 0.162 x 2½	38"	9,215	IBC, FL, LA
			(86) 0.148 x 2½	39"	(98) 0.148 x 2½	44"	9,215	
CMST14	52½'	14	(56) 0.162 x 2½	26"	(66) 0.162 x 2½	30"	6,475	
			(66) 0.148 x 2½	30"	(76) 0.148 x 2½	34"	6,475	
CMSTC16	54'	16	(50) 0.148 x 3¼	20"	(58) 0.148 x 3¼	25"	4,690	
CS14	100'	14	(26) 0.148 x 2½	15"	(30) 0.148 x 2½	16"	2,490	
			(30) 0.131 x 2½	16"	(36) 0.131 x 2½	19"	2,490	
SS CS16	150'	16	(20) 0.148 x 2½	11"	(22) 0.148 x 2½	13"	1,705	
			(22) 0.131 x 2½	13"	(26) 0.131 x 2½	15"	1,705	
CS20	250'	20	(12) 0.148 x 2½	7"	(14) 0.148 x 2½	9"	1,030	
			(14) 0.131 x 2½	9"	(16) 0.131 x 2½	9"	1,030	

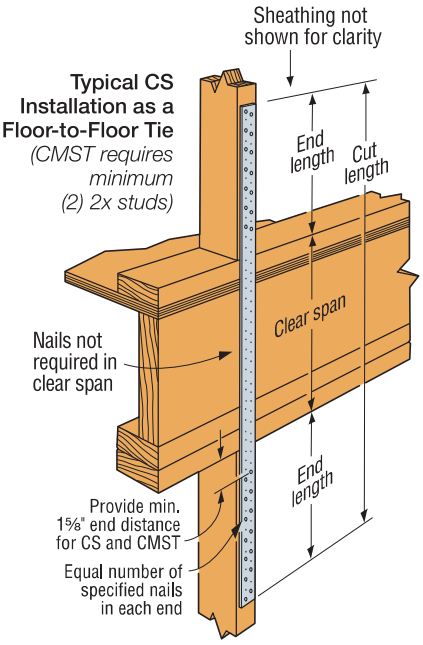
1. See pp. 260–261 for Straps and Ties General Notes.
2. Calculate the connector value for a reduced number of nails as follows:

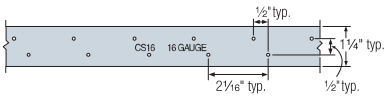
$$\text{Allowable Load} = \frac{\text{No. of Nails Used}}{\text{No. of Nails in Table}} \times \text{Table Load}$$

Example: CMSTC16 in DF/SP with 40 nails total.
(Half of the nails in each member being connected)

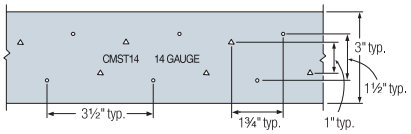
$$\text{Allowable Load} = \frac{40 \text{ Nails (Used)}}{50 \text{ Nails (Table)}} \times 4{,}690 \text{ lb.} = 3{,}752 \text{ lb.}$$

3. See page 268 for alternate nailing and lap splice information.
4. **Fasteners:** Nail dimensions in the table are listed diameter by length. See pp. 21–22 for fastener information.

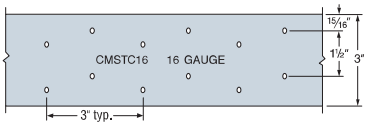




CS16 Hole Pattern
(all other CS straps similar)

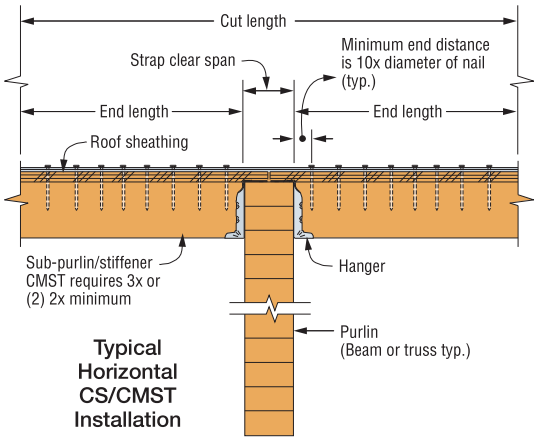


CMST14 Hole Pattern
(CMST12 similar)



CMSTC16 Hole Pattern

Gauge stamped on part for easy identification



Typical Horizontal CS/CMST Installation