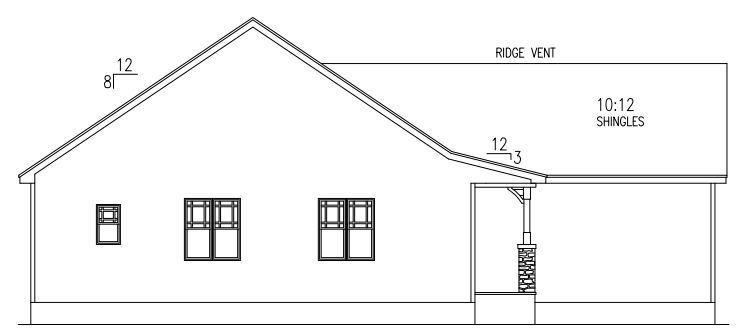


ATTIC SPACE VENTILATION	
REQUIRED	
<u>1883</u> SQ. FT. OF CLG. / 150 =	<u>12.55</u> SQ. FT. REQUIRED
REFER TO SECTION R806 (ROOF VENTILATION) IN NORTH CAROLINA STATE 2018 INTERNATIONAL RESIDENTIAL BUILDING CODES.	

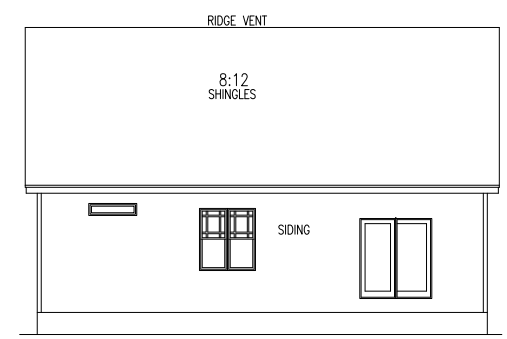
MEAN ROOF HGT.			
Soffit Hgt. From Assumed Grade	+ Highest Ridge Hgt. From Assumed Grade	+ 2	= Mean Roof Hgt.
11'-6"	+ 25'-4"	+ 2	= 16'-5" Mean Roof Hgt.



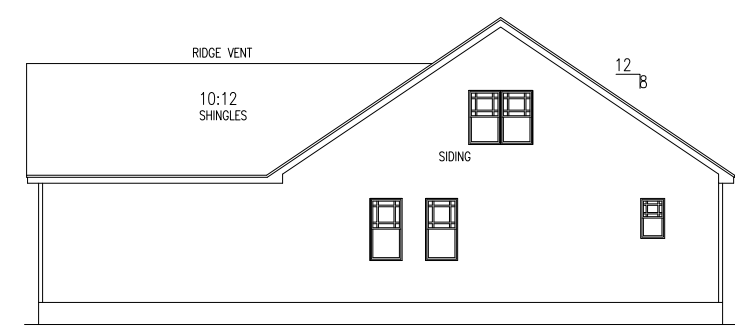
FRONT ELEVATION "C"



LEFT ELEVATION



REAR ELEVATION

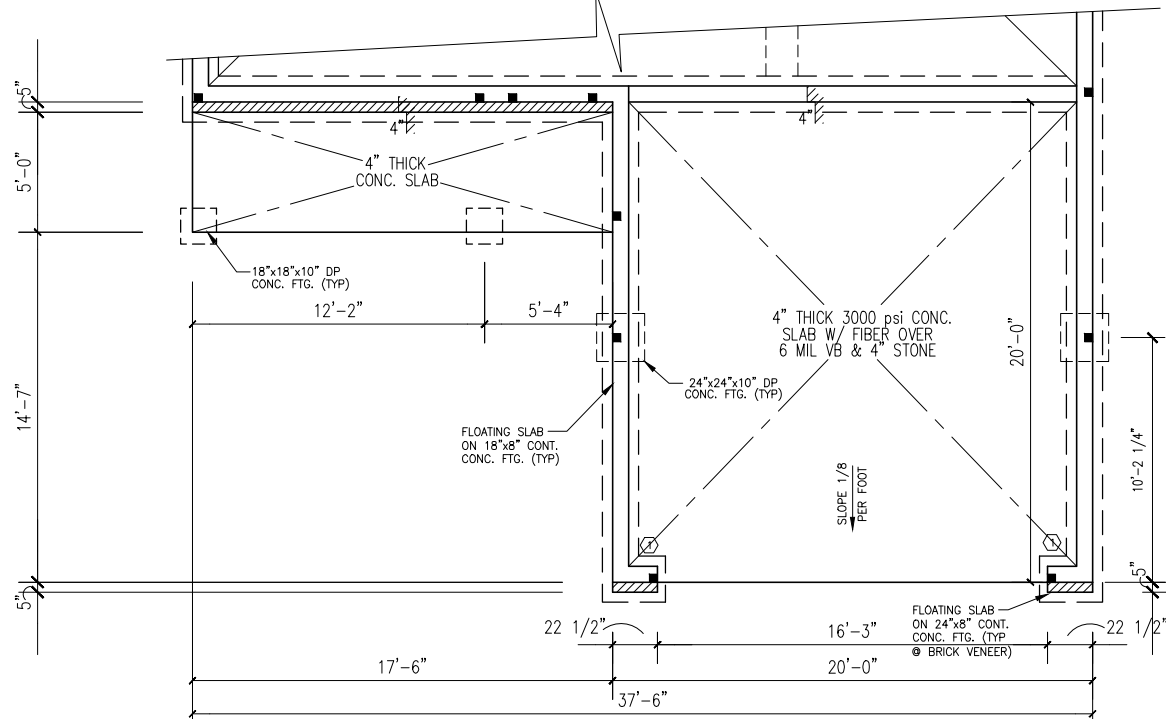
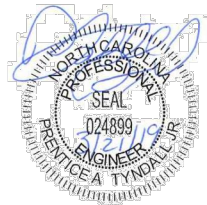


RIGHT ELEVATION

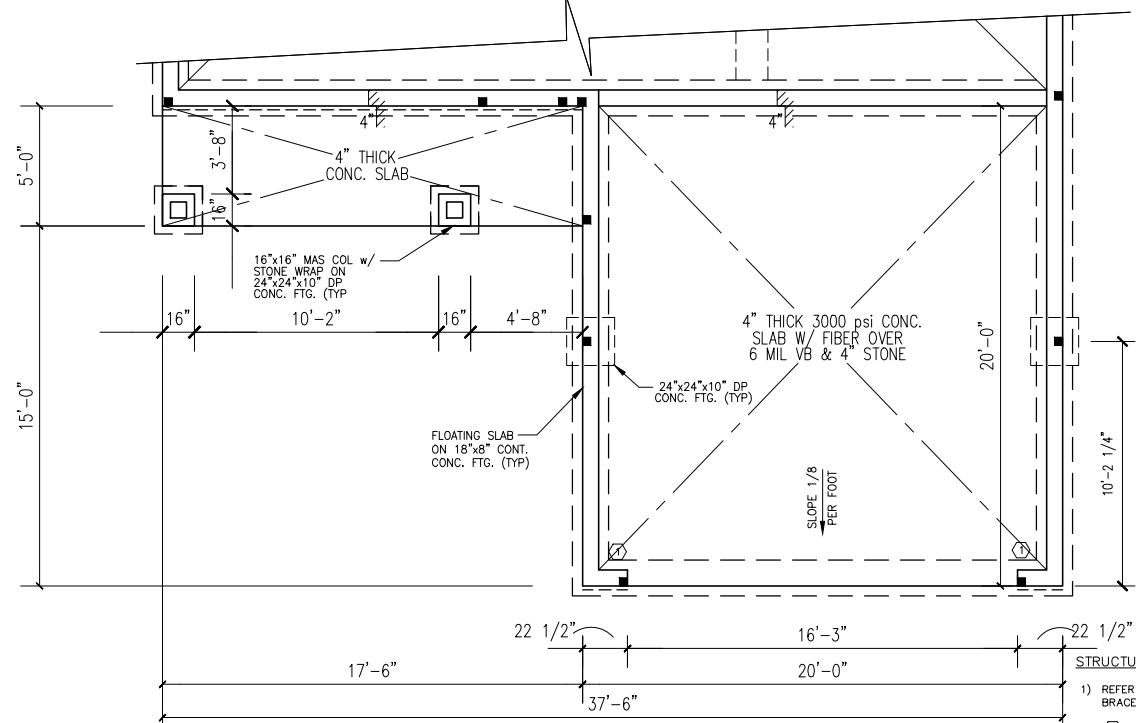
SCALE	
24"X36"	= 1/4"=1'-0"
11"X17"	= 1/8"=1'-0"



Project Number: 1901-010095
 * Structural analysis based on NC Residential Building Code 2018
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ELEVATION "B"

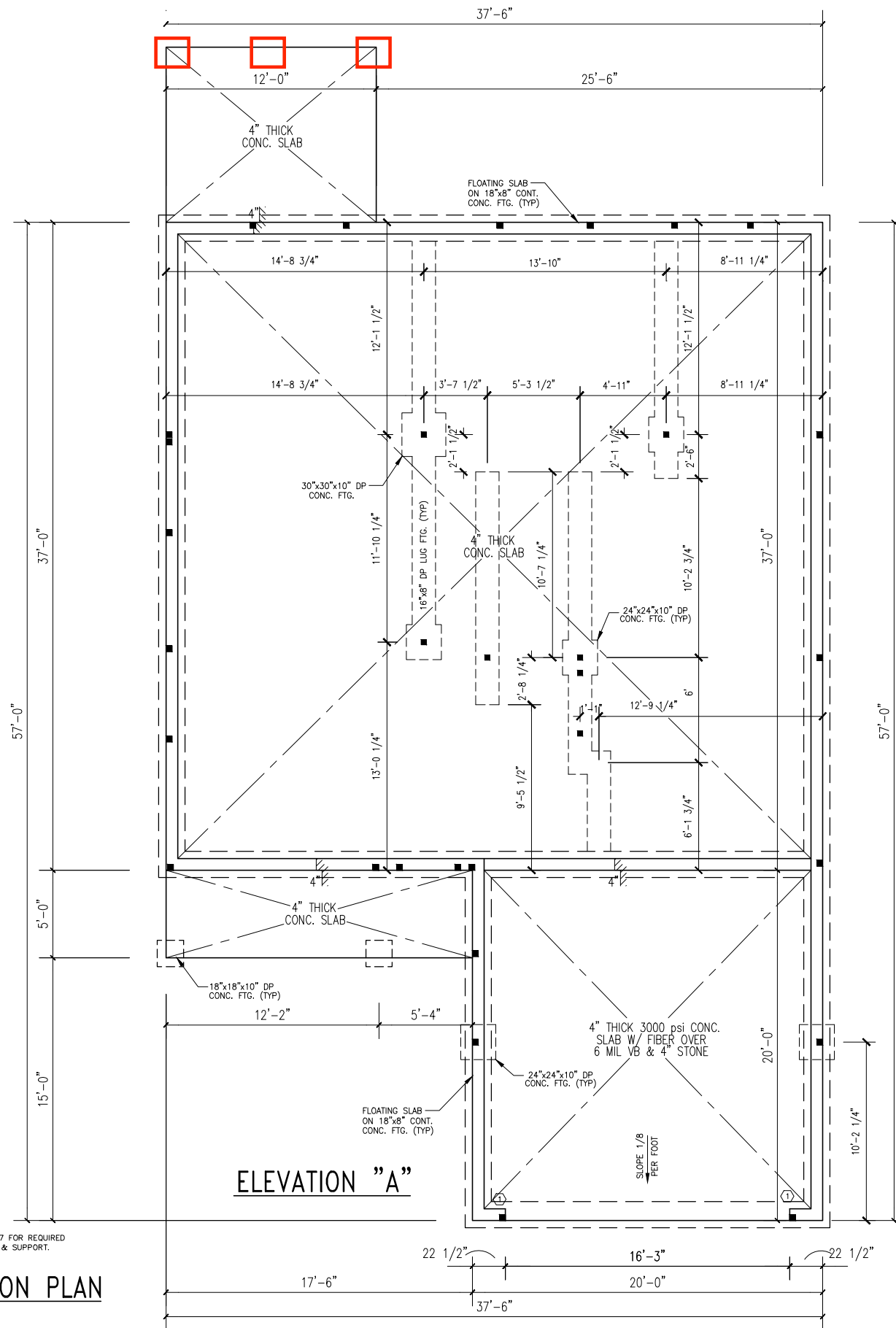


ELEVATION "C"

STRUCTURAL SHEATHING NOTES

- 1) REFER TO SECTION R602.10.6 & R602.10.7 FOR REQUIRED BRACED WALL PANEL (BWP) CONNECTION & SUPPORT.
- ① REFERENCE R602.10.7

FOUNDATION PLAN



ELEVATION "A"

SCALE
 24"x36" = 1/4"=1'-0"
 11"x17" = 1/8"=1'-0"

REVISIONS:

335 ATHLETIC CLUB BLVD
 CLAYTON, NC 27527
 domie@gadamshodge.com
 919-763-7278
 FIRM # C-4187

ADAMS & HODGE
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Floating Slab
 Foundation

PAVIN

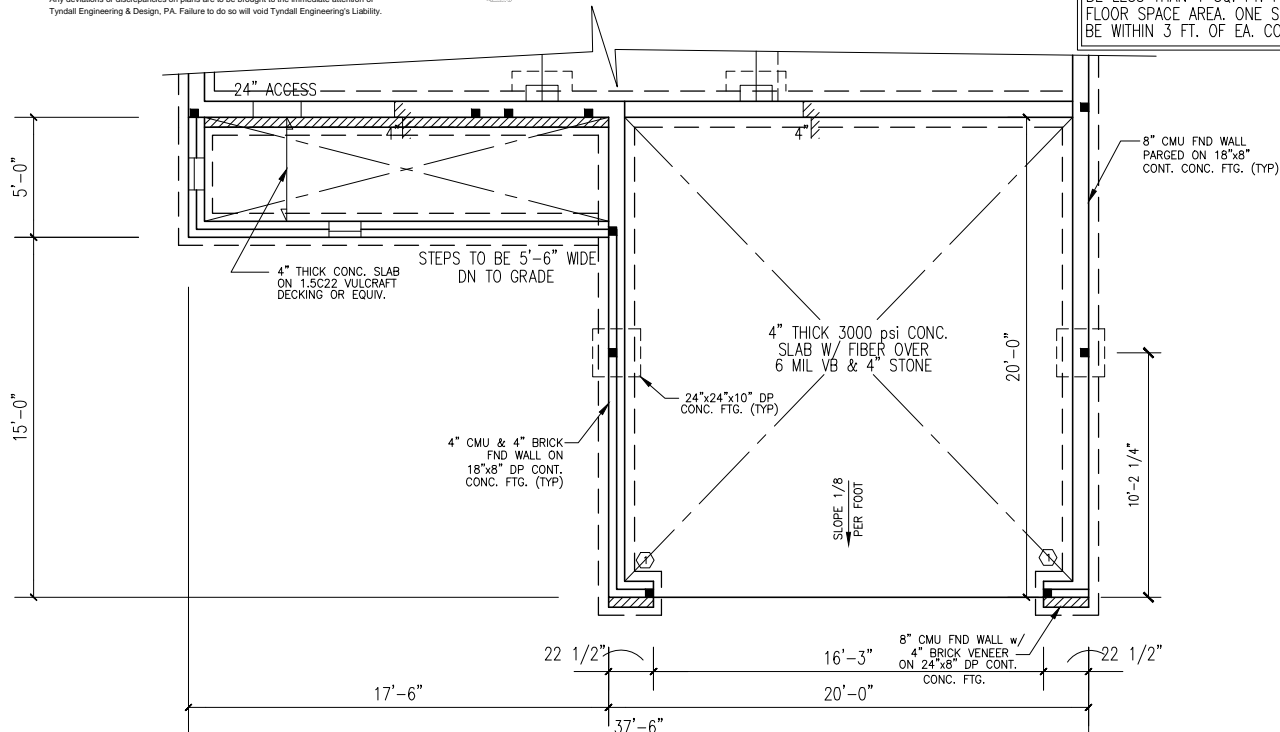
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 DRAWN
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 CHECKED

DATE
 5/25/2017
 SHEET

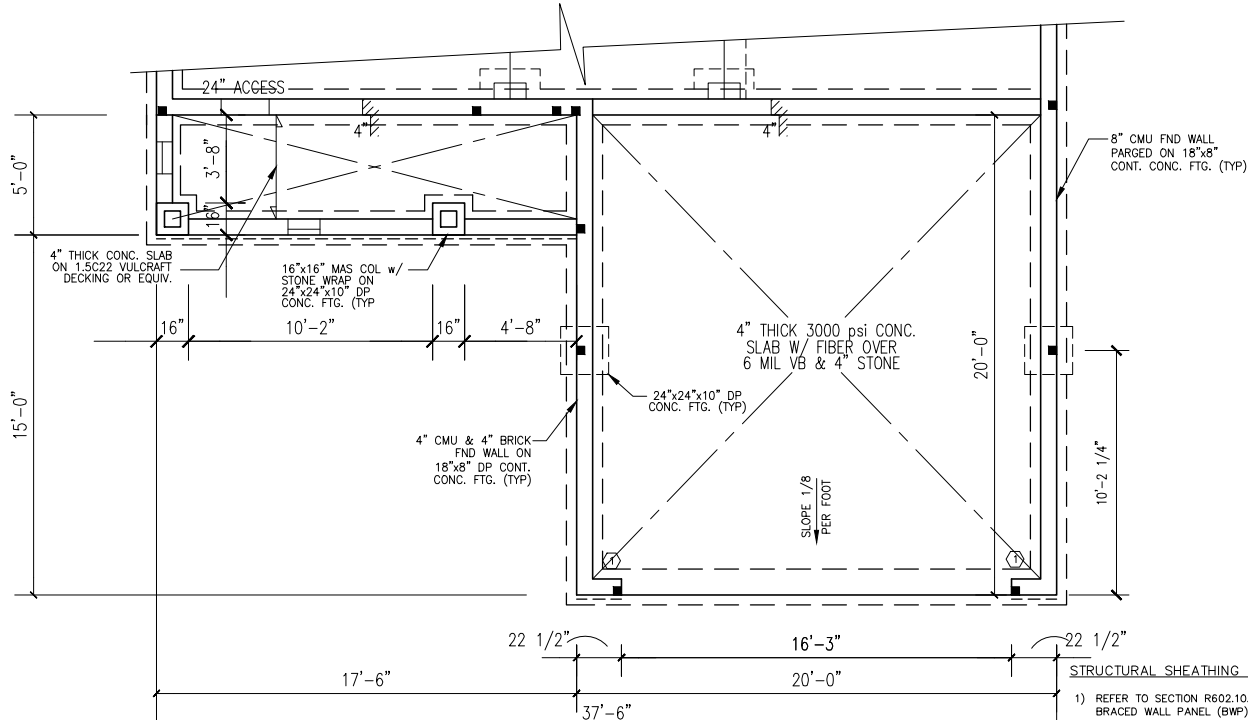


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CRAWL SPACE VENTILATION	
REQUIRED	1395 SQ. FT. / 150 = 9.3 SQ. FT. OF VENTILATION
PROVIDED	0.6 SQ. FT. / VENT = 15.5 VENTS = 16 (SQ. FT. OF VENTILATION)
THE MINIMUM NET AREA OF VENTILATION OPENINGS SHALL NOT BE LESS THAN 1 SQ. FT. FOR EA. 150 SQ. FT. OF UNDER-FLOOR SPACE AREA. ONE SUCH VENTILATING OPENING SHALL BE WITHIN 3 FT. OF EA. CORNER OF SAID BUILDING.	



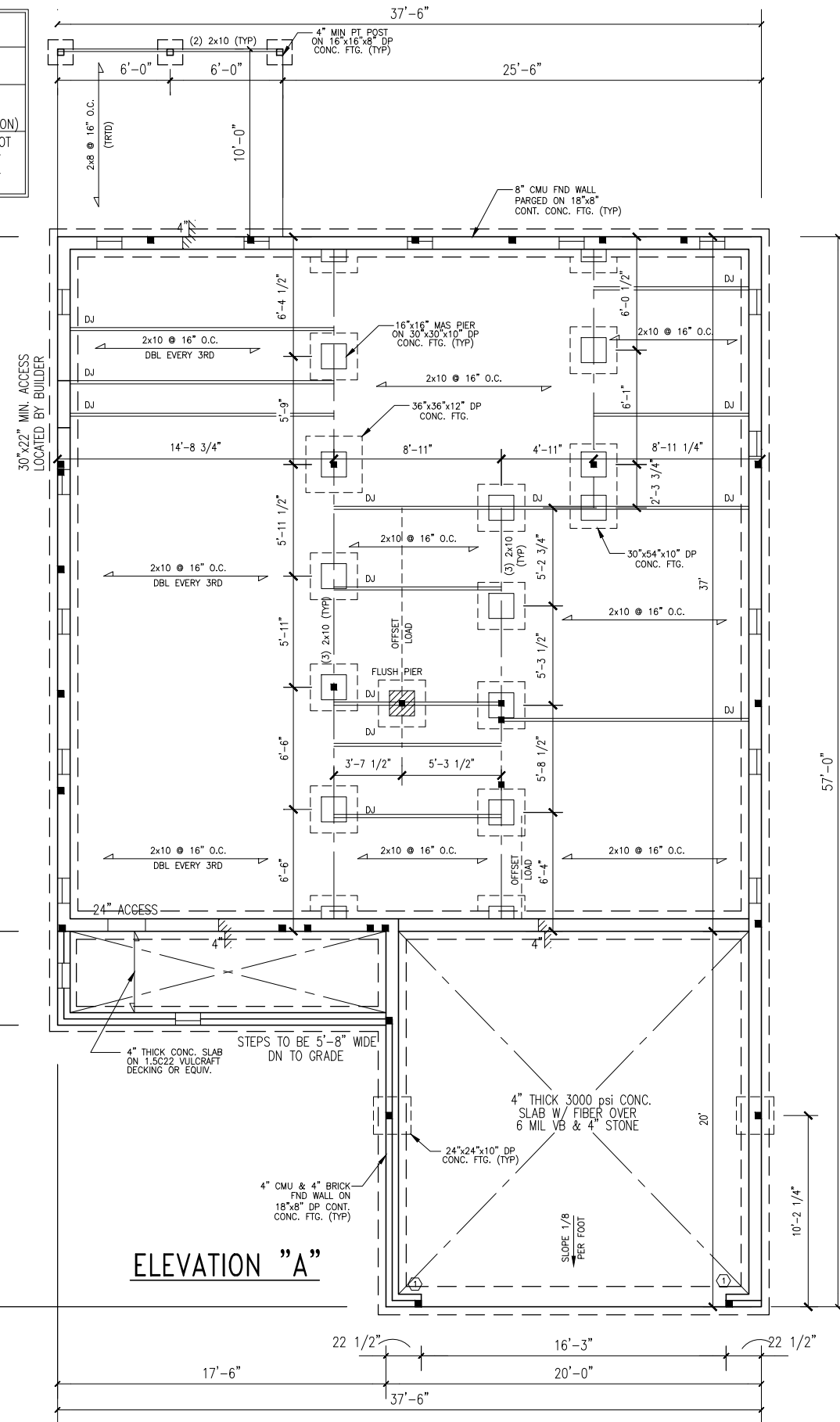
ELEVATION "B"



ELEVATION "C"

- STRUCTURAL SHEATHING NOTES
- REFER TO SECTION R602.10.6 & R602.10.7 FOR REQUIRED BRACED WALL PANEL (BWP) CONNECTION & SUPPORT.
 - REFERENCE R602.10.7

FOUNDATION PLAN



ELEVATION "A"

SCALE
24"x36" = 1/4"=1'-0"
11"x17" = 1/8"=1'-0"

REVISIONS:

335 ATHLETIC CLUB BLVD
 CLAYTON, NC 27527
 domie@gadamshodge.com
 919-763-7278
 FIRM # C-4187

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Crawlspace
 Foundation

PAVIN

FILE
 DESIGN ADS
 DRAWN ADS
 CHECKED

DATE 5/25/2017
 SHEET



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DESIGN LOADS

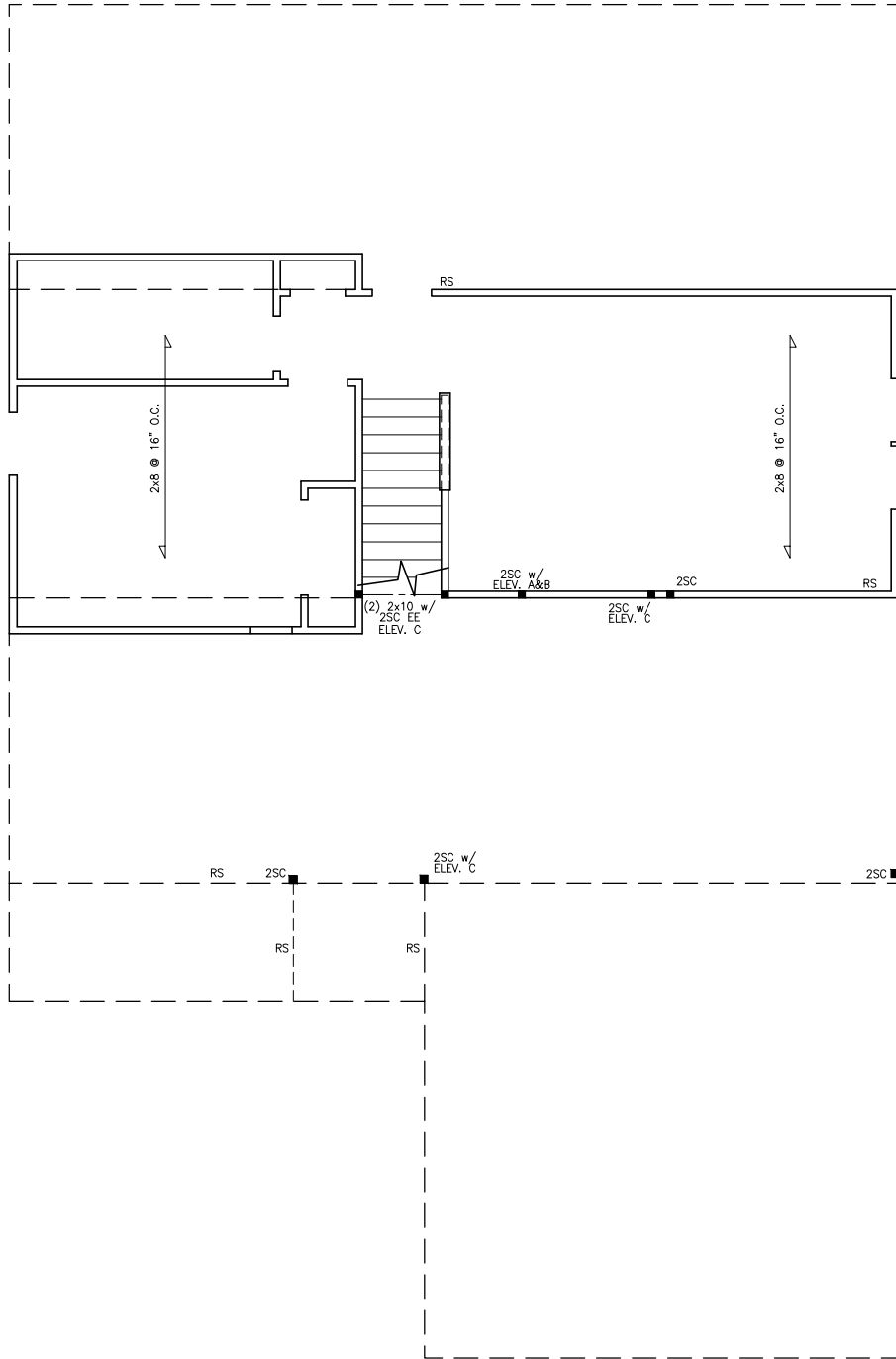
	LIVE LOAD (PSF)	DEAD LOAD (PSF)	DEFLECTION	
			LL	TL
FLOOR (primary)	40	10	L/360	L/240
FLOOR (secondary)	40	10	L/360	L/240
ATTIC (w/ storage)	20	10	L/240	L/180
ATTIC (no access)	10	5	L/240	L/180
EXTERNAL BALCONY	40	10	L/360	L/240
ROOF	20	10	L/240	L/180
ROOF TRUSS	20	20	L/240	L/180
WIND LOAD	BASED ON 120 MPH (EXPOSURE B)			
SEISMIC	BASED ON SEISMIC ZONES A, B & C			

STRUCTURAL NOTES:

- ALL CONSTRUCTION SHALL CONFORM TO THE LATEST REQUIREMENTS OF "NORTH CAROLINA STATE 2018 RESIDENTIAL BUILDING CODE", IN ADDITION TO ALL LOCAL CODES AND REGULATIONS.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL DIMENSIONS AND SQUARE FOOTAGE PRIOR TO CONSTRUCTION. TYNDALL ENGINEERING & DESIGN, PA IS NOT RESPONSIBLE FOR DIMENSIONS AND SQUARE FOOTAGE ERRORS ONCE CONSTRUCTION BEGINS.
- ALL LUMBER SHALL BE SYP #2 (UNO)
 ALL LVL LUMBER TO BE 1.75" WIDE NOMINAL EACH SINGLE MEMBER AND $F_b = 2600$ PSI, $E = 1.9M$ PSI (I.E. LEVEL MICROLAM)
 ALL LVL LUMBER IS TO BE 1.55E ($F_b = 2325$ PSI)
- ALL LOAD BEARING EXTERIOR WINDOW HEADERS WITH MAXIMUM SPAN OF 5'-6" SHOULD BE A (2) 2x10 w/ (1) 2x4 KING STUD AND (1) 2x4 JACK STUD NAILED TOGETHER w/ (2) 10d @ 8" O.C. PROVIDED THAT THE TOP OF THE WINDOW HEIGHT IS 6'-8" MINIMUM BOTTOM OF THE WINDOW HEIGHT IS 1'-6", OTHERWISE REFER TO TABLE R502.5(1).
- ALL INTERIOR LOAD BEARING HEADERS TO BE (2) 2x10 (U.N.O.) REFER TO TABLE R502.5(1) FOR JACK STUD REQUIREMENTS FOR HEADER SPANS FOR INTERIOR AND EXTERIOR LOAD CONDITIONS (UNO)
- REFER TO 2018 NC BUILDING CODE SECTION R602 FOR CONSTRUCTION OF ALL WALLS OVER 10'-0" IN HEIGHT.
- ALL STRUCTURAL STEEL SHALL BE ASTM A992 GRADE 50 $F_y = 50$ KSI MIN. (UNO)
- ALL EXTERIOR LUMBER TO BE #2 SYP PT
- ALL CONCRETE, $f_c = 3000$ PSI MIN.
- PRESUMPTIVE BEARING CAPACITY = 2000 PSF
- 1/2" ANCHOR BOLTS SPACED AT MAXIMUM OF 6'-0" O.C. AND NOT MORE THAN 12" FROM THE CORNER. THERE SHALL BE A MINIMUM OF (2) BOLTS PER PLATE SECTION. ANCHOR BOLTS SHALL BE SPACED AT 3'-0" O.C. FOR BASEMENTS. ANCHOR BOLT SHALL EXTEND 7" INTO CONCRETE OR MASONRY.
- PSL COLUMNS DESIGNED WITH MAX. HEIGHT OF 9'-0" (UNO) PROVIDE A MINIMUM OF 500# UPLIFT & LATERAL CONNECTION AT TOP AND BOTTOM OF PORCH COLUMNS. (U.N.O.)
- PROVIDE CONTINUOUS SHEATHING PER SECTION 602.10.4 OF THE 2018 IRC.
- MAXIMUM MASONRY PIER HEIGHT SHALL NOT EXCEED FOUR TIMES ITS LEAST HORIZONTAL DIMENSION.
- UPLIFT LOADS GREATER THAN 500# SHALL BE CONTINUOUSLY ANCHORED TO THE FOUNDATION.
- METAL HANGERS SHALL BE SIMPSON OR APPROVED EQUAL.

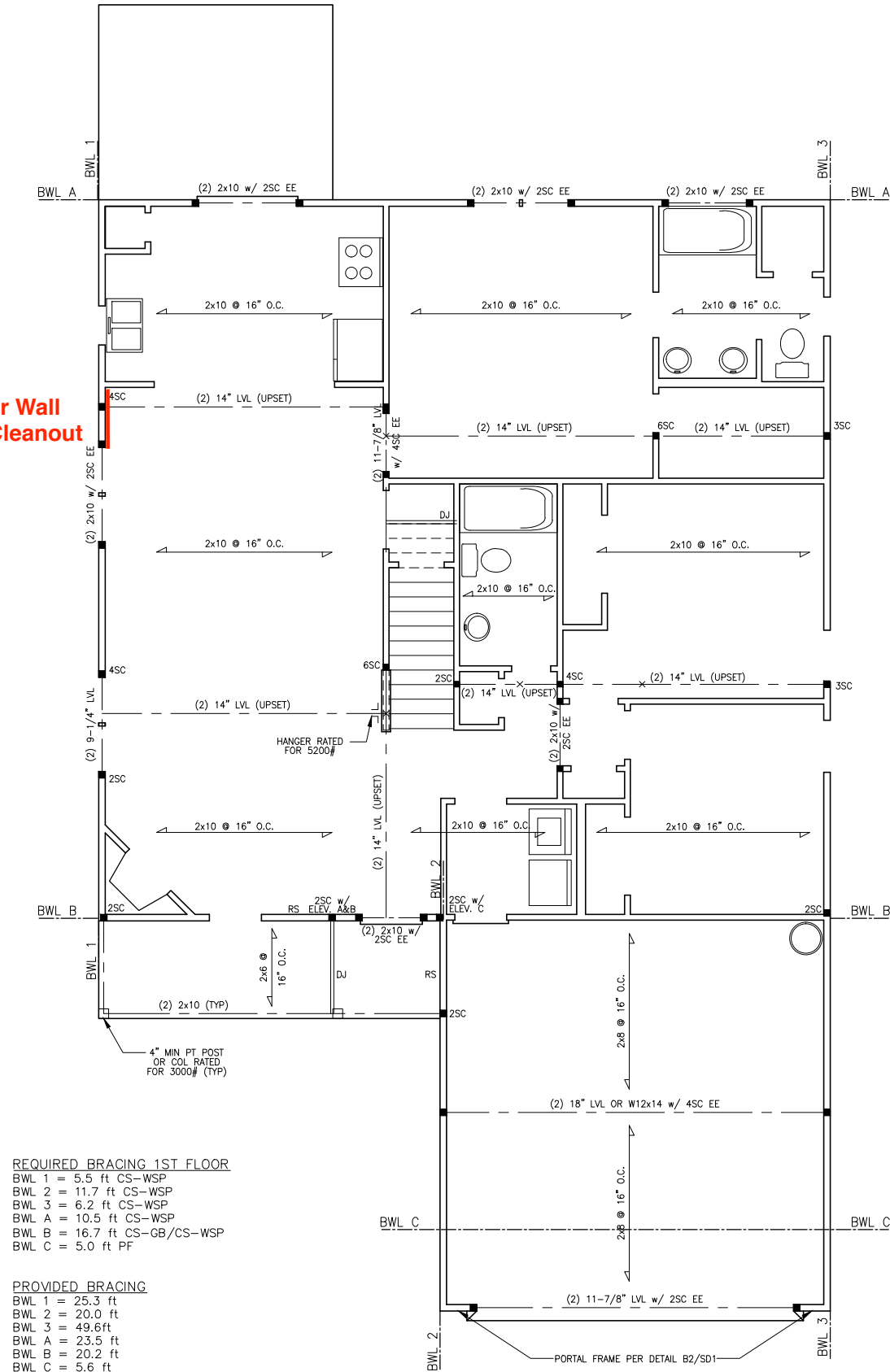
STRUCTURAL SHEATHING NOTES

- DESIGNED FOR SEISMIC ZONE A-C AND WIND SPEEDS OF 120 MPH OR LESS.
- WALLS SHALL BE BRACED IN ACCORDANCE WITH SECTION R602.10 OF THE 2018 NRC.
- BRACING REQUIREMENTS SHALL BE PER TABLE R602.10.3. REFER TO SECTION R602.10.4 FOR LOAD PATH DETAILS INCLUDING CONNECTIONS & SUPPORT OF BRACED WALL PANELS.
 - REFERENCE FIGURE R602.10.4.3 OF THE 2018 NRC.
- INTERIOR BRACED WALL PANELS (BWP) INDICATED SHALL BE SHEATHED IN ACCORDANCE WITH THE GB METHOD OR WSP METHOD AS PRESCRIBED IN SECTION R602.10.1 (UNO)
 - 1/2" GYPSUM BOARD (GB) MINIMUM LENGTH OF 8'-0" (ISOLATED PANELS) OR 4'-0" (CONTINUOUS SHEATHING). SECURE w/ 5d COOLER NAILS (OR EQUAL PER TABLE R702.3.5) SPACED @ 7" O.C. AT PANEL EDGES, INCLUDING TOP AND BOTTOM PLATES & 7" O.C. AT INTERMEDIATE SUPPORTS
 - 3/8" WOOD STRUCTURAL PANEL (WSP) SECURE w/ 6d COMMON NAILS SPACED AT 6" O.C. AT PANEL EDGES AND 12" O.C. AT INTERMEDIATE SUPPORTS
- EXTERIOR BRACED WALL PANELS (BWP) SHALL BE CONSTRUCTED IN ACCORDANCE WITH CS-WSP METHOD AS PRESCRIBED IN SECTION R602.10.3 (UNO)
- ALL SHEATHABLE SURFACES OF EXTERIOR WALLS (INCLUDING AREAS ABOVE AND BELOW OPENINGS AND CABLE END WALLS) SHALL BE CONTINUOUSLY SHEATHED WITH WOOD STRUCTURAL PANEL (WSP) SHEATHING WITH A MINIMUM THICKNESS OF 3/8". SHEATHING SHALL BE SECURED WITH MINIMUM 6d COMMON NAILS SPACED AT 6" O.C. AT PANEL EDGES AND SPACED AT 12" O.C. AT INTERMEDIATE SUPPORTS.
- MINIMUM BRACED WALL PANEL LENGTHS WITH CS-WSP METHOD SHALL BE AS FOLLOWS:
 - 24" ADJACENT TO OPENINGS NOT MORE THAN 67% OF WALL HEIGHT
 - 30" ADJACENT TO OPENINGS GREATER THAN 67% AND LESS THAN 85% OF WALL HEIGHT.
 - 48" FOR OPENINGS GREATER THAN 85% OF WALL HEIGHT
- SHEATH INTERIOR & EXTERIOR
- FOR CS-WSP METHOD, A MINIMUM 24" BRACED WALL PANEL CORNER RETURN SHALL BE PROVIDED AT BOTH ENDS OF A BRACED WALL LINE IN ACCORDANCE WITH FIGURE R602.10.3(4). IN LIEU OF A CORNER RETURN, EITHER A MIN. 48" BRACED WALL PANEL SHALL BE PROVIDED AT THE CORNER OR A HOLD-DOWN DEVICE WITH A MINIMUM UPLIFT DESIGN VALUE OF 800# SHALL BE FASTENED TO THE EDGE OF THE BRACED WALL PANEL CLOSEST TO THE CORNER AND TO THE FOUNDATION OR FRAMING BELOW.
 - MINIMUM 800# HOLD-DOWN DEVICE



STRUCTURAL PLAN

Fur Wall for Cleanout



REQUIRED BRACING 1ST FLOOR

- BWL 1 = 5.5 ft CS-WSP
- BWL 2 = 11.7 ft CS-WSP
- BWL 3 = 6.2 ft CS-WSP
- BWL A = 10.5 ft CS-WSP
- BWL B = 16.7 ft CS-GB/CS-WSP
- BWL C = 5.0 ft PF

PROVIDED BRACING

- BWL 1 = 25.3 ft
- BWL 2 = 20.0 ft
- BWL 3 = 49.6ft
- BWL A = 23.5 ft
- BWL B = 20.2 ft
- BWL C = 5.6 ft

SCALE	
24"x36"	= 1/4"=1'-0"
11"x17"	= 1/8"=1'-0"

REVISIONS:

335 ATHLETIC CLUB BLVD
 CLAYTON, NC 27527
 dome@adamsandhodge.com
 919-763-7278
 PKM# C-4187

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Structural Plans
 Option #3
 OPT. BDRM #4

PAVIN

FILE

DESIGN
 ADS

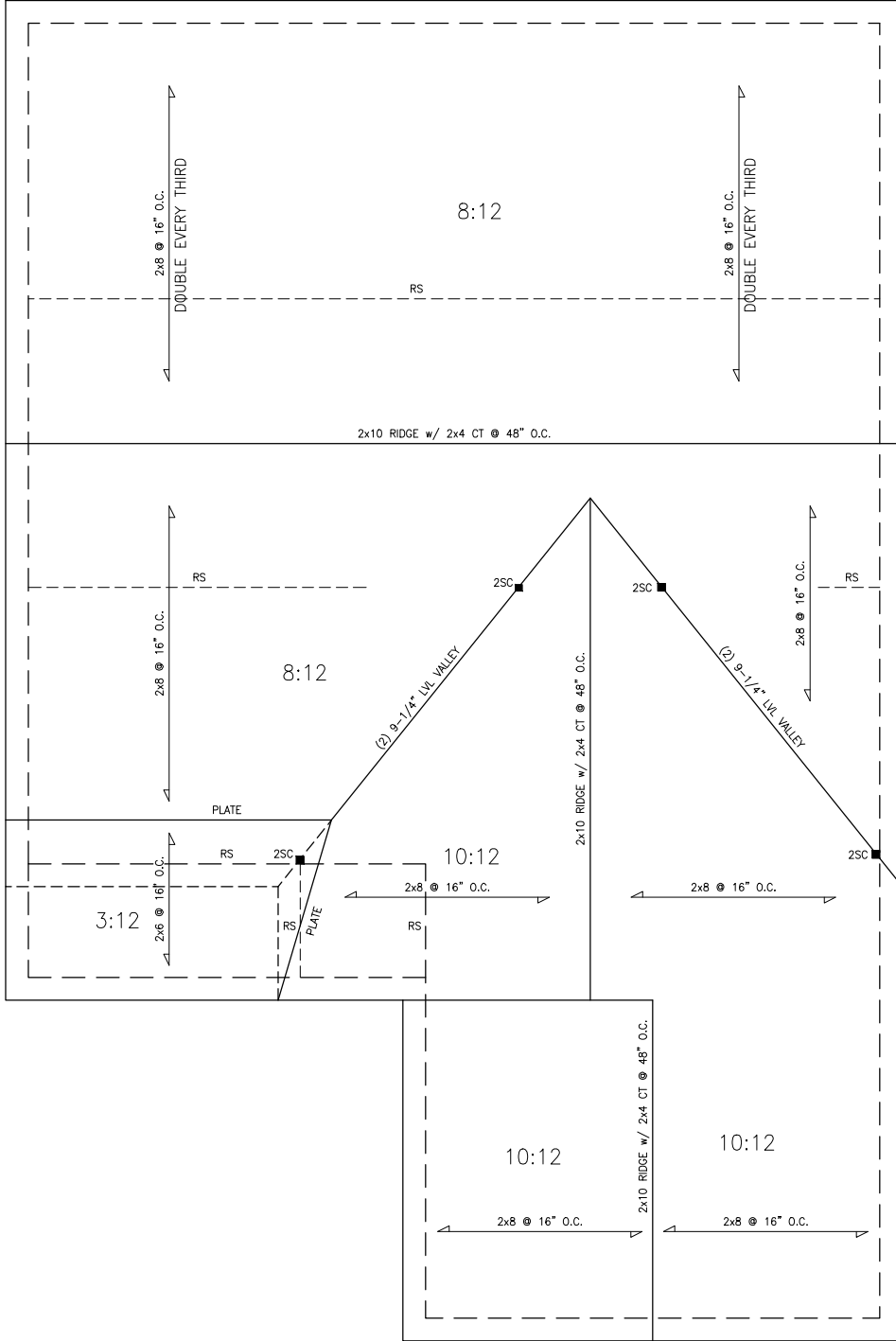
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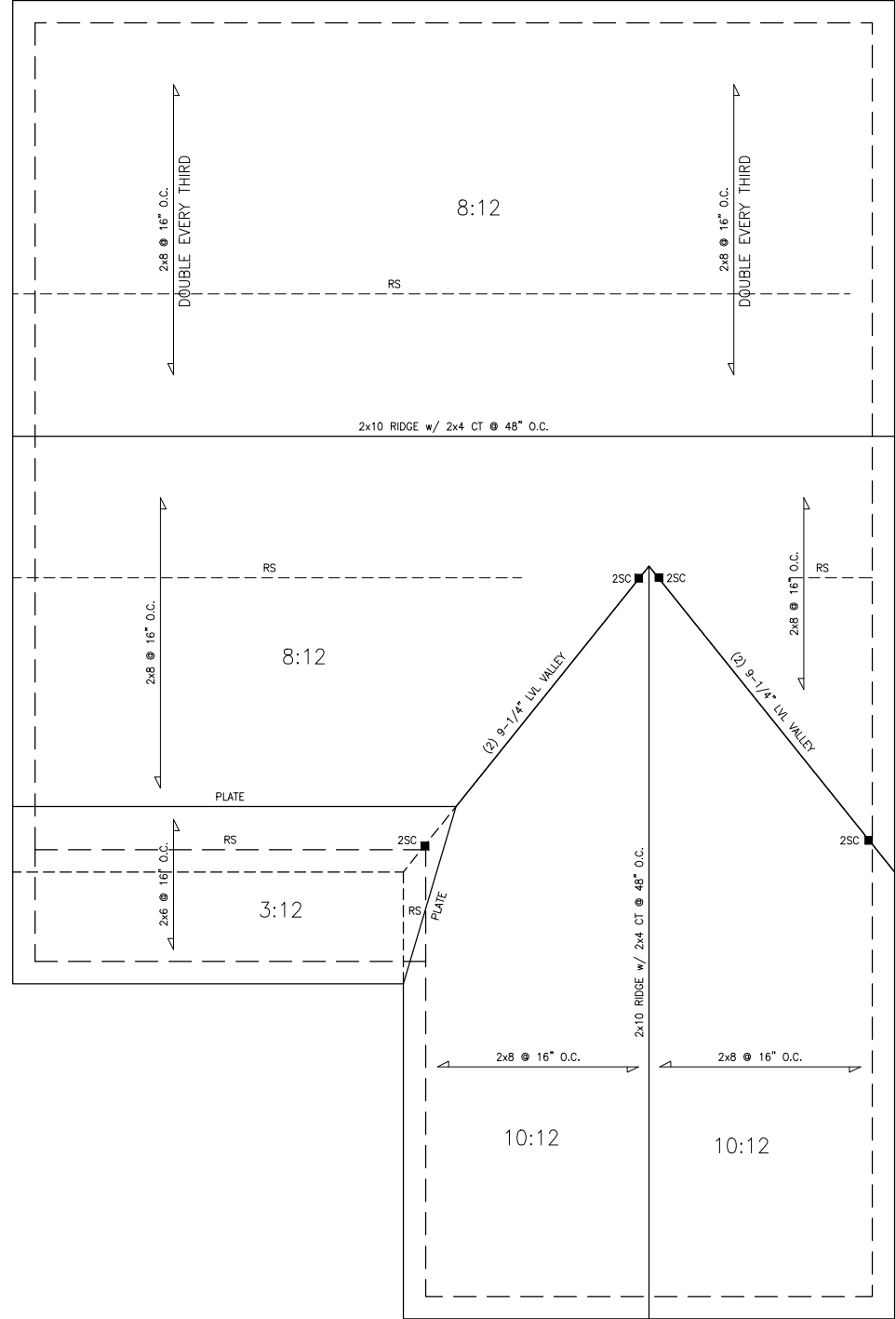
DATE
 5/25/2017

SHEET

3



ROOF FRAMING PLAN "A" & "B"



ROOF FRAMING PLAN "C"

SCALE
 24"x36" = 1/4"=1'-0"
 11"x17" = 1/8"=1'-0"

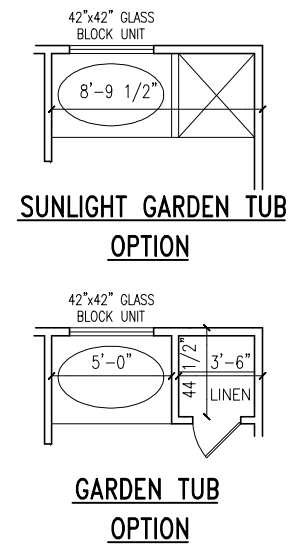
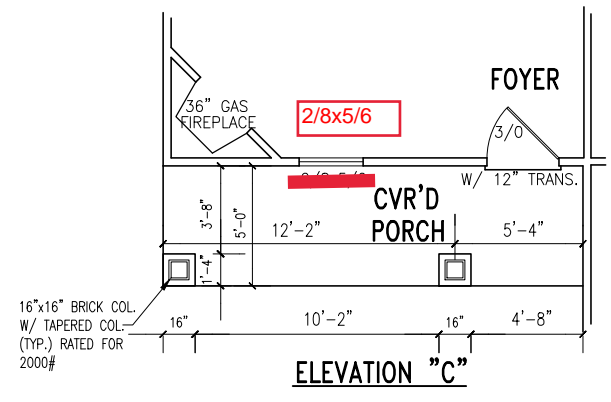
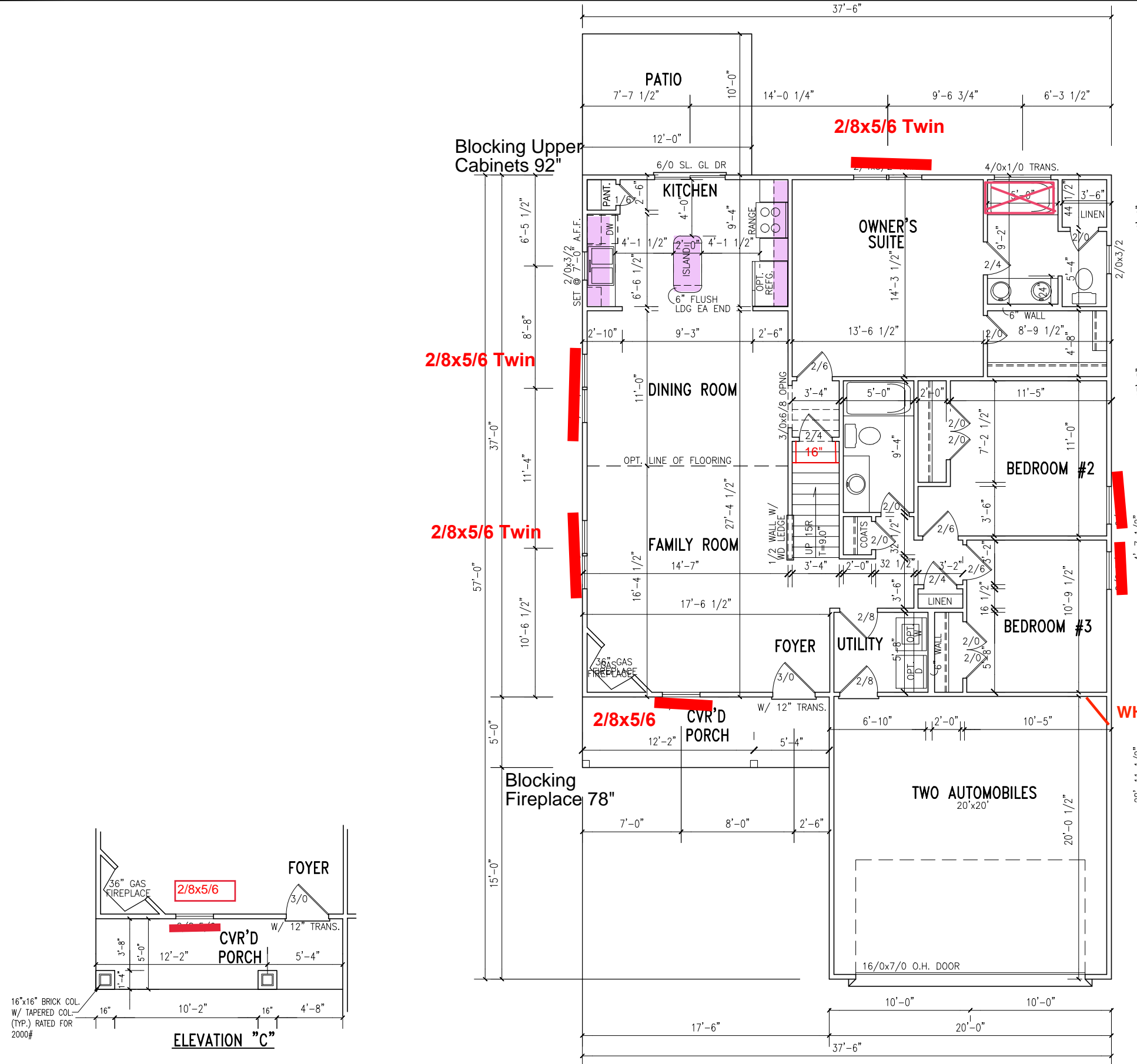


RS = ROOF SUPPORT



1907/75-5221 • 919/775-9888
 4000 South Drive • Suite 100 • North Carolina • 27505
 www.tyndall-engineering.com

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SQUARE FOOTAGE	
1ST FLOOR HTD.	1395
2ND FLOOR HTD.	260
TOTAL	1655
UNFINISHED STORAGE	200
GARAGE	400
PATIO	120
ELEVATION "A" PORCH	88
ELEVATION "B" PORCH	88
ELEVATION "C" PORCH	88

- NOTES:**
- 1) 9'-0" CLG. HGT. (9'-1 1/2" PLT. HGT.) UNLESS OTHERWISE NOTED.
 - 2) ALL EXTERIOR WALLS FIGURED AT 4" NOMINAL WIDTHS UNLESS OTHERWISE NOTED.
 - 3) ALL INTERIOR WALLS FIGURED AT 3 1/2" WIDTHS UNLESS OTHERWISE NOTED.
 - 4) SET WINDOWS AT 7'-6" A.F.F. UNLESS OTHERWISE NOTED.
 - 5) DIMENSIONS ARE TO FRAMING UNLESS OTHERWISE NOTED.

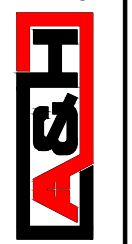
SCALE	
24"x36"	= 1/4"=1'-0"
11"x17"	= 1/8"=1'-0"

FIRST FLOOR PLAN

REVISIONS:

335 ATHLETIC CLUB BLVD
CLAYTON, NC 27527
doonie@adamsandhodge.com
919-763-7278
FIRM # C-4187

ADAMS & HODGE
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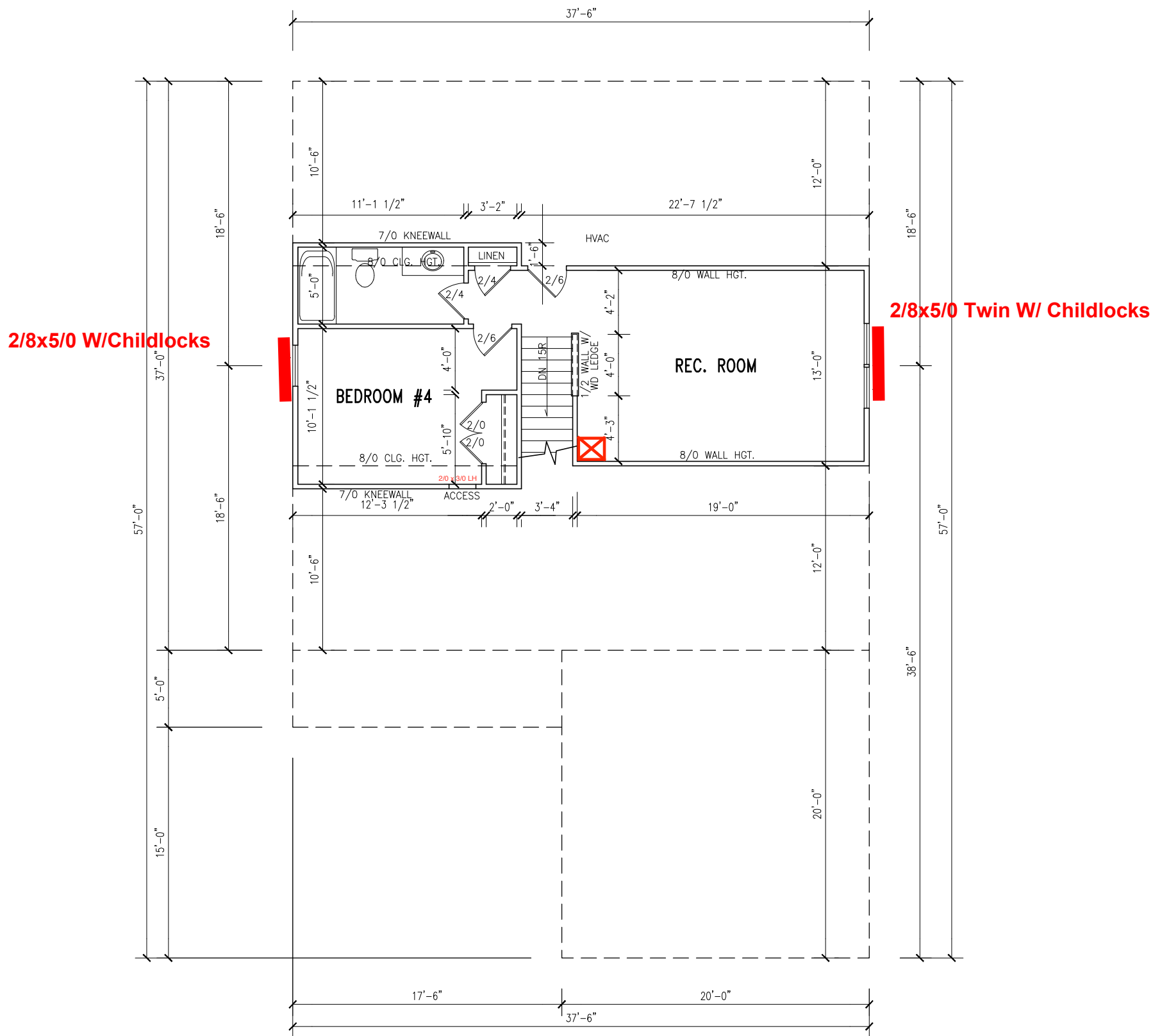


First Floor Plan

PAVIN

FILE
DESIGN ADS
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DATE 5/25/2017
SHEET

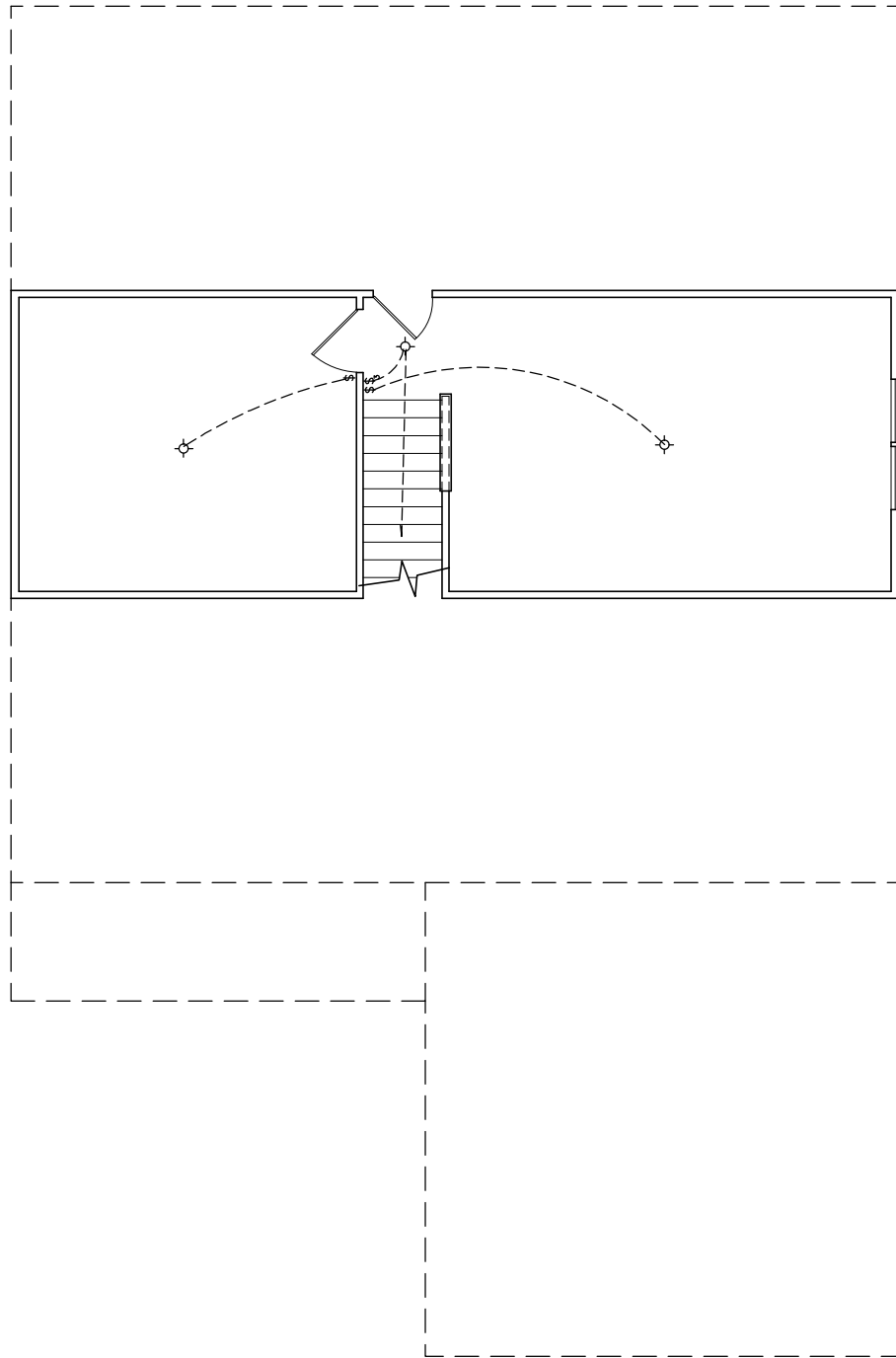


SECOND FLOOR PLAN

- NOTES:
- 1) 8'-0" CLG. HGT. (8'-1 1/2" PLT. HGT.) UNLESS OTHERWISE NOTED.
 - 2) ALL EXTERIOR WALLS FIGURED AT 4" NOMINAL WIDTHS UNLESS OTHERWISE NOTED.
 - 3) ALL INTERIOR WALLS FIGURED AT 3 1/2" WIDTHS UNLESS OTHERWISE NOTED.
 - 4) SET WINDOWS AT 6'-8" A.F.F. UNLESS OTHERWISE NOTED.
 - 5) DIMENSIONS ARE TO FRAMING UNLESS OTHERWISE NOTED.

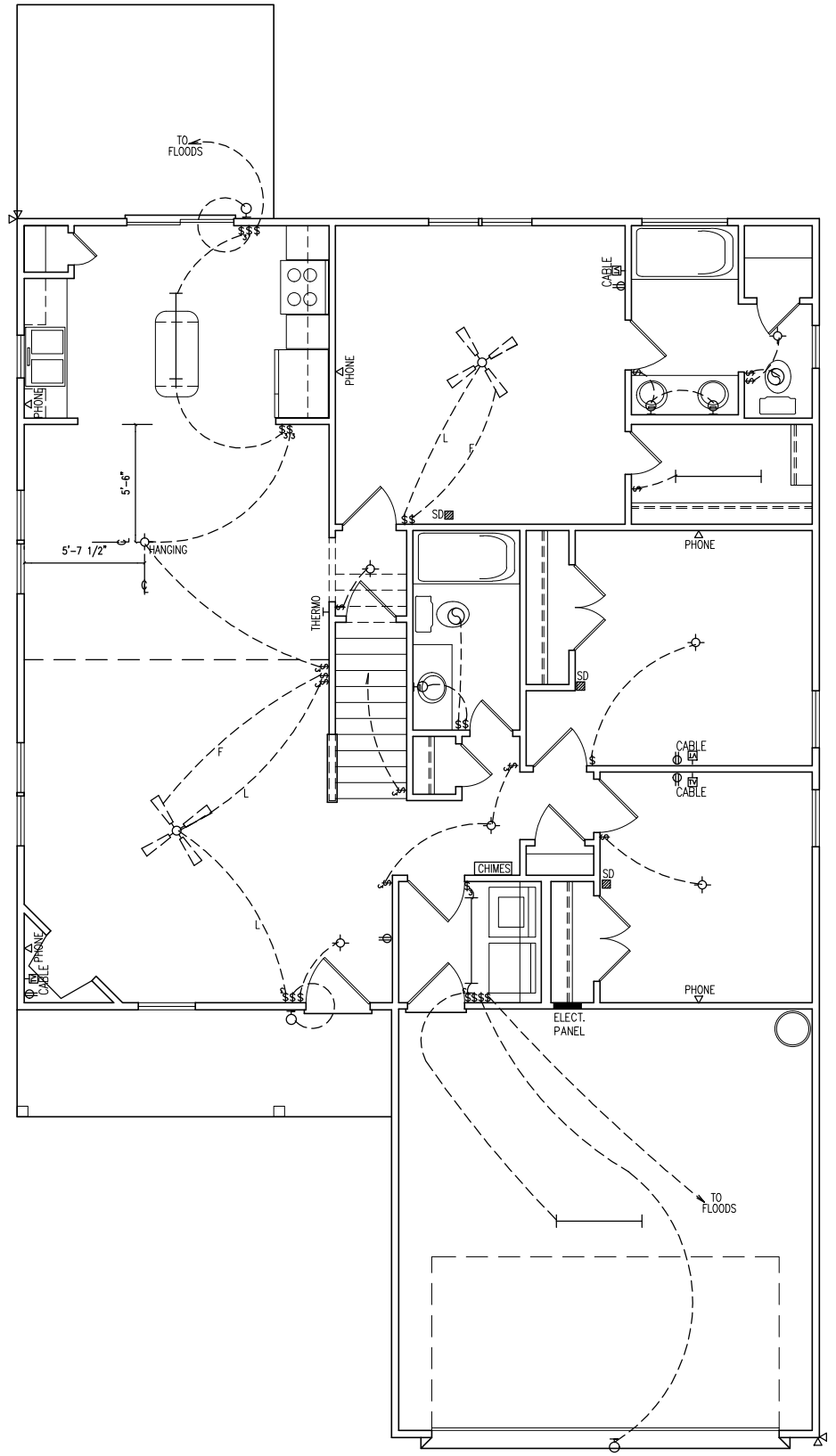
SCALE
 24"x36" = 1/4"=1'-0"
 11"x17" = 1/8"=1'-0"

REVISIONS:	
335 ATHLETIC CLUB BLVD CLAYTON, NC 27527 donnie@adamsandhodge.com 919-763-7278 FIRM # C-4187	
ADAMS & HODGE ENGINEERING, P.C.	
A&H	
Second Floor Plan Option #3 OPT. BDRM #4	PAVIN
FILE	DESIGN ADS
	DRAWN ADS
	CHECKED
DATE 5/25/2017	
SHEET	6



ELECTRICAL SYMBOLS			
	CEILING MOUNTED LIGHT FIXTURE		SINGLE RECEPTACLE OUTLET
	DIRECTIONAL CLG. LIGHT FIXTURE		DUPLEX RECEPTACLE OUTLET
	RECESSED LIGHT FIXTURE		QUADRUPLEX RECEPTACLE OUTLET
	WALL MOUNTED LIGHT FIXTURE		FLOOR OUTLET
	EXTERIOR FLOOD LIGHT		DUPLEX RECEPTACLE OUTLET SPLIT USED
	TRACK LIGHT FIXTURE		220 VOLT OUTLET
	CHIMES		WATER PROOF OUTLET
	SINGLE POLE WALL SWITCH		TELEPHONE OUTLET
	3-WAY POLE WALL SWITCH		TV OUTLET
	FOUR-WAY SWITCH		GROUND FAULT INTERCEPTOR
	GROUND FAULT INTERCEPTOR		RECESSED LIGHT FIXTURE ANGLE CUT
	WATER PROOF SWITCH		PULL CHAIN LIGHT FIXTURE
	DIMMER SWITCH		FLUORESCENT LIGHT BOX
	TIMER SWITCH		CEILING FAN
	FLUORESCENT LIGHT		EXHAUST FAN
	ELECTRICAL OUTLET GARAGE DOOR OPENER		EXHAUST FAN/LIGHT
	HANGING LIGHT FIXTURE		SMOKE DETECTOR
	CEILING FAN/LIGHT		SHOWER LIGHT

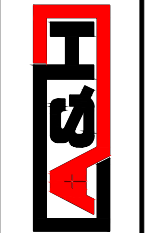
NOTE:
 (1) ALL RECEPTACLE PLACEMENT TO CODE.
 (2) PLEASE NOTE RECEPTACLE PLACEMENT PER FSC.



REVISIONS:

335 ATHLETIC CLUB BLVD
 CLAYTON, NC 27527
 dome@adamshodge.com
 919-763-7278
 FIRM # C-4187

ADAMS & HODGE
 ENGINEERING, P.C.



Electricals
 Standard

PAVIN

FILE

DESIGN
 ADS

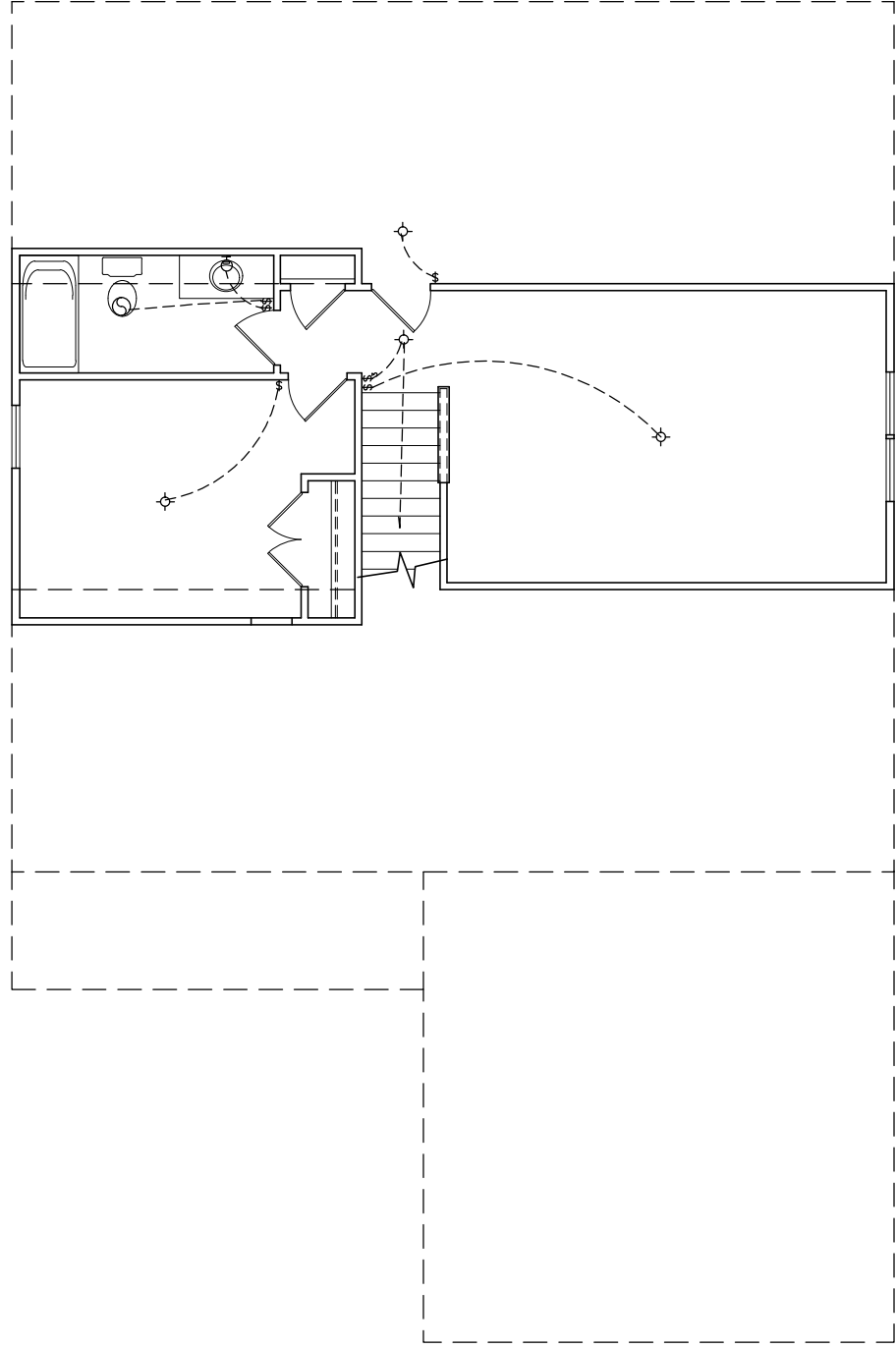
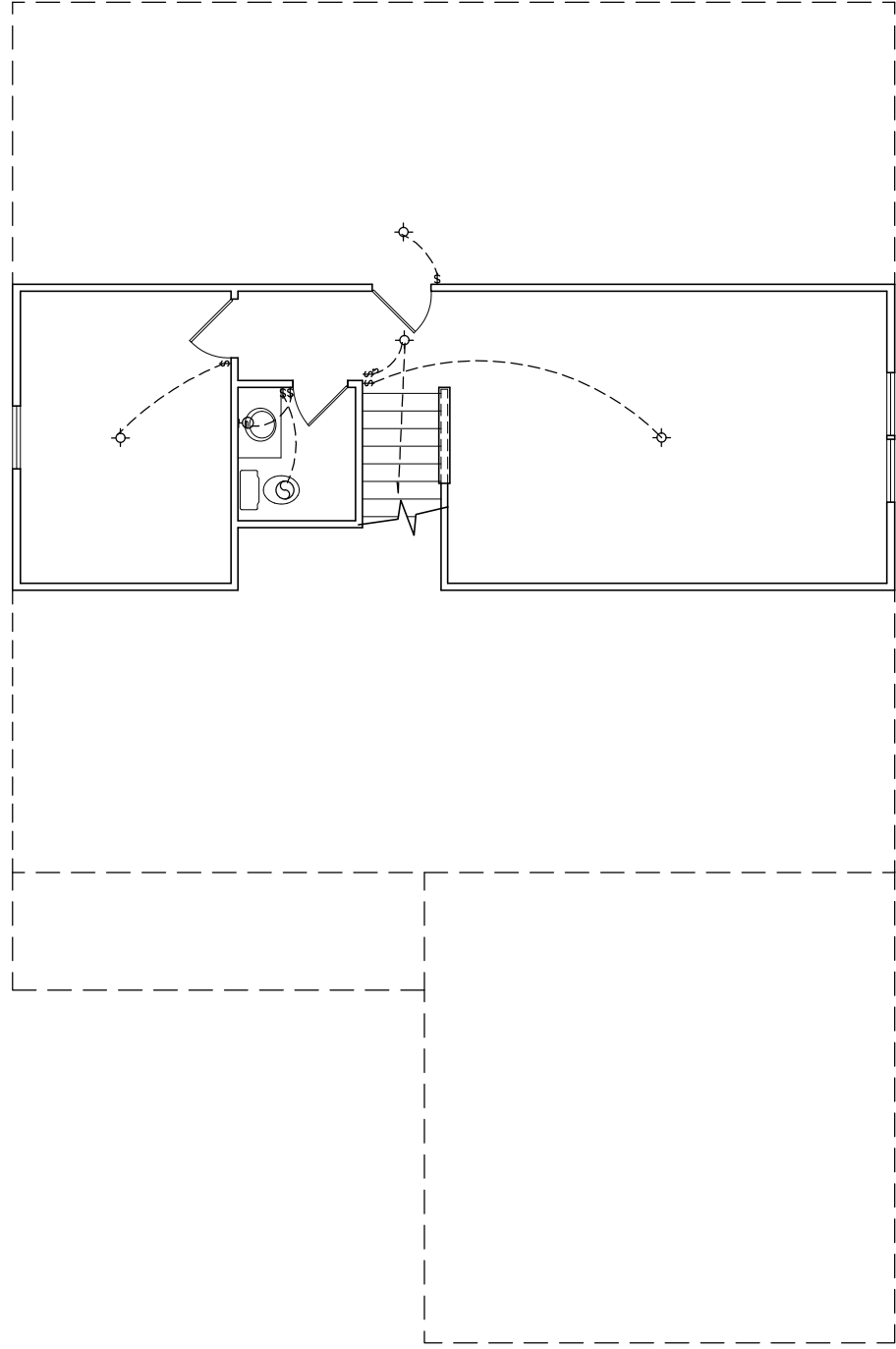
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DATE
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7



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335 ATHLETIC CLUB BLVD
 CLAYTON, NC 27527
 dominic@adamsandhodge.com
 919-763-7278
 FIRM # C-4187

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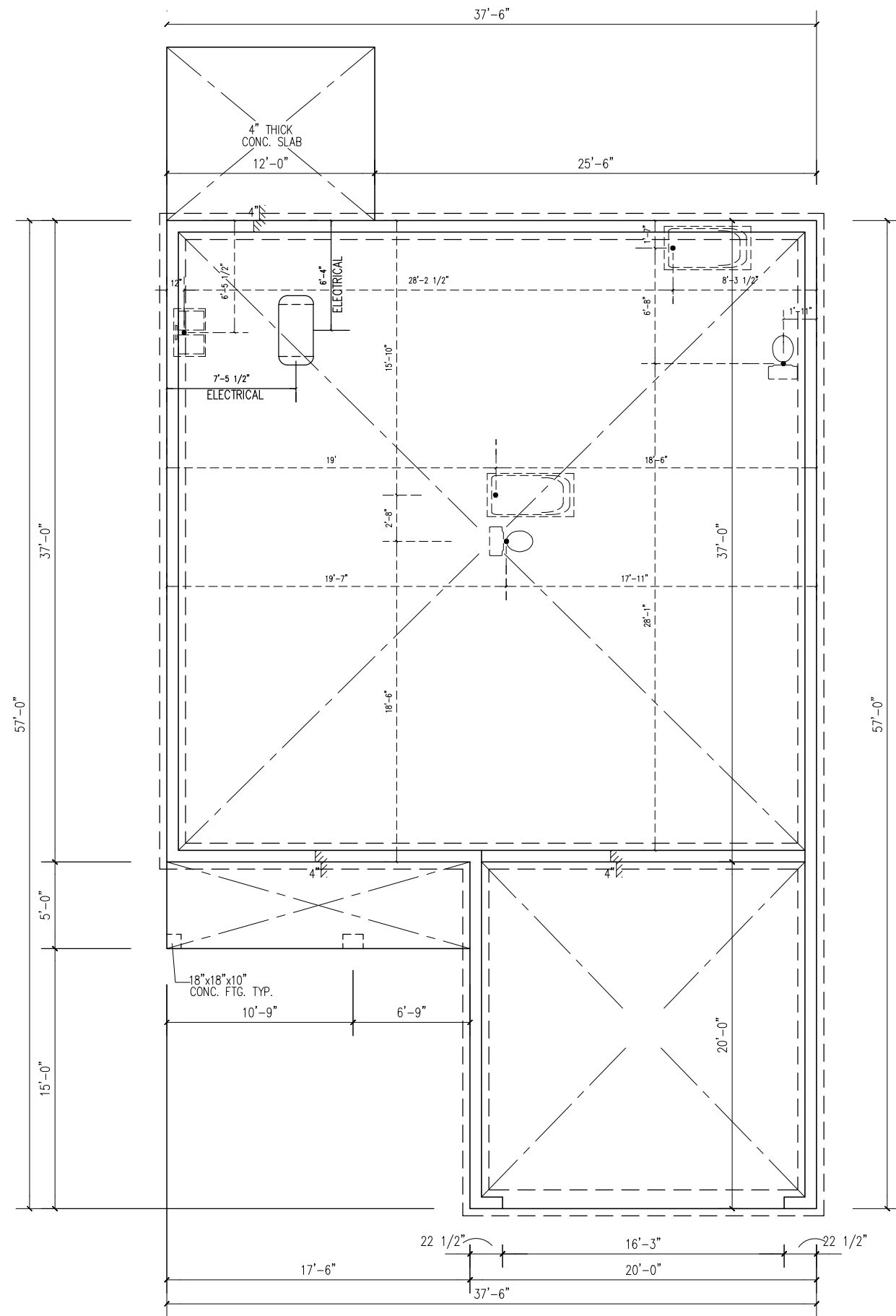


**Second Floor
 Electricals
 Option #2 & #3**

PAVIN

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 FILE
 DESIGN
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 DATE
 5/25/2017
 SHEET

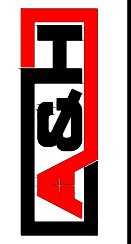
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REVISIONS:

335 ATHLETIC CLUB BLVD
 CLAYTON, NC 27527
 dominic@adamsandhodge.com
 919-764-7278
 FIRM # C-4187

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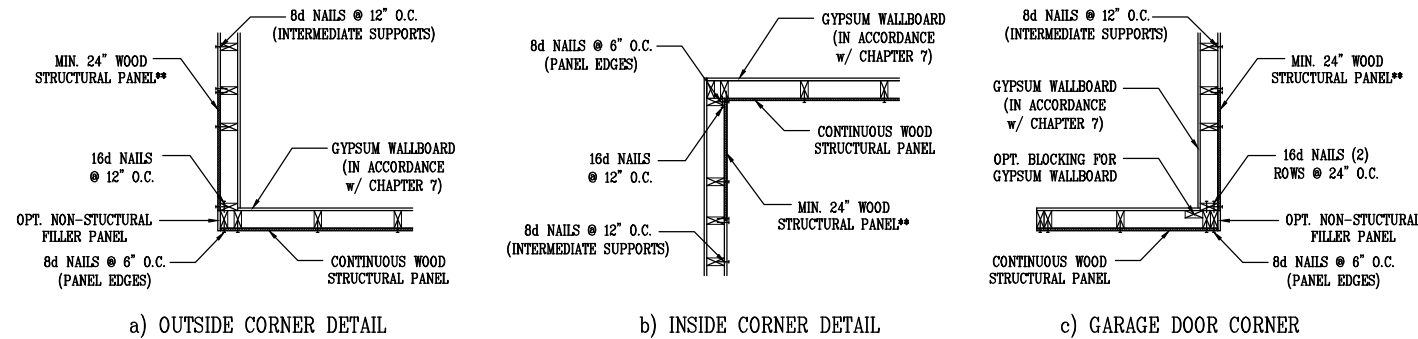


**PLUMBING
 LAYOUT**

PAVIN

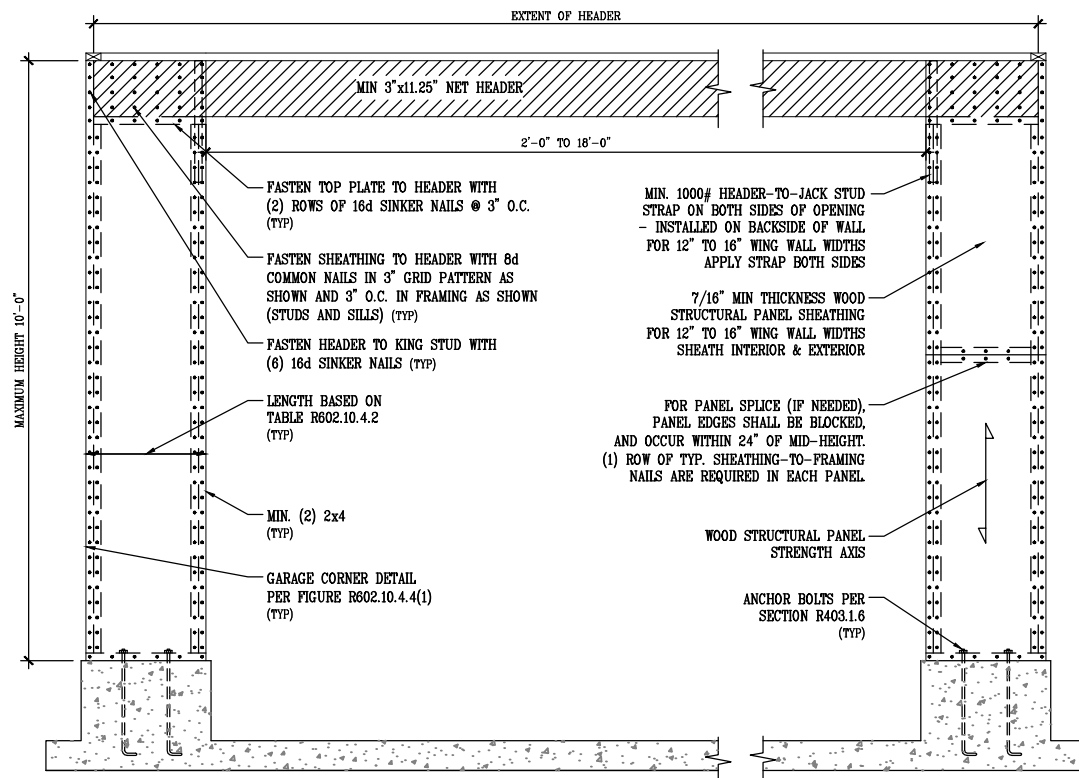
FILE
 DESIGN ADS
 DRAWN ADS
 CHECKED

DATE 5/25/2017
 SHEET



B1: TYPICAL EXTERIOR CORNER FRAMING FOR CONTINUOUS SHEATHING
NO SCALE

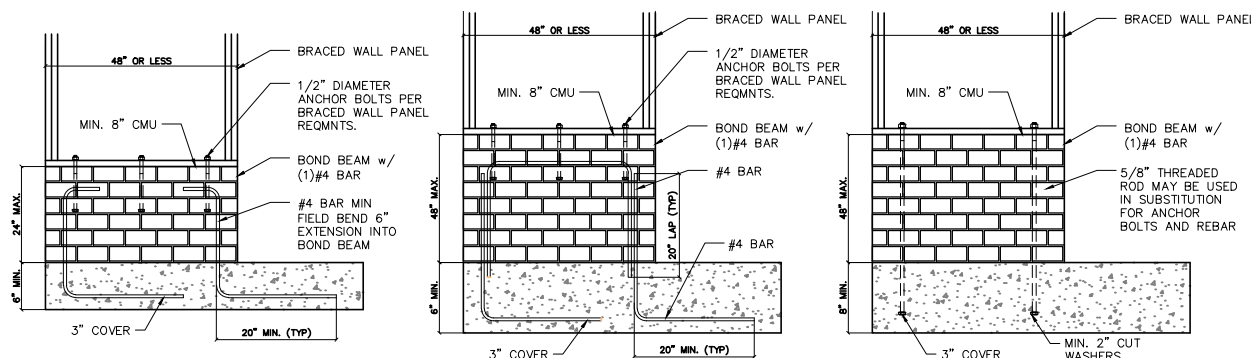
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B2: METHOD CS-PF: CONTINUOUS PORTAL FRAME PANEL CONSTRUCTION
FIGURE R602.10.4.1.1 w/ MODIFICATIONS FOR 12\"/>

STRUCTURAL SHEATHING NOTES

- 1) DESIGNED FOR SEISMIC ZONE A-C AND WIND SPEEDS OF 120 MPH OR LESS.
- 2) WALLS SHALL BE BRACED IN ACCORDANCE WITH SECTION R602.10 OF THE 2018 NRC.
- 3) BRACING REQUIREMENTS SHALL BE PER TABLE R602.10.3. REFER TO SECTION R602.10.4 FOR LOAD PATH DETAILS INCLUDING CONNECTIONS & SUPPORT OF BRACED WALL PANELS.
 - ① REFERENCE FIGURE R602.10.4.3 OF THE 2018 NRC.
- 4) INTERIOR BRACED WALL PANELS (BWP) INDICATED SHALL BE SHEATHED IN ACCORDANCE WITH THE GB METHOD OR WSP METHOD AS PRESCRIBED IN SECTION R602.10.1 (UNO)
 - ② 1/2\"/>
 - ③ 3/8\"/>
- 5) EXTERIOR BRACED WALL PANELS (BWP) SHALL BE CONSTRUCTED IN ACCORDANCE WITH CS-WSP METHOD AS PRESCRIBED IN SECTION R602.10.3 (UNO)
- 6) ALL SHEATHABLE SURFACES OF EXTERIOR WALLS (INCLUDING AREAS ABOVE AND BELOW OPENINGS AND GABLE END WALLS) SHALL BE CONTINUOUSLY SHEATHED WITH WOOD STRUCTURAL PANEL (WSP) SHEATHING WITH A MINIMUM THICKNESS OF 3/8\"/>
- 7) MINIMUM BRACED WALL PANEL LENGTHS WITH CS-WSP METHOD SHALL BE AS FOLLOWS:
 - 24\"/>
 - 30\"/>
 - 48\"/>
- ④ SHEATH INTERIOR & EXTERIOR
- 8) FOR CS-WSP METHOD, A MINIMUM 24\"/>
- ⑤ MINIMUM 800# HOLD-DOWN DEVICE



B4: MASONRY STEM WALL SUPPORTING BRACED WALL PANELS

FIGURE R602.10.4.3 OF THE 2018 NRC
NOTE: GROUT BOND BEAMS AND ALL CELLS WHICH CONTAIN REBAR, THREADED RODS AND ANCHOR BOLTS

METHOD	MATERIAL	MIN. THICKNESS	REQUIRED CONNECTION	
			① PANEL EDGES	② INTERMEDIATE SUPPORTS
CS-WSP	WOOD STRUCTURAL PANEL	3/8"	6d COMMON NAILS @ 6" O.C.	6d COMMON NAILS @ 12" O.C.
GB	GYPSUM BOARD	1/2"	5d COOLER NAIL** @ 7" O.C.	5d COOLER NAIL** @ 7" O.C.
WSP	WOOD STRUCTURAL PANEL	3/8"	6d COMMON NAILS @ 6" O.C.	6d COMMON NAILS @ 12" O.C.

**OR EQUIVALENT PER TABLE R702.3.5

B3: BRACE WALL PANEL CONNECTIONS

NO SCALE



Project Number: 1901-010095
*Structural analysis based on NC Residential Building Code 2018
The Engineer's seal applies only to structural components on this document. The seal does not include construction means, methods, techniques, procedures, or safety precautions. Any deviations or discrepancies on plans are to be brought to the immediate attention of Tyndall Engineering & Design, P.A. Failure to do so will void Tyndall Engineering's Liability.



REVISIONS:

335 ATHLETIC CLUB BLVD
CLAYTON, NC 27527
domis@adamsandhodge.com
919-763-7278
FIRM # C-4187

ADAMS & HODGE
ENGINEERING, P.C.



Structural
Bracing
Details

PAVIN

FILE

DESIGN
ADS

DRAWN
ADS

CHECKED

DATE
5/25/2017

SHEET