

# 2015 North Avenue Building Renovation Plans

## Owner

New Live Homes REI LLC  
8600 Branches Woods Lane  
North Chesterfield, VA 23237

## Scope of Work

Scope of work will generally consist of the renovation of an existing duplex to include the repair of the two story rear deck in accordance with these plans and the Virginia Residential Code, 2015.

## Engineer

Obsidian, Inc.  
Charles R. Field, P.E.  
515 North 22nd Street  
Richmond, VA 23223  
804.647.1589  
obsidianva@gmail.com

## Property Information

Parcel ID N000406016  
Zoning R-6  
Use Residential  
Setbacks Front Yard = 15 feet  
Side Yard = 5 feet  
Rear Yard = 5 feet  
Lot Coverage < 55%

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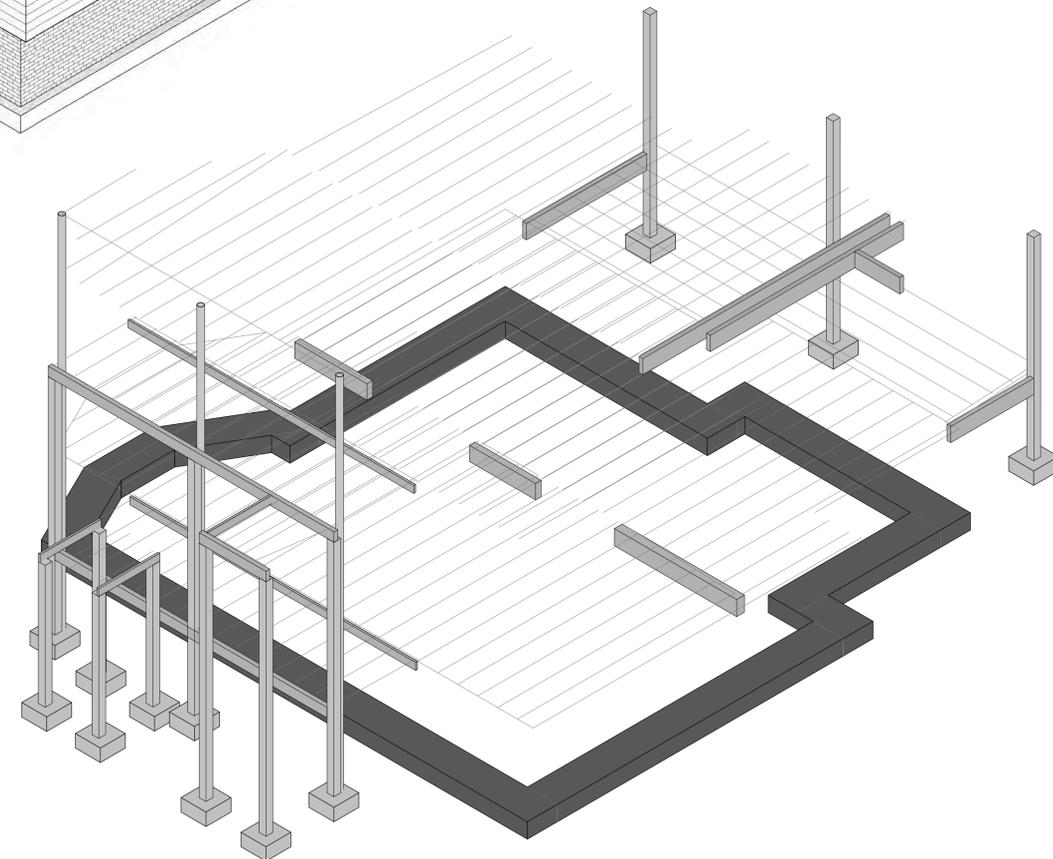
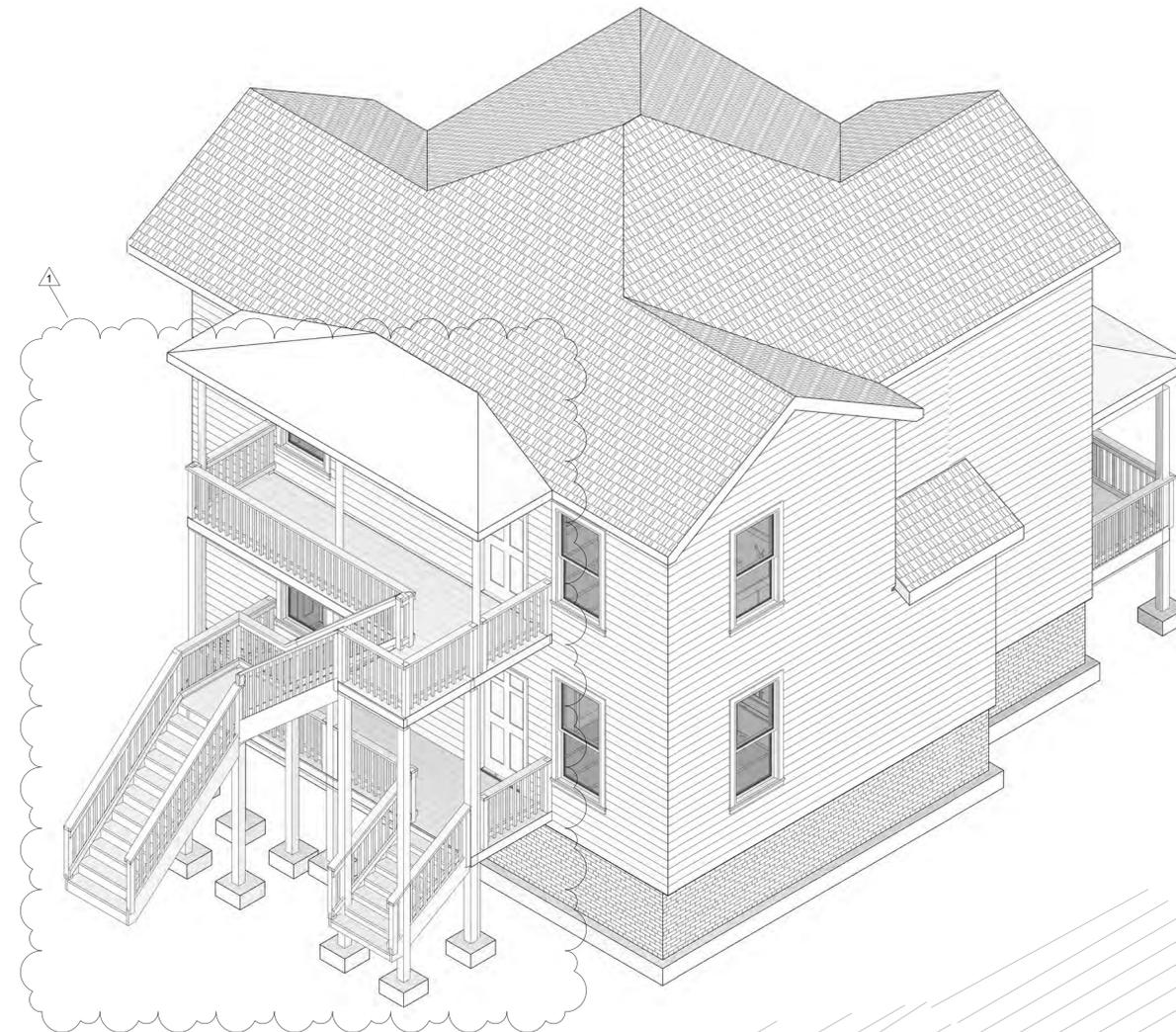
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## Room Area Table

Name	Area	Perimeter
<b>First Floor</b>		
Kitchen	169 SF	52'-11"
Office	83 SF	36'-9 1/4"
Bedroom 2	88 SF	38'-5 1/2"
Bedroom 1	160 SF	54'-2"
Living Room	119 SF	44'-1 7/8"
Hallway	80 SF	50'-8 1/8"
Bath	40 SF	26'-11 3/4"
	739 SF	308'-3 1/2"
<b>Second Floor</b>		
Kitchen	120 SF	44'-6 1/2"
Bath	40 SF	27'-2"
Hall	104 SF	61'-1 3/8"
Bedroom 1	122 SF	44'-4 1/8"
Bedroom 2	158 SF	52'-11 1/2"
Bedroom 3	91 SF	39'-7 1/2"
Living	154 SF	52'-9 1/4"
Laundry	13 SF	15'-7"
Closet	9 SF	11'-9"
Closet	9 SF	12'-7"
	819 SF	362'-5 1/4"
<b>Grand total</b>	<b>1559 SF</b>	<b>671'-8 3/4"</b>

## General Notes

- The structure will be constructed in accordance with the 2015 edition of the "Virginia Residential Code", the Statewide Uniform Building Code and the applicable Count of Henrico ordinances.
- The contractor is responsible for compliance with City, State and Federal job site safety requirements.
- The contractor shall verify all dimensions and conditions prior to start of work, and any discrepancies will immediately be brought to the attention of the engineer.
- Glazing in windows shall be tempered if the bottom edge is less than 18" above floor, in walls enclosing bathtub or showers, within 24" of arc of either vertical edge of a door, or less than 36" above the plane of stairways or landings. Glazing in all fixed and operable panels of swinging, sliding and bifold doors shall be tempered.
- Carbon monoxide alarm shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms in dwelling units within which fuel-fired appliances are installed and in dwelling units that have attached garages. The carbon monoxide detector shall comply with NFPA 720 and UL 2075.
- Enclosed accessible space under stairs shall have walls, under-stair surface, and any soffits protected on the enclosed side with 1/2" gypsum board.
- The structure shall be protected from subterranean termites by one of the following methods or a combination of these methods:
  - Chemical termiticide treatment, as provided in Section R318.2.
  - Termite baiting system installed and maintained according to the label.
  - Pressure-preservative-treated wood in accordance with the provisions of Section R317.1.
  - Naturally durable termite-resistant wood.
  - Physical barriers as provided in Section R318.3 and used in locations as specified in Section R317.1.
- All lumber unless otherwise noted is to be Southern Pine No. 2.
- There will not be a fire sprinkler system.
- There is no proposed fire detection system or alarm.
- The construction type is V-B.
- There are 2 stories.
- IRC 2012 minimum insulation and fenestration requirements:
  - Fenestration U-factor : 0.35
  - Ceiling R-value : 28
  - Wood frame wall R-value : 15
  - Mass wall R-value : 8/13
  - Floor R-value : 19
  - Basement wall R-value : 10/13
  - Slab R-value & depth: 10, 2ft
  - Crawlspace wall R-value : 10/13
- Load criteria:
  - Bearing soil capacity = 2000 psf
  - Floor live load = 40 psf
  - Floor dead load = 10 psf
  - Roof live load = 20 psf
  - Roof dead load = 10 psf
  - Snow loads = 20 psf
  - Basic Wind speed = 90 mph
  - Seismic Category: B.
  - Exposure: B.



G1.0

Rev. 1 2/6/20 Added framing details for front porch and rear deck

rev. 7/11/20  
September 6, 2019

**Cover Sheet**  
2015 North Avenue  
Paul Clothier

City of Richmond, VA



**Obsidian**  
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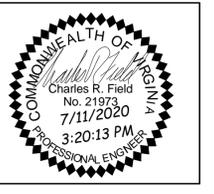




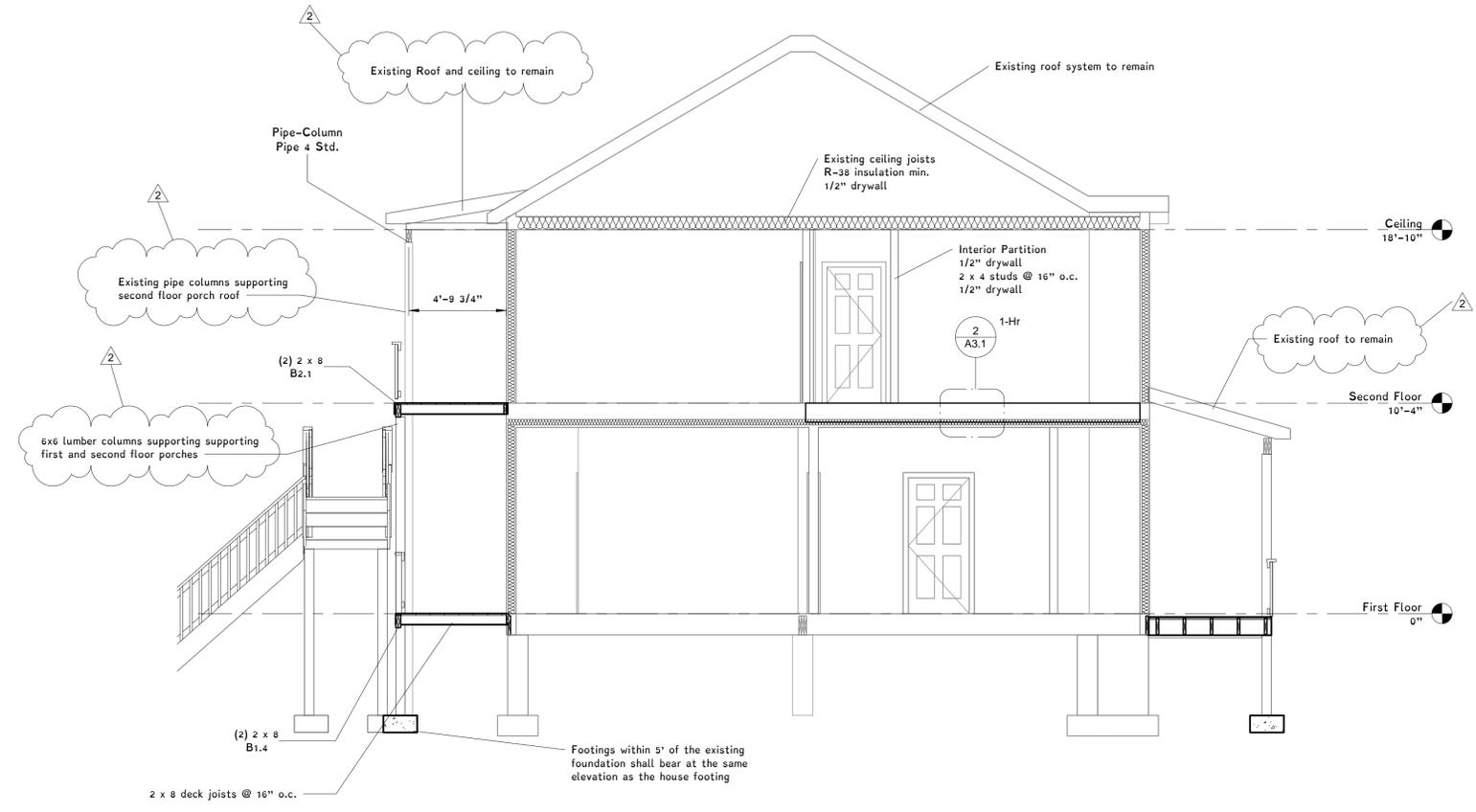
Rev.	Date	Description
2	5/27/20	Updated Calculations and Specified existing roof structures

rev. 7/11/20  
September 6, 2019

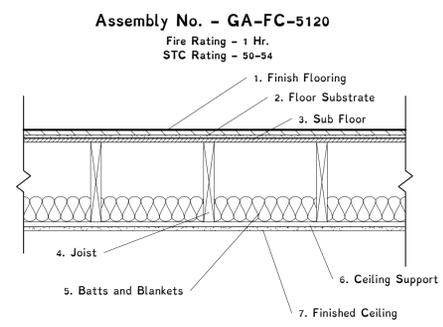
**Section & Details**  
2015 North Avenue  
Paul Clothier  
City of Richmond, VA



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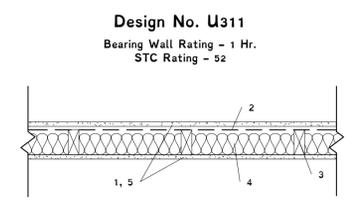


1 Cross Section  
1/4" = 1'-0"



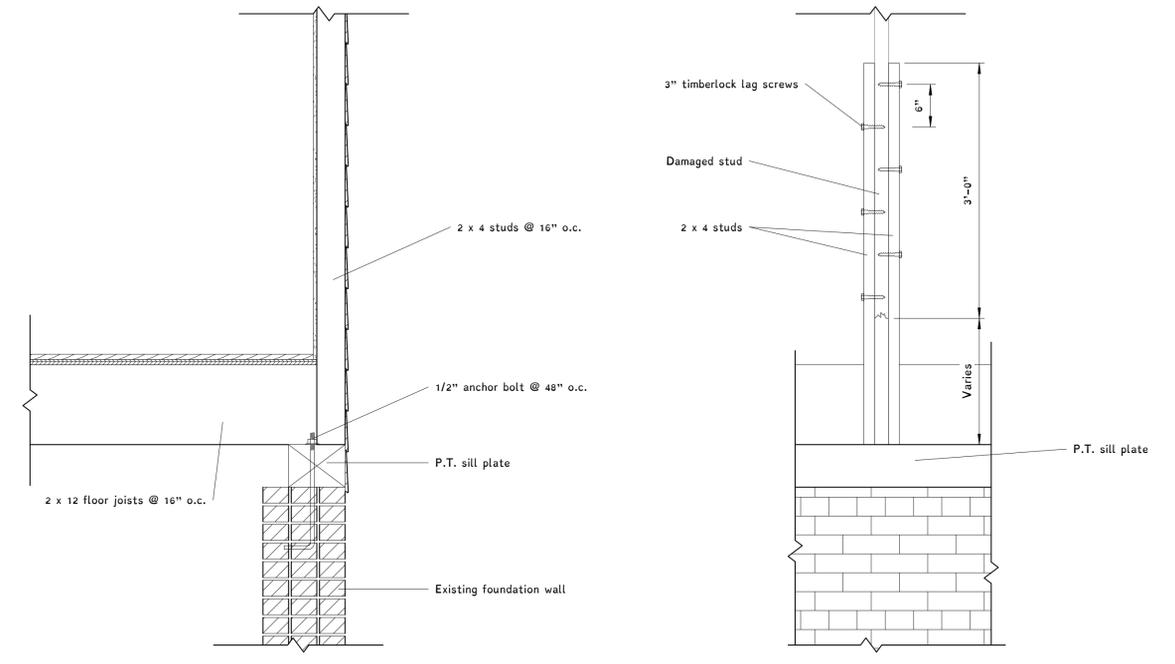
1. Finish Flooring - 1 by 4 in. T&G, laid perpendicular to joists; or 19/32 in. thick wood structural panels, min grade "underlayment" or "single floor". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered.
2. Floor Substrate - 3/8 in. (9 mm) particle board
3. Sub Floor - 5/8 in. (16 mm) plywood underlayment
4. Structural Members - Nom. 2 in. (51 mm) by 10 in. (254 mm) 16 in. (406 mm) OC min.
5. Batts and Blankets - 3-1/2 in. (89 mm) fiberglass insulation
6. Ceiling Support - Furring channels spaced 24 in. (609 mm) OC
7. Finished Ceiling - 1/2 in. (12 mm) thick type X gypsum board

2 1 Hr Floor - Wood Joist, GA-FC-5120  
1" = 1'-0"

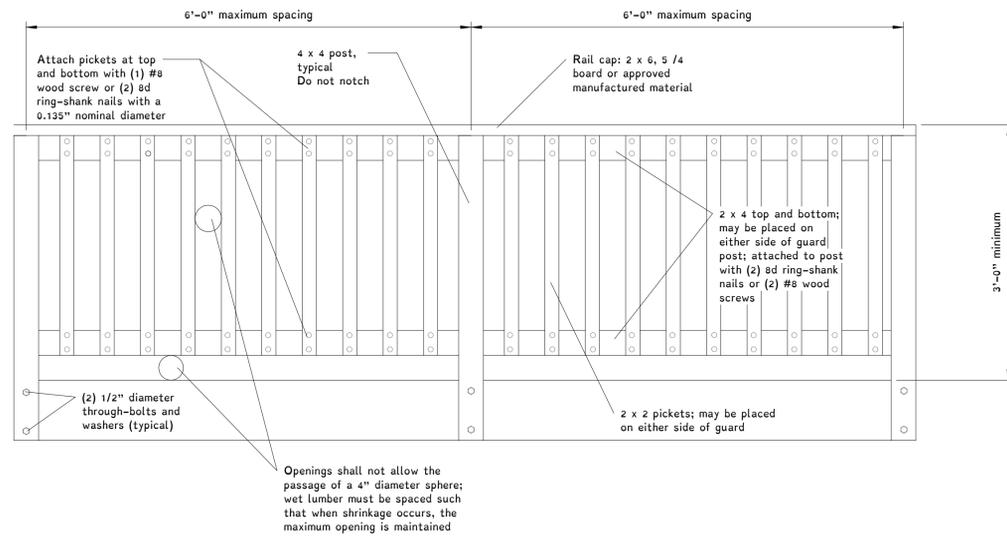


1. Gypsum Board - 5/8 in. thick gypsum board applied horizontally or vertically
2. Resilient Channel - 25 ga. furring channels installed horizontally spaced 24 in. OC
3. Wood Studs - 2 in. x 4 in. wood studs spaced max. 16 in. OC
4. Batts and Blankets - Min. 3 in. thick mineral wool batts or glass fiber insulation
5. Gypsum Board - 5/8 in. thick gypsum board applied horizontally or vertically

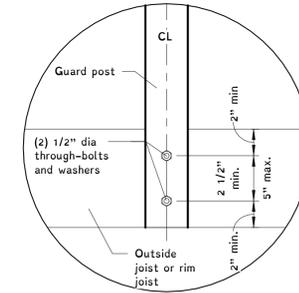
3 1 Hr Wall - Stud, U311  
1" = 1'-0"



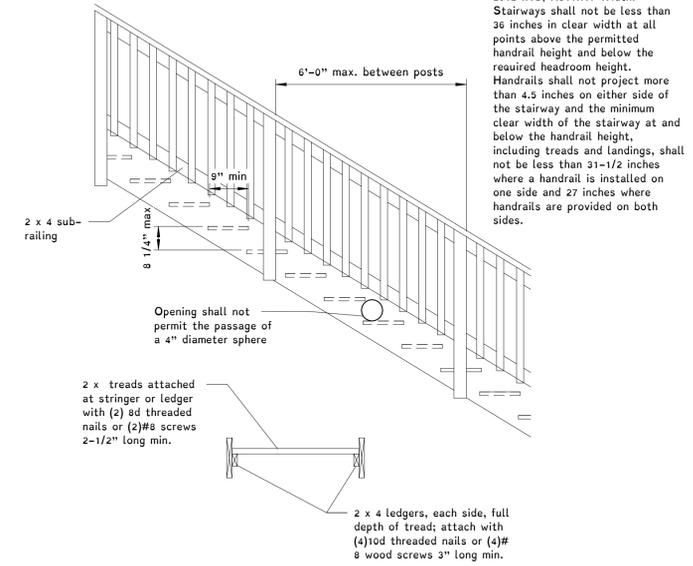
4 Stud & Sill Plate Repair Detail  
1" = 1'-0"



1 Deck Railing Detail  
1" = 1'-0"

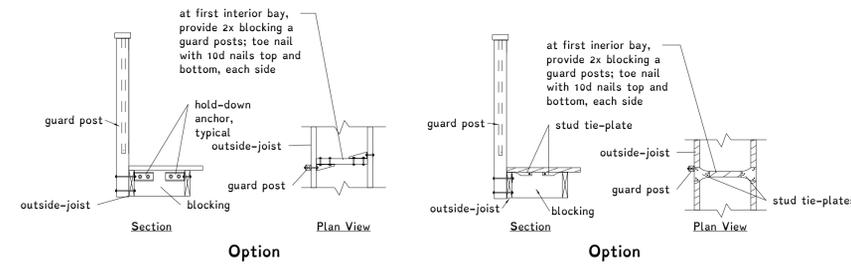


2 Guard Post Attachment  
1 1/2" = 1'-0"

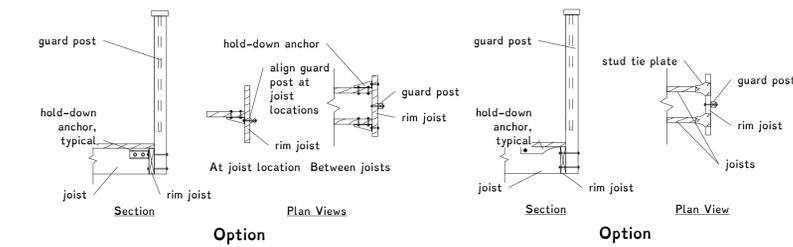


2012 IRC, R311.7.1 Width. Stairways shall not be less than 36 inches in clear width at all points above the permitted handrail height and below the required headroom height. Handrails shall not project more than 4.5 inches on either side of the stairway and the minimum clear width of the stairway at and below the handrail height, including treads and landings, shall not be less than 31-1/2 inches where a handrail is installed on one side and 27 inches where handrails are provided on both sides.

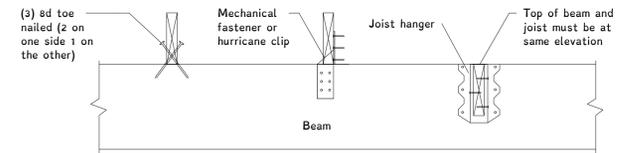
7 Stair Detail  
1/2" = 1'-0"



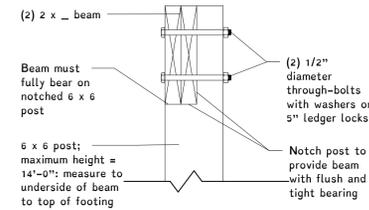
3 Guard Post to Outside Joist  
1/2" = 1'-0"



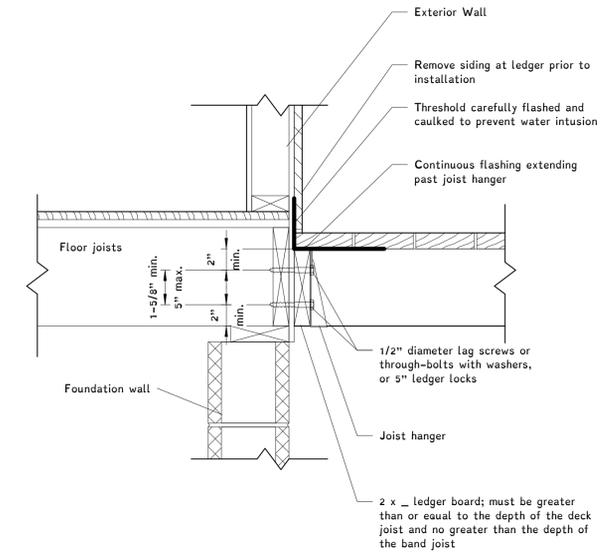
4 Guard Post to Rim Joist Detail  
1/2" = 1'-0"



5 Joist to Beam Connection  
1" = 1'-0"



6 Post to Beam Connection Detail  
1 1/2" = 1'-0"



Note: Ledger attachments to exterior veneers (brick, masonry, stone), hollow masonry, and to cantilevered floor overhangs or bay windows are prohibited.

8 Ledger Attachment - deck to rim board  
1 1/2" = 1'-0"

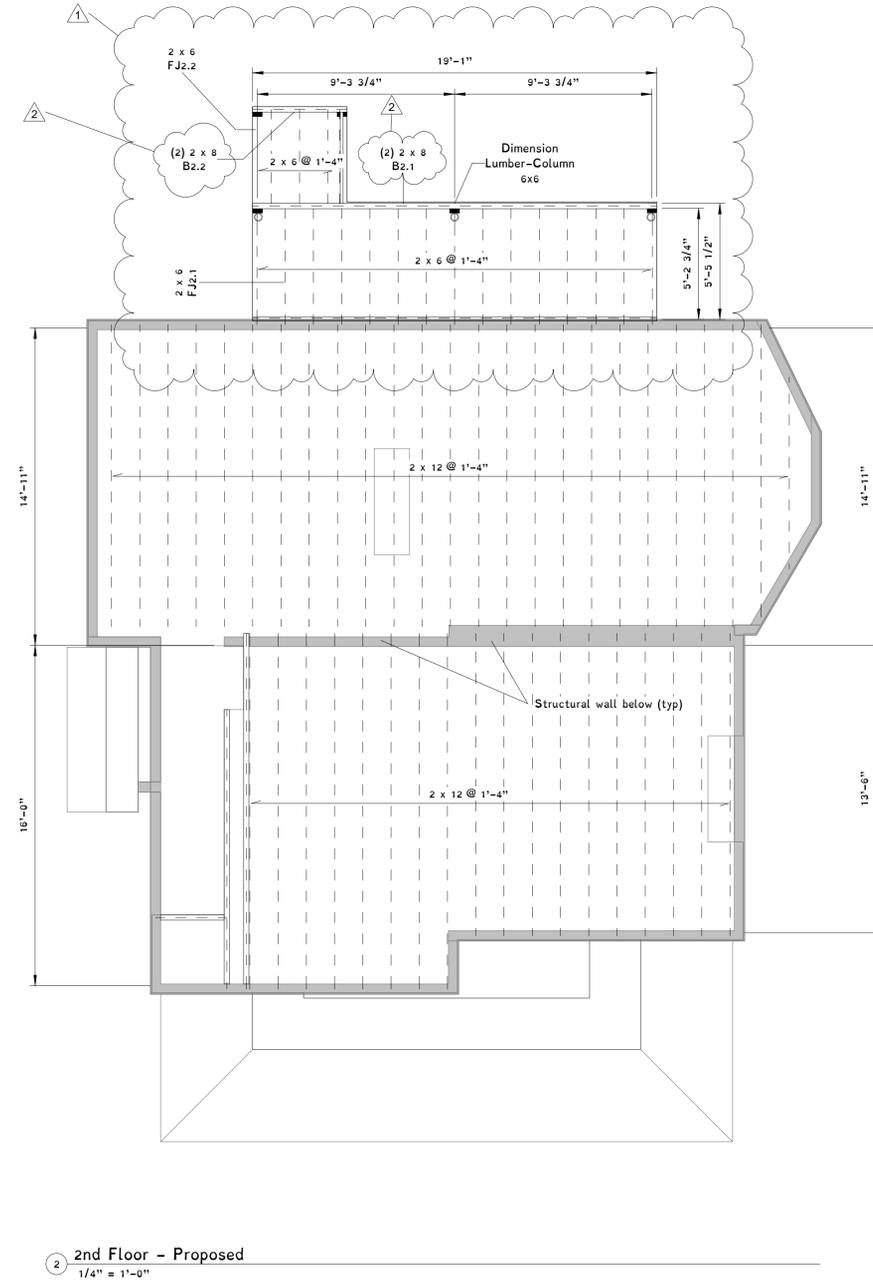
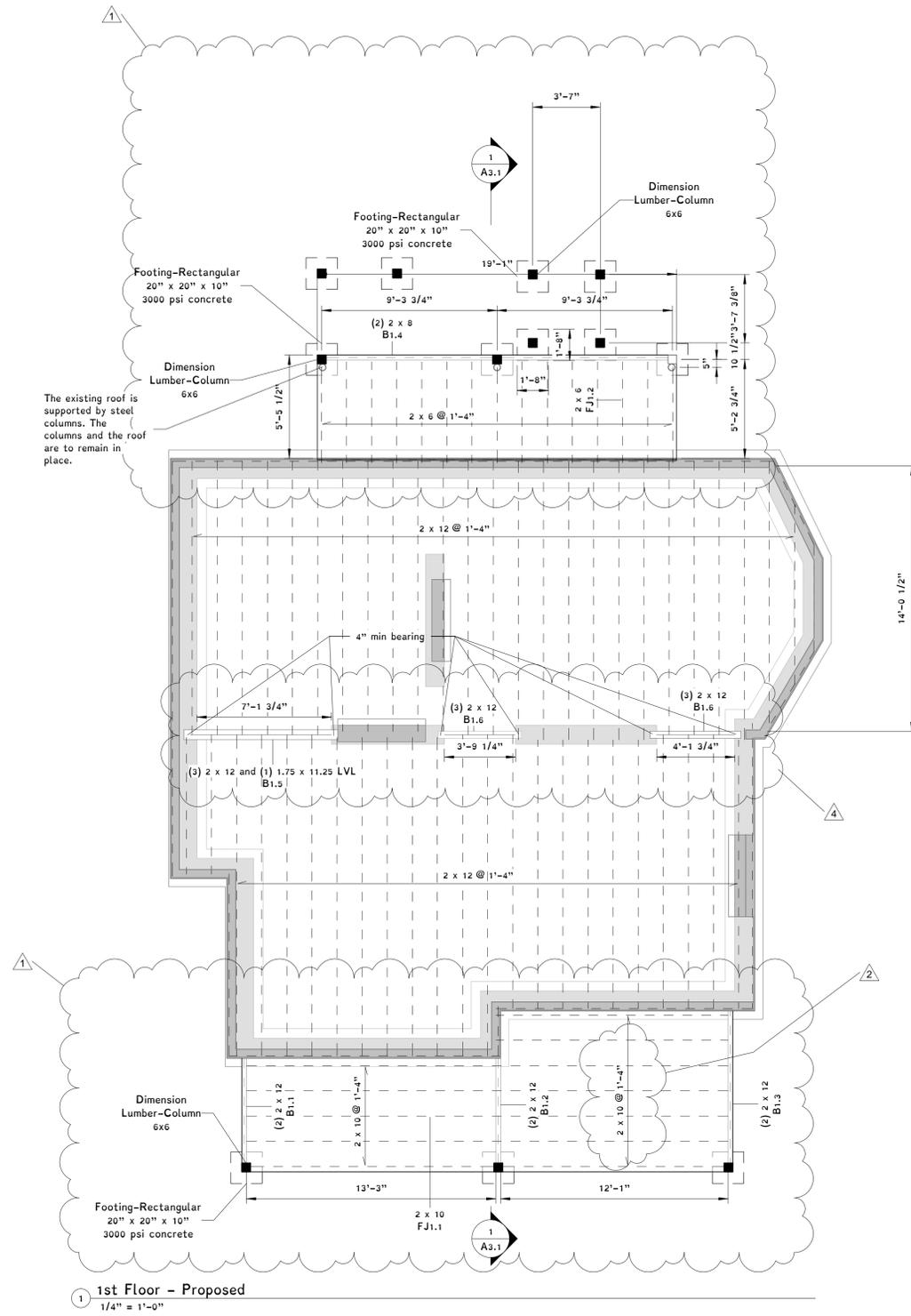
Deck Details  
2015 North Avenue  
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rev. 7/11/20  
September 6, 2019

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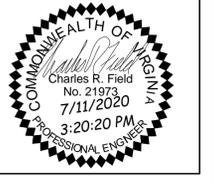


**S1.1**

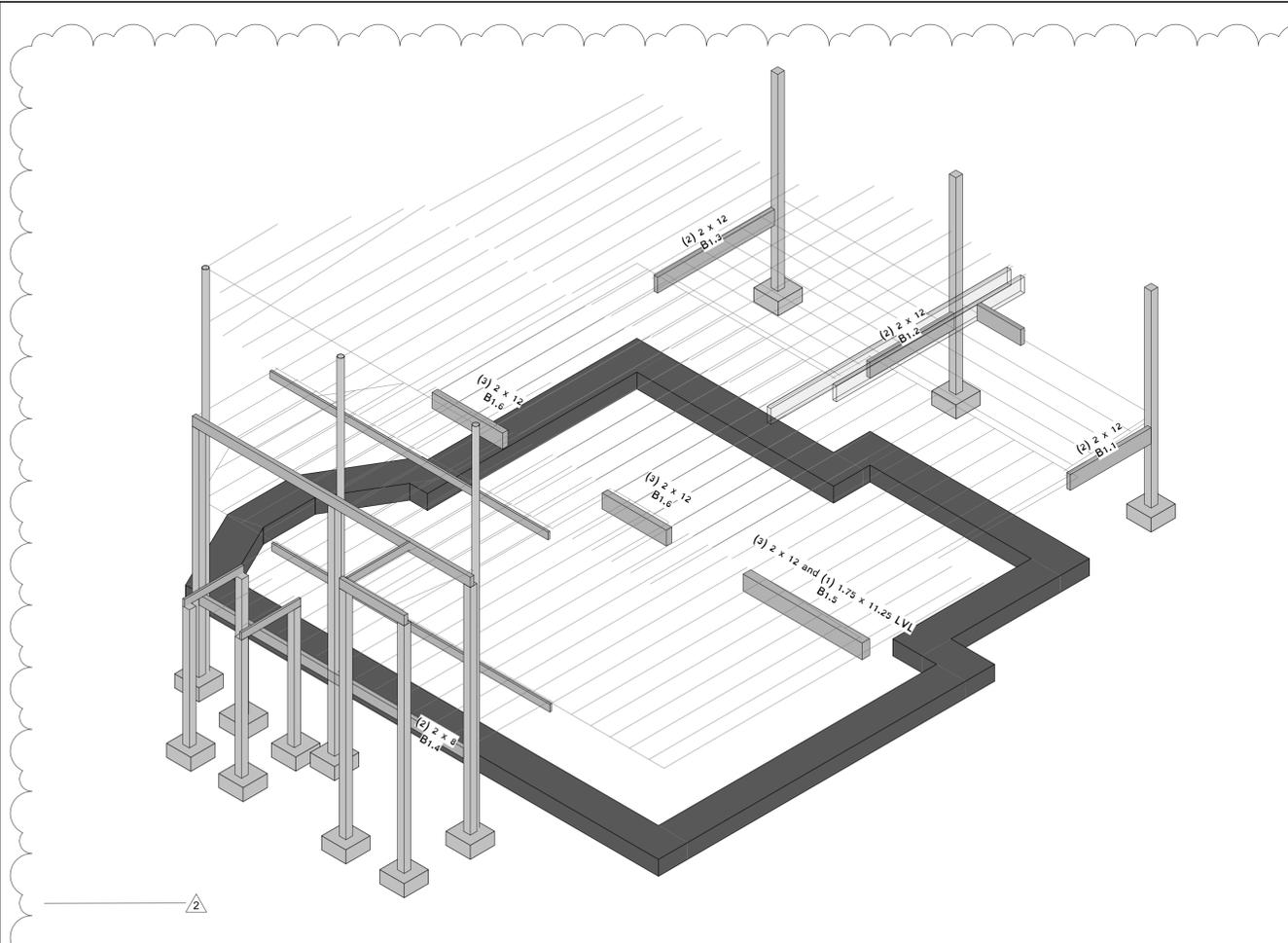
Rev.	Date	Description
1	2/6/20	Added framing details for front porch and rear deck
2	5/27/20	Updated Calculations and Specified existing roof structures
4	7/11/20	Revised calculations to B1.5

**Framing Plan**  
2015 North Avenue  
Paul Clothier

City of Richmond, VA  
rev. 7/11/20  
September 6, 2019



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**MEMBER REPORT** PASSED

1st Floor - floor, B1.1 Front Porch Beam 1  
2 piece(s) 2 x 12 Southern Pine No. 2

Overall Length: 6' 11 1/2"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1041 @ 2"	5933 (3.50")	Passed (88%)	---	1.0 D + 1.0 L (All Spans)
Shear (lbs)	623 @ 1' 3 3/4"	3938	Passed (66%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1425 @ 3' 3/4"	3955	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.013 @ 3' 3/4"	0.193	Passed (L999+)	---	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.017 @ 3' 3/4"	0.290	Passed (L999+)	---	1.0 D + 1.0 L (All Spans)

System: Floor  
Member Type: Drop Beam  
Building Use: Residential  
Building Code: IRC 2015  
Design Methodology: ASD

- Deflection criteria: LL (L260) and TL (L240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 6' 2" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lw): Bottom compression edge must be braced at 6' 2" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)		
	Total	Available	Required	Dead	Floor Live	Total
1 - Column - SYP	3.50"	3.50"	1.50"	229	812	1041
2 - Stud wall - SYP	3.50"	3.50"	1.50"	229	812	1041

Vertical Loads	Location (Side)	Tributary Width	Dead (D) (lb/ft)	Floor Live (L) (lb/ft)	Comments
0 - Self Weight (PLF)	0 to 6' 11 1/2"	N/A	8.8	---	---
1 - Uniform (PSF)	0 to 6' 11 1/2" (Front)	6' 7 1/2"	10.0	40.0	Floor Load

**Weyerhaeuser Notes**  
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator.

6/8/2020 8:01:51 PM UTC  
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**MEMBER REPORT** PASSED

1st Floor - floor, B1.2 Front Porch Beam 2  
2 piece(s) 2 x 12 Southern Pine No. 2

Overall Length: 6' 11 1/2"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1866 @ 2"	5933 (3.50")	Passed (33%)	---	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1177 @ 1' 2 3/4"	3938	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2691 @ 3' 3/4"	3955	Passed (68%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.026 @ 3' 3/4"	0.193	Passed (L999+)	---	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.033 @ 3' 3/4"	0.290	Passed (L999+)	---	1.0 D + 1.0 L (All Spans)

System: Floor  
Member Type: Drop Beam  
Building Use: Residential  
Building Code: IRC 2015  
Design Methodology: ASD

- Deflection criteria: LL (L260) and TL (L240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 6' 2" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lw): Bottom compression edge must be braced at 6' 2" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)		
	Total	Available	Required	Dead	Floor Live	Total
1 - Column - SYP	3.50"	3.50"	1.50"	414	1552	1966
2 - Stud wall - SYP	3.50"	3.50"	1.50"	414	1552	1966

Vertical Loads	Location (Side)	Tributary Width	Dead (D) (lb/ft)	Floor Live (L) (lb/ft)	Comments
0 - Self Weight (PLF)	0 to 6' 11 1/2"	N/A	8.8	---	---
1 - Uniform (PSF)	0 to 6' 11 1/2" (Front)	12' 8"	10.0	40.0	Floor Load

**Weyerhaeuser Notes**  
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File Name: North Avenue, 2015  
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**MEMBER REPORT** PASSED

1st Floor - floor, B1.3 Front Porch Beam 3  
2 piece(s) 2 x 12 Southern Pine No. 2

Overall Length: 8' 7 1/2"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1340 @ 2"	5933 (3.50")	Passed (23%)	---	1.0 D + 1.0 L (All Spans)
Shear (lbs)	958 @ 1' 2 3/4"	3938	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2670 @ 4' 3 3/4"	3955	Passed (67%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.052 @ 4' 3 3/4"	0.276	Passed (L999+)	---	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.066 @ 4' 3 3/4"	0.415	Passed (L999+)	---	1.0 D + 1.0 L (All Spans)

System: Floor  
Member Type: Drop Beam  
Building Use: Residential  
Building Code: IRC 2015  
Design Methodology: ASD

- Deflection criteria: LL (L260) and TL (L240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 8' 0" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lw): Bottom compression edge must be braced at 8' 0" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)		
	Total	Available	Required	Dead	Floor Live	Total
1 - Column - SYP	3.50"	3.50"	1.50"	297	1042	1339
2 - Stud wall - SYP	3.50"	3.50"	1.50"	297	1042	1339

Vertical Loads	Location (Side)	Tributary Width	Dead (D) (lb/ft)	Floor Live (L) (lb/ft)	Comments
0 - Self Weight (PLF)	0 to 8' 7 1/2"	N/A	8.8	---	---
1 - Uniform (PSF)	0 to 8' 7 1/2" (Front)	6' 1/2"	10.0	40.0	Floor Load

**Weyerhaeuser Notes**  
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**MEMBER REPORT** PASSED

1st Floor - floor, B1.4 Rear Deck Beam  
2 piece(s) 2 x 8 Southern Pine No. 2

Overall Length: 9' 9 1/4"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	644 @ 4"	7204 (4.25")	Passed (9%)	---	1.0 D + 1.0 L (All Spans)
Shear (lbs)	515 @ 1' 3 3/4"	2538	Passed (20%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1395 @ 4' 10 5/8"	2035	Passed (69%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.120 @ 4' 10 5/8"	0.228	Passed (L912)	---	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.156 @ 4' 10 5/8"	0.455	Passed (L700)	---	1.0 D + 1.0 L (All Spans)

System: Floor  
Member Type: Flush Beam  
Building Use: Residential  
Building Code: IRC 2015  
Design Methodology: ASD

- Deflection criteria: LL (L260) and TL (L240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 9' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lw): Bottom compression edge must be braced at 9' 7" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)		
	Total	Available	Required	Dead	Floor Live	Total
1 - Column - SYP	5.50"	4.25"	1.50"	153	505	658
2 - Column - SYP	5.50"	4.25"	1.50"	153	505	658

Vertical Loads	Location (Side)	Tributary Width	Dead (D) (lb/ft)	Floor Live (L) (lb/ft)	Comments
0 - Self Weight (PLF)	1' 1/4" to 9' 9 1/4"	N/A	8.8	---	1' 1/4" Rim Beam
1 - Uniform (PSF)	0 to 9' 9 1/4" (Top)	2' 7"	10.0	40.0	Deck Floor Load

**Weyerhaeuser Notes**  
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File Name: North Avenue, 2015  
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**2015 North Avenue  
Fitch Plate Design Calculations  
Prepare by: CRF**

Beam: central girder

Given:  
 $l = 7.5 \text{ ft}$  beam length

Tributary	Live Load	Dead Load
$T_{1st} = 14.667 \text{ ft}$	$LL_{1st} = 40 \text{ psf}$	$DL_{1st} = 10 \text{ psf}$
$T_{2nd} = 15.417 \text{ ft}$	$LL_{2nd} = 40 \text{ psf}$	$DL_{2nd} = 10 \text{ psf}$
$T_{attic} = 15.417 \text{ ft}$	$LL_{attic} = 20 \text{ psf}$	$DL_{attic} = 10 \text{ psf}$
$T_{roof} = 0 \text{ ft}$	$LL_{roof} = 20 \text{ psf}$	$DL_{roof} = 10 \text{ psf}$

Section 1: (3) 2x12  
 $E_1 = 1400000 \text{ psi}$   
 $b_1 = 4.5 \text{ in}$   
 $h_1 = 11.25 \text{ in}$

Section 2: 1.75x11.25 LVL  
 $E_2 = 2000000 \text{ psi}$   
 $b_2 = 1.75 \text{ in}$   
 $h_2 = h_1$

Modulus of Elasticity  
width  
height

Calculated Loads:  
 $w_{LL} = (T_{1st} \cdot LL_{1st} + T_{2nd} \cdot LL_{2nd} + T_{attic} \cdot LL_{attic} + T_{roof} \cdot LL_{roof}) = 1512 \frac{\text{lb}}{\text{ft}}$  Uniform live load  
 $w = (T_{1st} \cdot DL_{1st} + T_{2nd} \cdot DL_{2nd} + T_{attic} \cdot DL_{attic} + T_{roof} \cdot DL_{roof}) + w_{LL} = 1967 \frac{\text{lb}}{\text{ft}}$  Uniform total load

Calculate Moment and Shear:  
 $M_{max} = \frac{w \cdot l^2}{8} = 13828 \text{ ft} \cdot \text{lb}$  Maximum moment  
 $V_{max} = \frac{w \cdot l}{2} = 7375 \text{ lb}$  Maximum shear

Calculate Equivalent Beam:  
 $n = \frac{E_1}{E_2} = 0.7$  modular ratio  
 $b_{eq} = b_1 + n \cdot b_2 = 5.725 \text{ in}$  Equivalent beam width  
 $I_{eq} = \frac{1}{12} \cdot (b_{eq}) \cdot h_1^3 = 679 \text{ in}^4$  Equivalent Moment of Inertia

Calculate Deflection  
Live  
 $\Delta_{AllowedLL} = \frac{l}{360} = 0.25 \text{ in}$   
 $\Delta_{maxLL} = \frac{5 \cdot w_{LL} \cdot l^4}{384 \cdot E_1 \cdot I_{eq}} = 0.11 \text{ in}$   
Total  
 $\Delta_{Allowed} = \frac{l}{240} = 0.38 \text{ in}$   
 $\Delta_{max} = \frac{5 \cdot w \cdot l^4}{384 \cdot E_1 \cdot I_{eq}} = 0.15 \text{ in}$

Page 1 of 1  
Created with PTC Mathcad Express  
11/07/2020

**SOLUTIONS REPORT** PASSED

1st Floor - floor, B1.6 Central Girder  
Current Solution: 3 piece(s) 2 x 12 Southern Pine No. 2

Overall Length: 4' 8 3/4"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4681 @ 2"	8999 (3.50")	Passed (53%)	---	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2248 @ 1' 2 3/4"	5906	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4761 @ 2' 4 3/8"	5933	Passed (81%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.017 @ 2' 4 3/8"	0.147	Passed (L999+)	---	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.022 @ 2' 4 3/8"	0.220	Passed (L999+)	---	1.0 D + 1.0 L (All Spans)

System: Floor  
Member Type: Drop Beam  
Building Use: Residential  
Building Code: IRC 2015  
Design Methodology: ASD

All Product Solutions	Series		
	Depth	Pile	Wood Volume
1 - 1 1/4"	2 x Southern Pine No. 2	3	10.88

The purpose of this report is for product comparison only. Load and support information necessary for professional design review is not displayed here. Please print an individual Member Report for substantial responses.

6/8/2020 7:14:41 PM UTC  
Stuart Dumais  
Charles Field  
(804) 247-3319  
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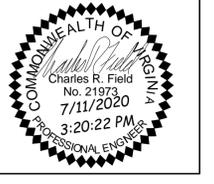
ForteWEB v3.0, Engine: VB.1.1.1, Data: V8.0.0.0  
File Name: North Avenue, 2015  
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**S7.1**

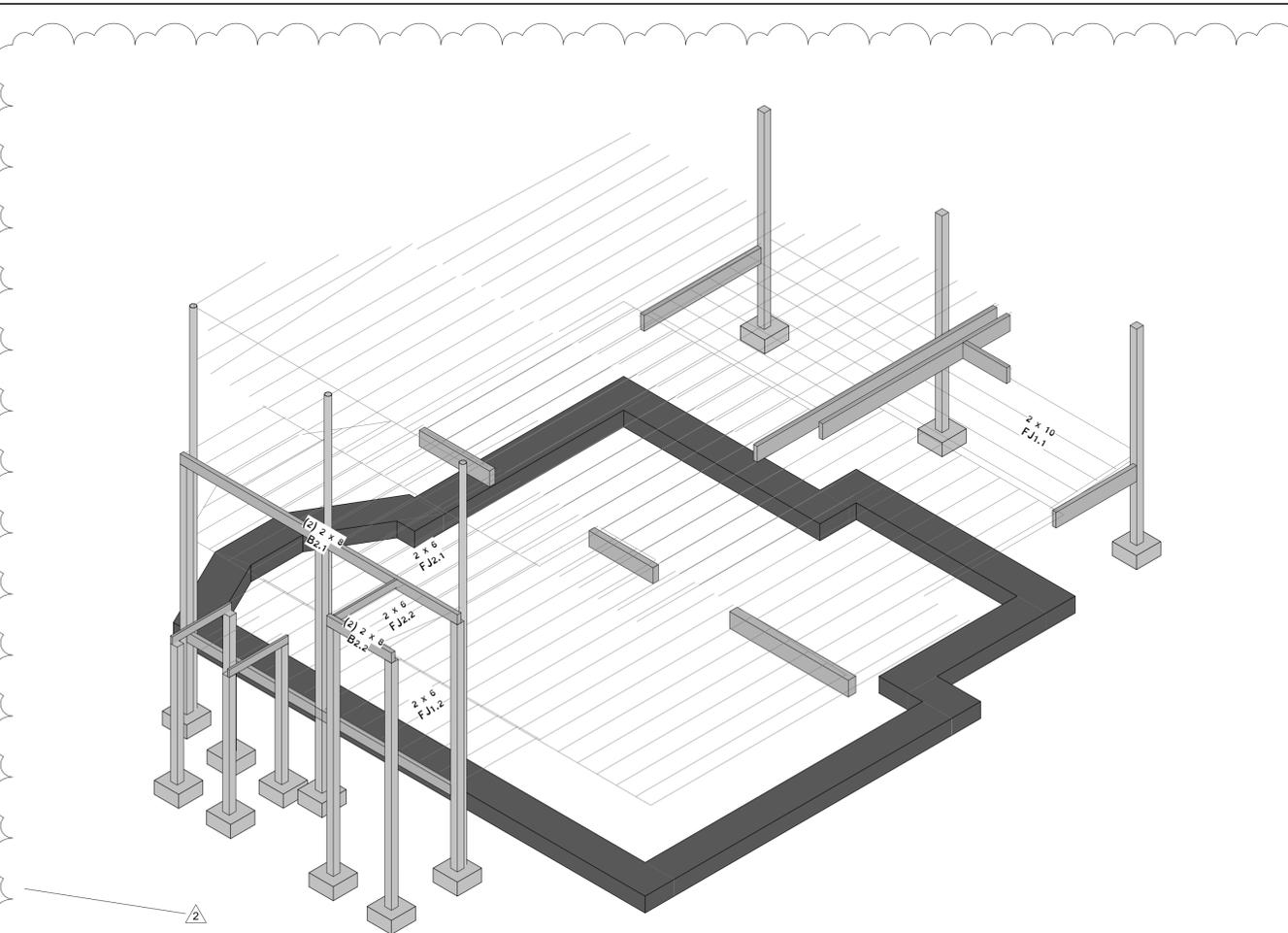
Rev.	Date	Description
4	7/11/20	Revised calculations to B1.5
2	5/27/20	Updated Calculations and Specified existing roof structures

rev. 7/11/20  
September 6, 2019

**Calculations**  
2015 North Avenue  
Paul Clothier  
City of Richmond, VA



**Obsidian**  
A Professional Engineering Practice  
417 North 22nd Street  
Richmond, VA 23223  
804.647.1589



**FORTE WEB MEMBER REPORT** PASSED

2nd Floor, B2.1 Rear Deck Floor Beam  
2 piece(s) 2 x 8 Southern Pine No. 2

Overall Length: 18' 11"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load Combination (Pattern)
Member Reaction (lbs)	1536 @ 9' 5 1/2"	4463 (1.957)	Passed (24%)	---	1.0 D + 1.0 L (All Spans)
Shear (lbs)	667 @ 10' 1 1/2"	2538	Passed (26%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-1402 @ 9' 5 1/2"	2025	Passed (69%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.085 @ 4' 7 3/4"	0.228	Passed (L/999+)	---	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.103 @ 4' 6 3/4"	0.456	Passed (L/999+)	---	1.0 D + 1.0 L (All Spans)

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Column - SYP	5.50"	5.50"	1.50"	118	447	565	Blocking
2 - Stud wall - SYP	3.50"	3.50"	1.50"	358	1179	1537	None
3 - Column - SYP	5.50"	5.50"	1.50"	318	447	565	Blocking

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)		Comments
			Location (Side)	Floor Live (1.00)	
1 - Uniform (PSF)	0 to 18' 11"	N/A	5.5	---	Deck Load
1 - Uniform (PSF)	0 to 18' 11"	7' 7"	10.0	40.0	

**Weyerhaeuser Notes**

The product application, input design loads, dimensions and support information have been provided by FortiWEB Software Operator

FortiWEB Software Operator Job Notes

6/8/2020 8:01:51 PM UTC  
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File Name: North Avenue, 2015  
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**FORTE WEB MEMBER REPORT** PASSED

2nd Floor, B2.2 Rear Deck Stair Beam  
2 piece(s) 2 x 8 Southern Pine No. 2

Overall Length: 4' 11 1/2"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load Combination (Pattern)
Member Reaction (lbs)	213 @ 2"	3814 (2.257)	Passed (5%)	---	1.0 D + 1.0 L (All Spans)
Shear (lbs)	126 @ 10' 3/4"	2538	Passed (5%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	193 @ 2' 3/4"	2025	Passed (19%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.003 @ 2' 3/4"	0.095	Passed (L/999+)	---	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.004 @ 2' 3/4"	0.190	Passed (L/999+)	---	1.0 D + 1.0 L (All Spans)

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Column - SYP	3.50"	2.25"	1.50"	53	168	221	1 1/4" Rim Board
2 - Column - SYP	3.50"	2.25"	1.50"	53	168	221	1 1/4" Rim Board

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)		Comments
			Location (Side)	Floor Live (1.00)	
0 - Self Weight (PLF)	1 1/4" to 4' 11 1/2"	N/A	5.5	---	Floor Load
1 - Uniform (PSF)	0 to 4' 11 1/2" (Point)	2' 1/2"	10.0	40.0	

**Weyerhaeuser Notes**

The product application, input design loads, dimensions and support information have been provided by FortiWEB Software Operator

FortiWEB Software Operator Job Notes

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File Name: North Avenue, 2015  
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**FORTE WEB MEMBER REPORT** PASSED

2nd Floor, FJ2.1 Rear Porch Second Floor  
1 piece(s) 2 x 6 Southern Pine No. 2 @ 32" OC

Overall Length: 9' 3 3/4"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load Combination (Pattern)
Member Reaction (lbs)	349 @ 3 1/2"	1271 (1.507)	Passed (27%)	---	1.0 D + 1.0 L (All Spans)
Shear (lbs)	288 @ 9"	963	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	456 @ 2' 10 7/8"	630	Passed (72%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.062 @ 2' 10 7/8"	0.131	Passed (L/999+)	---	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.077 @ 2' 10 7/8"	0.261	Passed (L/999+)	---	1.0 D + 1.0 L (All Spans)

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Hanger on S 1/2" SYP beam	3.50"	Hanger1	1.50"	78	310	388	See note 1
2 - Hanger on S 1/2" SYP beam	3.50"	Hanger1	1.50"	78	310	388	See note 1

Vertical Loads	Location (Side)	Spacing	Dead (0.90)		Comments
			Location (Side)	Floor Live (1.00)	
1 - Uniform (PSF)	0 to 9' 3 3/4"	32"	10.0	40.0	Floor Load

**Weyerhaeuser Notes**

The product application, input design loads, dimensions and support information have been provided by FortiWEB Software Operator

FortiWEB Software Operator Job Notes

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**FORTE WEB MEMBER REPORT** PASSED

2nd Floor, FJ2.2 Rear Deck Stair Platform  
1 piece(s) 2 x 6 Southern Pine No. 2 @ 32" OC

Overall Length: 4' 10 1/2"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load Combination (Pattern)
Member Reaction (lbs)	143 @ 3 1/2"	1271 (1.507)	Passed (11%)	---	1.0 D + 1.0 L (All Spans)
Shear (lbs)	113 @ 9"	963	Passed (12%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	153 @ 2' 5 1/4"	725	Passed (21%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.014 @ 2' 5 1/4"	0.107	Passed (L/999+)	---	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.017 @ 2' 5 1/4"	0.215	Passed (L/999+)	---	1.0 D + 1.0 L (All Spans)

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Hanger on S 1/2" SYP beam	3.50"	Hanger1	1.50"	33	130	163	See note 1
2 - Hanger on S 1/2" SYP beam	3.50"	Hanger1	1.50"	33	130	163	See note 1

Vertical Loads	Location (Side)	Spacing	Dead (0.90)		Comments
			Location (Side)	Floor Live (1.00)	
1 - Uniform (PSF)	0 to 4' 10 1/2"	16"	10.0	40.0	Floor Load

**Weyerhaeuser Notes**

The product application, input design loads, dimensions and support information have been provided by FortiWEB Software Operator

FortiWEB Software Operator Job Notes

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**FORTE WEB MEMBER REPORT** PASSED

1st Floor - floor, FJ1.1 Front Porch Joist  
1 piece(s) 2 x 10 Southern Pine No. 2 @ 16" OC

Overall Length: 26' 2 1/2"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load Combination (Pattern)
Member Reaction (lbs)	1073 @ 12' 8 1/4"	2231 (3.507)	Passed (48%)	---	1.0 D + 1.0 L (All Spans)
Shear (lbs)	491 @ 12' 9 1/4"	1619	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-1387 @ 12' 8 1/4"	1640	Passed (85%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.197 @ 8' 5 1/16"	0.337	Passed (L/621)	---	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.230 @ 8' 5 1/16"	0.674	Passed (L/704)	---	1.0 D + 1.0 L (All Spans)

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Beam - SYP	3.50"	2.25"	1.50"	72	323	395	30 1 1/4" Rim Board
2 - Beam - SYP	3.50"	3.50"	1.68"	215	859	1074	None
3 - Hanger on 9 1/4" SYP beam	3.50"	Hanger1	1.50"	63	303	366	See note 1

Vertical Load	Location (Side)	Spacing	Dead (0.90)		Comments
			Location (Side)	Floor Live (1.00)	
1 - Uniform (PSF)	0 to 26' 2 1/2"	16"	10.0	40.0	1st floor - floor

**Weyerhaeuser Notes**

The product application, input design loads, dimensions and support information have been provided by FortiWEB Software Operator

FortiWEB Software Operator Job Notes

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File Name: North Avenue, 2015  
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**FORTE WEB MEMBER REPORT** PASSED

1st Floor - floor, FJ1.2 Rear Porch First Floor  
1 piece(s) 2 x 6 Southern Pine No. 2 @ 32" OC

Overall Length: 6' 1/2"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load Combination (Pattern)
Member Reaction (lbs)	364 @ 3 1/2"	1271 (1.507)	Passed (29%)	---	1.0 D + 1.0 L (All Spans)
Shear (lbs)	303 @ 9"	963	Passed (31%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	497 @ 3 1/4"	630	Passed (79%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.073 @ 3' 1/4"	0.136	Passed (L/695)	---	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.091 @ 3' 1/4"	0.273	Passed (L/716)	---	1.0 D + 1.0 L (All Spans)

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Hanger on S 1/2" SYP edge-on/MSW	3.50"	Hanger1	1.50"	81	322	403	See note 1
2 - Hanger on S 1/2" SYP beam	3.50"	Hanger1	1.50"	81	322	403	See note 1

Vertical Load	Location (Side)	Spacing	Dead (0.90)		Comments
			Location (Side)	Floor Live (1.00)	
1 - Uniform (PSF)	0 to 6' 1/2"	32"	10.0	40.0	Floor Load

**Weyerhaeuser Notes**

The product application, input design loads, dimensions and support information have been provided by FortiWEB Software Operator

FortiWEB Software Operator Job Notes

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**S7.2**

Updated Calculations and Specified existing roof structures

Rev. 5/27/20 Date

2 Rev. 7/11/20 September 6, 2019

**Calculations**

2015 North Avenue  
Paul Clothier

City of Richmond, VA

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