

BOXABL CASITA

DESIGN DEVELOPMENT SET (NOT FOR CONSTRUCTION)

BOXABL
5345 East North Belt Road
N. Las Vegas, NV 89115
www.BOXABL.COM



**SIP ENGINEERING
CONSULTANTS, LLC**
14845 SW MURRAY SCHOLLS DR.
SUITE 110 PMB 306
BEAVERTON, OR 97007
PH: 503-564-4178
SIPconsultants.com
Mike@SIPconsultants.com

SHEET INDEX

- S1: COVER SHEET
WIND RATINGS
- S2 : WALL ELEV'S
- S3 : FLOOR / ROOF
PANEL LAYOUT
& DETAILS
- S4 : FOUNDATION
PLAN & DETAILS
- S5 : PANEL TEST
DATA

NOTES:

PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN
THIS DRAWING IS THE SOLE
PROPERTY OF BOXABL INC. ANY
REPRODUCTION IN PART OR AS A
WHOLE WITHOUT THE WRITTEN
PERMISSION OF BOXABL INC. IS
PROHIBITED.

SCALE: NONE

DRAWN BY: MN

REVIEWED BY:

REVISION:

ISSUE DATE: 10-07-22

SHEET: **S1**

COMPONENT STRENGTH CAPACITIES & WIND / EXPOSURE RATINGS

LOAD TYPE	PANEL USE	DIRECTION	LOAD AT FAILURE (PSF)	ALLOWABLE DESIGN LOAD (PSF)	FACTOR OF SAFETY
TRANSVERSE (BENDING)	ROOF	GRAVITY	113	31	3
		WIND UPLIFT	260	87	3
	FLOOR		260	87	3
	WALL	WINDWARD	110	37	3
		LEEWARD	149	38	3

Click [HERE](#) to determine Ultimate wind speed at your location (use Risk Category II)

As the "weak link" in the system, the values in the shaded area control the wind rating for the Casita. When including the foundation, and connections to the foundation, the overall rating could be less, depending on the design of those elements. 8	WIND SPEED / EXPOSURE RATING 2			
	WALLS BENDING	ULTIMATE (BASIC) 5 WIND SPEED (MPH)	NOMINAL 4 WIND SPEED (MPH)	EXPOSURE CATEGORY 3
	LEEWARD 6 CORNER COMPONENT & CLADDING	177	137	B
		161	124	C
		146	113	D
	MAIN WIND FORCE RESISTING SYSTEM (MWFRS) 7 1st story of 2	230	180	B
		200	160	C
		190	145	D

LOAD TYPE	PANEL USE	LOAD AT FAILURE (PLF)	ALLOWABLE DESIGN LOAD (PLF)	FACTOR OF SAFETY
AXIAL (COMPRESSION)	WALL	6,625	2208	3

LOAD TYPE	PANEL USE	LOAD AT FAILURE (PLF)	ALLOWABLE DESIGN LOAD (PLF)	FACTOR OF SAFETY
IN-PLANE 6 RACKING SHEAR	WALL	1,049	350	3
Racking shear ratings are higher than wall wall bending ratings, and therefore should not be used in determining location suitability.				
WIND SPEED / EXPOSURE RATING 2				
6 WALLS RACKING SHEAR	ULTIMATE (BASIC) 5 WIND SPEED (MPH)	NOMINAL 4 WIND SPEED (MPH)	EXPOSURE CATEGORY 3	
1-STORY	244	189	B	
	221	171	C	
	201	156	D	

ALL PANELS CONSTRUCTED WITH ATLAS TYPE 1 EPS (1 pcf), ADHERED w/ LOCTITE UR S113 ADHESIVE TO 24 ga STEEL SHEET (EXTERIOR), AND 1/4" MGO (INTERIOR)

Footnotes:

1) Load capacity (load at failure, and allowable design loads) based on 3rd party testing by NTA, Inc. Values are in ASD. For LRFD multiply values by 1.67.

2) Wind / Exposure rating estimates determined by the wind loading that produces pressures equal to the allowable design values using the *Directional Procedure* per ASCE 7-16, Section 27.3.1 (MWFRS) and Section 30.3 (C & C). Values assume relatively flat surrounding terrain. Sites on significant hills or edge of an escarpment will experience higher wind forces and must be evaluated by a qualified engineer. Ratings are subject to change with ongoing testing to confirm behavioral assumptions.

3) **Exposure B:** Urban and suburban areas, wooded areas, or other terrain with numerous, closely spaced obstructions that have a size of a single-family dwelling. These conditions prevail in the upwind direction for a distance greater than 1,500 ft.

Exposure C: Open terrain with scattered obstructions that have heights generally less than 30 ft. This includes flat, open country and grasslands. This category applies for all cases where Exposure B or D does not apply.

Exposure D: Flat, conditions prevail in the upwind direction for a distance greater than 5,000 ft, such as near coastlines, unobstructed areas and water surfaces. This includes smooth mud flats, salt flats and unbroken ice. Exposure D also applies where Exposure B or C conditions occur upwind of the site for a distance within 600 ft before Exposure D conditions begin.

EXCEPTION: An intermediate between the preceding categories is permitted in a transition zone, provided that it is determined by a rational analysis.

4) **NOMINAL WIND SPEED** is used some older building code and is intended for use in Allowable Stress Design (ASD) methods.

5) **ULTIMATE (BASIC) WIND SPEED** is used in the most current building code as is intended for use in Load and Resistance Factor Design (LRFD). "Ultimate" is used by the International Residential Code. "Ultimate is referred to as "Basic" by the International Building Code.

6) **COMPONENTS AND CLADDING (C&C):** Components receive wind loads directly and transfer the load to the MWFRS.

7) **MAIN FORCE RESISTING SYSTEM (MWFRS):** An assemblage of structural elements (walls and roof) that work together to transfer wind load acting on the entire building to the ground, while receiving load from more than one surface. Wind rating is based on wind loading combined with axial gravity load (distributed over an effective width below the steel beams) of a 2-story set-up.

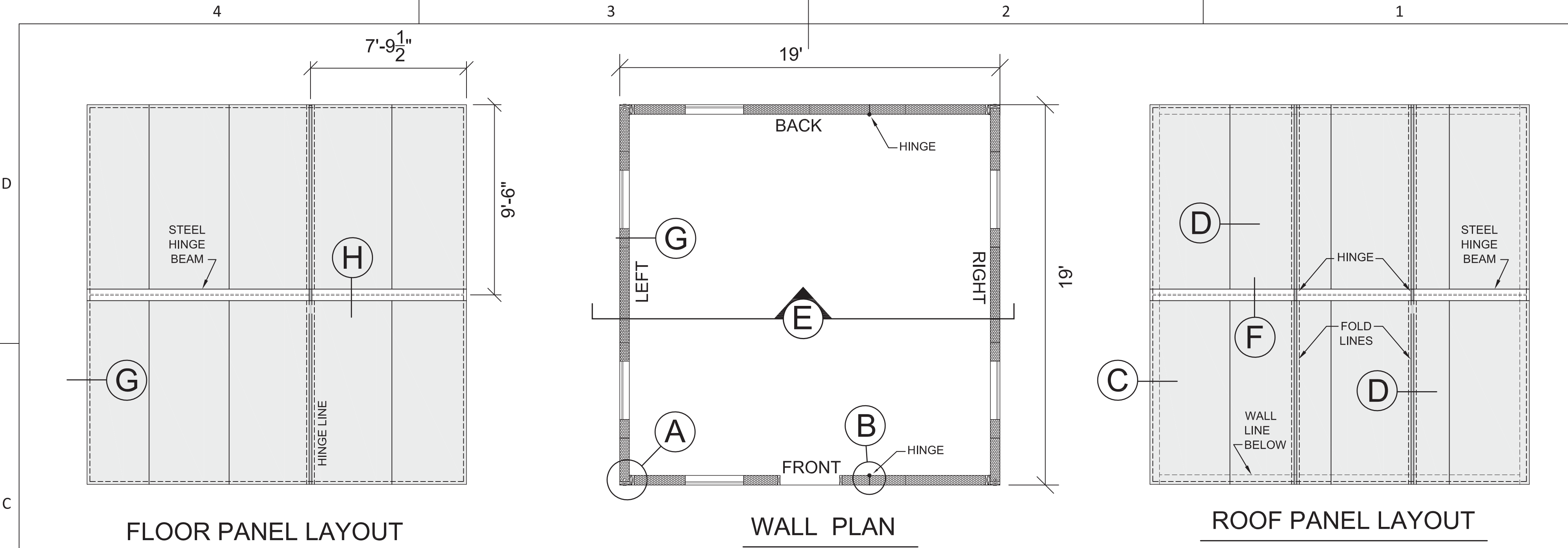
8) Casitas in high wind areas, especially 2-story, free-standing configurations will require exposed hold-down hardware that may be aesthetically unappealing, but will provide the owner visual assurance that the Casita is securely anchored against high winds.

9) Casitas with alternative roof profiles from the use of pre-engineered trusses, will higher racking shear loads and the indicated wind speed/exposure ratings will not apply, but must be evaluated by a qualified engineer. Future updates to the wind/exposure ratings may include ratings for various roof profiles.

SEE SHEET S5 FOR PANEL TEST DATA, BY NTA, INC.



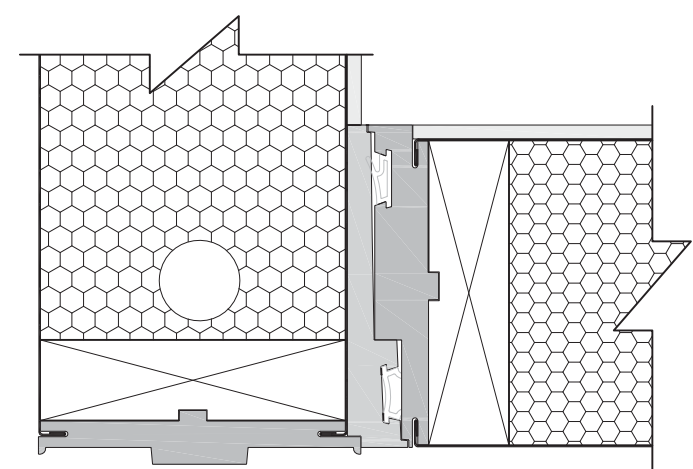
SHEET: S2



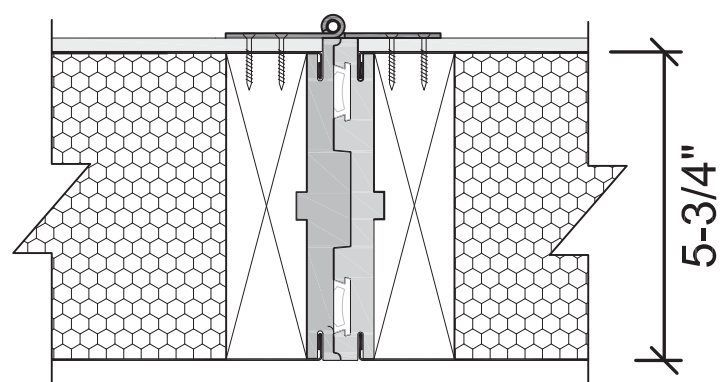
FLOOR PANEL LAYOUT

WALL PLAN

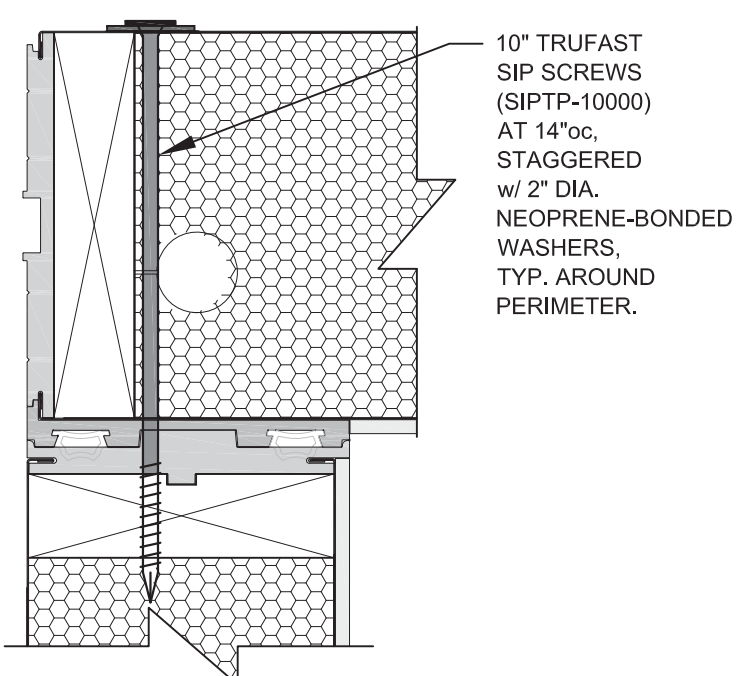
ROOF PANEL LAYOUT



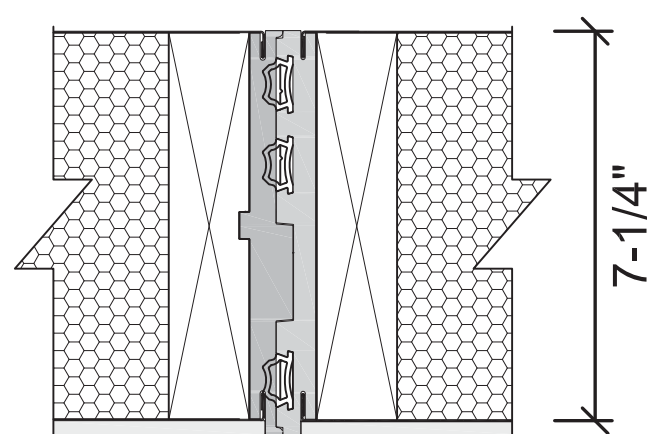
A WALL CORNER CONN.
SCALE: NONE



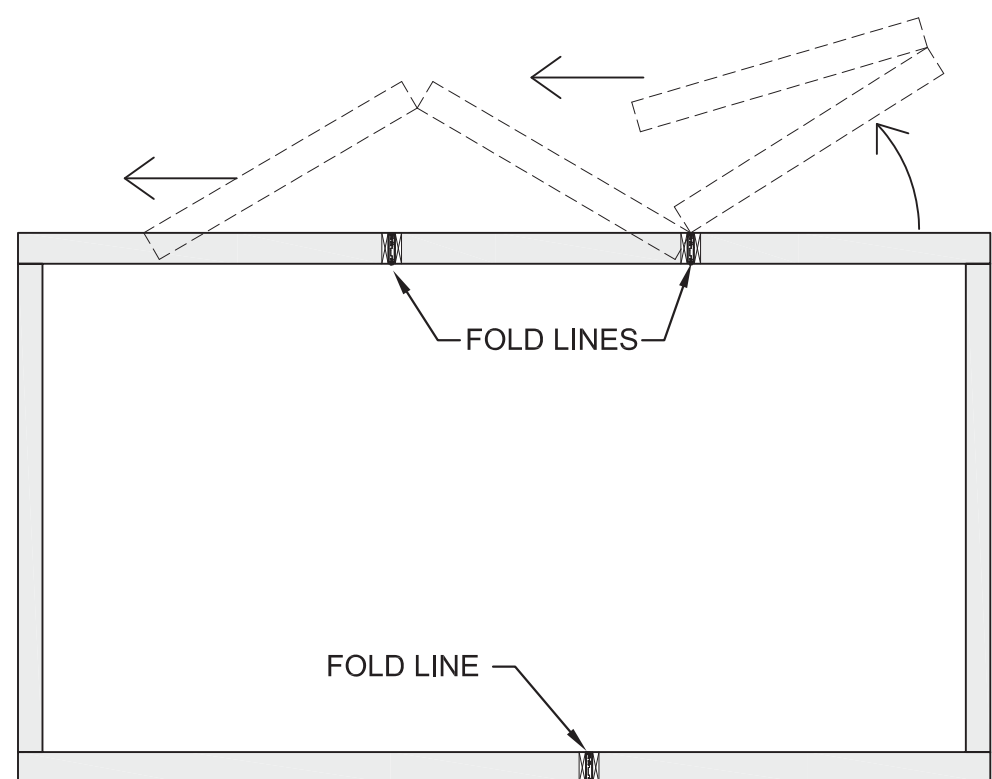
B WALL HINGE CONN.
SCALE: NONE



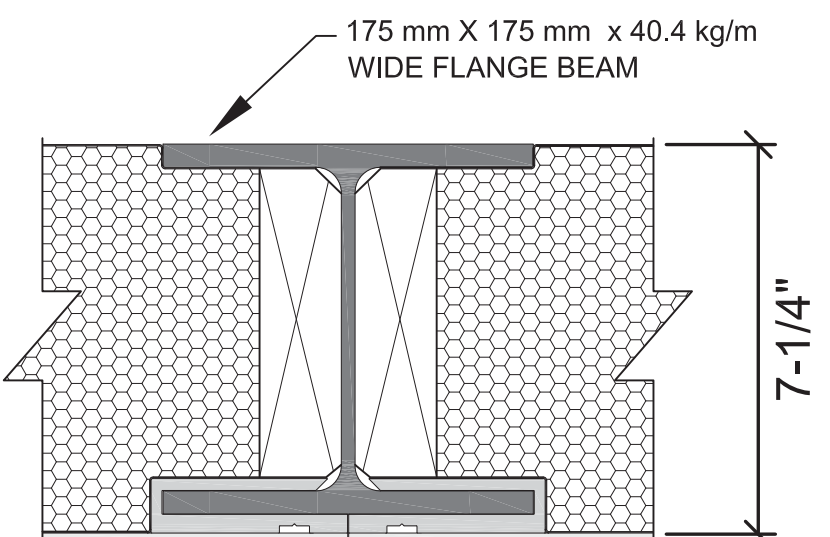
C ROOF / WALL CONN.
SCALE: NONE



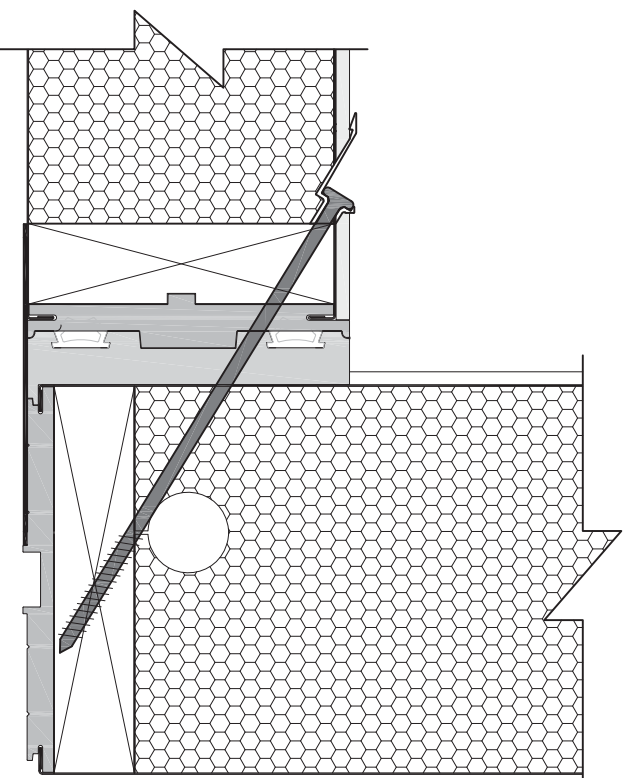
D ROOF JOINT AT FOLD LINE
SCALE: NONE



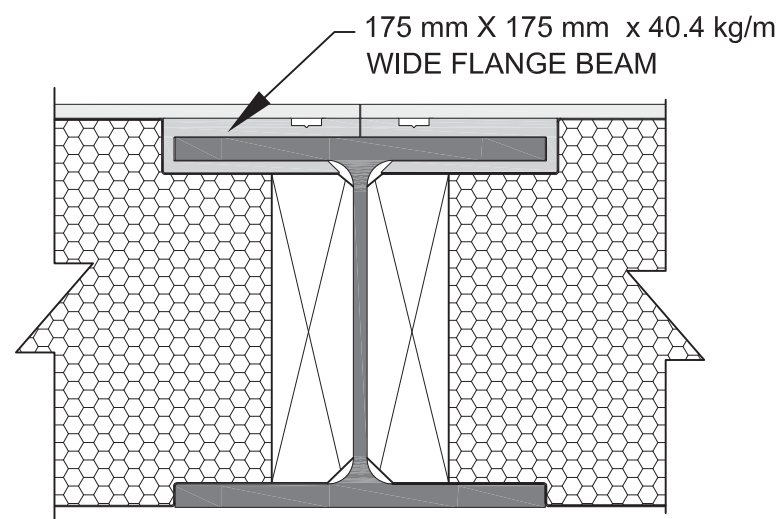
E SECTION



F ROOF HINGE BEAM
SCALE: NONE



G FLOOR / WALL CONN.
SCALE: NONE



H FLOOR HINGE BEAM
SCALE: NONE

BOXABL
5345 East North Belt Road
N. Las Vegas, NV 89115
www.BOXABL.COM

SIP ENGINEERING
CONSULTANTS, LLC
14845 SW MURRAY SCHOLLS DR.
SUITE 110 PMB 306
BEAVERTON, OR 97007
PH: 503-564-4178
SIPconsultants.com
Mike@SIPconsultants.com

MODEL:

**SINGLE
STORY
CASITA**

NOTES:

**PRELIMINARY
NOT FOR
CONSTRUCTION**

PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN
THIS DRAWING IS THE SOLE
PROPERTY OF BOXABL INC. ANY
REPRODUCTION IN PART OR AS A
WHOLE WITHOUT THE WRITTEN
PERMISSION OF BOXABL INC. IS
PROHIBITED.

SCALE: NONE

DRAWN BY: MN

REVIEWED BY:

REVISION:

ISSUE DATE: 10-07-22

SHEET: **S3**



1,500 PSF ALLOWABLE SOIL BEARING
PRESSURE ASSUMED.
FOUNDATION IS NOT SUITABLE WHERE
EXPANSIVE SOILS EXIST. OR SOILS
SUBJECT TO LIQUEFACTION.



BACK SIDE



PRELIMINARY
NOT FOR
CONSTRUCTION

SHEET: S4

