ALL WIND LOADS ARE IN ACCORDANCE WITH SECTION 1609, FLORIDA BUILDING CODE 6TH EDITION (2017)				
FLOOR AND ROOF LIVE LOADS				
UNINHABITABLE ATTICS:		20 PSF		
HABITABLE ATTICS, BEDROOM:		30 PSF		
ALL OTHER ROOMS:		40 PSF		
GARAGE:		40 PSF		
ROOFS:		20 PSF UNIFORM		
WIND DESIGN DATA				
ULTIMATE WIND SPEED: 130 MPH		PH		
NOMINAL (BASIC) WIND SPEED: 101 MPH		PH		
RISK CATEGORY:		II		
WIND EXPOSURE:		В		
ENCLOSURE CLASSIFICATION:		ENCLOSED		
INTERNAL PRESSURE COEFFICIENT:		0.18 +/-		
COMPONENTS AND CLADDING				
ROOFING ZONE 1:		16.8 PSF MAX.	-18.4 PSF MIN.	
ROOFING ZONE 2:		16.8 PSF MAX.	-21.5 PSF MIN.	
ROOFING ZONE 3:		16.8 PSF MAX.	-21.5 PSF MIN.	
ROOFING AT ZONE 2 OVERHANGS:		-31.1 PSF MIN.		
ROOFING AT ZONE 3 OVERHANGS:		-31.1 PSF MIN.		
STUCCO, CLADDING, DOORS AND WINDOWS				
ROOFING ZONE 4:		18.4 PSF MAX.	-19.9 PSF MIN.	
ROOFING ZONE 5:		18.4 PSF MAX.	-24.6 PSF MIN.	
9' WIDE O/H DR.:		16.1 PSF MAX.	-18.3 PSF MIN.	
16' WIDE O/H DR.: 16.0 PSF MAX17.3 PSF MIN.				

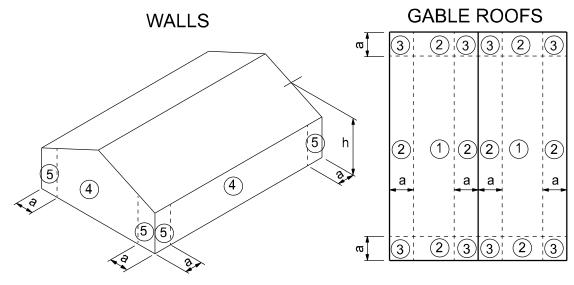
**HIP ROOFS** 

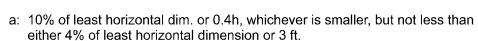
20 PSF (REDUCIBLE)

40 PSF

40 PSF

20 PSF





COMPONENTS AND CLADDING

### STRUCTURAL DESIGN CRITERIA

FLORIDA BUILDING CODE 6TH EDITION (2017) CODES: BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318-14) SPECIFICATIONS FOR STRUCTURAL CONCRETE BUILDINGS (ACI 301-16) BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (ACI 530-13) NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION, 2015 EDITION

APA PLYWOOD DESIGN SPECIFICATION

LIVE LOADS:

**STRUCTURAL** 

TRUSSES:

SOIL BEARING

h: mean roof height, in feet.

RESIDENTIAL FLOOR, UNLESS OTHERWISE INDICATED **BALCONIES** STAIRS LIGHT PARTITIONS (DEAD LOAD), U.N.O.

WIND LOADS BASED ON FBC, SECTION 1609 WIND LOADS: WIND VELOCITY: 120 M.P.H., USE FACTOR: 1.0 (F.B.C.)

ALL CONCRETE UNLESS OTHERWISE INDICATED CONCRETE **STRENGTH** 

3000 PSI PEA GRAVEL CONCRETE FOR MASONRY CELLS ONLY (DO NOT USE FOR CONCRETE COLUMNS OR TIE BEAMS) @ 28 DAYS

ASTM A185 WELDED WIRE FABRIC SHALL CONFORM TO **REINFORCING:** ASTM A615-40 40,000 PSI ALL REINFORCING BARS ALL STIRRUPS AND TIES ASTM A615-40 40,000 PSI

ASTM C90-99b, STANDARD WEIGHT UNITS, fm=1500 PSI CONCRETE MORTAR TYPE "S" 1800 PSI MASONRY CONCRETE GROUT 3000 PSI UNITS:

CONTINUOUS MASONRY INSPECTION IS REQUIRED DURING CONSTRUCTION ALL STRUCTURAL AND MISCELLANEOUS STEEL A36 36,000 PSI, U.N.O SHOP AND FIELD WELDS: E70XX ELECTRODES

STEEL: ALL BOLTS CAST IN CONCRETE: ASTM A36 OR ASTM A-307 BEAMS, RAFTERS, JOIST, PLATES, ETC. U.N.O. WOOD FRAMING:

NO. 2 SOUTHERN YELLOW PINE (19% M.C.) ROOF DECK: PLYWOOD C-C/C-D, EXTERIOR, or OSB FLOOR SHEATHING: T&G A-C GROUP 1 APA RATED (48/24) WALL SHEATHING: PLYWOOD C-C/C-D, EXTERIOR OR OSB VERSA LAM BEAM Fb = 2900 PSI (2.0E)

WOOD COLS. PARALLAM 2.0E U.N.O. **DESIGN LOADS: WOOD ROOF** 30 PSF TOP CHORD LIVE AND DEAD LOAD:

10 PSF BOTTOM CHORD DEAD LOAD: 40 PSF SEE DRAWINGS FOR SPECIAL CONCENTRATED LOADS. DESIGN FOR NEW WIND UPLIFT AS PER SPECIFIED CODES, DEDUCTING

A MAXIMUM OF 5 P.S.F. DEAD LOAD, BUT NOT EXCEEDING ACTUAL

DEAD LOAD. ASSUMED ALLOWABLE SOIL BEARING PRESSURE AFTER COMPACTION: 1,500 PSF SEE SOILS REPORT AND SPECIFICATIONS FOR COMPACTION REQUIREMENTS

IF SOIL CONDITIONS IN THE PROJECT DO NOT MEET OR EXCEED THE CAPACITY THE GENERAL CONTRACTOR SHALL CONTACT THE ENGINEER PRIOR TO FOUNDATION POUR FOR VERIFICATION OF FOUNDATION DESIGN.



PROJECT LOCATION

## NES RESIDENCE

Plt. Ht. Plate Height

### **ABBREVIATIONS**

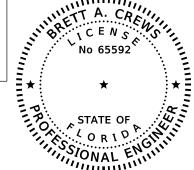
Anchor Bolt

Abv. Above	Fdn.	Foundation	Plt Sh.	Plant Shelf
A/C Air-Conditioner	Flr. Sys.	Floor System	PSF	Pounds per square foot
Adj. Adjustable	F.Pl.	Fireplace	P.T.	Pressure Treated
A.F.F. Above Finished Floor	Ft.	Foot / Feet	Pwd.	Powder Room
A.H.U. Air Handler Unit	Ftg.	Footing	Rad.	Radius
ALT. Alternate	FΧ	Fixed	Ref.	Refrigerator
B.C. Base Cabinet	Galv.	Galvanized	Req'd.	Required
B.F. Bifold Door	G.C.	General Contractor	Rm.	Room
Bk Sh Book Shelf	G.F.I.	Ground Fault Interrupter	Rnd.	Round
Bm. Beam	G.T.	Girder Truss	R/SH	Rod and Shelf
BOT. Bottom	Hdr.	Header	SD.	Smoke Detector
B.P. Bypass door	Hgt.	Height	S.F.	Square Ft.
Brg. Bearing	HB	Hose Bibb	Sh.	Shelves
Cir. Circle	Int.	Interior	SHT	Sheet
Clg. Ceiling	K/Wall	Kneewall	S.L.	
Col. Column	K.S.	Knee Space	S.L. S.P.F.	Side Lights
Comp. A/C Compressor	Laun.	Laundry		Spruce Pine Fir Square
C.T. Ceramic Tile	Lav.	Lavatory	Sq. S.Y.P.	Southern Yellow Pine
D Dryer	L.F.	Linear Ft.		Tempered
Dec. Decorative	L.T.	Laundry Tub	Temp.	Thicken
Ded. Dedicated Outlet	Mas.	Masonry	Thik'n.	
Dbl. Double	Max	Maximum	T.O.B.	Top of Block
Dia. Diameter	M.C.	Medicine Cabinet	T.O.M.	Top of Masonry
Disp. Disposal	MDP	Master Distribution Panel	T.O.P. Trans.	Top of Plate Transom Window
Dist. Distance		Manufacturer		
D.S. Drawer Stack	Mfgr. Micro.	Microwave	Тур.	Typical
D.V. Dryer Vent	Min	Minimum	UCL	Under Cabinet Lighting
D.W. Dishwasher	M.L.	Microlam	U.N.O.	Unless Noted Otherwise
Ea. Each	Mir.	Mirror	VB	Vanity Base
E.W. Each Way		Monolithic	Vert.	Vertical
Elec. Electrical	Mono N.T.S.		V.L.	Versalam
Elev. Elevation		Not to Scale	VTR	Vent through Roof
Ext. Exterior	Opn'g.	Opening	W	Washer
	Opt.	Optional	W/	With
Exp. Expansion	Pc.	Piece Pedestal	W/C	Water Closet
F.B.C. Florida Bldg. Code	Ped.		W.A.	Wedge Anchor
Fin. Fir. Finished Floor	P.L.	Parallam	Wd	Wood
F.G. Fixed Glass	PLF	Pounds per linear foot	WP	Water Proof

### INDEX OF SHEETS

<u>SHEET</u> **DESCRIPTION** A-1 **COVER SHEET** A-2 FLOOR PLAN A-3 ELEVATIONS FRONT AND REAR **ELEVATIONS SIDES** FOUNDATION PLAN A-5 ROOF PLAN ELECTRICAL PLAN SECTIONS AND FRAMING DETAILS

SHEARWALL DETAILS



#### **GENERAL PLAN NOTES**

CONSTRUCTION DOCUMENTS THE CUSTOMER IS RESPONSIBLE FOR DELIVERING THE REQUIRED SETS OF CONSTRUCTION DOCUMENTS TO THE PERMIT ISSUING AUTHORITIES, FOR THE ISSUANCE OF CONSTRUCTION PERMITS. THE CONTRACTOR SHALL REVIEW THE CONSTRUCTION DOCUMENTS AND VERIFY ALL DIMENSIONS. ANY DIS-CREPANCIES SHALL BE REPORTED TO THE ARCHITECT PRIOR TO THE

COMMENCEMENT OF ANY WORK OR FABRACATION OF ANY MATERIALS.

DO NOT SCALE OFF THESE PLANS

AMPLE DIMENSIONS ARE SHOWN ON THE PLANS TO LOCATE ALL ITEMS. SIMPLE ARITHMETIC MAY BE USED TO DETERMINE THE LOCATIONS OF THOSE ITEMS NOT DIMENSIONED.

CHANGES TO FINAL PLAN SETS

PLEASE DO NOT MAKE ANY STRUCTURAL CHANGES TO THESE PLANS WITHOUT CONSULTING WITH THE ARCHITECT. THE OWNER SHALL ASSUME ANY AND ALL LIABILITY FOR STRUCTURAL DAMAGE RESULTING FROM CHANGES MADE TO THE PLANS OR BY SUBSTITUTION OF MATERIALS DIFFERENT FROM SPECIFICATION ON THE PLANS.

INORGANIC ARSENICAL PRESSURE TREATED WOOD SOME FRAMING MATERIALS SPECIFIED FOR THE CONSTRUCTION OF YOUR PROJECT SUCH AS SILLS OR EXTERIOR FRAMING ARE PRESSURE TREATED. EACH PIECE IS CLEARLY MARKED FOR EASY IDENTIFICATION AND IS USUALLY GREENISH IN COLOR.

THIS WOOD HAS BEEN PRESERVED BY PRESSURE-TREATMENT WITH AN EPA-REGISTERED PESTICIDE CONTAINING INORGANIC ARSENIC TO PROTECT IT FROM INSECT ATTACK AND DECAY. EXPOSURE TO TREATED WOOD MAY PRESENT CERTAIN HAZARDS, THEREFORE, PRECAUTIONS SHOULD BE TAKEN BOTH WHEN HANDLING THE TREATED WOOD AND IN DETERMINING WHERE TO USE OR DISPOSE OF THE TREATED WOOD.

FOR FURTHER INFORMATION ON THE USE OF AND DISPOSAL OF INORGANIC ARSENIC PRESSURE TREATED WOOD, PLEASE REFER TO THE EPA MATERIAL SAFETY SHEET DEALING WITH THIS PRODUCT.

#### PREFABRICATED WOOD TRUSSES

1. ALL PREFABRICATED WOOD TRUSSES SHALL BE SECURELY FASTENED TO THEIR SUPPORTING WALLS OR BEAMS WITH **HURRICANE CLIPS OR ANCHORS** 

- 2. PREFABRICATED WOOD TRUSSES SHALL BE DESIGNED IN ACCORDANCE WITH THE LATEST EDITION OF THE "NATIONAL DESIGN SPECIFICATION FOR STRESS-GRADE LUMBER AND ITS FASTENERS" AS RECOMMENDED BY THE NATIONAL FOREST PRODUCTS ASSOCIATION.
- 3. TRUSS MEMBERS AND CONNECTIONS SHALL BE PROPOR-TIONED ( WITH A MAXIMUM ALLOWABLE STRESS INCREASE FOR LOAD DURATION OF 25%) TO WITHSTAND THE LIVE LOADS GIVEN IN THE NOTES AND TOTAL DEAD LOAD. 4. BRIDGING FOR PRE-ENGINEERED TRUSSES SHALL BE AS REQUIRED BY THE TRUSS MANUFACTURER UNLESS
- NOTED ON THE PLANS. 5. TRUSS ELEVATIONS AND SECTIONS ARE FOR GENERAL CONFIGURATION OF TRUSSES ONLY. WEB MEMBERS ARE NOT SHOWN, BUT SHALL BE DESIGNED BY THE TRUSS MANUFACTURER IN ACCORDANCE WITH THE FOLLOWING
- DESIGN SPECIFICATIONS FOR LIGHT WEIGHT METAL PLATE CONNECTED WOOD TRUSSES PER THE TRUSS
- PLATE INSTITUTE TPI LATEST EDITION. 7. PRE-ENGINEERED WOOD TRUSSES SHALL BE DESIGNED BY THE MANUFACTURER IN ACCORDANCE WITH SPECIFIED LOADS AND GOVERNING CODES . SUBMITTALS SHALL INCLUDE TRUSS FRAMING PLANS AND DETAILS SHOWING MEMBER SIZES, BRACING, ANCHORAGE, CONNECTIONS, TRUSS LOCATIONS, AND AND PERMANENT BRACING AND/OR BRIDGING AS REQUIRED FOR ERECTION AND FOR THE PERMANENT STRUCTURE. EACH SUBMITTAL SHALL BE SIGNED AND SEALED BY A FLORIDA REGISTERED STRUCTURAL ENGINEER. SUBMIT 3 COPIES FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
- 8. THE TRUSS MANUFACTURER SHALL DETERMINE ALL SPANS WORKING POINTS, BEARING POINTS, AND SIMILAR CONDITIONS. TRUSS SHOP DRAWINGS SHALL SHOW ALL TRUSSES, ALL BRACING MEMBERS, AND ALL TRUSS TO TRUSS HANGERS.

#### FIELD REPAIR NOTES

DESIGN LOADS:

- 1. MISSED LINTEL STRAPS FOR MASONRY CONSTRUCTION MAY BE SUBSTITUTED W/ (1) "SIMPSON MTSM16 TWIST STRAP W/ (4) 1/4" X 2 1/4" DIA. TITENS TO THE BOND BEAM BLOCK AND (7) 10d TO THE TRUSS FOR UPLIFTS OF 1000 LBS. OR LESS. USE (2) FOR 2000 LBS. OR LESS. OTHERS MAY BE SUBSTITUTED ON A CASE BY CASE BASIS.
- 2. MISSED "J" BOLTS FOR WOOD BEARING WALLS MAY BE SUB-STITUTED W/ 1/2" DIA. ANCHOR BOLTS SET IN 3/4" DIA. X 6" DEEP UNITEX "PROPOXY" 300 ADHESIVE BINDER FOLLOWING ALL MANUFACTURERS RECOMMENDATIONS (OR 1/2" X 6" RAWL STUD EXPANSION ANCHORS. )
- 3. REGARDING MISSED REBAR IN VERTICAL FILLED CELLS: DRILL A 3/4" DIAMETER HOLE 6" DEEP AT THE LOCATION OF THE OMITTED REBAR, AND INSTALL A 32" LONG #5 BAR INTO THE EPOXY FILLED HOLE. USE A TWO PART EMBEDDEMENT EPOXY ( SIMPSON "EPOXY TIE SET", OR HILTI " 2 PART" EMBEDDMENT EPOXY ), MIXED PER MANUFACTURER'S INSTRUCTIONS. ASSURE THAT ALL DUST AND DEBRIS FROM DRILLING ARE REMOVED FROM THE HOLE BY BRUSHING AND AND USING COMPRESSED AIR PRIOR TO APPLYING THE EPOXY. ALLOW THE EPOXY TO CURE TO MANUFACTURER'S SPECIFICATIONS, THEN FILL THE CELL IN THE NORMAL WAY DURING BOND BEAM POUR.
- 4. HURRICANE STRAPS MAY BE SUBSTITUTED WITH A STRAP OF GREATER HOLDOWN VALUE OR GREATER UPLIFT VALUE IN THE FIELD WITHOUT VERIFICATION, PROVIDED ALL MANUFACTURERS INSTALLATION INSTRUCTIONS ARE FOLLOWED.
- 5. FOR MORTER JOINTS LESS THAN 1/4", PROVIDE (1) #5 VERT. IN CONC. FILLED CELL EACH SIDE OF THE JOINT (BAR DOES NOT HAVE TO BE CONT. TO FOOTING)





349 SW CREWS FARM TERRACE LAKE CITY, FL 32025 PHONE: 386.623.4303



Brett A. Crews, P.E. 65592

DRAWN BY: APPROVED BY

JONES RESIDENCE

**COVER SHEET** 

PROJECT NO.: R20.004

SHEET:

A-1

#### RULES:

1. One all-thread rod at each corner.

2. One all-thread rod at each end of shearwalls.

3. One all-thread rod at each end of opening headers greater than 3'-0"

4. Check sub-sheathing to top plate connection for horizontal transfer capability. 5. If necessary, add all-thread rods to girders individually to exclude the from average uplift plf. 6. Check sole plate to slab connection, additional anchors may be required for lateral and shear load transfer.

ALLOWABLE VALUES		
Connection Type	Allowable Value	
Foundation / S.Y.P. Top Plate	3840 lbs.	
Foundation / Spruce-Pine-Fir Top Plate	3840 lbs.	
Lintel or Bond Beam / S.Y.P. Top Plate	3840 lbs.	
Lintel or Bond Beam / Spruce-Pine-Fir Top Plate	3840 lbs.	

#### Placement at slab level:

Corners When presetting the all-thread rod at a building corner, the rod

should be placed 8 to 12 inches away from the corner so it does not set under the corner framing members. When a all-thread rod is specified at a building corner, it may be placed on either side of the corner. Header ends

When presetting the all-thread rod at a header end, the rod

should be placed 8 to 12 inches away from the header end so it does not fall under the stud pack framing members.

Top Connections Top connections made at corners and header ends shall be made within

2 inches of the framing pack. A nut and 3X3 washer shall be applied to the top plates and tightened securely.

Intermediate Coupler Connections

When using the rod coupler, care should be taken to ensure full and equal thread engagement. This is easily achieved by threading the coupler all the way onto the rod, then standing the two rods end to end, then threading the coupler back over the rod joint so each rod is halfway into the coupler.

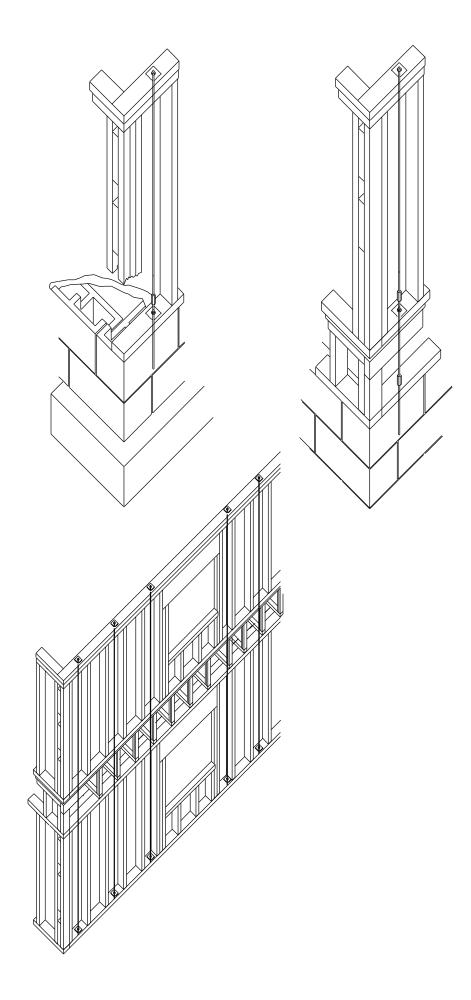
Retro-fits

In the case of an all thread rod misplacement, the rod may be epoxied into the concrete

Sole plate to slab connection:

The slab level sole plate shall be connected to the slab with the connectors specified and at the spacing specified within the design documents. All-thread rods shall be placed as per the design specifications. All-thread rods with a nut and washer at the sole plate will qualify as a sole plate connection but may require other anchors intermediate of the all-thread rod locations to qualify the specified spacing requirements.

On multiple story applications, the all-thread rod system shall be rechecked for proper tension just before the walls are veneered. This will allow the all-thread rod system to compensate for the buildings dead load compression.



#### **SHEARWALL NOTES:**

ie. FOR 8'-0" WALLS - (2'-3").

1. ALL SHEARWALLS SHALL BE TYPE 2 SHEARWALLS

AS DEFINED BY STD 10-99 305.4.3. THE WALL SHALL BE ENTIRELY SHEATHED WITH

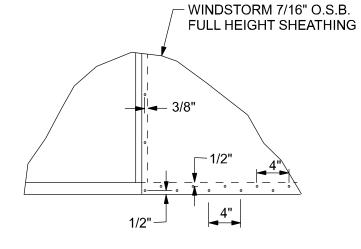
7/16" O.S.B. INCLUDING AREAS ABOVE AND BELOW OPENINGS. 3. ALL SHEATHING SHALL BE ATTACHED TO FRAMING ALONG ALL FOUR EDGES WITH JOINTS FOR ADJACENT

PANELS OCCURING OVER COMMON FRAMING MEMBERS

OR ALONG BLOCKING. 4. NAIL SPACING SHALL BE 6" O.C. EDGES AND

12" O.C. IN THE FIELD. TYPE 2 SHEARWALLS ARE DESIGNED FOR THE OPENING IT CONTAINS. MAXIMUM HEIGHT OF OPENING SHALL BE 5/6 TIMES THE WALL HEIGHT. THE MINIMUM DISTANCE BETWEEN OPENINGS SHALL BE THE WALL HEIGHT/3.5

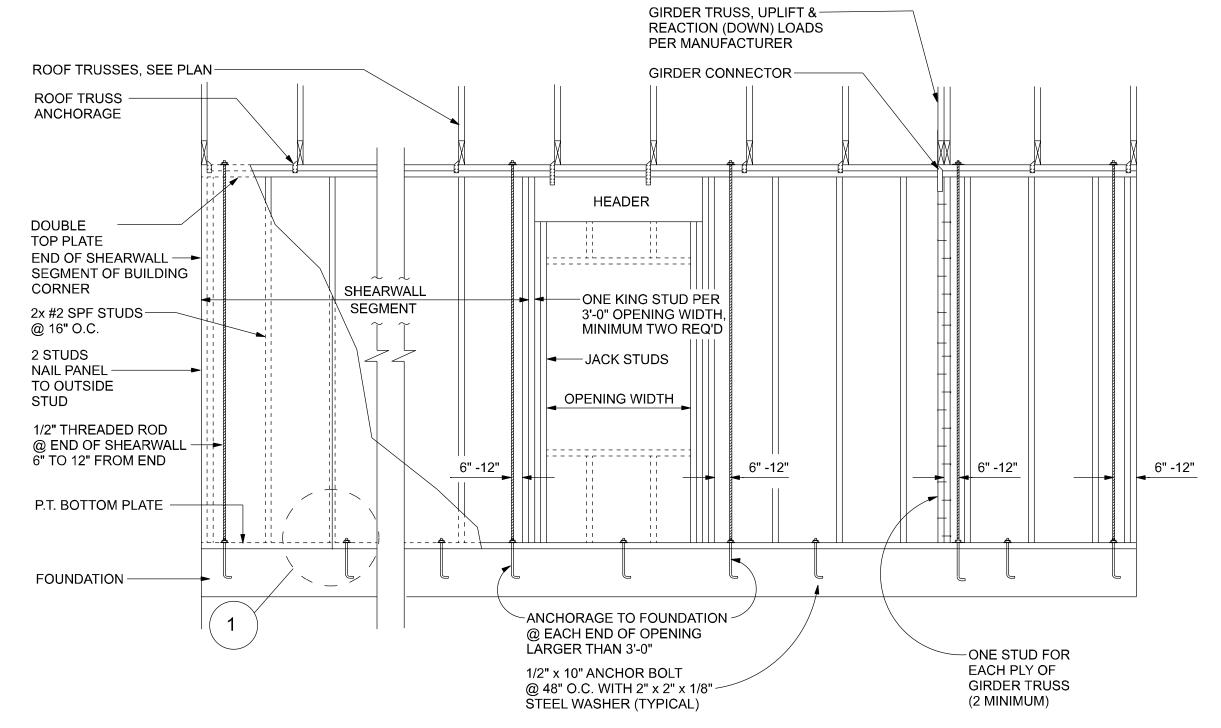
OPENING WIDTH	SILL PLATES	16d TOE NAILS EACH END
UP TO 6'-0"	(1) 2x4 OR (1) 2x6	1
> 6' TO 9'-0"	(3) 2x4 OR (1) 2x6	2
> 9' TO 12'-0"	(5) 2x4 OR (2) 2x6	3



#### DOUBLE NAIL EDGE SPACING TOP AND BOTTOM PLATE

UPLIFT CAPACITY = 474 plf (TABLE 305S1 SSTD10-99)

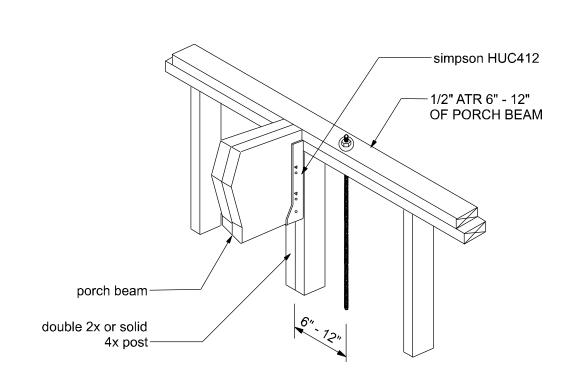
ALL WALL SHEATHING SHALL BE WINDSTORM 1 1/8" FULL HEIGHT SHEATHING-SEE DETAIL 1 FOR NAILING



SHEARWALL DETAILS

SCALE: 1/2" = 1'-0"

VERIFY GIRDER TRUSS LOCATION ON TRUSS LAYOUT FOR REQ'D ALL THREAD AT GIRDER LOCATION

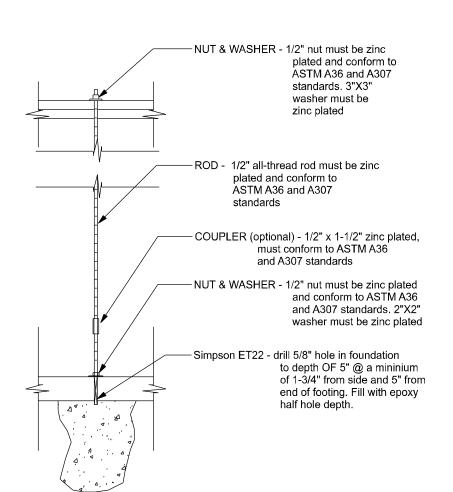


# ALL THREAD @ PORCH BEAM

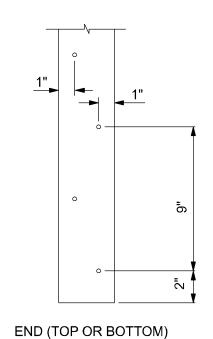
#### ALLOWABLE DEFLECTION OF STRUCTURAL MEMBERS

STRUCTURAL MEMBER	ALLOWABLE DEFLECTION
rafters having slopes greater than 2/12 with no finished ceiling attached to rafters	L/180
interior walls and partitions	H/180
floors and plastered ceilings	L/360
all other structural members	L/240
exterior walls with plaster or stucco finish	H/360
exterior walls - wind loads with brittle finishes	L/240
exterior walls - wind loads with flexible finishes	L/120

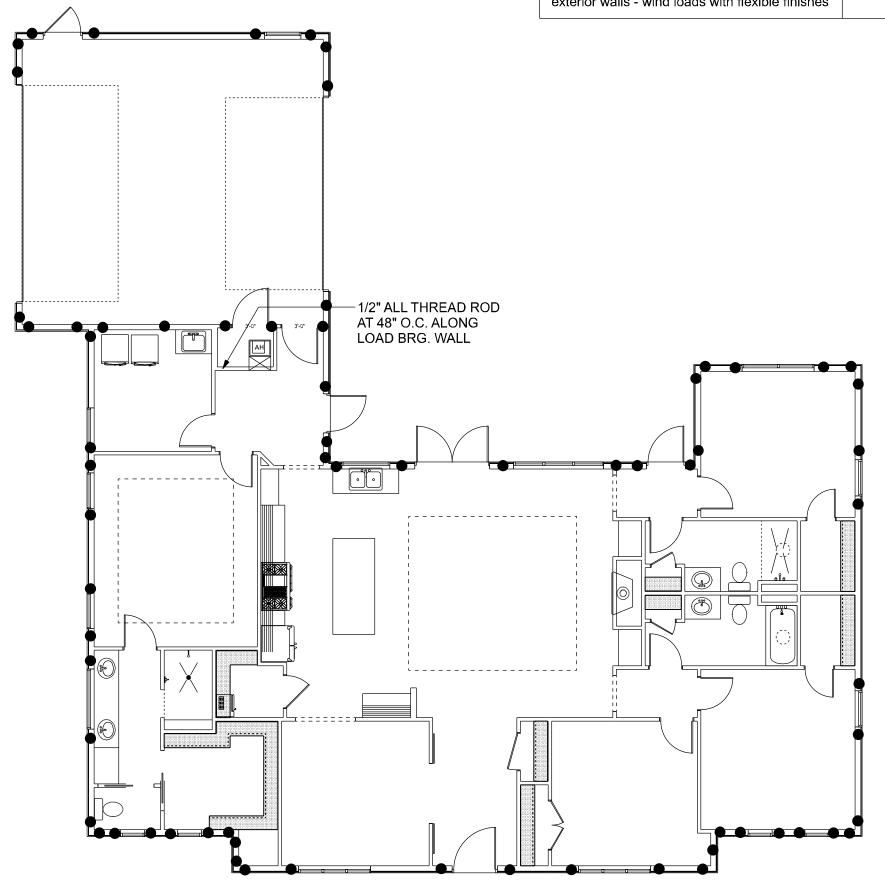
#### OPENING CONNECTION REQUIREMENTS **CONNECTOR AT** ANCHORAGE TO **HEADER SIZE** CLEAR FOUNDATION @ EACH #2 GRADE OR EACH END OF OPENING END OF OPENING BETTER OPENING WIDTH END BEARING 0' - 3' (2) 2x8 1.5" >3' - 6' (2) 2x10 1/2" ALL THREAD ROD 1/2" ALL THREAD ROD 1/2" ALL THREAD ROD 1/2" ALL THREAD ROD >6' - 9' (2) 2x12 3" (2) 1 3/4" x 11 1/4" LVL - 2.0E 1/2" ALL THREAD ROD 1/2" ALL THREAD ROD >9' - 12' (2) 1 3/4" x 11 1/4" LVL - 2.0E 1/2" ALL THREAD ROD 1/2" ALL THREAD ROD 1/2" ALL THREAD ROD (2) 1 3/4" x 11 1/4" LVL - 2.0E >15' - 18' 1/2" ALL THREAD ROD

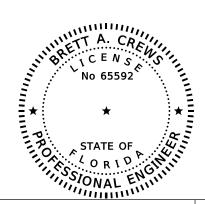


A SOLID MEMBER OF EQUAL OR GREATER SIZE THAN MULTIPLE MEMBERS MAY BE USED. IF RATED SHEATHING IS APPLIED TO NARROW EDGES, NAILED TO EACH STUD AT 12" O.C. MAXIMUM, THE LAMINATION NAILING SHOWN HERE IS NOT REQUIRED.



GIRDER COLUMN DETAIL SCALE: 1/2" - 1'\_0"





## ALL THREAD DETAIL

ALL THREAD LOCATION

SCALE:	: 1/2" = 1'-0"		No 65592  STATE OF ORIDARY
CONTRACTOR 780		CERTIFICATE OF AUTHORIZATION	

REVISIONS **DESIGN BY:** PROJECT NO.: CERTIFIED GENERAL CO DRAWN BY: **DESCRIPTION** JONES RESIDENCE DATE BY R20.004 NO. 28022 TRADEMARK Brett A. Crews Brett A. Crews Date: 2020.10.13 349 SW CREWS FARM TERRACE APPROVED BY 09:17:20-04'00' LAKE CITY, FL 32025 LAKE CITY, FL. 32025 (386)755-5254 SHEARWALL DETAILS **Construction Group, Inc.** A-9 PHONE: 386.623.4303 **Crews Engineering Services, LLC** Brett A. Crews, P.E. 65592