





GENERAL

- 1. These plans and specifications are the sole property of NVR. Any unauthorized use of these plans without the written consent of NVR is prohibited.
2. These plans are subject to modification as necessary to meet code requirements or to facilitate mechanical/plumbing installations or to incorporate design improvements.
3. These plans are not to be scaled for construction purposes. Dimension lines and notes supersede all scale references.
4. Single Family Attached/Detached - Automatic residential fire sprinkler systems shall be installed in accordance with NCRBC P2404 or NFPA 13B where required.
5. This note sheet only covers major code requirements. The plans are intended to conform to all current applicable codes or engineering design in accordance with Section 301.13.

CODE ANALYSIS

- 1. This note sheet only covers major code requirements. The plans are intended to conform to all current applicable codes including, but not limited to:
NCRBC 2018, NCMC 2018, NCFE 2018, NCFCE 2018, NEC 2017 w/ NC Amendments, NCEC 2018, NCFPC 2018
2. Use Group: R-3
3. Constr. Type: V-B
4. Max. Stories: 3

ENERGY AND MECHANICAL

- 1. Insulation requirements per 2018 NCRBC Chapter 11, Energy Efficiency, or Chapter 4 of the 2018 North Carolina Energy Conservation Code (NCECC), or Chapter 4 of the 2015 International Energy Conservation Code (IECC), Residential Energy Efficiency by the prescriptive method. See NVR "Standard Energy Package" for field procedures and details.

Table with 8 columns: CLIMATE ZONE, PENETRATION U-FACTOR, GLAZED PENETRATION SHGC, CEILING R-VALUE, FRAME WALL R-VALUE, FLOOR R-VALUE, BASEMENT WALL R-VALUE, SLAB R-VALUE, CRAWL SPACE WALL R-VALUE. Rows 3 and 4.

- 2. All HVAC equipment is sized based on ACCA Manual J calculations. Ductwork is sized using ACCA Manual D. Minimum efficiencies of equipment are as listed below. Upgrades for improved energy performance may be installed.
- Air conditioner - 14 SEER
- Gas furnace - 92% / 96%
- Heat Pump - 8.2 HSPF
3. Winter interior design temperatures shall be 70°F and summer interior design temperatures shall be 75°F. Exterior design temperatures vary based on geographic location and are listed on the Manual J calculations.
4. Roof ventilation calculations are based on the following specifications:
Ridge vent: Minimum 18 sq. in. of vent per linear foot
Soffit vent: Minimum 4.8 sq. in. of vent per linear foot
Roof Jack (box vent): Minimum 45 sq. in. of vent per unit
5. See NVR "Standard Energy Package" for field procedures and details.

DESIGN LOADS

Table of Loads for House Structure, Per Table 301.5

Table with 2 columns: Location (Floor Living Areas, Floor Sleeping Areas, Garage Floors, Roof Areas, Habitable Attics, Walls, Stairs) and Load (e.g., 40# P.S.F. (Live), 10# P.S.F. (Dead)).

Design Criteria

- Design Codes:
1. National Design specification for Wood Construction by National Forest Products Association.
2. Specification for the Design Fabrication and Erection of Structural Steel for Buildings by American Institute of Steel Construction.
Materials:
Headers\* Southern Pine (KD-14), No. 1 Grade
Studs Spruce-Pine-Fir, Stud Grade
Jacks Spruce-Pine-Fir, Stud Grade
Beams\*\* Southern Pine (KD-14), No. 1 Grade
Joists 2x10 Hem-Fir (KD-14), No. 2 Grade or better (NCLIB & NWFA)
2x8 Southern Pine (KD-14), No. 1 Grade or better
2x10 Spruce-Pine-Fir (KD-14), No. 2 Grade or better (NLGA)
LVL: 1.6E Minimum
\* Where required, Laminated Veneer Lumber may be used per Engineering Structural Steel - A.S.T.M. A36

FOUNDATIONS

- 1. All plain and reinforced concrete shall comply with requirements in ACI 318.
2. Concrete footings shall be poured a maximum 5' slump, 5 bag mix, and 2500 psi minimum strength per Table R402.2. Concrete walls shall be poured a maximum 5' slump, 5 1/2-bag mix, and 3000 psi minimum strength per Foundation Wall Design table below. Special soil and or wall height conditions may require a higher psi mix.
3. Walls and footings designed as unreinforced unless otherwise specified on foundation plans or details. Special soil and/or site conditions may require the addition of reinforcing.
4. Footing frost depth to be no less than 12" per R403.1.4 and Table R301.2(1).
5. Minimum Soil Bearing Capacity shall be 2,000 PSF per Table R401.4.1.
6. Interior slabs on grade (excluding garage slabs) to be minimum 3-1/2" concrete (may be represented on plans as nominal 4") over 4" sub-base, with vapor barrier (6-mil polyethylene) as required per Section 506 and minimum 2,500 PSI per Table R402.2.
7. Unconditioned crawl spaces shall have a minimum net area of ventilation not less than 1 square foot for each 150 square feet of area, unless the ground surface is covered by a class vapor retarder, in which case the minimum net area of ventilation shall not be less than 1 square foot for each 1500 square feet of area. One such ventilating opening shall be within 3 feet (914 mm) of each corner of the building, per R408.1.2.
8. Foundation drains shall be located per local codes and according to local site conditions. Drain discharge by gravity or mechanical means to conform with approved site plan and installed per Section R408.1.
9. The top course of block of foundation walls shall be semi-solid block or open cores of hollow block shall be filled with mortar.
10. Block piers to be solid block or mortar-filled hollow block.
11. A poured concrete foundation wall designed to withstand an equivalent fluid height of 30# per cubic ft. may be substituted where masonry units (block) are shown on plans.
12. Concrete and masonry foundation walls shall be damp-proofed with min. 3/8" portland cement grout from footing to top of finished grade. The grouting shall be covered with a coat of approved bituminous material applied at the recommended rate per R406.1.
13. Where required, concrete and masonry foundation walls shall be waterproofed with an approved membrane extending from footing to top of finished grade. The joints in the membrane shall be lapped and sealed with an adhesive compatible with the waterproofing membrane. Waterproofing to be in accordance with R406.2.
14. Non-structural garage slabs shall be nominal 3 1/2" thick. Structural garage slabs shall be nominal 4" thick. All garage slabs shall be 3500 PSI air-entrained concrete on compacted / undisturbed soil per Table R402.2.
15. Foundation framing anchors shall be 1/2"x18" anchor bolts with 7" minimum embedment or Simpson Strong-Tie MASA / USP F43 (16 gauge steel, galvanized) or equivalent set in concrete or grouted cell, 1'-0" maximum from corners and spaced at a maximum of 6' o.c. and in the middle third of the width of the plate. For walls connecting offset braced wall panels, those 24" in length or shorter shall have min. (1) anchor strap and those 12" or shorter can be installed without anchor strap. Torches in seismic design category "C" shall require a 22x1" x 3" x 3" plate washer per R403.1.6.1 and maximum anchor bolt spacing for buildings over two stories shall be 4'.
16. Steel columns and bases shall be given a shop coating of rust-inhibitive paint or equivalent to provide corrosion resistance per R407.2.
17. For masonry veneers:
Per R103.B.4.1 - Corrugated sheet metal veneer ties shall be a minimum of No. 22 U.S. gauge by 7/8 inch. Each tie shall be spaced not more than 32" o.c. horizontally and 24" o.c. vertically and shall support not more than 2.67 square feet of wall area. For townhouses in Seismic Design Category C and in wind areas of more than 30 pounds per square foot pressure, each tie shall support not more than 2 square feet of wall area.
Additional metal ties shall be provided around all wall openings greater than 16 inches (406 mm) in either dimension. Metal ties around the perimeter of openings shall be spaced not more than 3 feet (914mm) on center and placed within 12 inches (305 mm) of the wall opening.
Per R103.2 - One layer of No. 15 asphalt felt or other approved water-resistant barrier shall be provided behind brick.
Per Table R103.B.4 - Provide minimum 1-inch air space between brick veneer and sheathing.
Per R103.B.6 - Provide minimum 3/16" diameter weep holes at 33" on center maximum, located immediately above the flashing.
Per R103.B.5 - When veneer of brick, clay tile, concrete, or natural or artificial stone are used, 6 mil plastic flashing shall be attached to the sheathing wherever necessary to prevent moisture penetration behind the veneer. See NVR Flashing Details.

- 18. Per R103.B.4.1 - Corrugated sheet metal veneer ties shall be a minimum of No. 22 U.S. gauge by 7/8 inch. Each tie shall be spaced not more than 32" o.c. horizontally and 24" o.c. vertically and shall support not more than 2.67 square feet of wall area. For townhouses in Seismic Design Category C and in wind areas of more than 30 pounds per square foot pressure, each tie shall support not more than 2 square feet of wall area.
Additional metal ties shall be provided around all wall openings greater than 16 inches (406 mm) in either dimension. Metal ties around the perimeter of openings shall be spaced not more than 3 feet (914mm) on center and placed within 12 inches (305 mm) of the wall opening.
Per R103.2 - One layer of No. 15 asphalt felt or other approved water-resistant barrier shall be provided behind brick.
Per Table R103.B.4 - Provide minimum 1-inch air space between brick veneer and sheathing.
Per R103.B.6 - Provide minimum 3/16" diameter weep holes at 33" on center maximum, located immediately above the flashing.
Per R103.B.5 - When veneer of brick, clay tile, concrete, or natural or artificial stone are used, 6 mil plastic flashing shall be attached to the sheathing wherever necessary to prevent moisture penetration behind the veneer. See NVR Flashing Details.
19. Porch slab and exterior concrete work shall be nominal 4" minimum #3500 air entrained concrete w/ 6x6 #10 WLM unless otherwise noted as specified by engineering.
20. Block foundation walls may be substituted for poured foundation walls shown on foundation plans provided all requirements of Section R404 are met.
21. Termites treatment provided below slabs or to framing members per R318.1.

FOUNDATION WALL DESIGN (C)

NCRBC PRESCRIPTIVE CODE OR ENGINEERED DESIGN PER ACI 318.2

Table with 5 columns: WALL HEIGHT, WALL THICKNESS, LATERAL SOIL LOAD (q), UNBALANCED FILL, VERTICAL REINFORCING (b), HORIZONTAL REINFORCING (b). Rows for 6'-0", 8'-0", 10'-0", 8'-0", 10'-0", 9'-0", 10'-0".

NOTE: BACKFILLING OF THE FOUNDATION SHALL NOT TAKE PLACE BEFORE THE BASEMENT SLAB IS IN PLACE AND THE FLOOR FRAMING IS ERECTED OR UNLESS WALLS ARE ADEQUATELY BRACED.

- a. SOIL CLASSES SM, SC, SH, SM-SC AND ML - 45 PSF
SOIL CLASSES SC, MH, ML-CL AND CL - 60 PSF
b. SPACINGS SHOWN IS BASED UPON Fy = 60,000 PSI
STEEL FOR Fy = 40,000 PSI STEEL, REDUCE SPACINGS BY 0.67
c. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI
d. ENGINEERED DESIGN PER ACI 318-14, REQUIREMENTS FOR RESIDENTIAL CONCRETE CONSTRUCTION
e. FOR ALL WALL HEIGHTS, ONE HORIZONTAL BAR SHALL BE LOCATED WITHIN THE TOP 24", ONE IN THE BOTTOM 24" WITH THE REMAINING BARS EQUALLY SPACED. MAINTAIN 2" OF CONCRETE COVER BETWEEN INSIDE FACE OF WALL AND FACE OF HORIZONTAL BARS.
f. ONE BAR WITHIN 12" OF TOP AND AT MID-HEIGHT OF WALL PER TABLE R404.1.2(1).
g. ONE BAR WITHIN 12" OF TOP AND ONE EACH AT THIRD POINT OF WALL HEIGHT PER TABLE 404.1.2(1).

PLANS

- 1. Habitable attics and sleeping rooms shall have a window or door as a second means of egress that shall be minimum 5.7 sq. ft. openable area (5.0 sq. ft. if at grade level) with maximum sill height 44" above finish floor (min. hgt. 24", min. width 20") per R310.1.1.
2. All emergency escape and rescue openings shall have a minimum net clear openable area of 4 sq ft. The minimum net clear opening height shall be 22" and a minimum net clear opening width of 20". Emergency escape and rescue openings must have a minimum total glazing area of not less than 5 sq ft in the case of a ground window and not less than 5.7 sq ft in the case of an upper story window per R310.2.1. Window wells where required, shall be installed per R310.2.3 with a minimum of 4 sq ft and a minimum horizontal projection and width of 36". Wells with a greater depth of 44" shall have permanently affixed ladder or steps per R310.2.3.1.
3. Clear opening heights for exterior doors to be 6'-6" minimum per R311.2. All interior doors providing egress from habitable rooms shall have nominal minimum dimensions of 2'-6" by 6'-8" per R311.6.1. Habitable rooms with double doors less than 5'-0" in total width (less than 2'-6" per door slab) shall have a total opening width of at least 2'-6" with no slide bolts or locking devices installed on either door.
4. Sliding glass drs/patio drs/wds must be safety glazed per R306.4.
5. Interior stairway shall have minimum head room of 6'-8" per R311.7.2 and minimum tread depth of 9" and maximum riser height of 6 1/4". Handrails are required for stairs with four or more risers and shall have minimum height of 34" and maximum height of 38" above treads and landings. Handrail to have maximum 4 1/2" projection into width of stair per Section R311.7. Enclosed accessible space under stairs shall have walls, under stair surface and any soffits protected on the enclosed side with 1/2" gypsum board per R302.1.
6. Guard rails to have minimum height of 36" and shall not have openings from the walking surface to the required guard height which allow passage of a sphere 4 inches in diameter per R312.
7. The triangular openings at the open side of stair, formed by the riser, tread and bottom rail of a guard, shall not allow passage of a sphere 6 inches (153 mm) in diameter per R312.1.3.
8. Where exterior landings or floors serving the required egress door are not at grade, they shall be provided with access to grade by means of a a stairway in accordance with Section R311.7 (see item #5 above) or a ramp in accordance with Section R311.8.
9. Handrails shall be installed on exterior stairs having (4) or more risers per R311.7.6. Guards shall be installed at exterior porches / decks that are located more than 30 inches (762 mm) measured vertically to the floor or grade below at any point within 36 inches (914 mm) horizontally to the edge of the open side. Insect screening shall not be considered as a guard.
10. All flashing used (including at windows, doors, and with stone or masonry veneer) shall be corrosion-resistant per R103.4. See NVR Flashing Details.
11. Wood framed walls assumed to be 2 x 4 stud construction unless otherwise noted on plans. Bearing walls shall have studs spaced at 16" o.c. maximum per Table R602.3(3) and Table R602.3(5).
12. All exterior sheathing to be structural sheathing designed in accordance with R602.10.
13. An approved water-resistant barrier shall be applied over sheathing of exterior walls per Section R103.2.
14. Interior sheathing shall be 1/2" gypsum wall board unless otherwise noted. Exceptions may include, but are not limited to, special requirements for wall bracing and fire separation.
15. Screw fastening is typical for gypsum installation and nailing will only be permitted at the perimeter of the board.
• All screws shall be corrosion-resistant Type #1-1/4" drywall screws.

SCREW FASTENING SCHEDULE table with columns: Framing Spacing, Nails, WITH ADHESIVE, WITHOUT ADHESIVE.

- For 1/2" wallboard, nails shall be 1-1/4" long, 1/4" head and .098 diameter shanks with annular ring or acceptable equivalent and comply with ASTM C514.
• For 5/8" wallboard, nails shall be 1-3/8" long, 1/4" head and .098 diameter shanks.
17. Garages shall be completely separated from the residence and attic area by not less than 1/2" gypsum board applied to the garage side. Garages beneath habitable rooms shall be separated from all habitable rooms above by not less than 5/8" type X gyp. board. Where a structure is supporting a floor-ceiling assembly due to living space above the garage, the structure shall also be protected by not less than 1/2" gypsum board per Section R302.6. Openings and penetrations through the separation shall be protected by sealing the area around the penetration per Section R302.5. The garage door shall be a 20-minute fire-rated door and be equipped with a self-closing device installed per Section R302.5.1.
18. Asphalt shingles shall be installed per section R405.2. For roof slopes of 2:12 through 4:12, in lieu of two layers of underlayment, a self-adhering polymer-modified bitumen underlayment shall be used per R405.1.1 Exception #1.
19. Attic spaces shall be ventilated w/ ridge and soffit vents unless otherwise noted. Venting provided per R306.2.
20. Fireblocking shall be installed between ceiling and floor openings per R302.11. Draftstopping to be installed in accordance with R302.12.
21. Water closet, lavatory or bidet shall not be set closer than 15 inches from its center to any side wall, partition or vanity or closer than 30 inches center-to-center between adjacent fixtures. There shall be a clearance of not less than 21 inches in front of the water closet, lavatory or bidet to any wall, fixture or door per P2105.1
22. Heating and cooling equipment installation shall be in accordance with IRC Chapter 14 and the International Mechanical Code.
23. Mechanical fireplaces shall be installed per Section R1004 and 1005.
24. Single family attached structures to have 2-hour dwelling unit separation wall continuous to roof deck. Roofing material to be minimum class 'C' over approved fire retardant wood decking extending 4' each side of dwelling unit separation wall per R302.2 and R302.3.
25. Untreated wood shall be minimum 8" above finish grade per R311.1 Item #2.
26. Bottom plates on slabs and any wood in contact w/ concrete or masonry to be pressure treated material per Section R311.
27. Exterior egress swing doors shall open onto a landing not more than 8 1/4" below the top of the threshold when door swings in and 1 1/2" below the top of the threshold when the door swings out. The landing shall extend a minimum of 36" in the direction of travel and be at least the width of the doorway served per R311.3.
28. Air exhaust and intake openings that terminate outdoors shall be protected with corrosion-resistant screens, louvers, or grills having a min. opening size of 1/4" and maximum of 1/2" in any dimension per R303.6.
29. Fasteners and connectors for pressure preservative-treated wood shall be hot-dipped galvanized steel.
30. Windows that have an operable opening more than 72" above finished grade or surface below, the lowest part of the clear opening of the window shall be a minimum of 24" above the finished floor of the room in which the window is located. Glazing between the floor and 24" shall be fixed or have openings through which a 4" dia. sphere cannot pass per Section R312.2.
31. The final grade shall fall a minimum of 6 inches within the first 10 feet of the foundation per R401.3.
32. One- and two-family dwelling construction (R302.1.1):
Vinyl or aluminum soffit material shall be securely attached to framing members and use an underlayment material of either fire retardant treated wood, 3/4-inch wood sheathing or 5/8-inch gypsum board. Venting requirements shall apply to both soffit and underlayment. Vents shall be nominal 2-inch continuous or equivalent intermittent and shall not exceed the minimum net free air requirements of Section R306.2 by more than 50%. Vents in soffit are not allowed within 4 feet of fire walls or property lines per R302.2.5 and R302.2.6.
33. 1-hour fire-rated construction required on projections within 2' to 3' of lot line per R302.1. No projections allowed within 2' of property line.
1-hour fire-rated construction required on townhouse eaves within 3' of the property line.
Note: Single Family Detached product will NOT be built within 3' of the property line.
34. Wall bracing is designed in compliance with Section R602.10. When wall bracing is beyond the criteria for a prescriptive approach, the structure is analyzed utilizing engineering in compliance with the North Carolina Building Code (NCBC). Refer to house-specific wall bracing detail sheets and wall bracing standard details. Adhesive attachment of wall sheathing, including Method GB, shall not be permitted in Seismic Design Category C.
35. Minimum floor sheathing shall be 5/8" tongue & groove decking underlayment grade plugged and sanded, exterior glue, glued and nailed on joists to meet. "American Plywood Association" approved glued floor system, unless otherwise specified.

ELECTRICAL

- 1. Ground-fault and arc-fault circuit interrupter protection is provided per NFPA 70 (National Electric Code).
2. Electric panel box installation to be in accordance with NFPA 70, Article 408 Section III. Location may vary by design.
3. Approved smoke detectors shall be installed in each sleeping room; outside each separate sleeping area in the immediate vicinity of the bedrooms and on each additional story of the dwelling, including basements and habitable attics not including crawl spaces and uninhabitable attics. Where more than one smoke detector is required, the devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual unit. All smoke detectors shall receive their primary power from the building wiring and be equipped with a battery backup.
4. Unless listed for installation in such locations, smoke detectors shall be installed at least 10 feet from a cooking appliance, at least 3 feet from the door to a bathroom containing a tub or shower, at least 3 feet from forced air supply registers, and at least 3 feet from the tip of a ceiling fan blade. In sleeping rooms, smoke detectors should be located in the vicinity of the room entrance. They shall be installed at the highest portion of the ceiling (including tray or coffered ceilings) or within 12 inches vertically from the highest point in rooms with sloped ceilings.
5. Interior stairs shall be provided with an artificial light source in the vicinity of each landing or directly over each stair section and capable of illuminating treads and landings to a level not less than 1fc measured at the center of the tread or landing per R303.1.
6. Outlets within 6' of a sink must be GFI protected.
7. An approved carbon monoxide alarm shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms. Where a fuel-burning appliance is located within a bedroom or its attached bathroom, a carbon monoxide alarm shall be installed within the bedroom, R315.3.
8. Outlets installed in laundry areas must be GFI protected.



REMARKS table with columns: REV. NO., DATE, DESCRIPTION. Includes code updates for 2018 NCRBC and MBT - UPDATED ENERGY NOTES.

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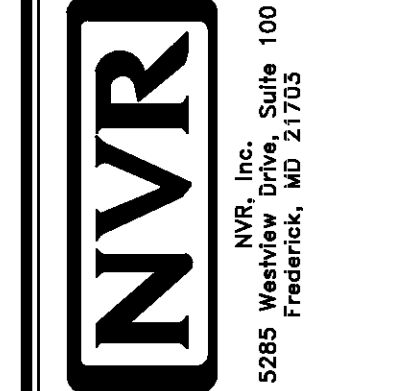
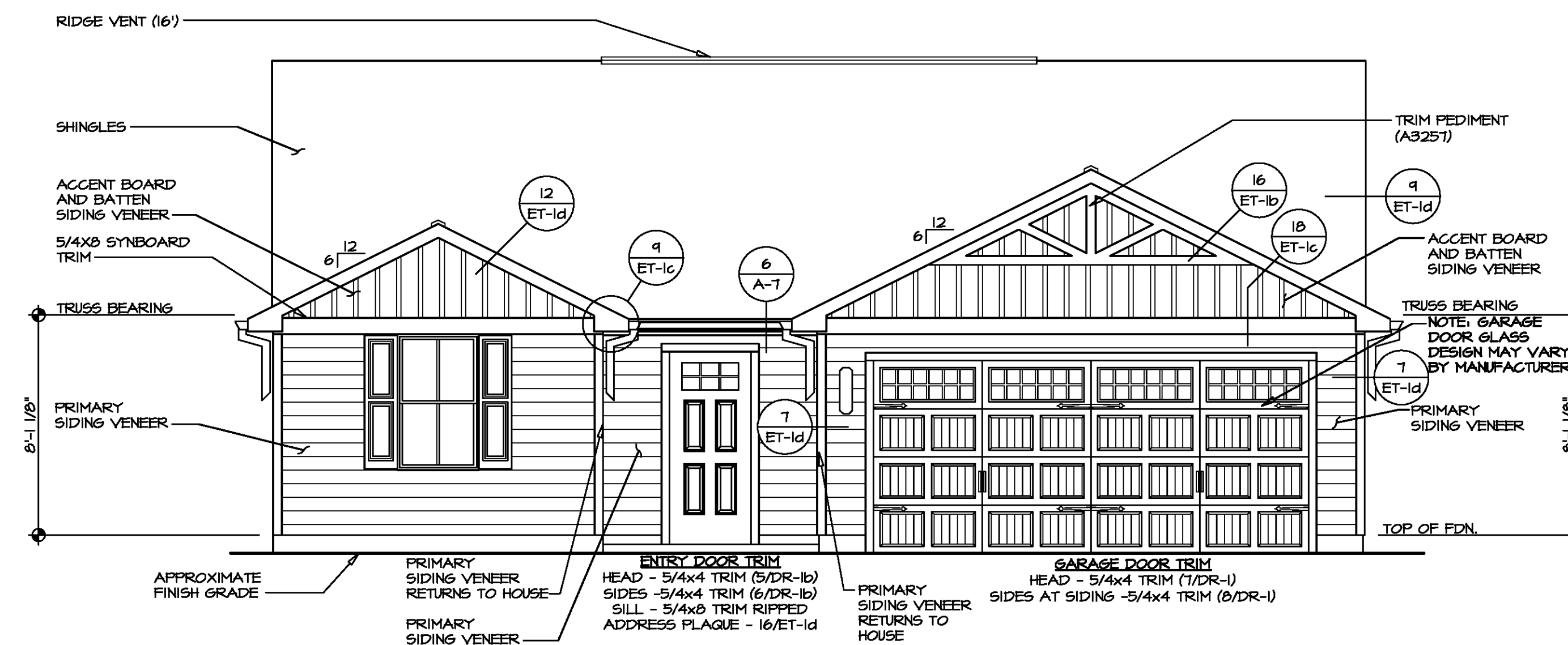
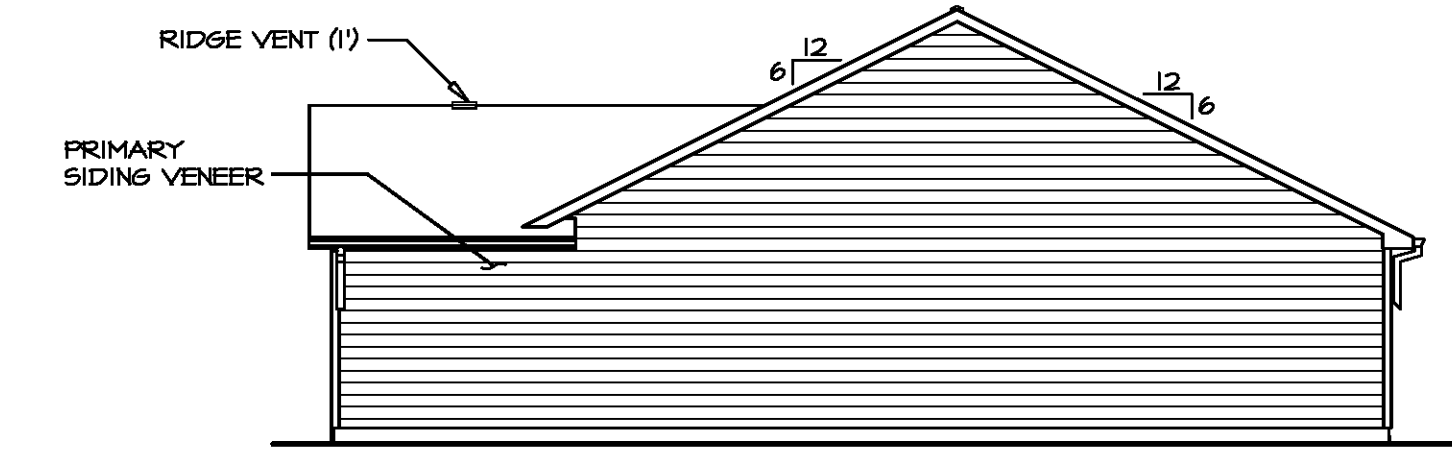


Table with columns: SHEET NO., MODEL, DRAWING TITLE, DRAWN BY, DATE, OPTION. Includes title 'NCRBC 2018 SPEC SHEET' and 'SINGLE FAMILY ATTACHED SINGLE FAMILY DETACHED'.

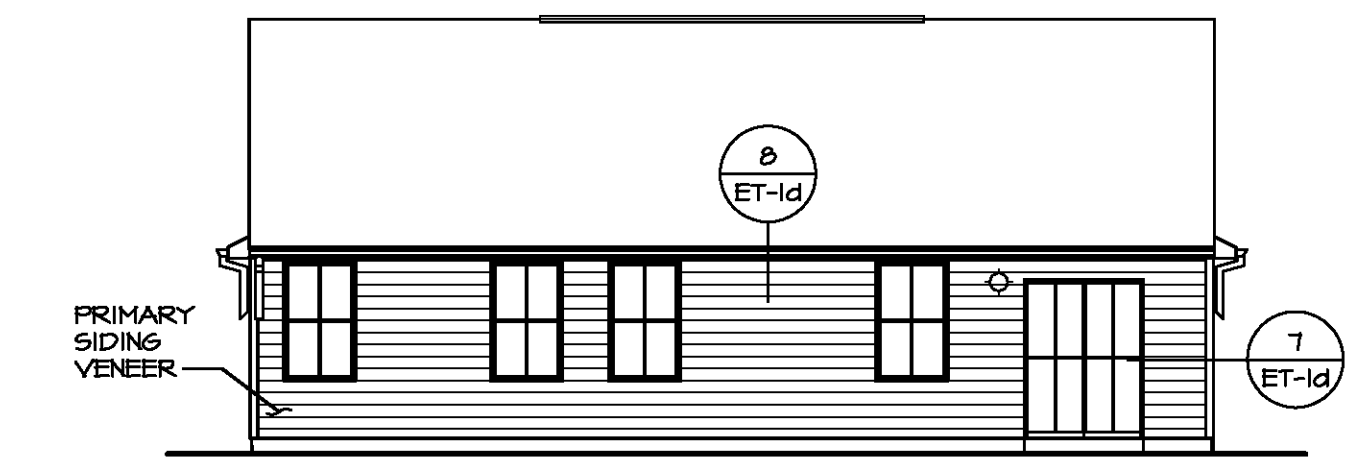




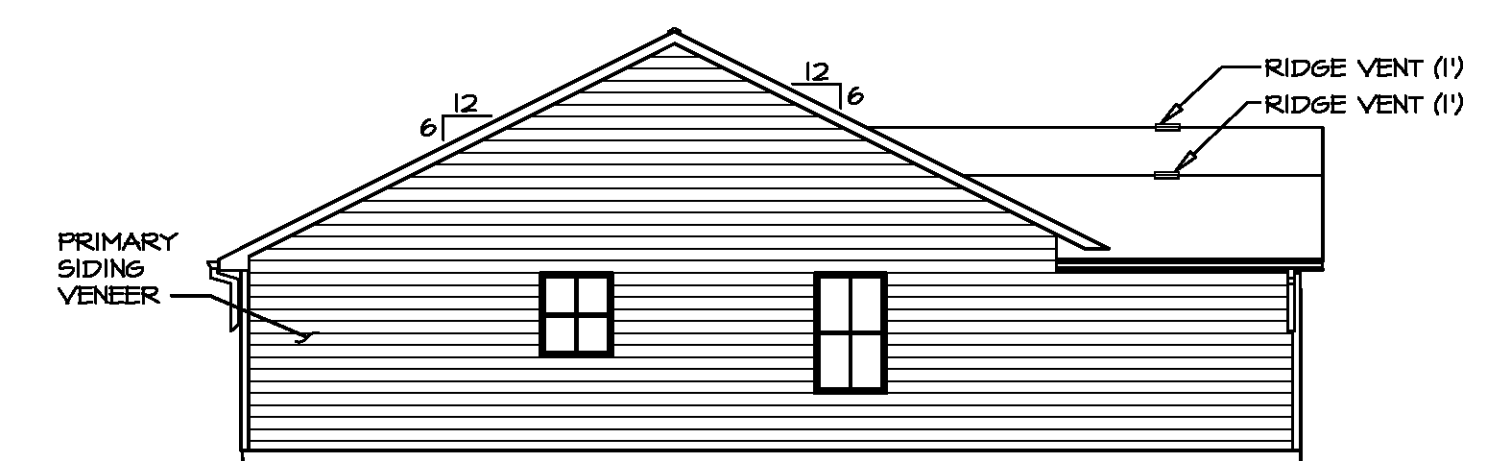
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 SCALE: 1/4" = 1'-0"



**2 RIGHT SIDE ELEVATION**  
 SCALE: 1/8" = 1'-0"



**3 REAR ELEVATION**  
 SCALE: 1/8" = 1'-0"

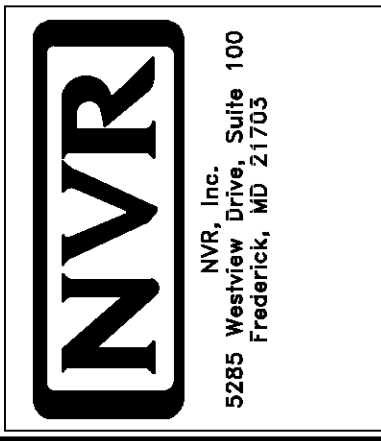


**4 LEFT SIDE ELEVATION**  
 SCALE: 1/8" = 1'-0"



DIV.-COMM-LOT-UNIT  
 COMM-LOT  
 STREET ADDRESS  
 CITY  
 STATE  
 APT. NO.  
 ZIP

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SET NO. SPC00  
 VERSION 01  
 DRAWN BY SGA  
 DATE: 1/12/15  
 OPTION FSN, FSA

MODEL SPRUCE  
 DRAWING TITLE FRONT, SIDE AND REAR ELEVATIONS  
 OPTION DESCRIPTION MONOLITHIC SLAB FOUNDATION  
 SHEET NO. A-1  
 2



NVR - Business Use Only



**ROOF VENTILATION CALCULATIONS**

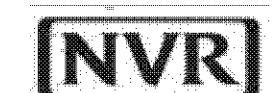
HOUSE NAME	SPRUCE
HOUSE VERSION	SPC00-01
PRODUCT LINE	RYANHOMES
VENTILATION VALUES	SDR17: 5.0 sq ft of vent per ft. RDR2: 16 sq ft of vent per ft. RDR1 / Double Vents: 65 sq ft of vent per vent.

USER GUIDE	Y13	Any?	Any?	VENT OK	No action req'd.
	NO	YES		OK VENT OK	No action req'd.
	NO	YES		OK VENT FAIL	Increase ridge.
	NO	YES		HIGH FAIL	Decrease ridge.
	NO	NO	Any?	FAIL	Increase total vent.

All Elevations (Full Basement Foundation "FBA")													
Location / Options	Area (A) (sq ft)	Required A/150 (sq ft)	Required A/300 (sq ft)	6-0ft (ft)	6-0ft Vent (sq ft)	Ridge (ft)	Ridge Vent (sq ft)	Upper Slope / Gable Vent (sq ft)	Lower Slope / Gable Vent (sq ft)	TOTAL (sq ft)	OK A/150	A/300 % vent at ridge	Notes
Main House Roof	2038.04	1359.36	679.68	48	473.04	38	206.00			1718.08	NO	23.7%	OK
Left Side of House over Bedroom 3	1381.41	921.61	460.80	35	348.00	1	18.00			1066.80	YES	N/A	N/A
Right Side of House over Garage	948.60	632.40	316.20	23	227.40	1	18.00			248.70	YES	N/A	N/A

All Elevations (Crawl and Slab Foundation "FCA and FSA")													
Location / Options	Area (A) (sq ft)	Required A/150 (sq ft)	Required A/300 (sq ft)	6-0ft (ft)	6-0ft Vent (sq ft)	Ridge (ft)	Ridge Vent (sq ft)	Upper Slope / Gable Vent (sq ft)	Lower Slope / Gable Vent (sq ft)	TOTAL (sq ft)	OK A/150	A/300 % vent at ridge	Notes
Main House Roof	2038.04	1359.36	679.68	48	473.04	38	206.00			1718.08	NO	23.7%	OK
Left Side of House over Bedroom 3	1381.41	921.61	460.80	35	348.00	1	18.00			1066.80	YES	N/A	N/A
Right Side of House over Garage	948.60	632.40	316.20	23	227.40	1	18.00			248.70	YES	N/A	N/A

NVR - Business Use Only



Version 2.0  
(Last Revised 04/26/19)

**HOUSE VOLUME CALCULATIONS**

HOUSE NAME	SPRUCE
HOUSE VERSION	SPC00-01
PRODUCT LINE	RYANHOMES

Note: The volume of the structure has been computed in accordance with "Title 5, of the Community Affairs, Chapter 23. Uniform Construction Code, Subchapter 2. Administration and enforcement: Process." (5)23-2.28. Volume computation)

ALL ELEVATIONS W/ FULL BASEMENT "FBA"			
Location / Area of house	Floor Area (sq. ft.)	Mean height (ft.)	Total volume (cu. Ft.)
Main section of the house	1440.00	12.57	18105
Gable left of the house	96.00	9.49	911
Garage bump out from main house	240.01	10.53	2526
			<b>Total House Volume 21542</b>

ALL ELEVATIONS W/ CRAWL SPACE "FCA", SLAB FOUNDATION "FSA"			
Location / Area of house	Floor Area (sq. ft.)	Mean height (ft.)	Total volume (cu. Ft.)
Main section of the house	1440.00	12.57	18105
Gable left of the house	96.00	9.49	911
Garage bump out from main house	160.01	10.53	1684
			<b>Total House Volume 20700</b>

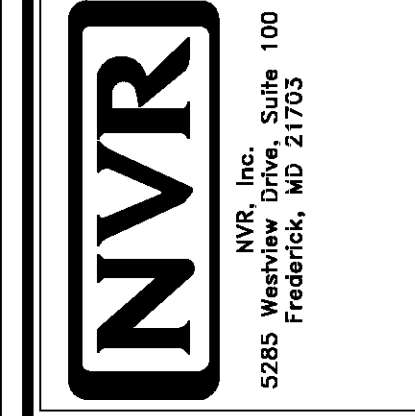
Additional areas of volume to be added to total house volume as needed			
Location / Area of house / option	Floor Area (sq. ft.)	Mean height (ft.)	Total volume (cu. Ft.)
Full Basement "FBA"	1376.61	8.61	11859
Crawl Spaces "FCA"	1308.15	0.80	1047

DIV-COMM-LOT-UNIT

COMM-LOT  
STREET ADDRESS  
CITY

APT. NO.  
STATE  
ZIP

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SET NO. SPC00  
VERSION 01  
DRAWN BY ZDM  
DATE: 6/7/14  
OPTION

MODEL SPRUCE  
DRAWING TITLE ROOF VENT CALCULATIONS  
VOLUME CALCULATIONS  
OPTION DESCRIPTION



PAD FOOTING SCHEDULE					
IDENTIFIER	LENGTH	WIDTH	HEIGHT	ENG. NUM.	REMARKS
FOOT	10'-0"	1'-4"	0'-8"		

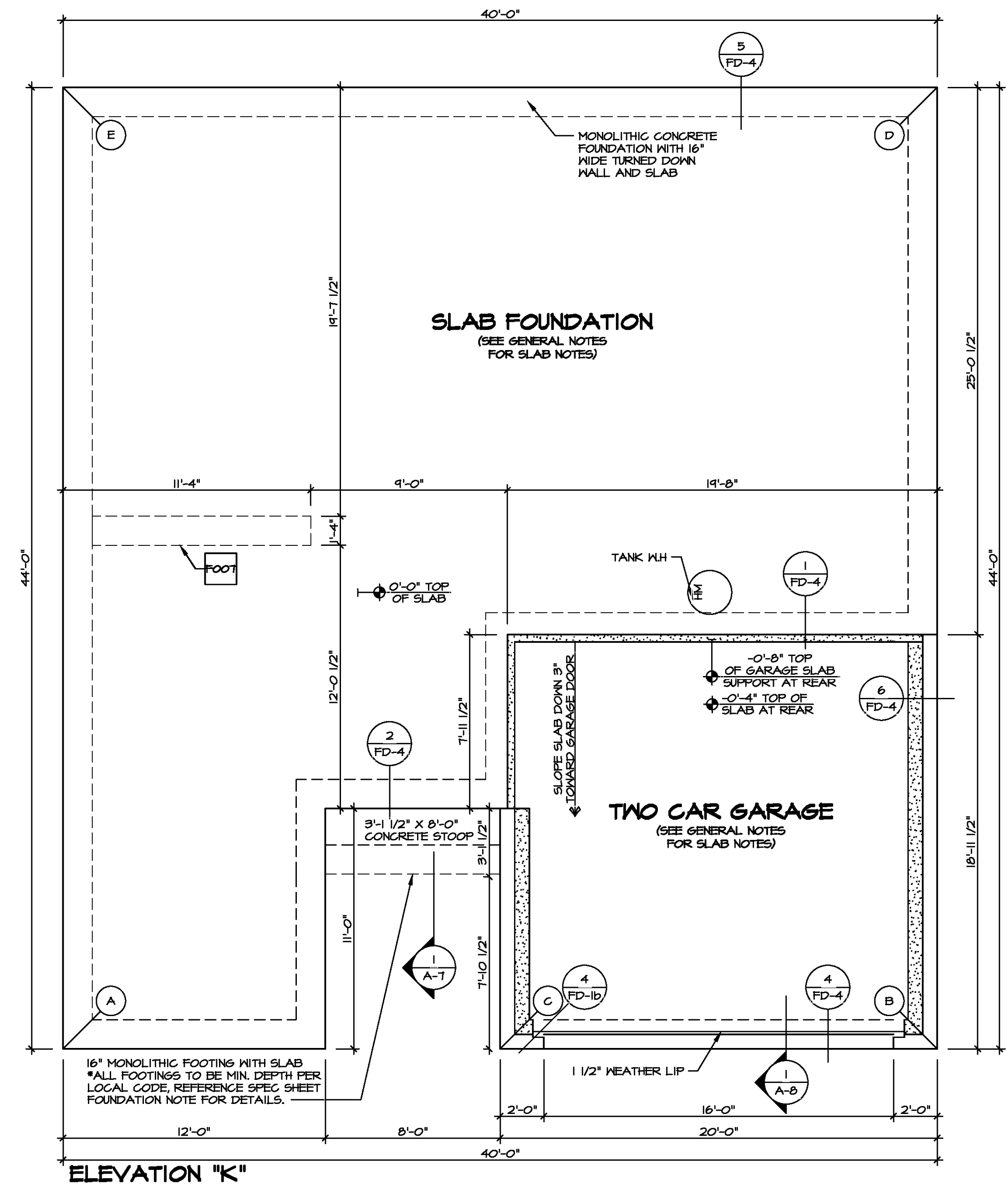
FOUNDATION DIAGONALS					
A			B		
A	0"	A	40'-0"		
B	40'-0"	B	0"		
C	20'-0"	C	20'-0"		
D	59'-5 9/16"	D	44'-0"		
E	44'-0"	E	59'-5 9/16"		

- FOUNDATION NOTES - SLAB**
- FOUNDATION UNDER HABITABLE SPACE:
    - CONCRETE SLAB ON 6 MIL VAPOR BARRIER OVER SUB-BASE (SEE SPEC SHEET FOR SLAB NOTES)
  - FOUNDATION UNDER GARAGE:
    - UNEXCAVATED WITH CONCRETE SLAB ON VAPOR BARRIER OVER SUB-BASE (SEE SPEC SHEET FOR SLAB NOTES)
  - SEE SHEET (A-4) FOR FOUNDATION CONNECTION INFORMATION.
  - SLAB LEDGE LOCATIONS VARY W/ GRADE BEAM(S) ORIENTATION. SEE GB-1 FOR DETAILS.

**LEGEND**

	BEARING WALL
	NON BEARING WALL
	INDICATES BEARING FROM POINT-LOAD ABOVE
	JACKS
	BEAM/HEADER
	PAD FOOTING
	STEEL COLUMN
	PORTAL FRAME
	JOIST/TRUSS
	LVL
	ENGINEERING PAGE NUMBER

SEE FC DETAILS FOR FRAMING CONNECTORS



**FOUNDATION PLAN**  
SCALE: 1/4" = 1'-0"

DIV-COMM-LOT-UNIT

COM-LOT

STREET ADDRESS

CITY STATE ZIP

APT. NO.

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**NVR**  
NVR, Inc. Suite 100  
Frederick, MD 21703

MODEL: SPRUCE

DRAWING TITLE: FOUNDATION PLAN

OPTION DESCRIPTION: 3

SET NO. SPC00

VERSION 01

DRAWN BY

DATE:

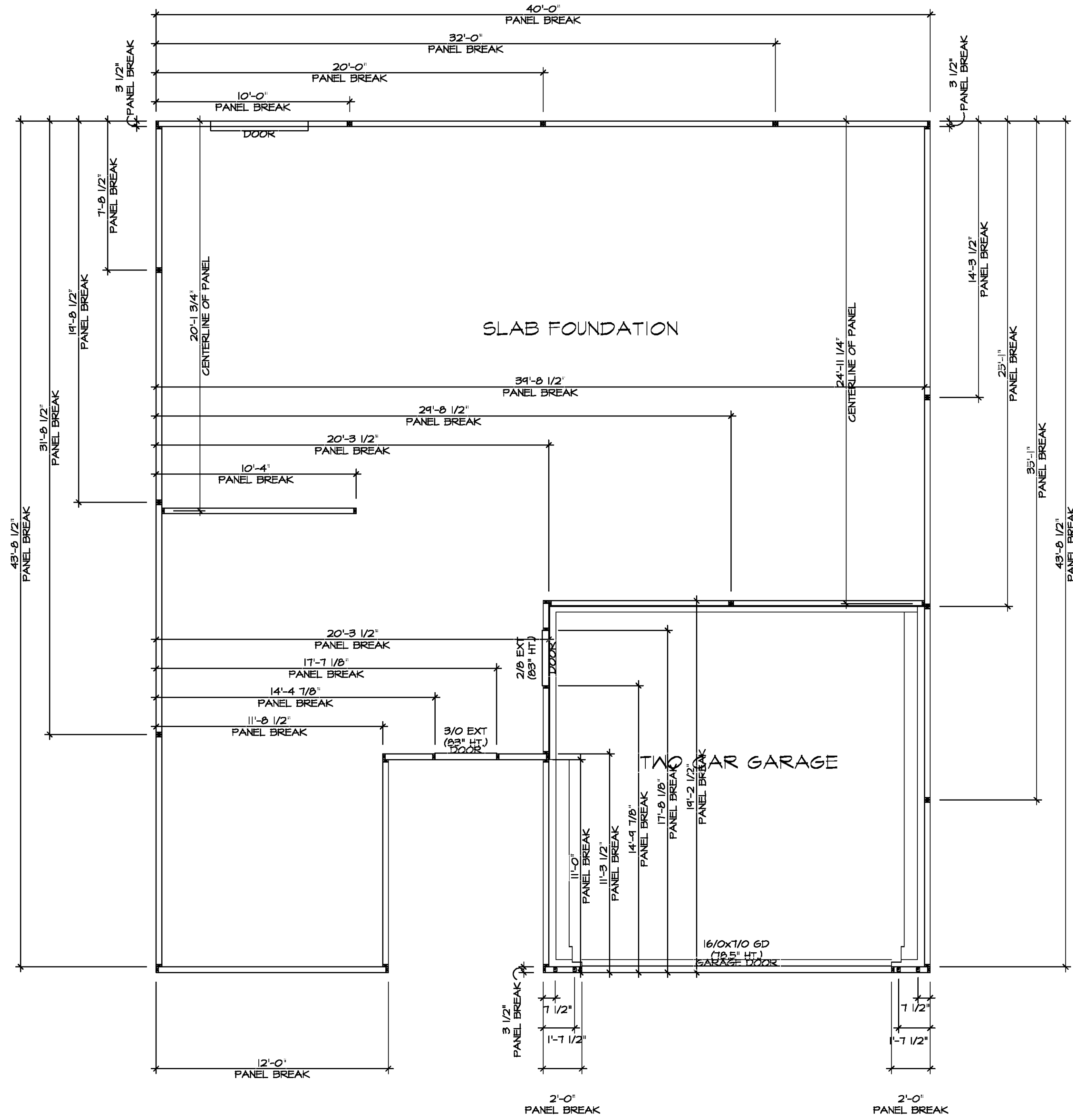
OPTION

SHEET NO. A-2

3

VA-15-Std12-15b\ASD\2020 Zoned\Half-Complete\PLAN\DETACHED\SPRUCE-SPC00-01\ELC\_P-06-008\3 A-2\_PDI\_LS (FSM).dwg 09/08/20 - 9:37 am





**FOUNDATION HOLD DOWN DETAILS**

SCALE: 1/4" = 1'-0"

HOLD DOWN NOTES	
REFER TO DETAIL (9/FD-1) FOR HOLD DOWN OFFSET DIMENSIONS. REFER TO DETAIL (12/FD-1) FOR HOLD DOWNS ON CMU BLOCK.	
STRAP	<ol style="list-style-type: none"> <li>ALL PANELS GREATER THAN 24' SHALL HAVE AN ANCHOR WITHIN 12" OF THE PANEL BREAKS / ENDS. (SEE DETAIL SHEET F1-1 FOR MORE INFORMATION ON ANCHOR DETAILS)</li> <li>STRAP,             <ol style="list-style-type: none"> <li>ON FOUNDATION USE (5THD14)</li> <li>ON FLOOR SYSTEM USE (5THD14R)</li> </ol> </li> <li>ALL OTHER HOLD DOWN SEE DETAIL (10-2) FOR MORE INFORMATION.</li> <li>STRAP LOCATION ON PLANS SHOWN BY DASHED DIMENSION TO CENTER OF STUDS</li> </ol> <p style="text-align: center;">OR</p>
BOLT	<ol style="list-style-type: none"> <li>5/8" THREADED ROD</li> <li>ALL OTHER HOLD DOWN SEE DETAIL (10-2) FOR MORE INFORMATION.</li> <li>BOLT LOCATION ON PLANS SHOWN BY SOLID DIMENSION TO CENTER OF BOLT</li> </ol>



DIV-COMM-LOT-UNIT

COMM-LOT

STREET ADDRESS

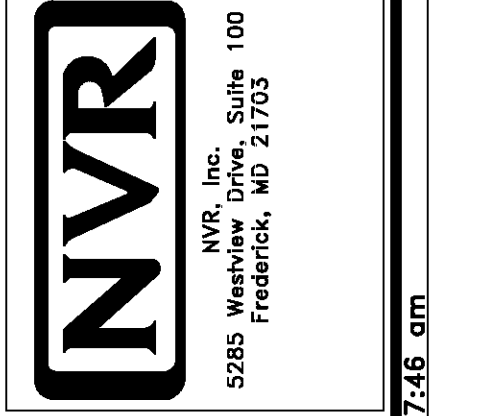
CITY

STATE

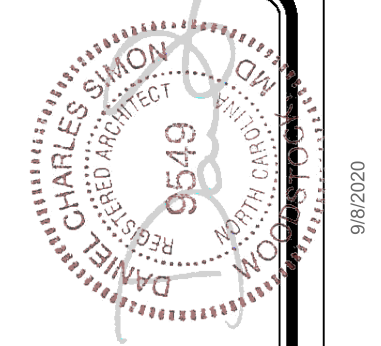
APT. NO.

ZIP

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MODEL	SPRUCE
DRAWING TITLE	FOUNDATION HOLD DOWN DETAILS
OPTION DESCRIPTION	
SHEET NO.	A-3
SET NO.	SPC00
VERSION	01
DRAWN BY	MBT
DATE	6/21/19
OPTION	
SHEET NO.	4

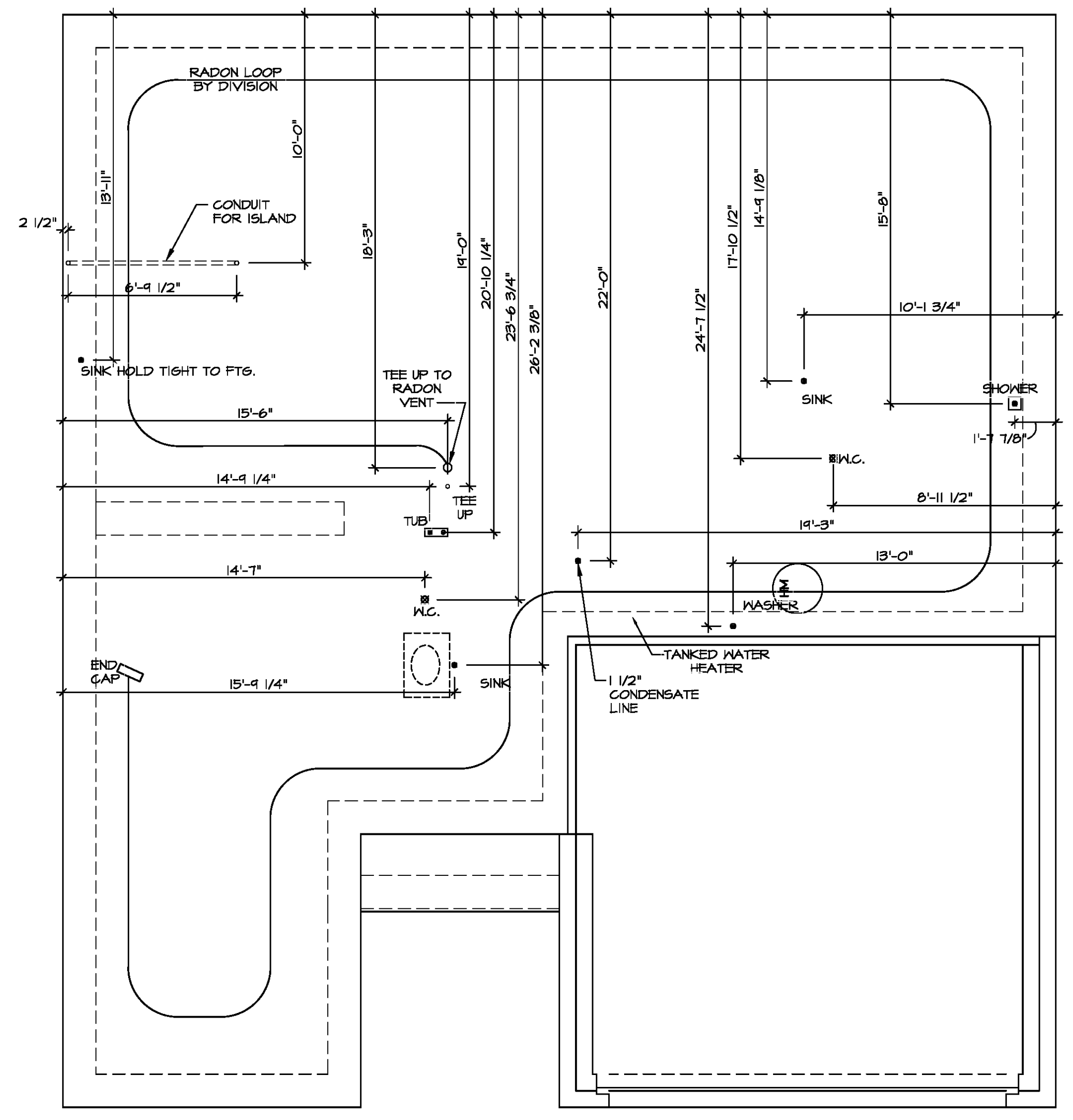


**NOTE**  
 RADON REMEDIATION  
**RADON LOOP:**

- (4") PERFORATED HDPE "LOOP"
- MUST BE PLACED IN STONE BED SLIGHTLY HIGHER THAN ANY INTERIOR DRAINTILE
- LOOP TO BE SEPARATE FROM ANY DRAINTILE ELEMENTS
- TO BE CORRUGATED HDPE PIPE
- SCREWS TO BE INSTALLED THROUGH LOOP AT TEE UP INTO STACK

**STACK REQUIREMENTS:**

- 3" PVC STACK (4" IF BASEMENT IS GREATER THAN 2200 SQFT.)
- NO PART OF STACK IS TO BE HORIZONTAL (45° ELBOWS PERMITTED AS REQUIRED)
- PIPE TO BE PHYSICALLY LABELED IN THE FIELD AS "RADON VENT" OR OTHER JURISDICTIONALLY REQUIRED LANGUAGE (ON EVERY LEVEL OF HOUSE)
- ROOF TERMINATION TO BE IN TOP 1/3 OF ROOF
- SCREEN OR VENT CAP INSTALLED TO KEEP PESTS OUT OF RADON VENT AT ROOF TERMINATION.



**PLUMBING PLAN**  
 SCALE: 1/4" = 1'-0"

MODEL <b>SPRUCE</b>	SET NO. SPC00	VERSION 01
	DRAWN BY RJC	DATE: 12/30/14
SHEET NO. <b>A-4</b>	DRAWING TITLE <b>PLUMBING PLAN</b>	
	OPTION DESCRIPTION	
DIV.-COMM-LOT-UNIT		COMM-LOT
STREET ADDRESS		APT. NO.
CITY		STATE
		ZIP
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<p>NVR, Inc.        5285 Westview Drive, Suite 100        Frederick, MD 21703</p>		
PROJECTS\RYAN\HOMES\SPRUCE_SPC00_01\Sheets\Lot_Specific\5 A-4_PLUMB_LS.dwg		08/02/20 - 7:51 am



FIRST FLOOR JACK SCHEDULE				
IDENTIFIER	DESCRIPTION	OPTIONS	ENG. NUM.	FIELD INSTALLED
J101	JACK - (3) 2X4 SFF STUD GRADE		1010	
J102	JACK - (3) 2X4 SFF STUD GRADE		1010	
J105	JACK - (3) 2X4 SFF STUD GRADE	FSA	1010	
J106	JACK - (3) 2X4 SFF STUD GRADE	FSA	1010	
J107	JACK - (2) 2X4 SFF STUD GRADE		1006	
J108	JACK - (2) 2X4 SFF STUD GRADE		1006	

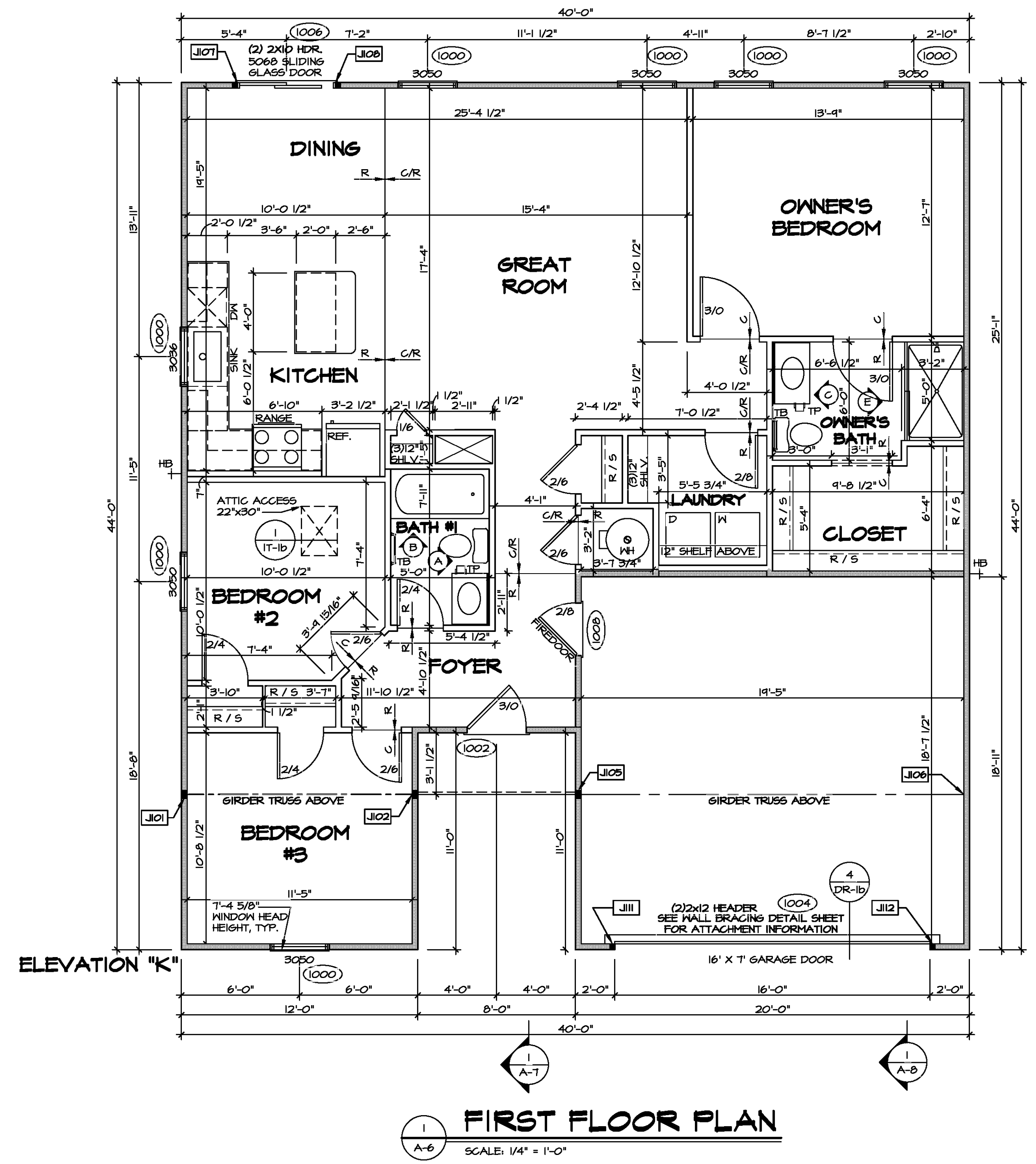
- FLOOR PLAN NOTES**
- ALL HEADERS ARE (2) 2x6 w/ 2x4 WALLS OR (3) 2x6 w/ 2x6 WALLS, UNLESS OTHERWISE NOTED.
  - ALL HEADERS TO HAVE (1) 2x4 OR 2x6 JACK AND KING STUD EACH END, UNLESS OTHERWISE NOTED.
  - ALL EXTERIOR WALLS TO BE 4" w/ OSB OR 3 1/2" w/ LAMINATED FIBROUS STRUCTURAL SHEATHING, ALL INTERIOR WALLS TO BE 3 1/2", UNLESS OTHERWISE NOTED.
  - HATCHED AREAS INDICATE DROPPED CEILINGS. ALL DROPPED CEILINGS ARE 12" UNLESS OTHERWISE NOTED.
  - SEE "BRACED WALL PANEL DETAIL SHEET" FOR SPECIAL WALL FRAMING LOCATIONS AND HEADER SIZES, IF APPLICABLE.
  - SEE STANDARD DETAIL CATEGORY "IT" SHEET(S) FOR INTERIOR TRIM DETAILS.
  - SEE ARCHITECTURAL DETAIL SHEET "AD" FOR HOUSE SPECIFIC INTERIOR TRIM OPTION TABLE.
  - ALL WINDOWS HAVE 7'-0 1/2" HEADER HEIGHT UNLESS OTHERWISE NOTED.
  - ALL HEADERS IN NON-BEARING WALLS SHALL BE A SINGLE FLAT 2X4 OR 2X6 ATTACHED TO GRIPPLIES ABOVE, UNLESS OTHERWISE NOTED.
  - TANKED WATER HEATER SHOWN AS BASE CONDITION, OPTIONAL TANKLESS WATER HEATER IS AVAILABLE IN LIEU OF TANKED WATER HEATER.

- GYPSUM NOTES**
- AT GARAGE:  
GYPSUM BOARD AT COMMON WALLS, CEILINGS, BEAM WRAPS AND SUPPORTS PER STANDARD DETAIL FA-1(b) FIRE ASSEMBLIES OR AS REQUIRED BY LOCAL CODE.
- AT STAIRS:  
1/2" GYPSUM BOARD AT UNDERSIDE OF STAIRS AND WALLS IN CLOSET

**LEGEND**

	BEARING WALL
	NON BEARING WALL
	INDICATES BEARING FROM POINT-LOAD ABOVE
	JACKS
	BEAMHEADER
	PAD FOOTING
	STEEL COLUMN
	PORTAL FRAME
	JOIST/TRUSS
	LVL
	ENGINEERING PAGE NUMBER

SEE FC DETAILS FOR FRAMING CONNECTORS



MODEL: SPRUCE  
DRAWING TITLE: FIRST FLOOR PLAN  
OPTION DESCRIPTION: 7

SET NO. SPC00  
VERSION 01  
DRAWN BY: SGA  
DATE: 12/14/14  
OPTION

SHEET NO. A-6

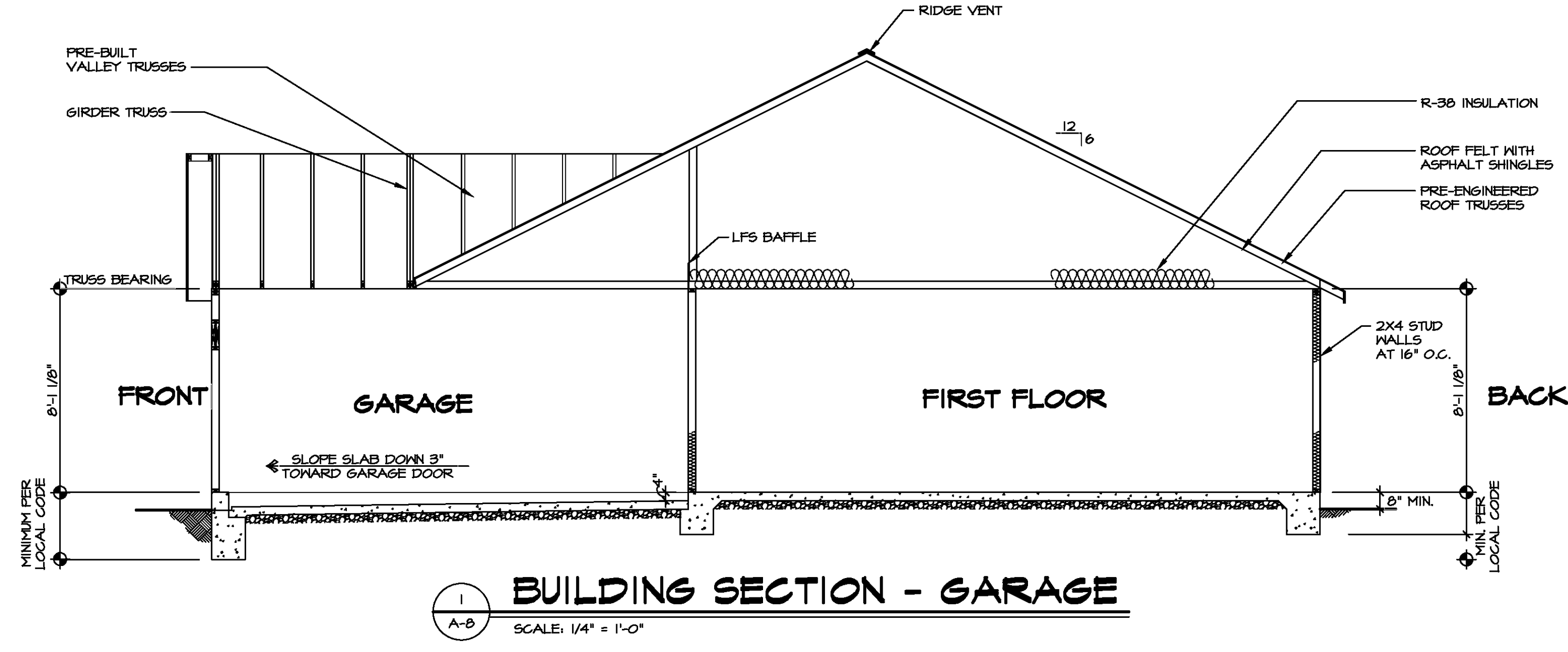
MODEL: SPRUCE  
DRAWING TITLE: FIRST FLOOR PLAN  
OPTION DESCRIPTION: 7

MODEL: SPRUCE  
DRAWING TITLE: FIRST FLOOR PLAN  
OPTION DESCRIPTION: 7

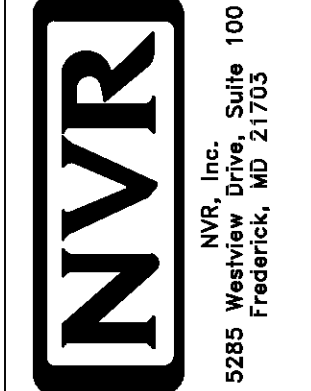
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SHEET NO. <b>A-8</b>	MODEL <b>SPRUCE</b>	SET NO. <b>SPC00</b>	VERSION <b>01</b>	
	DRAWING TITLE <b>BUILDING SECTION - GARAGE</b>	DRAWN BY <b>RJC</b>	DATE: <b>1/5/15</b>	DIV-COMM-LOT-UNIT COMM-LOT STREET ADDRESS CITY STATE ZIP
OPTION DESCRIPTION <b>9</b>	OPTION			© NVR, Inc. expressly reserves the right to modify or change the information in these plans. These plans are not to be reproduced, changed or altered in any way without the written consent of NVR, Inc.



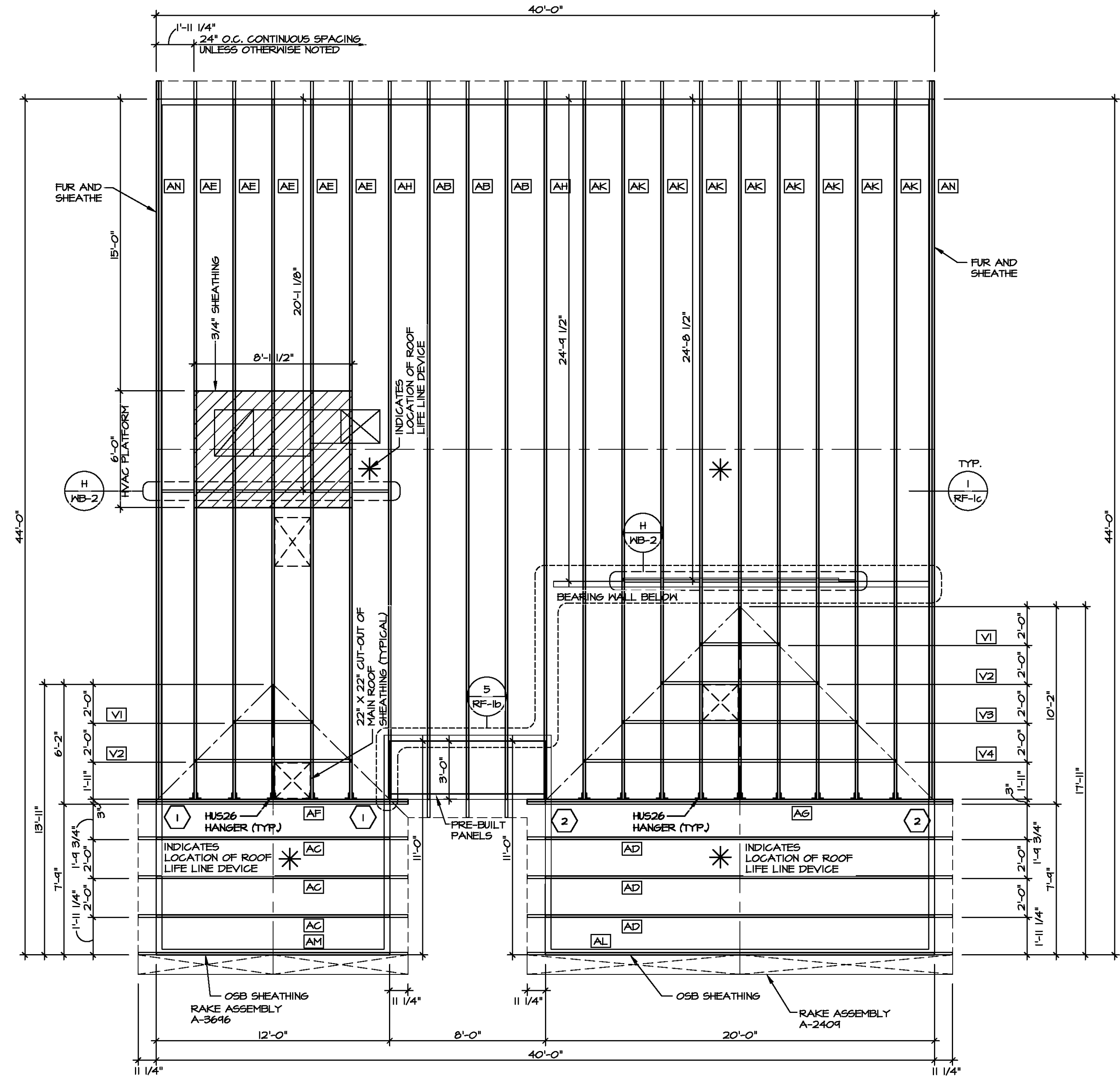




TRUSS SCHEDULE					
IDENTIFIER	SPECS	TRUSS NUMBER	LENGTH	ROOF PITCH (X/12)	TYPE
AB	SE	13134	36'-0"	6/12	COMMON
AC	SE	13140	12'-0"	6/12	COMMON
AD	SE	13141	20'-0"	6/12	COMMON
AE	SE	13142	36'-0"	6/12	COMMON
AF	SE	13143	12'-0"	6/12	GIRDER (2 PLY)
AG	SE	13144	20'-0"	6/12	GIRDER (2 PLY)
AH	SE	13147	36'-0"	6/12	COMMON
AK	SE	13144	36'-0"	6/12	COMMON
AL	SE	13174	20'-0"	6/12	GABLE END
AM	SE	13175	12'-0"	6/12	GABLE END
AN	SE	16412	36'-0"	6/12	COMMON
V1	VT	43344	4'-0"	6-6/12	VALLEY
V2	VT	43345	8'-0"	6-6/12	VALLEY
V3	VT	43346	12'-0"	6-6/12	VALLEY
V4	VT	43407	16'-0"	6-6/12	VALLEY

- ROOF FRAMING NOTES**
- REFER TO THE STANDARD DETAILS FOR THE FOLLOWING:
    - TRUSS TIE-DOWNS (1/RF-1)
    - PIGGYBACK TRUSS ATTACHMENT (2/RF-1)
    - VALLEY GABLE TRUSS BRACING (3/RF-1)
    - GABLE BRACING (1/RF-1c)
    - TRUSS BRACING (2/RF-1c)
    - LIFELINE ATTACHMENT (5/RF-1)
    - FALL PROTECTION ON PLATFORM TRUSSES (1/RF-1)
  - IF TRUSS DOES NOT APPEAR ON THE TRUSS BRACING SHEET, NO ADDITIONAL LATERAL BRACING REQUIRED.

- LEGEND**
- BEARING WALL
  - INDICATES BEARING FROM POINT-LOAD ABOVE JACKS
  - BEAM/HEADER
  - PAD FOOTING
  - STEEL COLUMN
  - TRUSS TIE DOWN
  - PORTAL FRAME
  - JOIST/TRUSS
  - LVL
  - ENGINEERING PAGE NUMBER
- SEE FC DETAILS FOR FRAMING CONNECTORS



**1**  
**5-2** **ROOF FRAMING**  
 SCALE: 1/4" = 1'-0"

DIV.-COMM.-LOT-UNIT

COM.-LOT

STREET ADDRESS

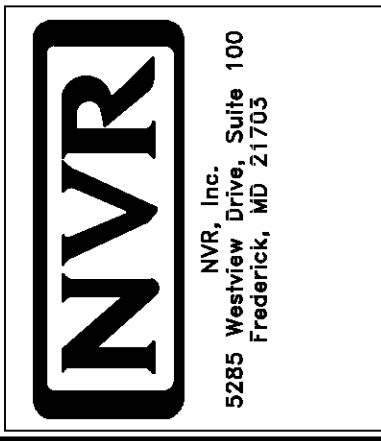
CITY

STATE

APT. NO.

ZIP

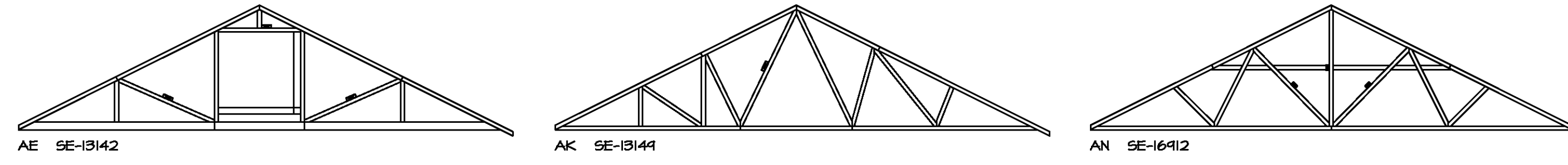
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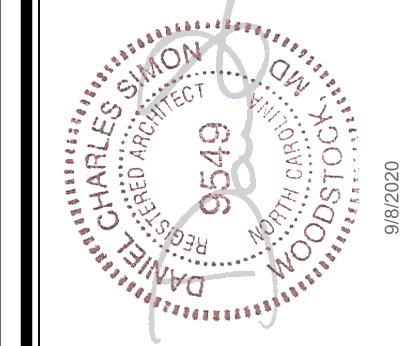
MODEL	SET NO. SPC00
DRAWING TITLE	VERSION 01
ROOF FRAMING	DRAWN BY MBT
OPTION DESCRIPTION	DATE: 6/19/14
	OPTION
SHEET NO.	16
	16

**TRUSS BRACING NOTES**

- IF TRUSS DOES NOT APPEAR ON THIS TRUSS BRACING SHEET, NO ADDITIONAL LATERAL BRACING IS REQUIRED.
- 1X6 SFF#2 LATERAL BRACES SHALL BE NAILED TO MINIMUM (3) TRUSS MEMBERS WITH MINIMUM (2) 10D NAILS. PROVISIONS MUST BE MADE AT ENDS OR SPECIFIED INTERVALS TO RESTRAIN OR ANCHOR LATERAL BRACING.
- WEB "T" BRACE, DETAIL 3/RF-1c, IS REQUIRED WHERE LATERAL BRACING IS NOT CONTINUOUS ACROSS THREE (3) OR MORE TRUSSES AND MAY BE USED IN LIEU OF 1X6 LATERAL BRACING.
- DIAGONAL BRACING REQUIRED WHEN LATERAL BRACING IS REQUIRED (1/RF-1)
- STUDDED GABLE BRACING DETAIL 1/RF-1c TO BE UTILIZED FOR TRUSSES 6'-4" IN HEIGHT OR GREATER.
- PARTIALLY SHEATHED GABLES, SEE 5/RF-1c FOR "L" BRACING WHEN REQUIRED.
- LATERAL BRACING CAN BE APPLIED TO EITHER SIDE OF THE WEB MEMBER IDENTIFIED IN THE DRAWING.
- SHEATHING (OSB OR GYPSUM) REPLACES LATERAL AND DIAGONAL TRUSS BRACING.

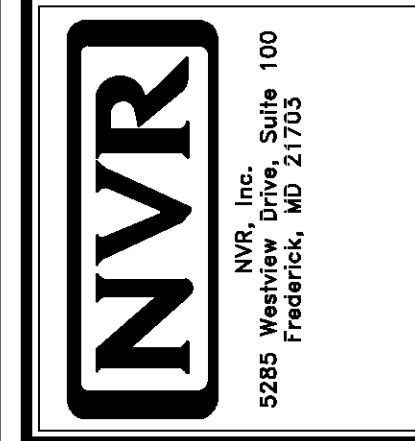


**TRUSS BRACING DETAILS**  
 SCALE: 1/8" = 1'-0"      SOUTHEAST TRUSS SPECIFICATIONS



DIV.-COMM-LOT-UNIT  
 ---  
 COMM-LOT  
 STREET ADDRESS  
 CITY STATE ZIP  
 APT. NO.

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SHEET NO.	MODEL	SET NO.	VERSION	DRAWN BY	DATE	OPTION
S-3	SFRUCE	01	01	MBT	6/19/14	
17	TRUSS BRACING DETAILS					
	OPTION DESCRIPTION					





BRACED WALL LINE SCHEDULE				
WIND SPEED (ULT)	IDENTIFIER	ACTUAL (FT)	REQUIRED (FT)	METHOD
130 MPH	BWL 100.00	10.00'	7.05'	CONTINUOUS (2 SIDES)
130 MPH	BWL 101.00	30.01'	8.61'	WSP (2 SIDES)
130 MPH	BWL 102.00	10.76'	10.71'	GB
130 MPH	BWL 103.00	31.74'	8.81'	WSP (2 SIDES)
130 MPH	BWL 104.00	16.13'	6.75'	WSP (2 SIDES)
130 MPH	BWL 105.00	22.00'	6.00'	WSP (2 SIDES)

**SHEATHING NOTE**  
 LAMINATED FIBROUS STRUCTURAL (LFS) SHEATHING MATERIAL SHALL BE INSTALLED ON ALL WALLS UNLESS OTHERWISE NOTED ON THE FLOOR PLAN. INSTALL IN ACCORDANCE WITH SECR1 TECHNICAL EVALUATION REPORT. STRUCTURAL PERFORMANCE UNDER LATERAL LOAD CONDITIONS IS DESIGNED. INSTALLATION SHALL BE PERFORMED IN ACCORDANCE WITH THE PROVISIONS FOR WOOD STRUCTURAL PANELS (WSP/CS-WSP) AS DEFINED IN THE APPROPRIATE TER SECTION.

**STRUCTURAL SHEATHING MATERIAL**

- OX THERMO-PLY TER NO. 1004-01
- BARRICADE THERMO-BRACE TER NO. 1507-08
- NSP DRYLINE TSX TER NO. 1407-06

**LEGEND**

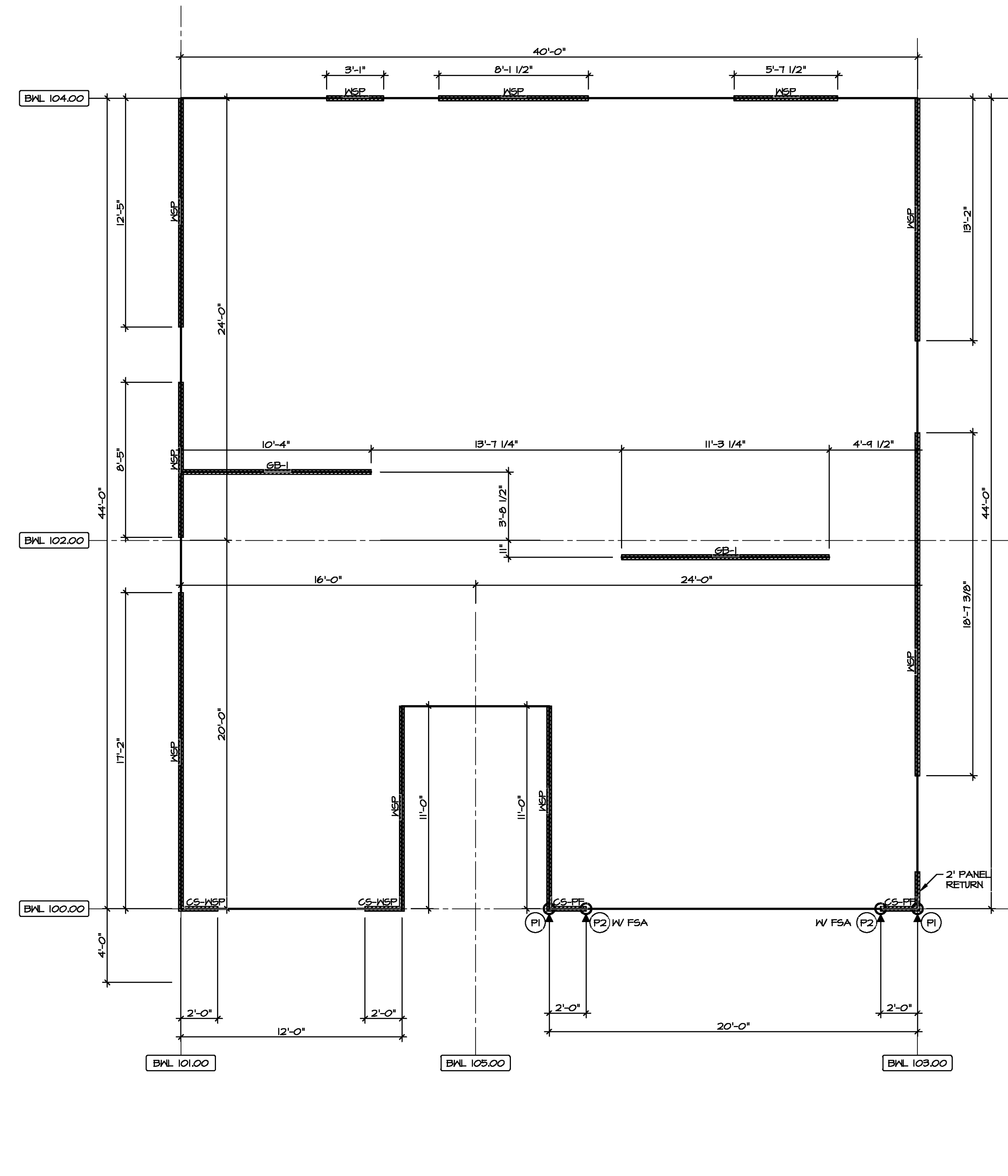
- BWL XXXXX BRACED WALL LINE I.D.
- BRACED WALL LINE
- HOUSE WALL
- BRACED WALL PANEL
- WSP WOOD STRUCTURAL PANEL
- GB GYPSUM BOARD (1) SIDED OR (2) SIDED
- GB-BW GYPSUM BOARD BLOCKED WALL CONSTRUCTION (1) SIDED OR (2) SIDED (SEE STANDARD DETAIL G/MB-2)
- LIB LET-IN BRACINGS (SEE STANDARD DETAIL F / MB-2)
- CS-WSP CONTINUOUS SHEATHING - WOOD STRUCTURAL PANEL
- CS-PF CONTINUOUS SHEATHING - PORTAL FRAME, SEE FLOOR PLANS FOR PORTAL FRAME HEADER INFORMATION (SEE STANDARD DETAIL A, C / MB-2)
- CS-G CONTINUOUS SHEATHING - WOOD STRUCTURAL PANEL ADJACENT TO GARAGE OPENINGS
- HOLD-DOWN  
1. SEE SHEET MB-2 "P" INDICATOR SCHEDULE AND DETAILS  
2. ARROW INDICATES LOCATION

**NOTES:**  
 HOUSE HAS BEEN ANALYZED UTILIZING A PRESCRIPTIVE METHOD IN COMPLIANCE WITH INTERNATIONAL RESIDENTIAL CODES (IRC) UNLESS OTHERWISE NOTED.

FASTENING SCHEDULE			
SHEATHING	FASTENER	SPACINGS	
		EDGES	FIELD
1/16" WOOD STRUCTURAL PANELS OR EQUIVALENT (WV METHOD WSP, CS-WSP, CS-G)	8d COMMON NAILS  ALTERNATIVE FASTENER 1-3/4" 16-GAUGE CORROSION RESISTANT STAPLES	6" O.C.	12" O.C.
1/2" GYPSUM WALLBOARD (WV METHOD GB-1, GB-2)	1-1/4" LONG, 1/4" HEAD, 0.08" DIA. ANNULAR-RINGED NAILS CORROSION RESISTANT TYPE W 1-1/4" DRYWALL SCREWS	7" O.C.	7" O.C.
LAMINATED FIBROUS STRUCTURAL SHEATHING	10d X 1 1/4" GALVANIZED ROOFING NAILS 1-1/4" 16-GAUGE CORROSION RESISTANT STAPLES	3" O.C.	3" O.C.
1/2" GYPSUM WALLBOARD BLOCKED AT THE EDGES (WV METHOD GB-BW-1, GB-BW-2)	BLOCKING REQUIRED AT ALL GYPSUM EDGES. USED CORROSION RESISTANT TYPE W 1-1/4" DRYWALL SCREWS	4" O.C.	12" O.C.

**NOTES:**

- MINIMUM 1/16" CROWN WIDTH FOR STAPLES IN WOOD STRUCTURAL PANEL.
- SPECIFIED GYPSUM FASTENING REQUIRED ONLY WHERE METHOD GB IS IDENTIFIED. SEE PHASE SPECS FOR TYPICAL GYPSUM FASTENER SPACINGS.
- USE OF STAPLES IN WOOD STRUCTURAL PANEL AS FASTENING METHOD ON WALLS PER ENGINEERED ALTERNATIVE.



**FIRST FLOOR WALL BRACING DETAIL**  
 SCALE: 1/8" = 1'-0"

MODEL: **SPRUCES**  
 DRAWING TITLE: **WALL BRACING DETAILS**  
 SHEET NO.: **S-4**  
 OPTION DESCRIPTION: **1B**

SET NO. **SPRUCO**  
 VERSION **01**  
 DRAWN BY **MBT**  
 DATE: **6/19/14**  
 OPTION

DIV.-COMM.-LOT-UNIT  
 COMM.-LOT  
 STREET ADDRESS  
 CITY  
 STATE  
 ZIP

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 5285 Walkers Lane  
 Frederick, MD 21703

VA-AS-501d12-105a ASDA 2020 ArchiCAD-Compliance Ruled Detached Spruce-SPRUCO-01\ELC\_P-06-008\18 S-4 WSHG-LS.dwg 09/08/20 - 9:38 am