

# 3508 East Broad Street Carriage House

## Building Renovation Plans

### Owner

Mary Wayne  
3508 East Broad Street  
Richmond, VA 23223

### Engineer

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

### Table of Contents

A1	Title Sheet
A2	First Floor Plans
A3	Second Floor Plans
A4	North and East Elevations
A5	South and West Elevations
A6	Structure
A7	Deck Connection & Railing Details
A8	Deck Footing & Stair Detail
A9	Stair Detail
A10	Beam Calcs
A11	Site Layout
A12	Foundation Repair

### Property Information

Parcel ID	E0001118019
Zoning	R-8
Use	Residential

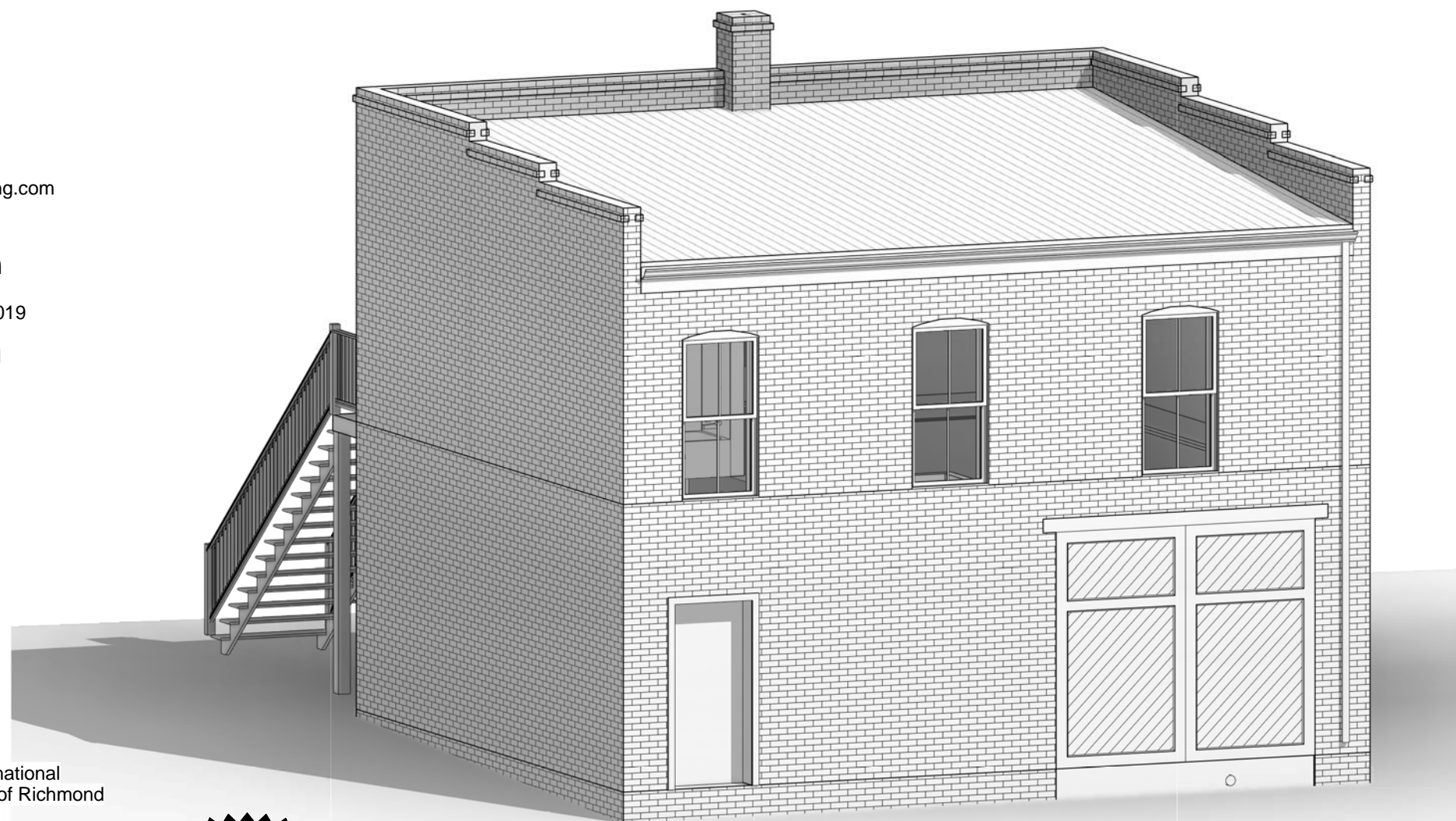
### Scope of Work

Scope of work will generally consist of the renovation of an existing carriage house in accordance with these plans and the IRC, 2012.

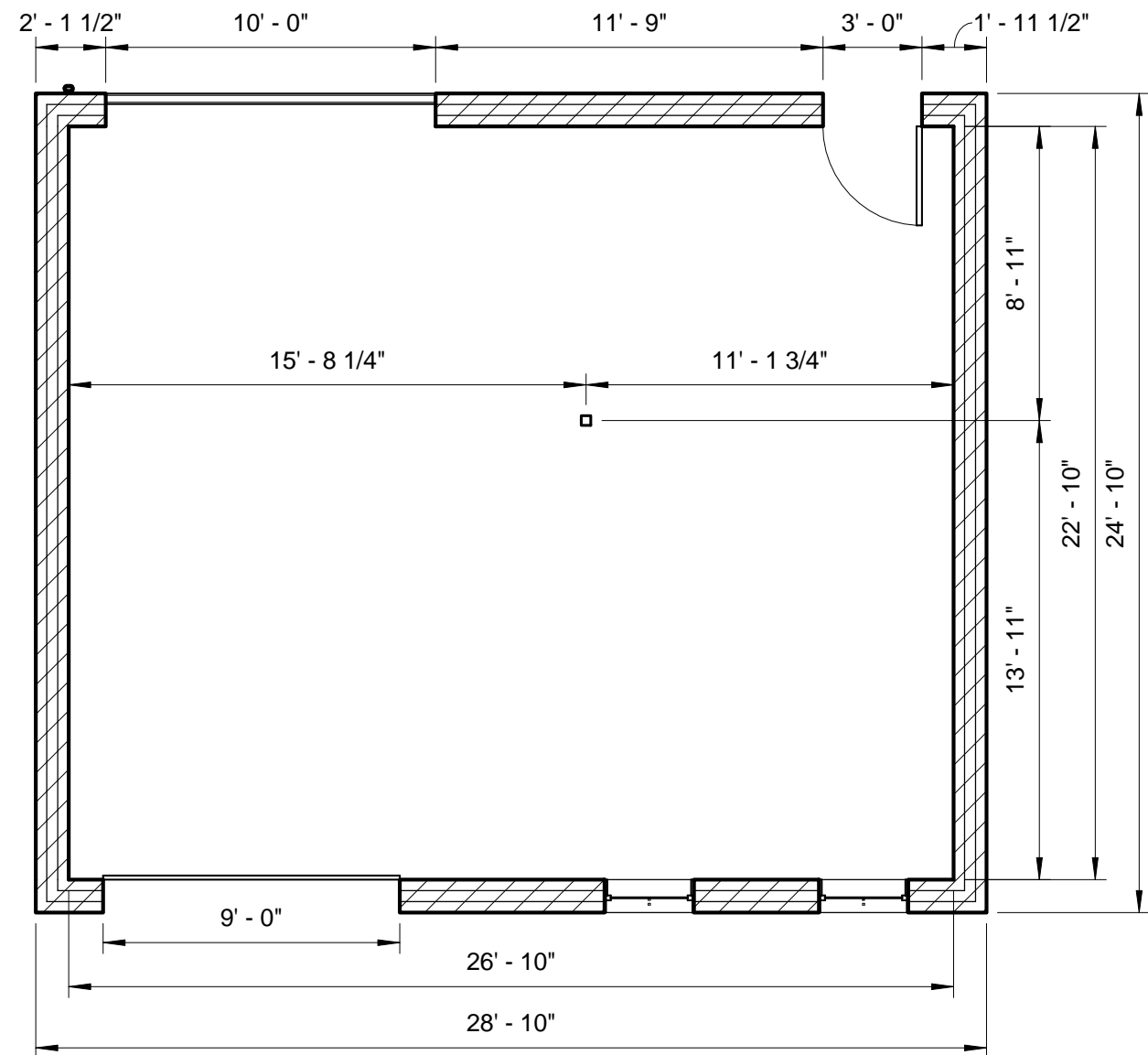
### General Notes

- The structure will be renovated in accordance with the 2012 edition of the "International Residential Code", the Statewide Uniform Building Code and the applicable City of Richmond 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.
- The construction type is V-B.
- There are 2 stories.
- Load criteria: live load = 40 psf, dead load = 10 psf, snow load = 20 psf, wind load = 90 mph
- Total residential space 1227 sf.

Rev.	Date	Description
3	5/18/2015	Foundation plan added
2	4/20/2015	Specified compliance with CAR approval
1	4/20/2015	Proposed beam and posts added. Exterior opening info added.

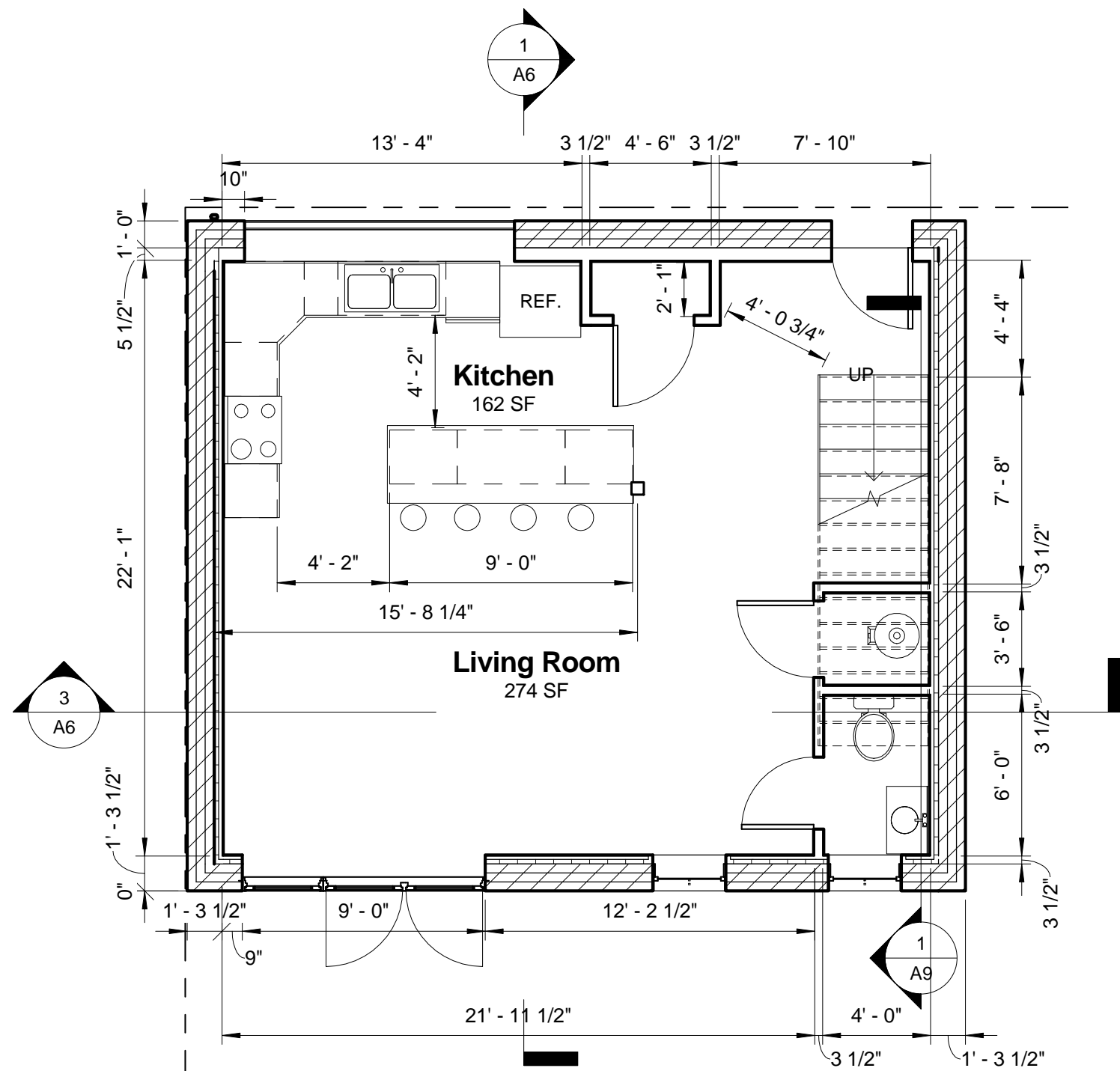


	<b>Obsidian, Inc.</b> 515 North 22nd Street Richmond, VA 23223 804.647.1589	<b>Title Sheet</b> 3508 East Broad Carriage House Renovation Mary Wayne rev. 5/20/2015 April 7, 2015
--	--	--



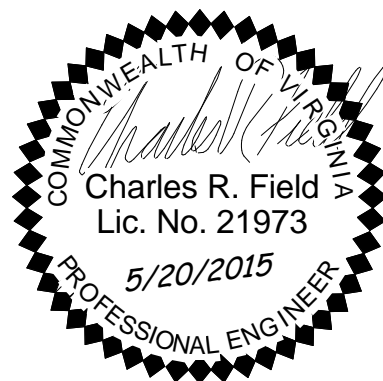
1 Existing - First Floor

3/16" = 1'-0"



2 Proposed - First Floor

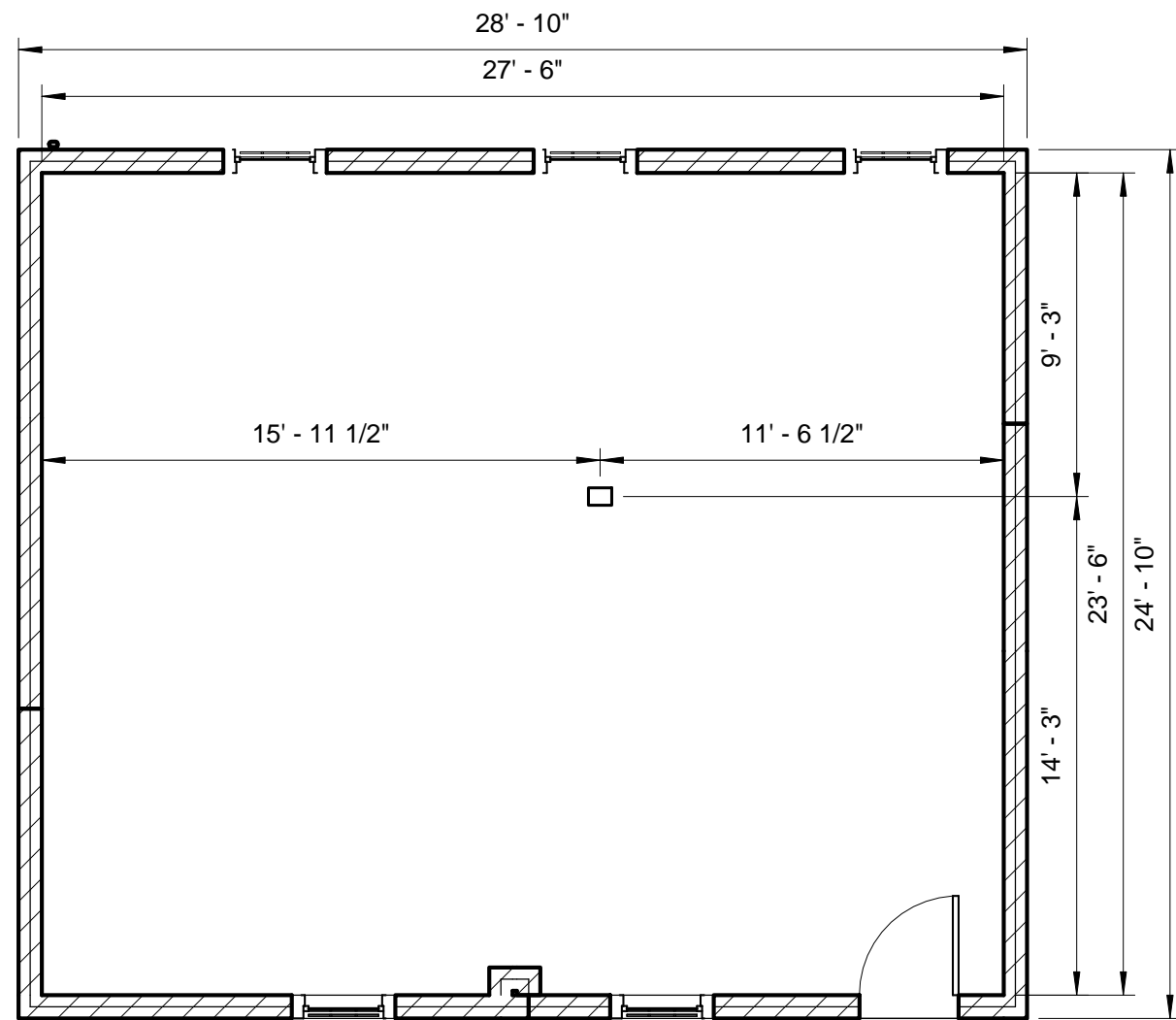
3/16" = 1'-0"



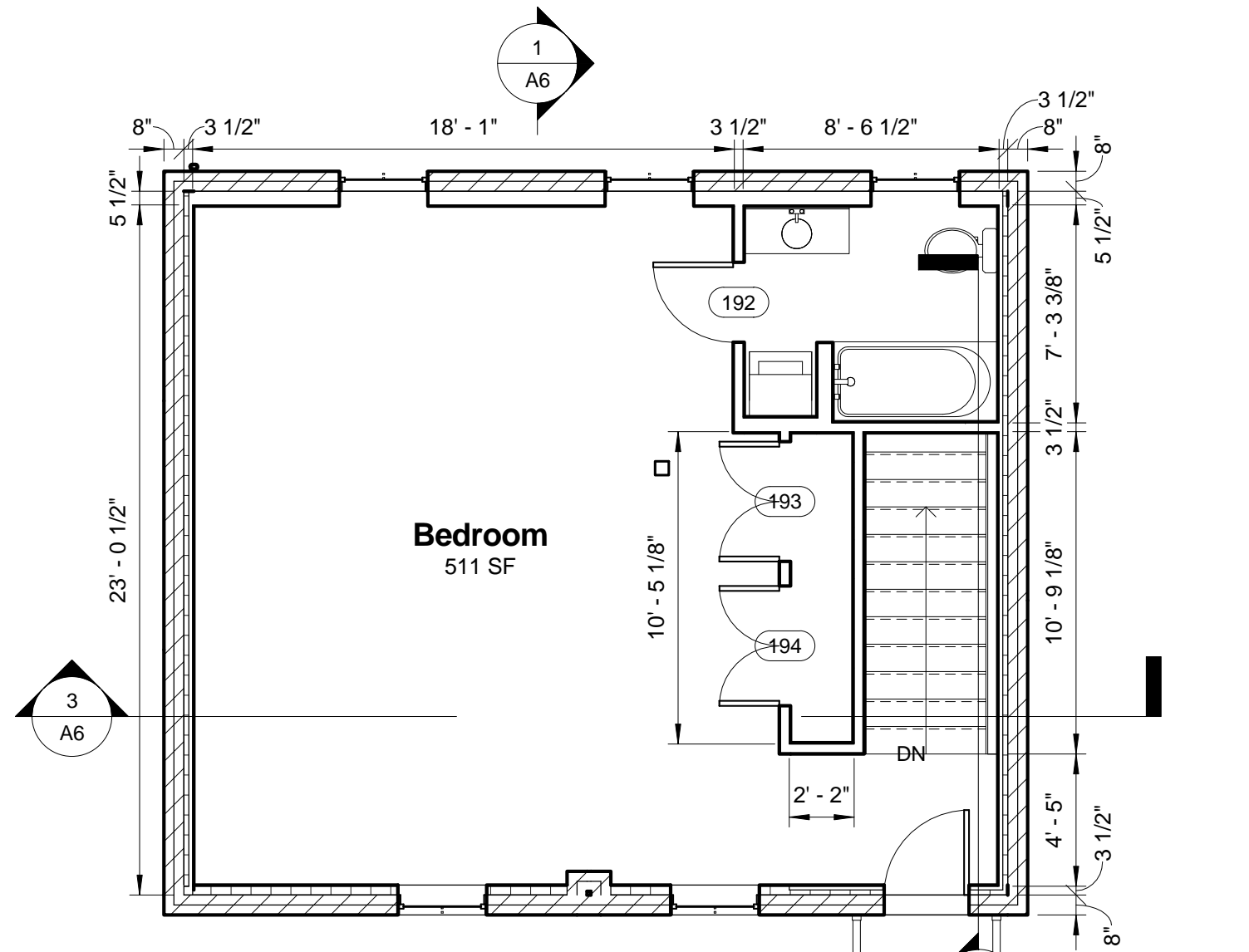
Rev.	Date	Description

**Obsidian, Inc.**  
 515 North 22nd Street  
 Richmond, VA 23223  
 804.647.1589

**First Floor Plans**  
**3508 East Broad Carriage House Renovation**  
 Mary Wayne  
 rev. 5/20/2015  
 April 7, 2015



1 Existing - Second Floor  
3/16" = 1'-0"

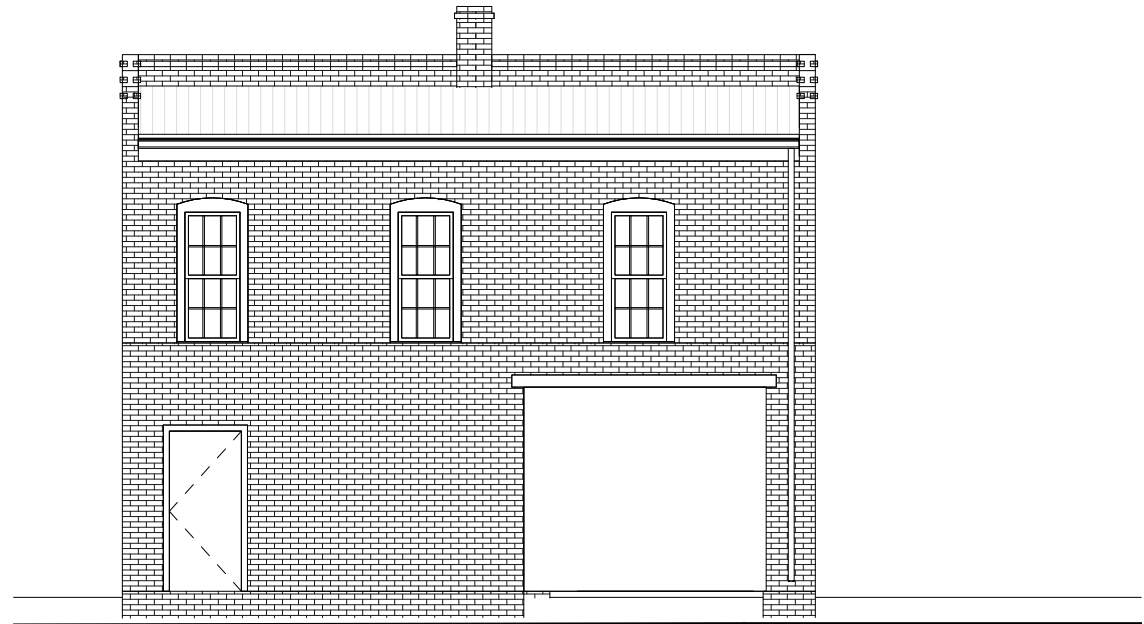


2 Proposed - Second Floor  
3/16" = 1'-0"

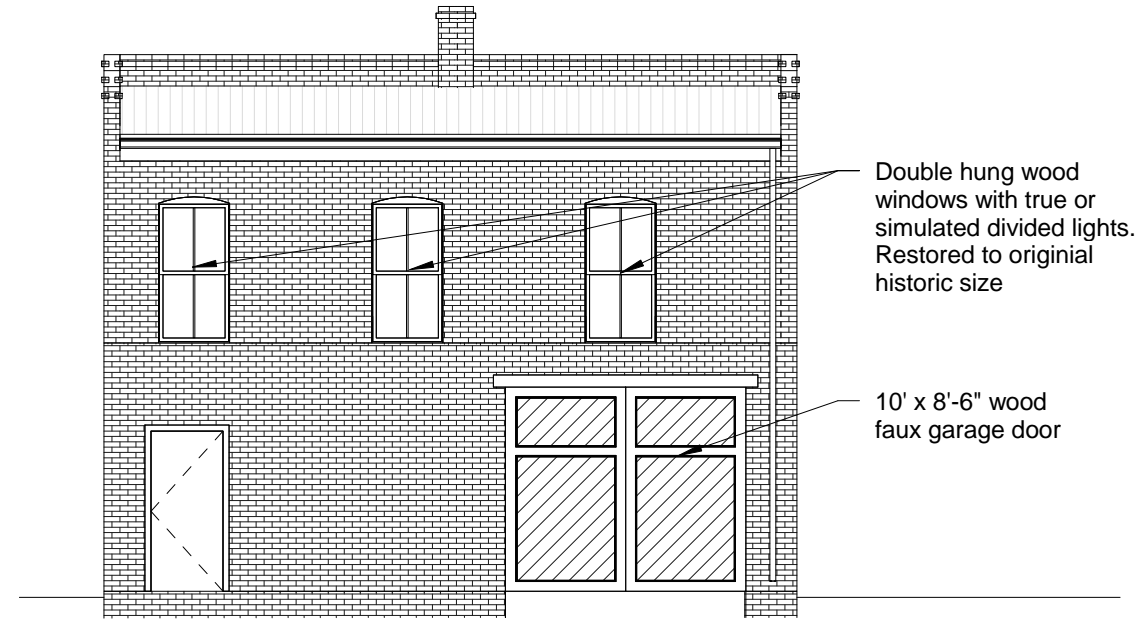


Rev.	Date	Description

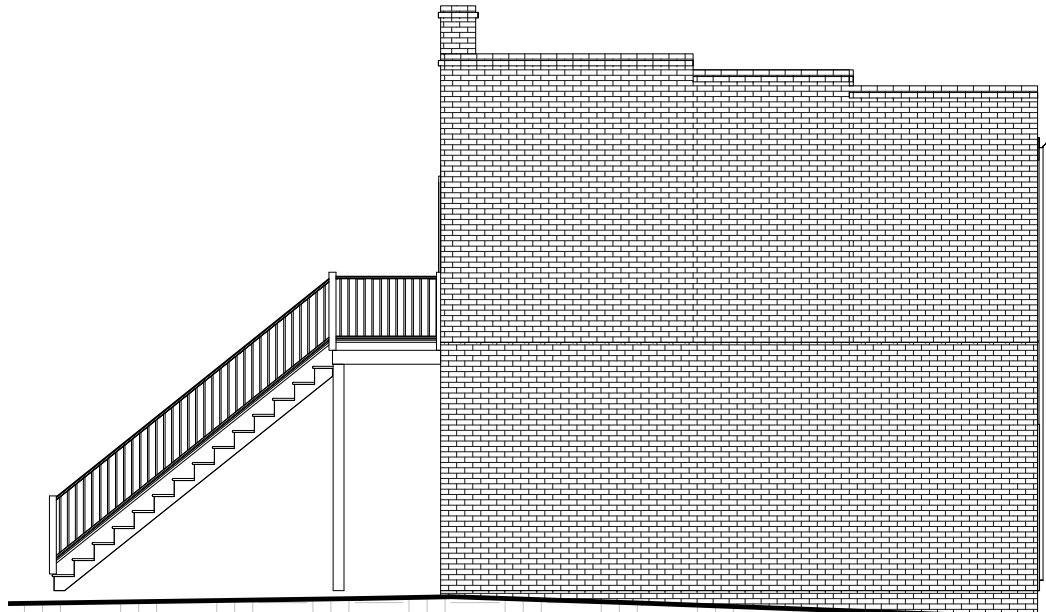
<p><b>Obsidian, Inc.</b> 515 North 22nd Street Richmond, VA 23223 804.647.1589</p>	<p><b>Second Floor Plans</b> 3508 East Broad Carriage House Renovation Mary Wayne rev. 5/20/2015 April 7, 2015</p>	<p>A3</p>
--	--	-----------



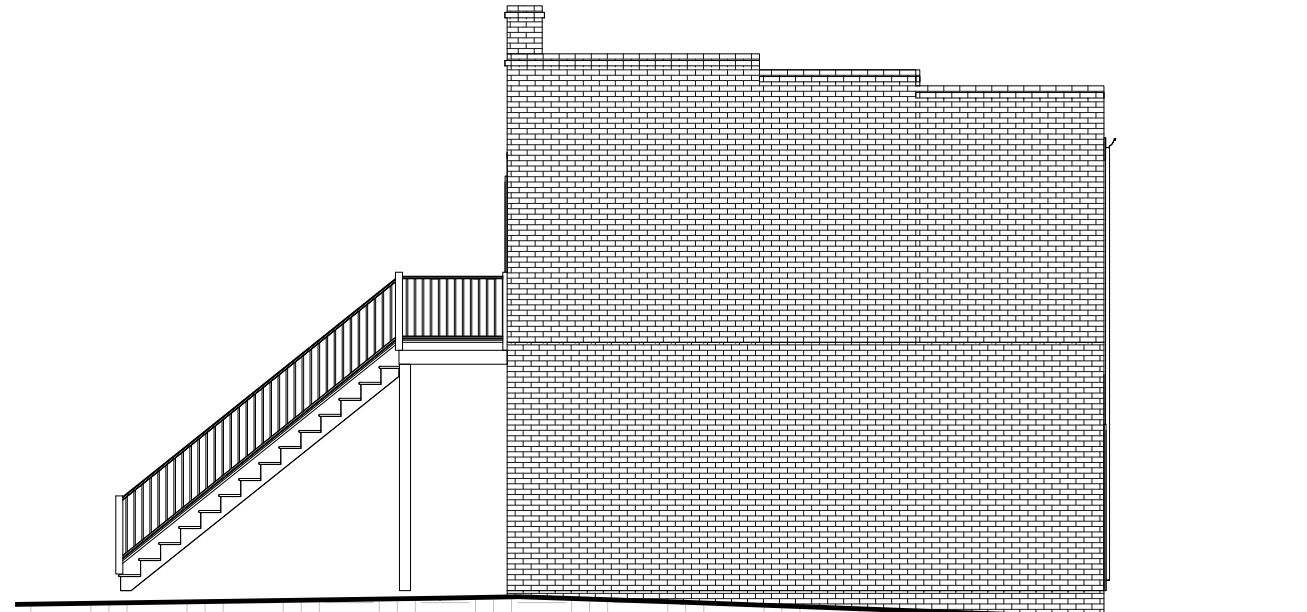
① Existing North  
1/8" = 1'-0"



② Proposed North  
1/8" = 1'-0"



③ Existing East  
1/8" = 1'-0"

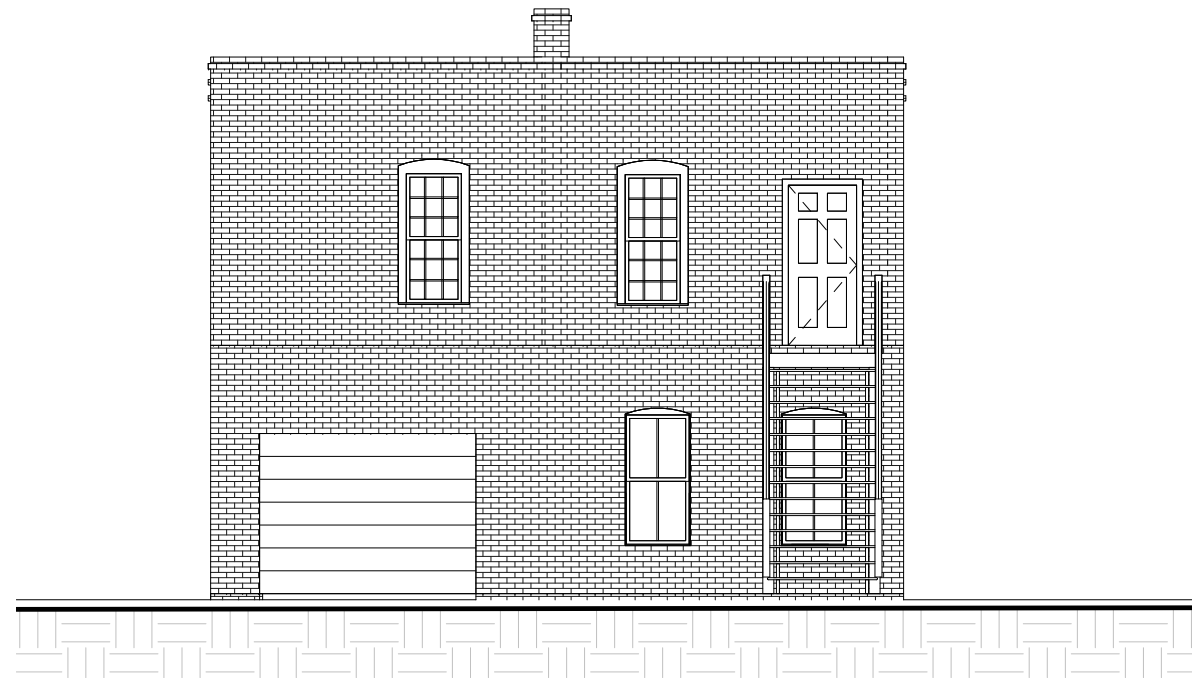


④ Proposed East  
1/8" = 1'-0"



Rev.	Date	Description

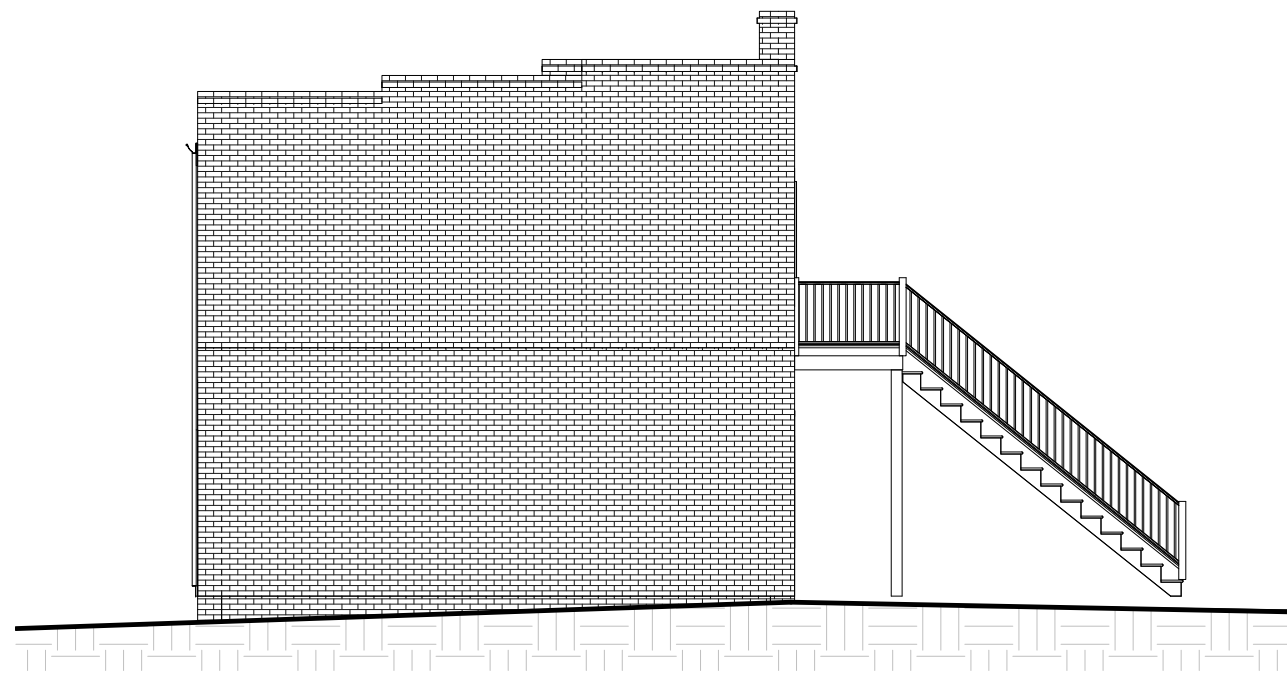
	<b>Obsidian, Inc.</b> 515 North 22nd Street Richmond, VA 23223 804.647.1589	<b>North and East Elevations</b> <b>3508 East Broad Carriage House Renovation</b> Mary Wayne rev. 5/20/2015 April 7, 2015
--	--	---



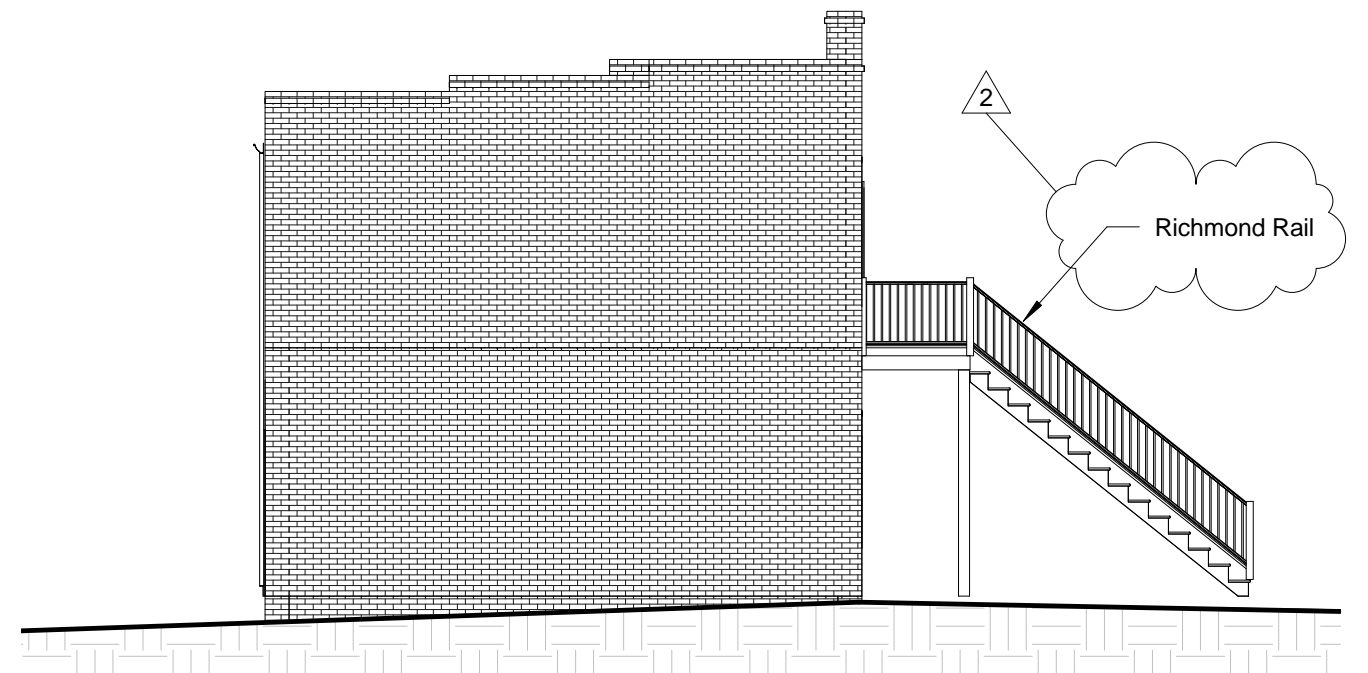
1 Existing South  
1/8" = 1'-0"



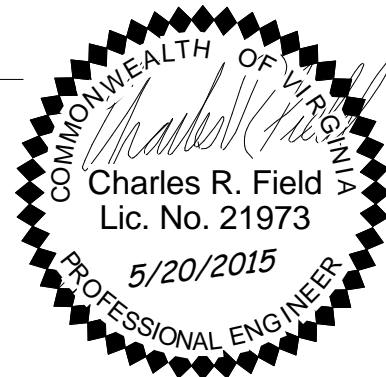
3 Proposed South  
1/8" = 1'-0"



2 Existing West  
1/8" = 1'-0"



4 Proposed West  
1/8" = 1'-0"

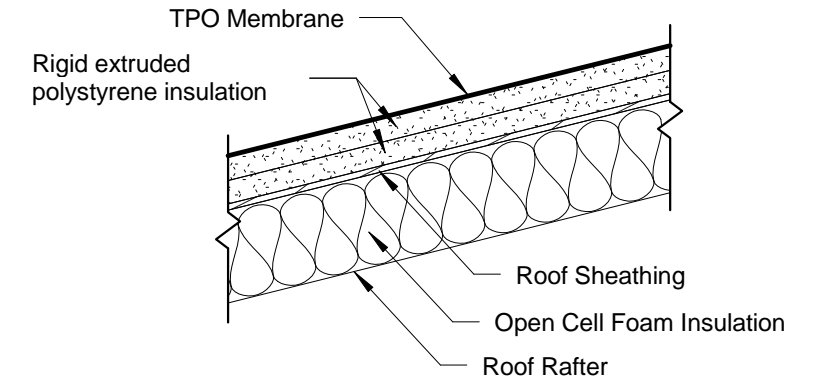
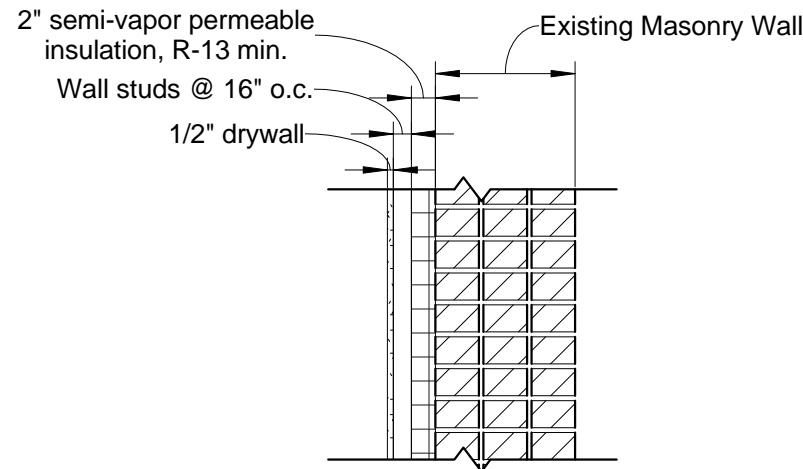


Rev.	Date	Description
2	4/20/2015	Specified compliance with CAR approval

<p><b>Obsidian, Inc.</b> 515 North 22nd Street Richmond, VA 23223 804.647.1589</p>	<p><b>South and West Elevations</b> <b>3508 East Broad Carriage House Renovation</b> <b>Mary Wayne</b></p> <p>rev. 5/20/2015 April 7, 2015</p>
--	--

**Roof System**

Existing roofing to remain  
 Existing sheathing to remain or  
 be replaced where necessary  
 using 5/8" min. sheathing  
 R-49 insulation min.  
 2 x 8 roof rafters @ 16" min.  
 1/2" drywall ceiling



**Note:**

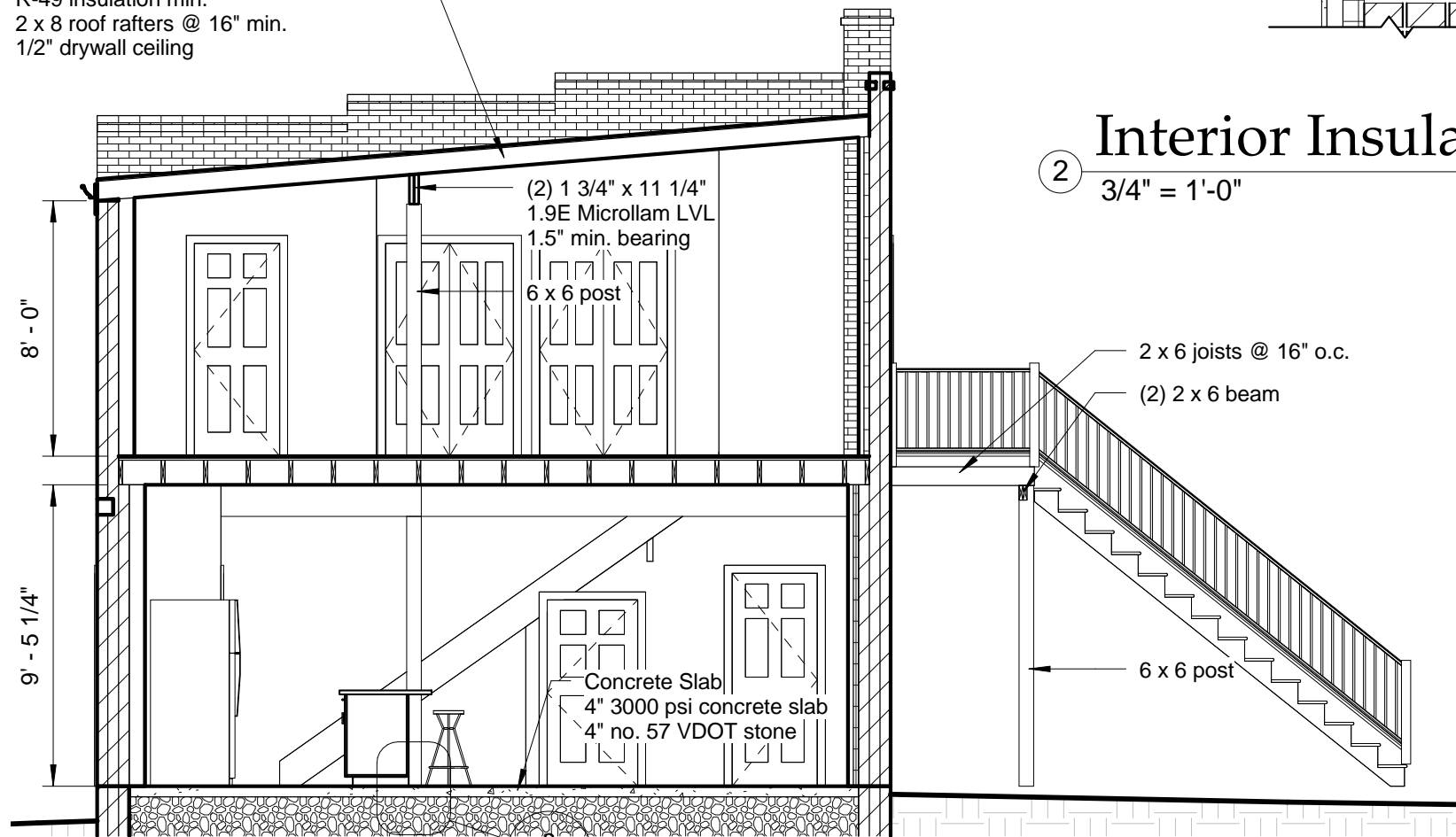
1. Insulation configuration to be verified to be IRC 2012 compliant with REScheck
2. REScheck report to be available to inspector at job site.

**Interior Insulation Detail**

② 3/4" = 1'-0"

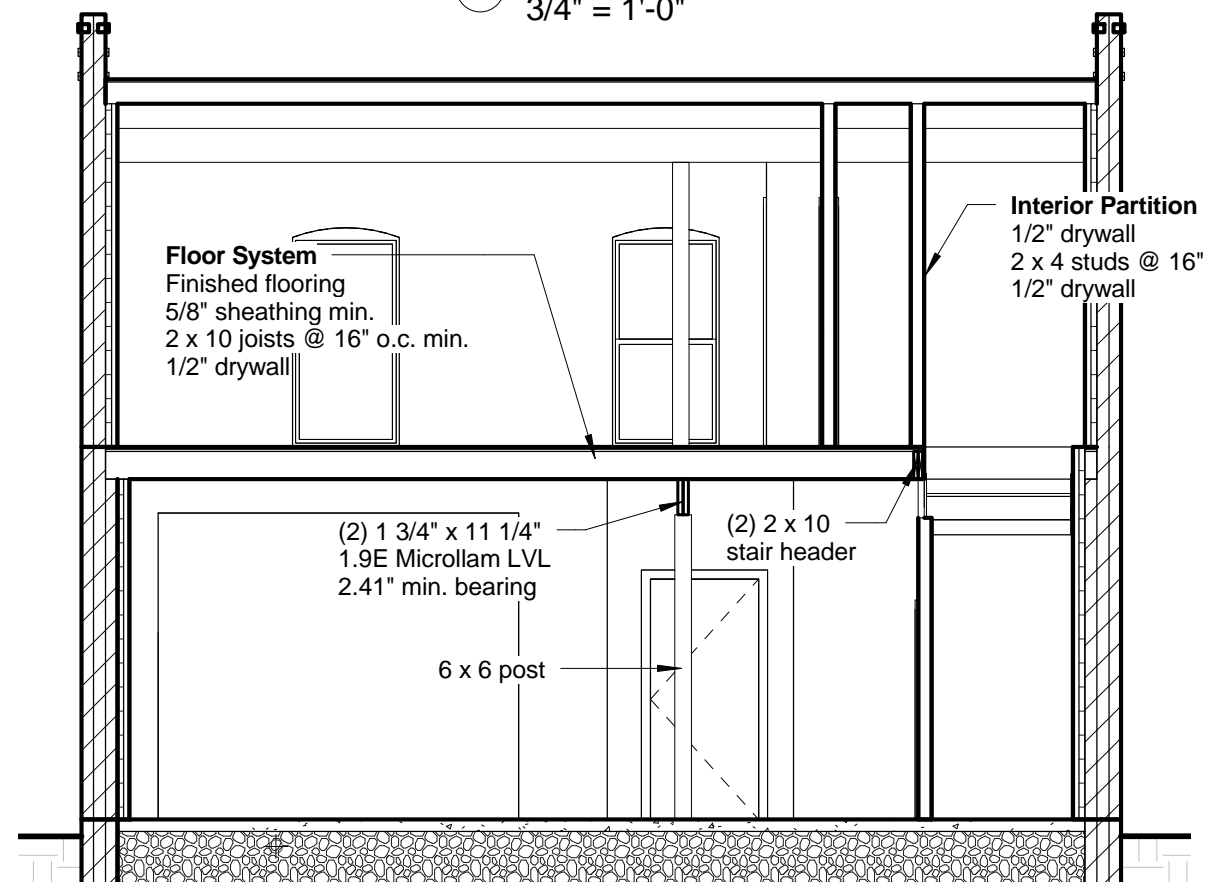
**Ceiling**

④ 3/4" = 1'-0"



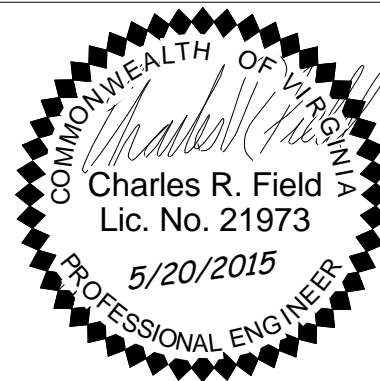
**North - South**

① 3/16" = 1'-0"



**East - West**

③ 3/16" = 1'-0"



Rev.	Date	Description

**Obsidian, Inc.**

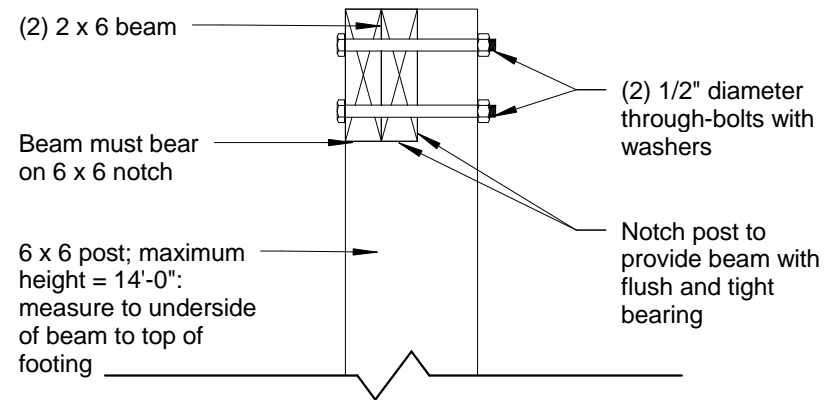
515 North 22nd Street  
 Richmond, VA 23223  
 804.647.1589

**Structure**

**3508 East Broad Carriage House Renovation**

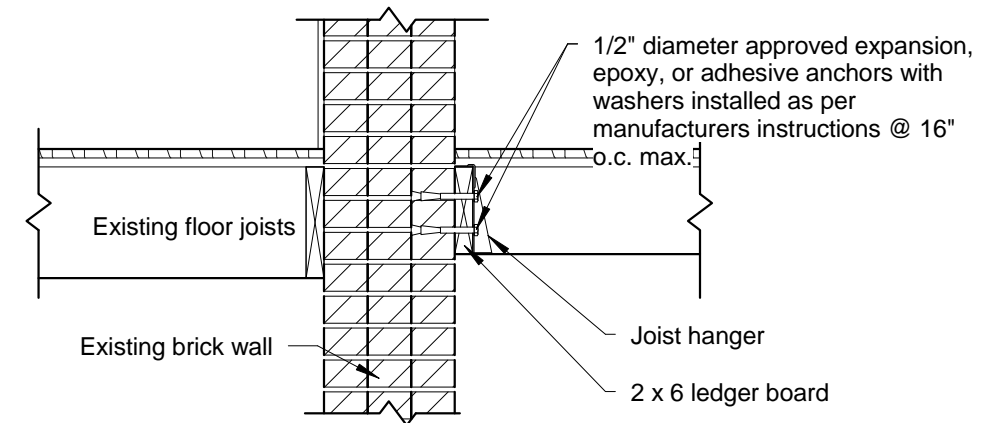
**Mary Wayne**

rev. 5/20/2015  
 April 7, 2015



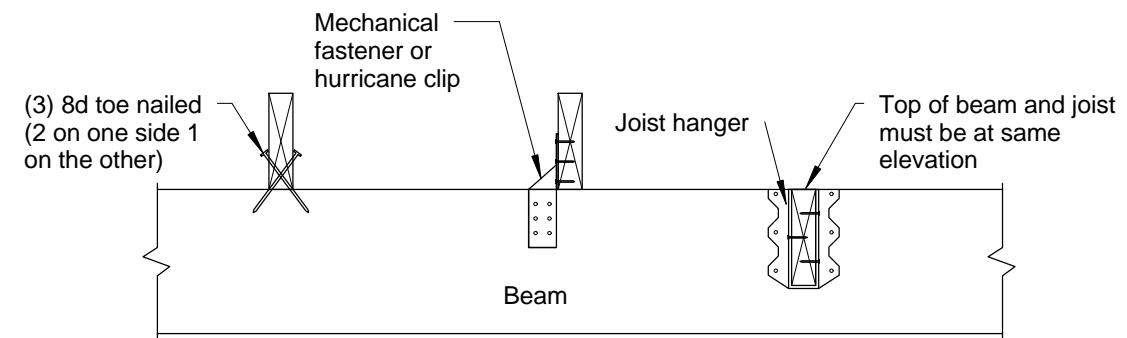
## Post to Beam Connection Detail

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



## Deck Attachment Detail

3 3/4" = 1'-0"



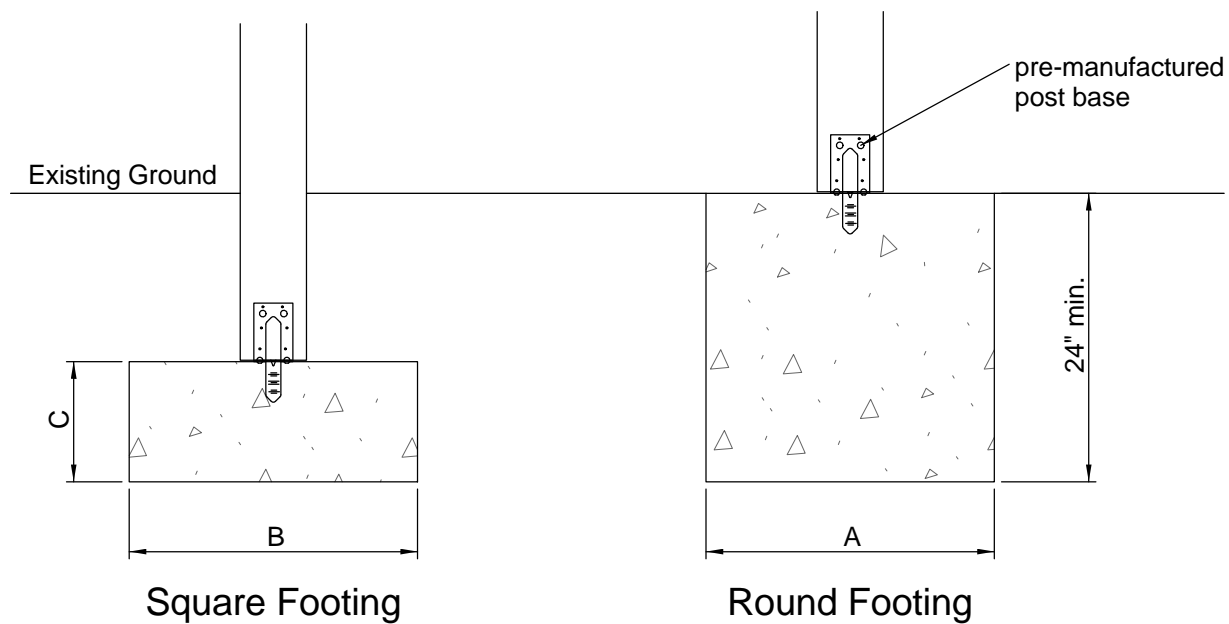
## Joist to Beam Connection

2 3/4" = 1'-0"



Rev.	Date	Description

	<b>Obsidian, Inc.</b> 515 North 22nd Street Richmond, VA 23223 804.647.1589	<b>Deck Connection &amp; Railing Details</b> <b>3508 East Broad Carriage House Renovation</b> rev. 5/20/2015 April 7, 2015 <b>Mary Wayne</b>
--	--	--



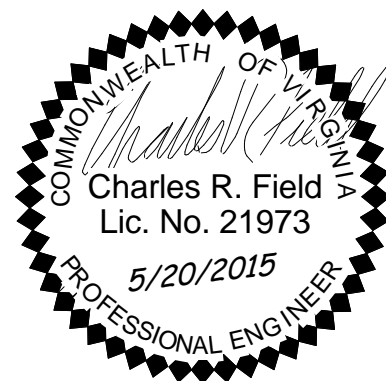
Beam Span	Joist Span	Footing Size Square, B	Round, A	Minimum Thickness, C
0' - 8'	0' - 14'	16"	18"	8"
8' - 12"	14' - 18'	18"	20"	10"
	0' - 10'	16"	18"	8"
12' - 17'-5"	10' - 14'	22"	24"	10"
	14' - 18'	22"	24"	10"
	0' - 10'	22"	24"	10"
	10' - 14'	24"	26"	12"

**Notes:**

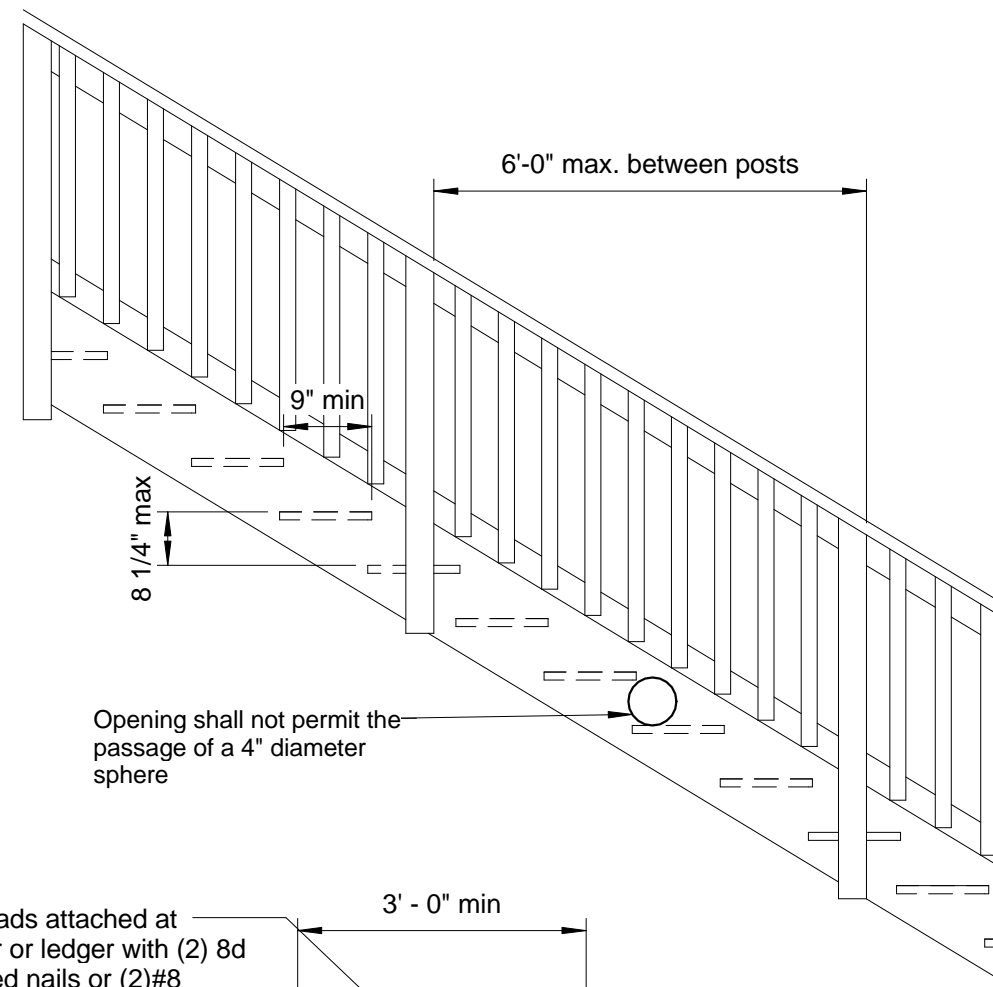
1. Footing must bear on solid ground.
2. The pre-manufactured post base shall be galvanized and must withstand a minimum uplift force of 1300 lbs.
3. The concrete for the footing shall have a minimum compressive strength of 2,500 psi.
4. Deck footings closer than 5' to an existing exterior house wall must bear at the same elevation as the existing house footings.
5. Bearing conditions shall be verified in the field by city inspectors prior to placement of concrete.
6. Call Miss Utility at 811 before digging.

# 1 Footing

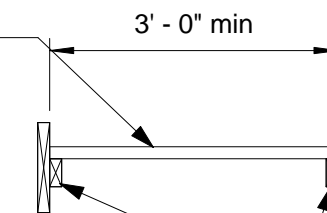
3/4" = 1'-0"



Rev.	Date	Description



2 x treads attached at stringer or ledger with (2) 8d threaded nails or (2)#8 screws 2-1/2" long min.



2 x 4 ledgers, each side, full depth of tread; attach with (4) 10d threaded nails or (4)#8 wood screws 3" long min.

2009 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.

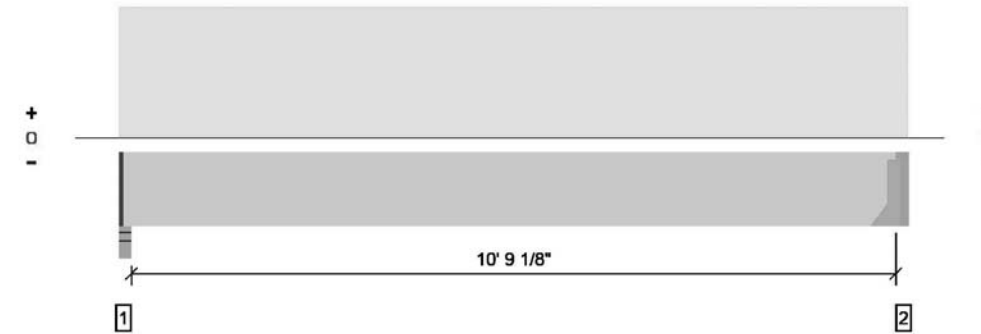
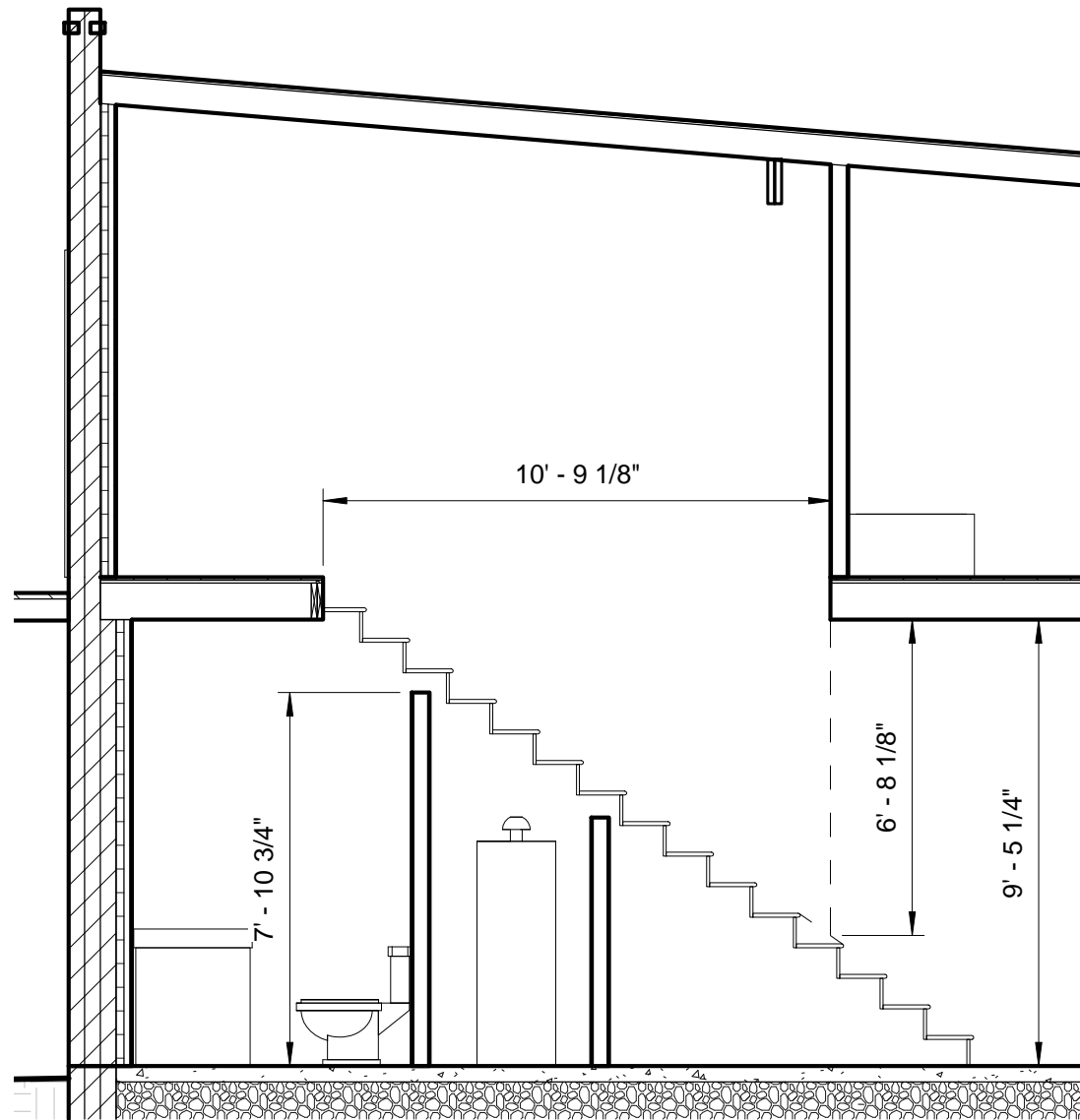
# 2 Stair Detail

1/2" = 1'-0"

	<b>Obsidian, Inc.</b> 515 North 22nd Street Richmond, VA 23223 804.647.1589	<b>Deck Footing &amp; Stair Detail</b> <b>3508 East Broad Carriage House Renovation</b> rev. 5/20/2015 April 7, 2015 <b>Mary Wayne</b>
--	--	--



Overall Length: 11' 4 1/8"



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)	957 @ 11' 5/8"	2543 (1.50")	Passed (38%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	821 @ 10' 3 3/8"	3238	Passed (25%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2604 @ 5' 7 5/16"	2853	Passed (91%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.115 @ 5' 7 5/16"	0.363	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.200 @ 5' 7 5/16"	0.544	Passed (L/652)	--	1.0 D + 1.0 L (All Spans)

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Bracing (Lu): All compression edges (top and bottom) must be braced at 9' 5 7/16" o/c unless detailed otherwise. Proper attachment and positioning of lateral bracing is required to achieve member stability.
- Applicable calculations are based on NDS 2005 methodology.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - SYP	3.50"	2.25"	1.50"	417	568	985	1 1/4" Rim Board
2 - Hanger on 9 1/4" SYP beam	3.50"	Hanger <sup>1</sup>	1.50"	425	581	1006	See note <sup>1</sup>

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- <sup>1</sup> See Connector grid below for additional information and/or requirements.

Connector: Simpson Strong-Tie Connectors						
Support	Model	Seat Length	Top Nails	Face Nails	Member Nails	Accessories
2 - Face Mount Hanger	U210-2	2.00"	N/A	14-10d x 1-1/2	6-10d x 1-1/2	

Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 11' 4 1/8"	3' 4 1/2"	20.0	30.0	Residential - Sleeping Areas

**Weyerhaeuser Notes**

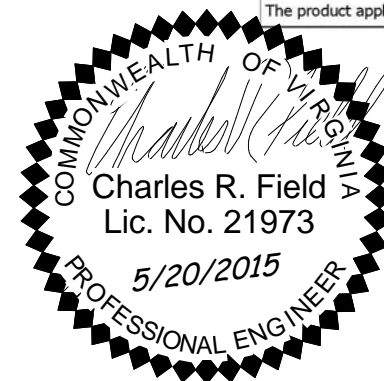
Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Refer to current Weyerhaeuser literature for installation details. (www.woodbywy.com) Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards.

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



**1 Stair Section**

1/4" = 1'-0"



Rev.	Date	Description

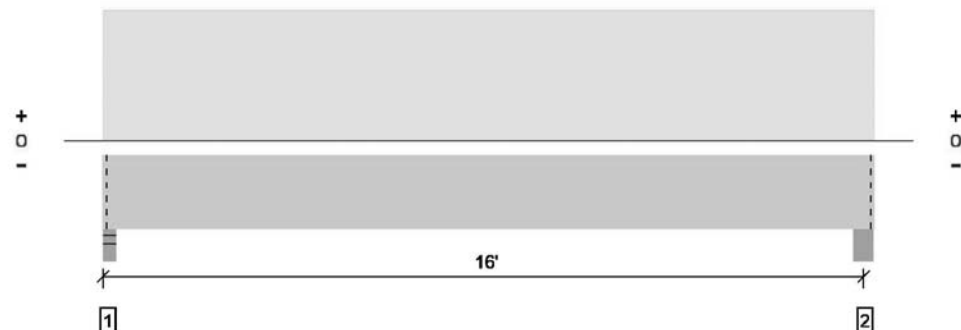
<b>Obsidian, Inc.</b> 515 North 22nd Street Richmond, VA 23223 804.647.1589	<b>Stair Detail</b> 3508 East Broad Carriage House Renovation Mary Wayne rev. 5/20/2015 April 7, 2015
--	---



MEMBER REPORT *Roof, Roof Beam*  
**2 piece(s) 1 3/4" x 11 1/4" 1.9E Microllam® LVL**

PASSED

Overall Length: 16' 2 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)	2922 @ 2"	6921 (3.50")	Passed (42%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2474 @ 1' 2 3/4"	8603	Passed (29%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	11250 @ 8' 3/8"	18558	Passed (61%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.433 @ 8' 3/8"	0.524	Passed (L/436)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.670 @ 8' 3/8"	0.786	Passed (L/282)	--	1.0 D + 1.0 S (All Spans)

System : Roof  
 Member Type : Drop Beam  
 Building Use : Residential  
 Building Code : IBC  
 Design Methodology : ASD  
 Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Bracing (Lu): All compression edges (top and bottom) must be braced at 12' 3 1/16" o/c unless detailed otherwise. Proper attachment and positioning of lateral bracing is required to achieve member stability.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Roof Live	Snow	Total	
1 - Stud wall - SYP	3.50"	3.50"	1.50"	1034	1887	1887	4808	Blocking
2 - Column - SYP	5.50"	5.50"	1.50"	1056	1927	1927	4910	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Loads	Location	Tributary Width	Dead (0.90)	Roof Live (non-snow: 1.25)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 16' 2 3/4"	11' 9"	10.0	20.0	20.0	Roof

**Weyerhaeuser Notes**

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Refer to current Weyerhaeuser literature for installation details. (www.woodbywy.com) Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards.

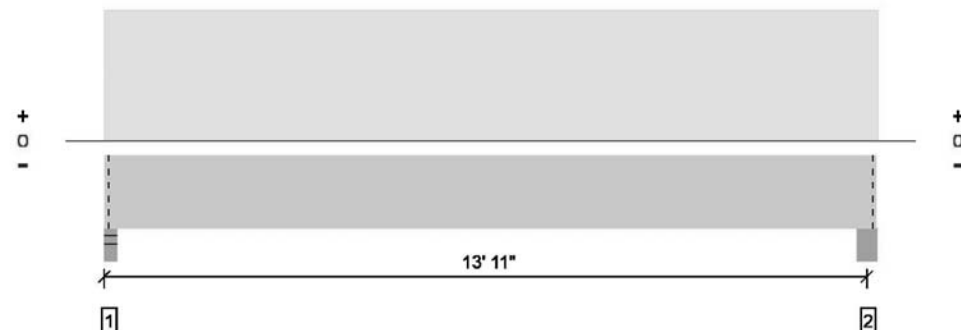
The product application, input design loads, dimensions and support information have been provided by Forte Software Operator



MEMBER REPORT *Second Floor, Floor : Drop Beam*  
**2 piece(s) 1 3/4" x 11 1/4" 1.9E Microllam® LVL**

PASSED

Overall Length: 14' 1 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)	3827 @ 2"	6921 (3.50")	Passed (55%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	3154 @ 1' 2 3/4"	7481	Passed (42%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	12745 @ 6' 11 7/8"	16137	Passed (79%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.427 @ 6' 11 7/8"	0.455	Passed (L/384)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.581 @ 6' 11 7/8"	0.682	Passed (L/282)	--	1.0 D + 1.0 L (All Spans)

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

- Deflection criteria: LL (L/360) and TL (L/240).
- Bracing (Lu): All compression edges (top and bottom) must be braced at 9' 10 11/16" o/c unless detailed otherwise. Proper attachment and positioning of lateral bracing is required to achieve member stability.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - SYP	3.50"	3.50"	1.94"	1014	2813	3827	Blocking
2 - Column - SYP	5.50"	5.50"	1.50"	1038	2880	3918	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 14' 1 3/4"	13' 5"	10.0	30.0	Residential - Bedroom

**Weyerhaeuser Notes**

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Refer to current Weyerhaeuser literature for installation details. (www.woodbywy.com) Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards.

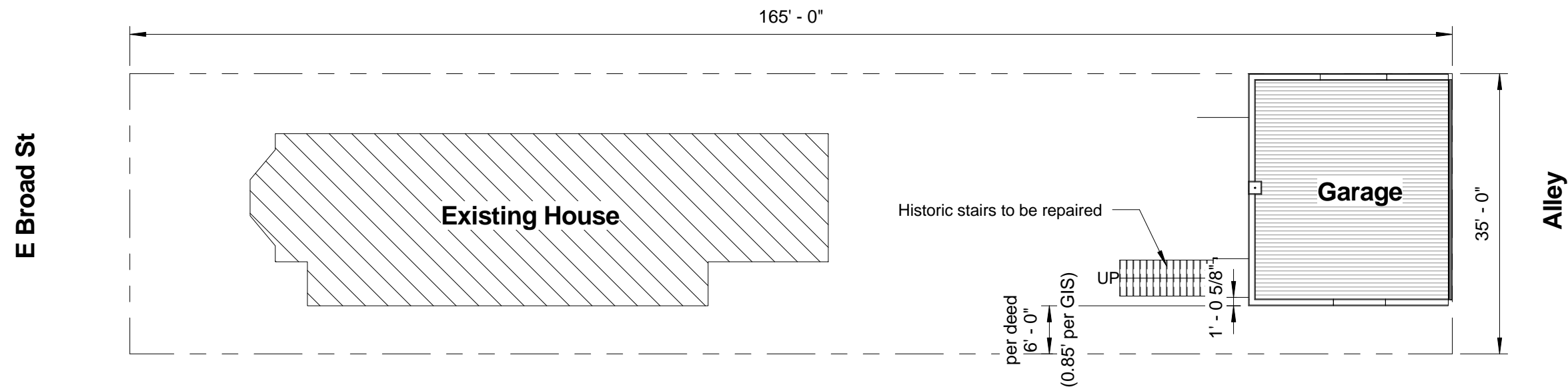
The product application, input design loads, dimensions and support information have been provided by Forte Software Operator



Rev.	Date	Description

**Obsidian, Inc.**  
 515 North 22nd Street  
 Richmond, VA 23223  
 804.647.1589

**Beam Calcs**  
 3508 East Broad Carriage House Renovation  
 Mary Wayne  
 rev. 5/20/2015  
 April 7, 2015



Note: Property lines are based on City of Richmond GIS data.

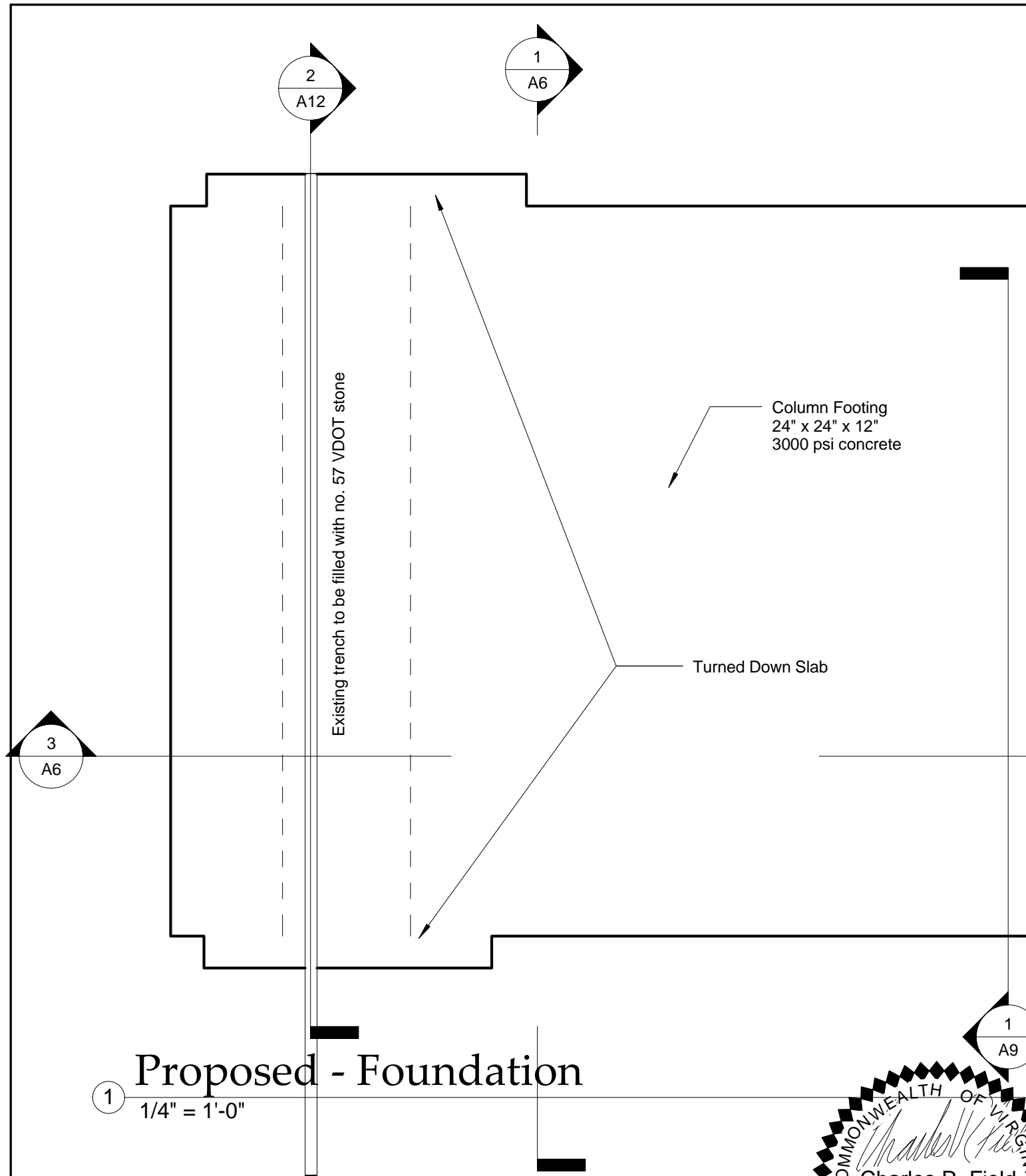
# Site Plan

1 1/16" = 1'-0"

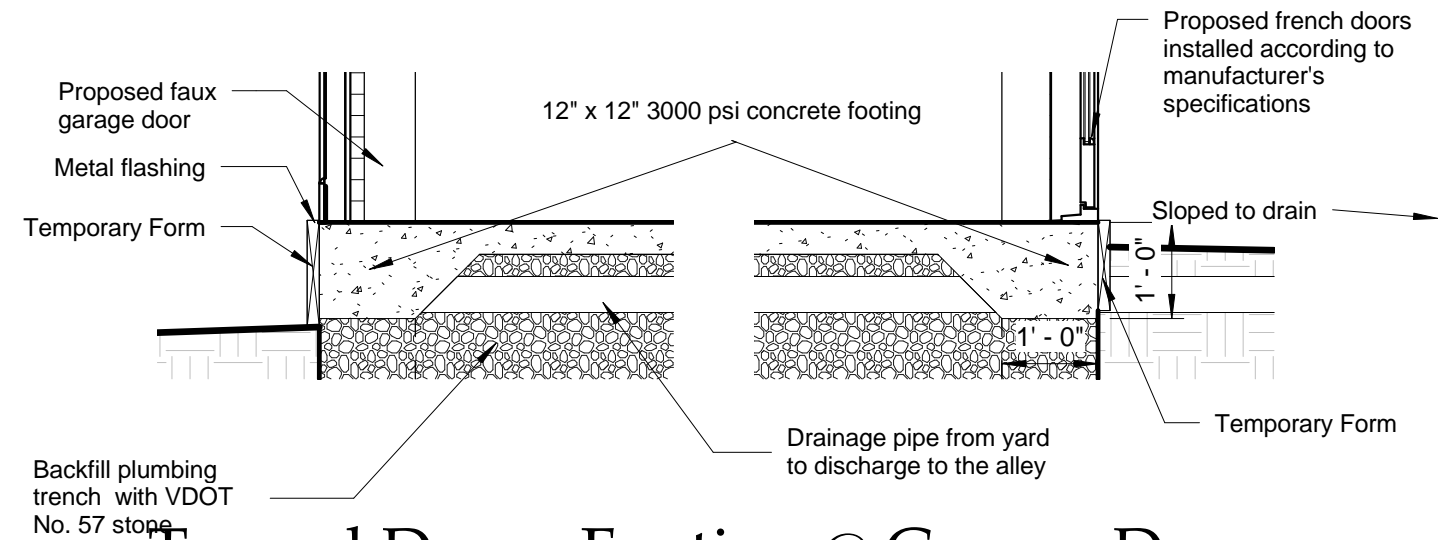


Rev.	Date	Description

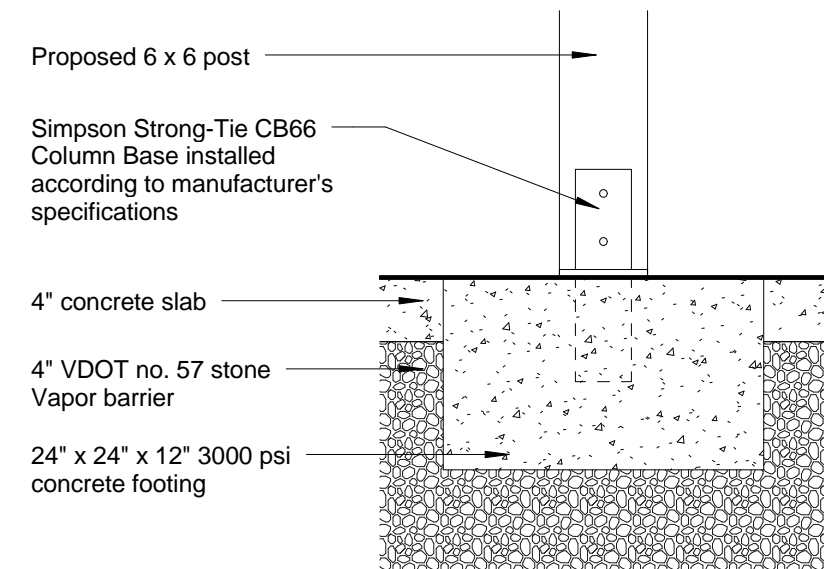
<p><b>Obsidian, Inc.</b> 515 North 22nd Street Richmond, VA 23223 804.647.1589</p>	<p><b>Site Layout</b> 3508 East Broad Carriage House Renovation Mary Wayne rev. 5/20/2015 April 7, 2015</p>	<p>A11</p>
--	---	------------



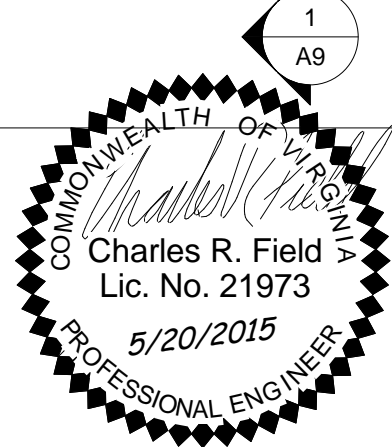
1 Proposed - Foundation  
1/4" = 1'-0"



2 Turned Down Footing @ Garage Door  
1/2" = 1'-0"



3 Column Footing  
1" = 1'-0"



Rev.	Date	Description
3	5/18/2015	Foundation plan added

**Obsidian, Inc.**  
515 North 22nd Street  
Richmond, VA 23223  
804.647.1589

**Foundation Repair**  
3508 East Broad Carriage House Renovation  
Mary Wayne  
rev. 5/20/2015  
April 7, 2015