



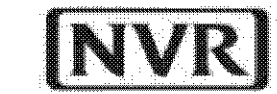
ROOF VENTILATION CALCULATIONS

HOUSE NAME	ASPEN
HOUSE VERSION	ASPO0-01
PRODUCT LINE	RYANHOMES
VENTILATION VALUES	SOFFIT: 9.9 sq. ft. of vent per ft. RIDGE: 18 sq. ft. of vent per ft. ROOF / GABLE VENT: 25 sq. ft. of vent per roof

USER GUIDE	YES	NO	VENT OR	NO ACTION REQ'D
	YES	YES	OR VENT OR	No action req'd.
	NO	YES	LOW RISE	Increase ridge
	NO	YES	HIGH RISE	Increase ridge
	NO	NO	PAK	Increase total vent.

ELEVATION "A & K"												
Location / Option	Area (sq. ft.)	Height (ft.)	Volume (cu. ft.)	Soffit (sq. ft.)	Ridge (sq. ft.)	Roof (sq. ft.)	Upper Rise / Gable Area (sq. ft.)	Lower Rise (sq. ft.)	TOTAL (sq. ft.)	OR A/100	OR A/100	Notes
Main house total	124.75	8.83	1102.00	42.50	76.56	498.54	15	100.00	226.56	100	100	
Garage total	11.20	7.80	87.36	0	0	0	0	0	87.36	100	100	

ELEVATION "B & L"												
Location / Option	Area (sq. ft.)	Height (ft.)	Volume (cu. ft.)	Soffit (sq. ft.)	Ridge (sq. ft.)	Roof (sq. ft.)	Upper Rise / Gable Area (sq. ft.)	Lower Rise (sq. ft.)	TOTAL (sq. ft.)	OR A/100	OR A/100	Notes
Main house total	124.75	8.83	1102.00	42.50	76.56	498.54	15	100.00	226.56	100	100	
Garage total	11.20	7.80	87.36	0	0	0	0	0	87.36	100	100	



HOUSE VOLUME CALCULATIONS

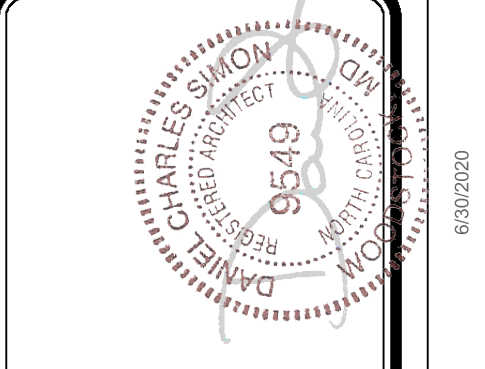
HOUSE NAME	ASPEN
HOUSE VERSION	ASPO0-01
PRODUCT LINE	RYANHOMES

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)

ELEVATION "A"			
Location / Area of house	Floor Area (sq. ft.)	Mean height (ft.)	Total volume (cu. Ft.)
Left side of the house	560.00	20.98	11751
Right side of the house	320.00	19.48	6235
Garage bump out from main house	80.00	8.83	706
Total House Volume			18693

ELEVATION "B, K, L"			
Location / Area of house	Floor Area (sq. ft.)	Mean height (ft.)	Total volume (cu. Ft.)
Left side of the house	560.00	20.98	11751
Right side of the house	320.00	19.48	6235
Garage bump out from main house	80.00	8.83	706
Porch on front of house	24.00	8.83	212
Total House Volume			18904

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.)
Partial Front Porch "EPB" W/ Elevation	24.00	8.83	212
Full Basement "FBA"	560.00	8.61	4824
Crawl space "FCA"	560.00	0.80	448



DIV - COMM - LOT - UNIT

COMM - LOT

STREET ADDRESS

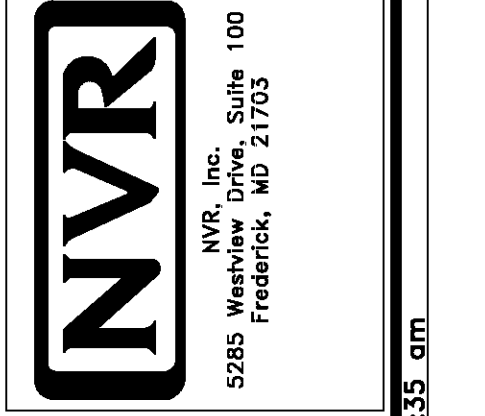
CITY

STATE

APT. NO.

ZIP

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SHEET NO. CA-1

MODEL ASPEN

DRAWING TITLE

OPTION DESCRIPTION

SET NO. ASPO0

VERSION 01

DRAWN BY

DATE

OPTION

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GENERAL

- These plans and specifications are the sole property of NVR. Any unauthorized use of these plans without the written consent of NVR is prohibited.
- These plans are subject to modification as necessary to meet code requirements or to facilitate mechanical/plumbing installations or to incorporate design improvements.
- These plans are not to be scaled for construction purposes. Dimension lines and notes supersede all scale references.
- Single Family Attached/Detached - Automatic residential fire sprinkler systems shall be installed in accordance with **NCRC P2404** or **NFPA 13D** where required.
- 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 301.3**.

CODE ANALYSIS

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

ENERGY AND MECHANICAL

- Insulation requirements per 2018 NCRC Chapter II, 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.

R-values shown below are the minimum used.

CLIMATE ZONE	FEENESTRATION U-FACTOR	GLAZED FEENESTRATION SHGC	CEILING R-VALUE	FRAME WALL R-VALUE 2x4 / 2x6	FLOOR R-VALUE	BASEMENT WALL R-VALUE UNFIN. / FIN.	SLAB R-VALUE # DEPTH	CRANK SPACE WALL R-VALUE
3	0.35	0.20	36	15 / 14	14	5 / 15	NA	5 / 15
4	0.35	0.20	36	15 / 14	14	10 / 15	10	10 / 15

- 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

- 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.

- Roof ventilation calculations are based on the following specifications:
 - Ridge vent: Minimum 18 sq. in. of vent per linear foot
 - Soffit vent: Minimum 1.8 sq. in. of vent per linear foot
 - Roof Jack (box vent): Minimum 45 sq. in. of vent per unit

- See NVR "Standard Energy Package" for field procedures and details.

DESIGN LOADS

Table of Loads for House Structure. Per Table 301.5

Floor Living Areas	- 40# P.S.F. (Live)	- 10# P.S.F. (Dead)
Floor Sleeping Areas	- 30# P.S.F. (Live)	- 10# P.S.F. (Dead)
Garage Floors	- 50# P.S.F. (Live)	- 50# P.S.F. (Dead)
Roof Areas - Top Chord	- 20# P.S.F. (Live)	- 10# P.S.F. (Dead)
- Bottom Chord	- 10# P.S.F. (Live) (Attics without storage)	- 20# P.S.F. (Live) (Attics with limited storage)
Habitable Attics	- 10# P.S.F. (Live)	- 10# P.S.F. (Dead)
Trusses	- 30# P.S.F. (Live)	- Areas up to 150 mph ultimate wind speed per Table R301.2(4)
Walls	- Exposure category 'B'	- Areas up to 150 mph ultimate wind speed per Table R301.2(4)
Stairs	- 40# P.S.F. (Live)	- 10# P.S.F. (Dead)

Design Criteria

- National Design specification for Wood Construction by National Forest Products Association.
- 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 (NGLIB & NNPA)
 - 2x8 Southern Pine (KD-14), No. 1 Grade or better
 - 2x10 Spruce-Pine-Fir (KD-14), No. 2 Grade or better (NLGA)
 - LVL 1.4E Minimum

- * Where required, Laminated Veneer Lumber may be used per Engineering
- ** Structural Steel - A.S.T.M. A36

FOUNDATIONS

- All plain and reinforced concrete shall comply with requirements in **ACI 318**.
- Concrete footings shall be poured a maximum 5' slump, 5 bag mix, and 2500 psi minimum strength per **Table R402.1**. 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.
- Walls and footings designed as unreinforced unless otherwise specified on foundation plans or details. Frost soil and/or site conditions may require the addition of reinforcing.
- Footing frost depth to be no less than 12" per **R403.1.4** and **Table R301.2(1)**.
- Minimum Soil Bearing Capacity shall be 2,000 PSF per **Table R401.4.1**.
- 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 2500 PSI per **Table R402.2**.
- 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 I 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 **R403.1.2**.
- Foundation drains shall be located per local codes and according to local site conditions. Drain discharges by gravity or mechanical means to conform with approved site plan and installed per **Section R403.1**.
- The top course of block of foundation walls shall be semi-solid block or open cores of hollow block shall be filled with mortar.
- Block piers to be solid block or mortar-filled hollow block.
- A poured concrete foundation wall designed to withstand an equivalent fluid weight of 30# per cubic ft. may be substituted where masonry units (block) are shown on plans.
- Concrete and masonry foundation walls shall be dampproofed with min. 3/8" portland cement paring from footing to top of finished grade. The paring shall be covered with a coat of approved bituminous material applied at the recommended rate per **R406.1**.
- 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**.
- 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**.
- Foundation framing anchors shall be 1/2"x18" anchor bolts with T1 minimum embedment or Simpson Strong-Tie MASA / USP FAS (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 shall have min. 1" anchor straps and those 12" or shorter can be installed without anchor straps. Townhouses in seismic design category 'C' shall require a 22"x3"x3" plate washer per **R403.1.6.1** and maximum anchor bolt spacing for buildings over two stories shall be 4'.
- Steel columns and bases shall be given a shop coating of rust-inhibitive paint or equivalent to provide corrosion resistance per **R407.2**.
- For masonry veneers:
 - Per **R103.5.4.1** - 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 (914 mm) on center and placed within 12 inches (305 mm) of the wall opening.
 - Per **R103.5.2** - One layer of No. 15 asphalt felt or other approved water-resistive barrier shall be provided behind brick.
 - Per **Table R103.5.4** - Provide minimum 1-inch air space between brick veneer and sheathing.
 - Per **R103.5.6** - Provide minimum 3/16" diameter weep holes at 33" on center maximum, located immediately above the flashing.
 - Per **R103.5.5** - 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.
- Porch slab and exterior concrete work shall be nominal 4" minimum #3500 air entrained concrete w/ 6x6 #10 W/M in accordance with specifications by engineering.
- Foundation wall strip footing thickness to be 8" (or 6" with a single story) unless otherwise noted as specified by engineering. Strip footing projections beyond the face of the foundation wall shall not exceed the footing thickness. Strip footings, pier pads, and any other footing identified as being greater than 8" in thickness shall not be reduced.
- Block foundation walls may be substituted for poured foundation walls shown on foundation plans provided all requirements of **Section R404** are met.
- Termite treatment provided below slabs or to framing members per **R318.1**.

FOUNDATION WALL DESIGN (c)
NCRC PRESCRIPTIVE CODE OR ENGINEERED DESIGN PER ACI 318.2

WALL HEIGHT	WALL THICKNESS	LATERAL SOIL LOAD (w)	UNBALANCED FILL	VERTICAL REINFORCING (v)	HORIZONTAL REINFORCING (h)
8'-0"	6"	45	6'-0"	NOT REQUIRED	2- #4 BARS (f)
		60	7'-0"	NOT REQUIRED (d)	3- #4 BARS (d)
		60	6'-0"	NOT REQUIRED (d)	3- #4 BARS (d)
	10"	45	6'-0"	NOT REQUIRED	2- #4 BARS (f)
		60	7'-0"	#4 @ 22" O.C. (d)	3- #4 BARS (d)
		60	6'-0"	NOT REQUIRED	2- #4 BARS (f)
12'-0"	6"	45	7'-0"	NOT REQUIRED (d)	4- #4 BARS (d)
		60	8'-0"	#4 @ 19" O.C. (d)	4- #4 BARS (d)
		60	7'-0"	#4 @ 19" O.C. (d)	4- #4 BARS (d)
	10"	45	7'-0"	NOT REQUIRED	3- #4 BARS (g)
		60	8'-0"	NOT REQUIRED (d)	4- #4 BARS (d)
		60	7'-0"	NOT REQUIRED (d)	4- #4 BARS (d)

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.

- SOIL CLASSES GM, GC, SM, SM-SC AND ML - 45 PSF SOIL CLASSES SC, MH, ML-CL AND CL - 60 PSF
- SPACINGS SHOWN IS BASED UPON Fy = 60,000 PSI STEEL FOR Fy = 40,000 PSI STEEL, REDUCE SPACING BY 0.67
- CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI
- ENGINEERED DESIGN PER ACI 318-14, REQUIREMENTS FOR RESIDENTIAL CONCRETE CONSTRUCTION
- FOR ALL WALL HEIGHTS, ONE HORIZONTAL BAR SHALL BE LOCATED WITHIN THE TOP 24" AND 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.
- ONE BAR WITHIN 12" OF TOP AND AT MID-HEIGHT OF WALL PER TABLE R404.1.2(1).
- ONE BAR WITHIN 12" OF TOP AND ONE EACH AT THIRD POINT OF WALL HEIGHT PER TABLE R404.1.2(1).

PLANS

- 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. operable 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**.
- All emergency escape and rescue openings shall have a minimum net clear operable 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 5.7 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 5 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**.
- 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.
- Sliding glass drs/patio drs/walks must be safety glazed per **R308.4**.
- Interior stairway shall have minimum head room of 6'-8" per **R311.2** and minimum tread depth of 4" and maximum riser height of 8 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 **R302.7**.
- 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 **R312.1**.
- 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 **R312.3**.
- 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 stairway in accordance with **Section R311.7** (see item #5 above) or a ramp in accordance with **Section R311.6**.
- Handrails shall be installed on exterior stairs having (4) or more risers per **R311.1.6**. 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.
- All flashing used (including at windows, doors, and with stone or masonry veneer) shall be corrosion-resistant per **R103.4**. See NVR Flashing Details.
- 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)**.
- All exterior sheathing to be structural sheathing designed in accordance with **R602.10**.
- An approved water-resistive barrier shall be applied over sheathing of exterior walls per **Section R103.2**.
- 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.
- 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 W 1-1/4" drywall screws.

SCREW FASTENING SCHEDULE				
Framing Spacing	WITH ADHESIVE			
	Ceilings	Load-brg. walls	Non-load-brg. walls	
16	16	24	24	
24	16	24	24	
Framing Spacing	WITHOUT ADHESIVE			
	Ceilings	Load-brg. walls	Non-load-brg. walls	
16	12	16	16	
24	12	12	12	

- 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 C54.
 - For 5/8" wallboard, nails shall be 1-3/8" long, 1/4" head and .098 diameter shanks.
- 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**.
 - Asphalt shingles shall be installed per **Section R305.2**. 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 **Section R305.1** Exception #1.
 - Attic spaces shall be ventilated w/ ridge and soffit vents unless otherwise noted. Venting provided per **R306.2**.
 - Fireblocking shall be installed between ceiling and floor openings per **R302.11**. Draftstopping to be installed in accordance with **R302.12**.
 - Water closet, lavatory or bidet shall not be set closer than 15 inches from its center to any side wall, partition or vanity or closet 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**.
 - Heating and cooling equipment installation shall be in accordance with IRC Chapter 14 and the International Mechanical Code.
 - Mechanical fireplaces shall be installed per **Section R1004** and **1005**.
 - 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**.
 - Untreated wood shall be minimum 8" above finish grade per **R311.1** item #2.
 - Bottom plates on slabs and any wood in contact w/ concrete or masonry to be pressure treated material per **Section R311**.
 - 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**.
 - Air exhaust and intake openings that terminate outdoors shall be protected with corrosion-resistant screen, louvers, or grills having a min. opening size of 1/4" and maximum of 1/2" in any dimension per **R303.6**.
 - Fasteners and connectors for pressure preservative-treated wood shall be hot-dipped galvanized steel.
 - Windows that have an operable opening more than 12" 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**.
 - The final grade shall fall a minimum of 6 inches within the first 10 feet of the foundation per **R401.3**.
 - 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 and shall be per **Section R302.6**. Where the property line is 10 feet or more from the building face, the provisions of this code section shall not apply.
 - Townhouse construction (**R302.2.5**):
 - Projections extending into the fire-separation distance shall have not less than 1-hour fire-resistive construction on the underside. 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 R302.2** by more than 50%. Vents in soffit are not allowed within 4 feet of the walls or property lines per **R302.2.5** and **R302.2.6**.
 - 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.
 - 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 6B, shall not be permitted in Seismic Design Category C.
 - Minimum floor sheathing shall be 5/8" tongue & groove decking underlayment grade plugged and ganded, exterior glue, glued and nailed on joists to meet. *American Plywood Association* approved glued floor system, unless otherwise specified.

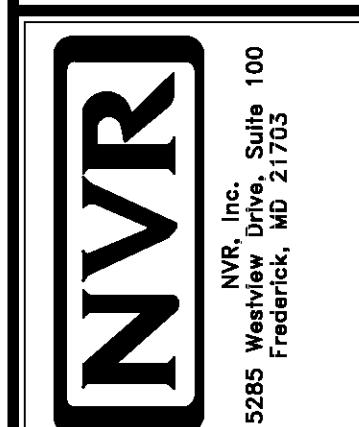
ELECTRICAL

- Ground-fault and arc-fault circuit interrupter protection is provided per **NFPA 70** (National Electric Code).
- Electric panel box installation to be in accordance with **NFPA 70, Article 408 Section III**. Location may vary by design.
- 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 but 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.
- 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.
- 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 **R303.7**.
- Outlets within 6' of a sink must be GFI protected.
- 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**.
- Outlets installed in laundry areas must be GFI protected.



REV. NO.	DATE	DESCRIPTION
1	5/1/18	MBT - CODE UPDATES FOR 2018 NCRC
2	5/1/18	MBT - UPDATED ENERGY NOTES

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MODEL	SET NO.	VERSION	DRAWN BY	DATE	OPTION
NCRC 2018 SPEC SHEET	SS-1				
DRAWING TITLE: SINGLE FAMILY ATTACHED SINGLE FAMILY DETACHED					
OPTION DESCRIPTION: NC State Building Code - Residential Code 2018					

- ### 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) OR STRUCTURAL CONCRETE SLAB ON VAPOR BARRIER OVER SUB-BASE (SEE SPEC SHEET FOR SLAB NOTES)
 - SEE FOUNDATION HOLD DOWN SHEET FOR CONNECTION INFORMATION.
 - SLAB LEDGE LOCATIONS VARY W/ GRADE BEAM(S) ORIENTATION. SEE 68-1 FOR DETAILS.
 - THE DIRECTION OF THE ARROW IS THE DIRECTION OF REBAR, AS REQUIRED.
 - ALL FOOTINGS ARE PLAIN, UNREINFORCED CONCRETE UNLESS NOTES OTHERWISE.

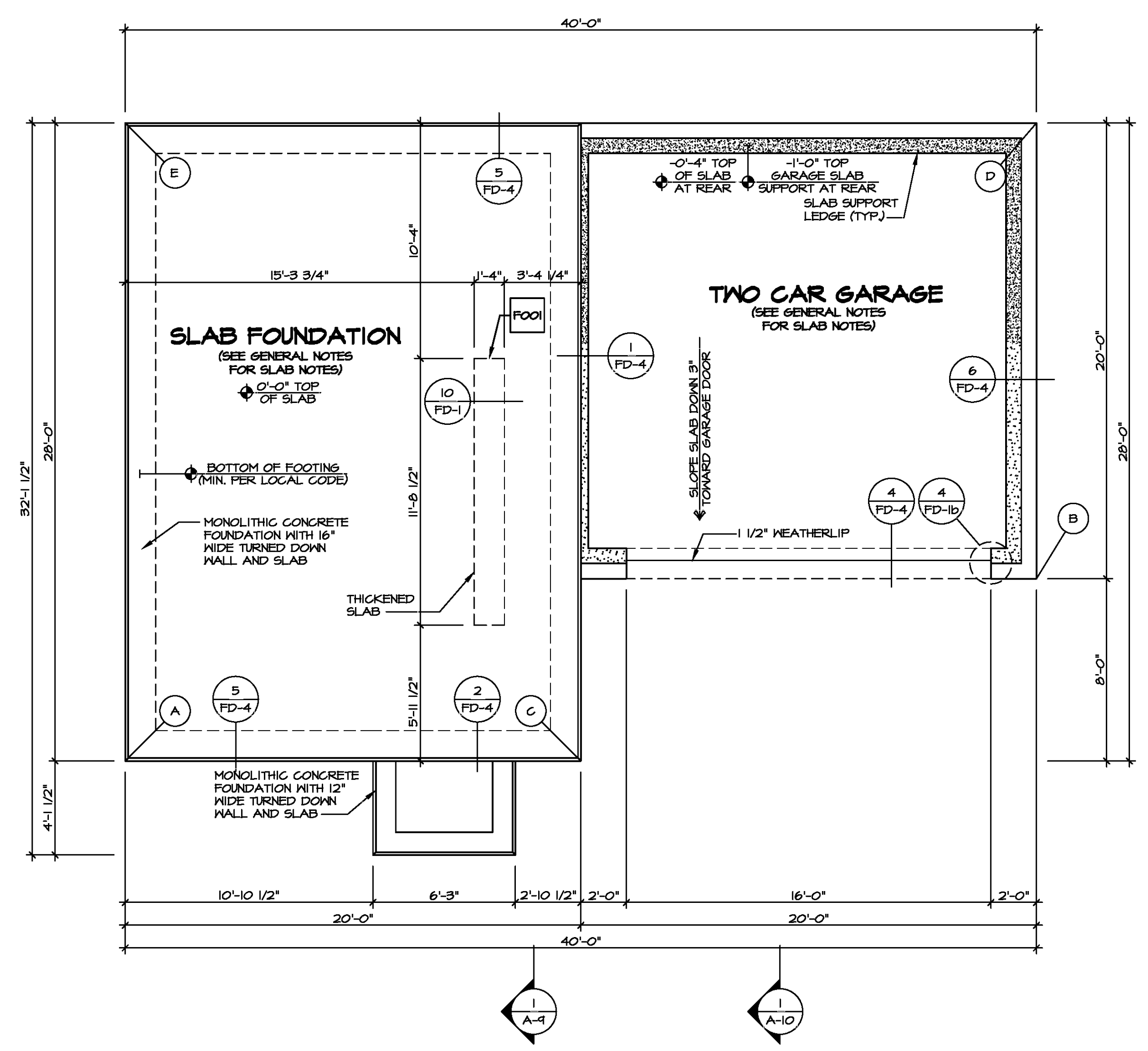
- ### LEGEND
- BEARING WALL
 - NON BEARING WALL
 - INDICATES BEARING FROM POINT-LOAD ABOVE
 - JACKS
 - BEAM/HEADER
 - PAD FOOTING
 - STEEL COLUMN
 - TRUSS TIE DOWN
 - PORTAL FRAME
 - JOIST/TRUSS
 - LVL
 - ENGINEERING PAGE NUMBER
- SEE FC DETAILS FOR FRAMING CONNECTORS

FOUNDATION DIAGONALS

A		B	
A	0"	A	40'-4 1/2"
B	40'-4 1/2"	B	0"
C	20'-0"	C	21'-6 1/2"
D	48'-4 24/32"	D	20'-0"
E	28'-0"	E	44'-8 21/32"

PAD FOOTING SCHEDULE

IDENTIFIER	LENGTH	WIDTH	HEIGHT	ENG. NUM.	REMARKS
FOOT	11'-8 1/2"	1'-4"	0'-8"	50001	

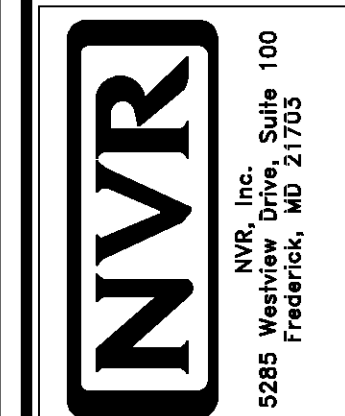


FOUNDATION PLAN
SCALE: 1/4" = 1'-0"



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

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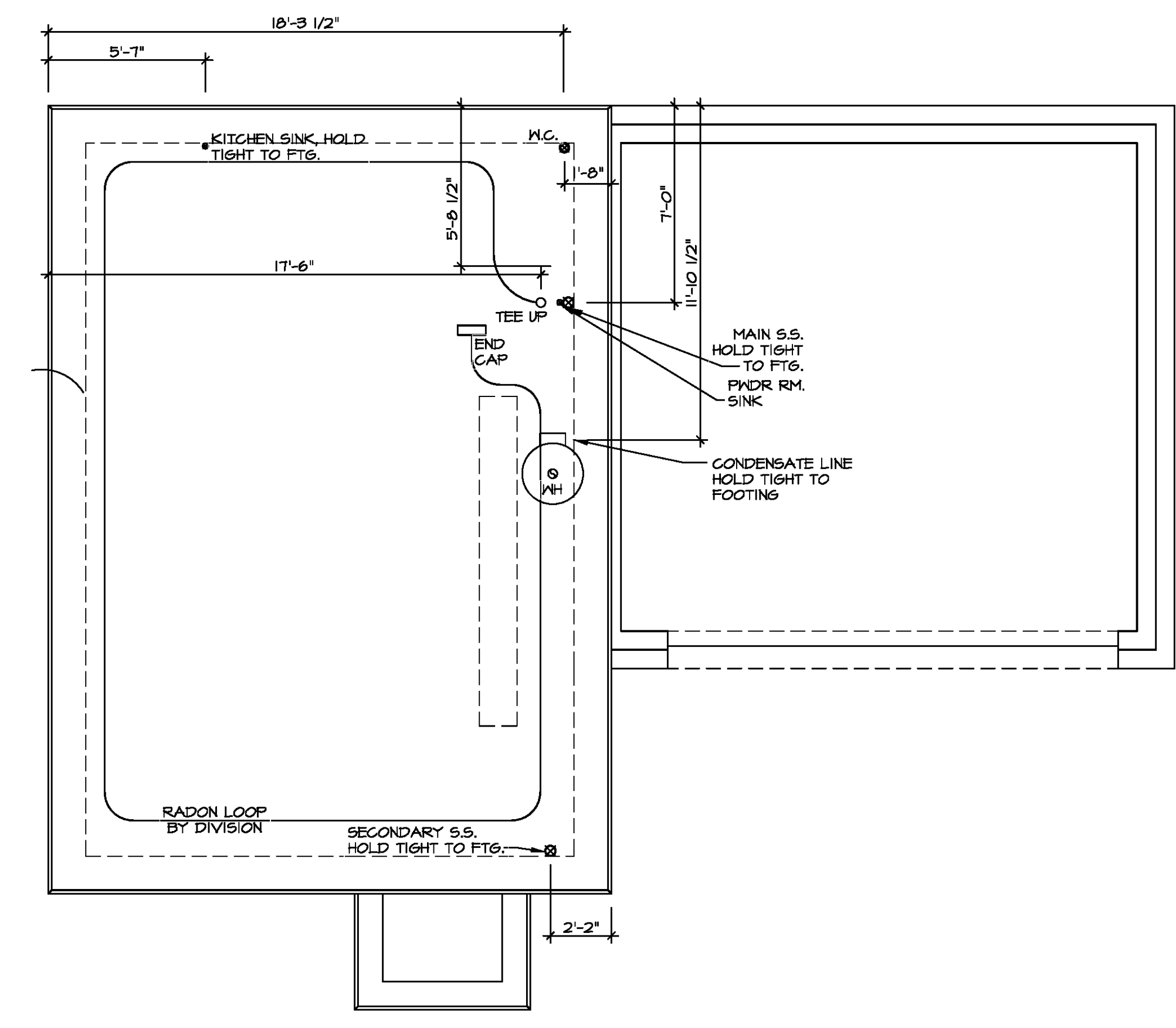
MODEL: ASPEN
DRAWING TITLE: FOUNDATION PLAN
OPTION DESCRIPTION: SLAB FOUNDATION

SHEET NO. A-3
5

SET NO. ASPOO
VERSION 01
DRAWN BY
DATE:
OPTION FSA

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
 - SCREENS 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.

INSTALLATION OF RADON STACK AND LOOP TO BE DETERMINED BY DIVISION

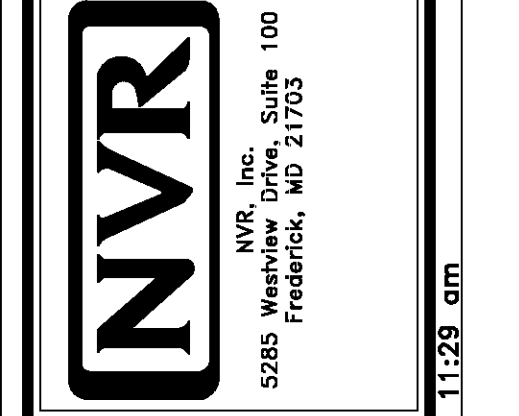


PLUMBING PLAN
 SCALE: 1/4" = 1'-0"



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

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MODEL	SET NO.	ASPOC
DRAWING TITLE	VERSION	01
PLUMBING PLAN	DRAWN BY	
OPTION DESCRIPTION	DATE	
	OPTION	
SHEET NO.	7	
A-5		



LEGEND

- BEARING WALL
- NON BEARING WALL
- ⊗ INDICATES BEARING FROM POINT-LOAD ABOVE
- J JACKS
- B BEAM/HEADER
- F PAD FOOTING
- C STEEL COLUMN
- X TRUSS TIE DOWN
- X PORTAL FRAME
- X JOIST/TRUSS
- LVL
- X ENGINEERING PAGE NUMBER

SEE FC DETAILS FOR FRAMING CONNECTORS

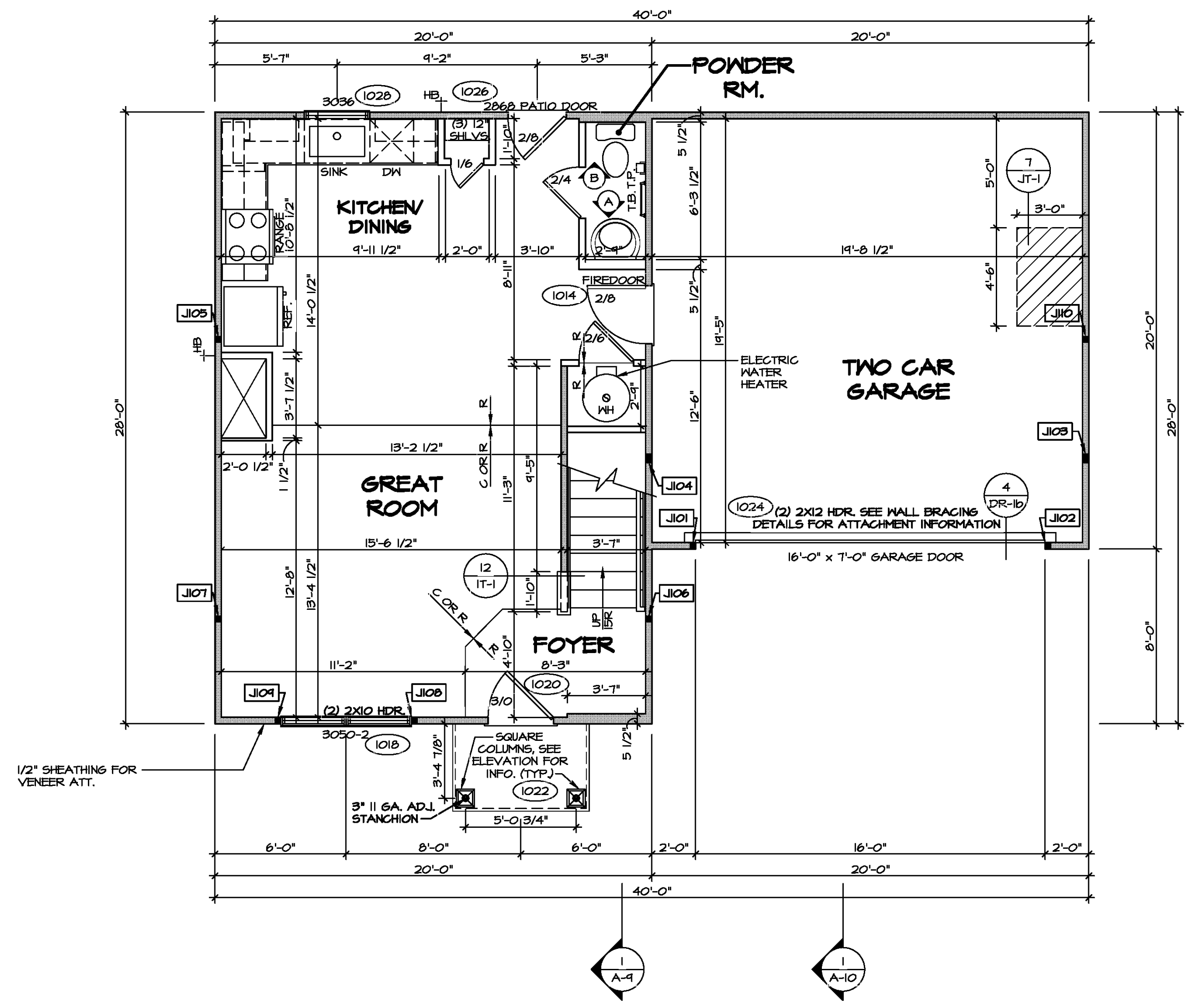
FLOOR PLAN NOTES

1. ALL HEADERS ARE (2) 2x6 w/ 2x4 WALLS OR (3) 2x6 w/ 2x6 WALLS, UNLESS OTHERWISE NOTED.
2. ALL HEADERS TO HAVE (1) 2x4 OR 2x6 JACK AND KING STUD EACH END, UNLESS OTHERWISE NOTED. MULTI-OPENING HEADERS TO HAVE (2) JACKS AT INTERMEDIATE BEARINGS, UNLESS OTHERWISE NOTED. NO ADDITIONAL FLOOR SYSTEM BLOCKING OR CONTINUOUS LOAD PATH JACKS ARE REQUIRED UNLESS OTHERWISE NOTED.
3. 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.
5. SEE "BRACED WALL PANEL DETAIL SHEET" FOR SPECIAL WALL FRAMING LOCATIONS AND HEADER SIZES, IF APPLICABLE.
6. SEE STANDARD DETAIL CATEGORY "11" SHEET(S) FOR INTERIOR TRIM DETAILS.
7. SEE ARCHITECTURAL DETAIL SHEET "AD" FOR HOUSE SPECIFIC INTERIOR TRIM OPTION TABLE.
8. ALL WINDOWS HAVE 7'-0" 1/2" HEADER HEIGHT UNLESS OTHERWISE NOTED.
4. ALL HEADERS IN NON-BEARING WALLS SHALL BE A SINGLE FLAT 2x4 OR 2x6 ATTACHED TO CRIPPLES ABOVE, UNLESS OTHERWISE NOTED.
10. 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



FIRST FLOOR PLAN
SCALE: 1/4" = 1'-0"

FIRST FLOOR JACK SCHEDULE

IDENTIFIER	DESCRIPTION	ENS. N.M.	REMARKS
J101	JACK - (2) 2X4 SFF STUD GRADE	1024	
J102	JACK - (2) 2X4 SFF STUD GRADE	1024	
J103	JACK - (3) 2X4 SFF	1016	
J104	JACK - (3) 2X4 SFF	1016	
J105	JACK - (2) 2X4 SFF STUD GRADE	1012	
J106	JACK - (2) 2X4 SFF STUD GRADE	1012	
J107	JACK - (2) 2X4 SFF STUD GRADE	1012	
J108	JACK - (2) 2X4 SFF STUD GRADE	1012	
J109	JACK - (2) 2X4 SFF STUD GRADE	1012	
J110	JACK - (2) 2X4 SFF STUD GRADE	1012	

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

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Frederick, MD 21703

MODEL: ASPEN
DRAWING TITLE: FIRST FLOOR PLAN
OPTION DESCRIPTION: 9

SET NO. ASPOO
VERSION: 01
DRAWN BY:
DATE:
OPTION

SHEET NO. A-7
9

Y:\As-Sold\2-05a\ASDA 2020 1st floor-Complete\NVA DETACHED\ASPEN_ASP00-01\ELL_P_06-0082\9 A-7 PLAN_LS.dwg 06/30/20 - 1:48 PM



LEGEND	
	BEARING WALL
	NON 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

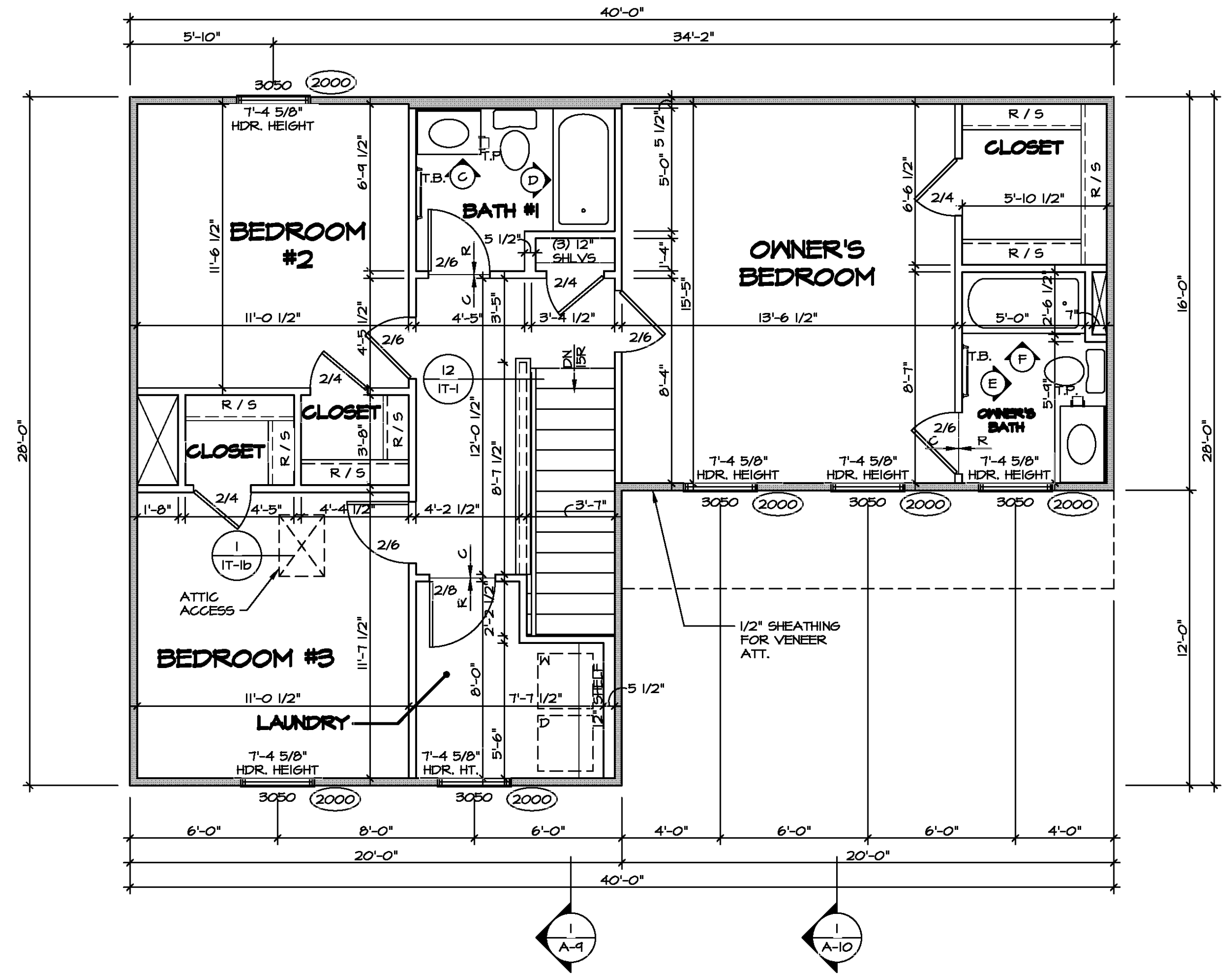
SEE FC DETAILS FOR FRAMING CONNECTORS

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. MULTI-OPENING HEADERS TO HAVE (2) JACKS AT INTERMEDIATE BEARINGS, UNLESS OTHERWISE NOTED. NO ADDITIONAL FLOOR SYSTEM BLOCKING OR CONTINUOUS LOAD PATH JACKS ARE REQUIRED 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 "11" 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 CRIPPLES 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

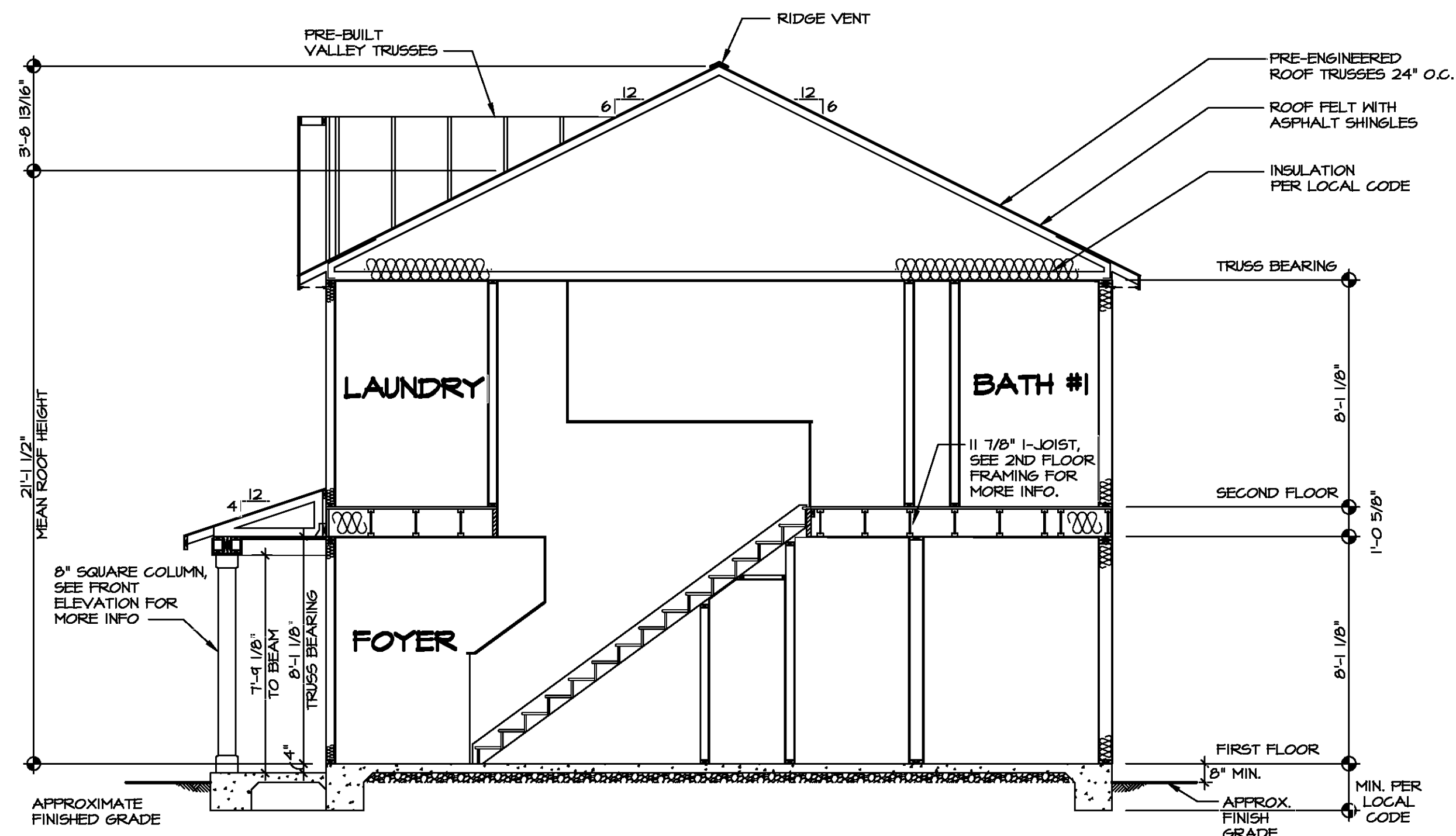


SECOND FLOOR PLAN
SCALE: 1/4" = 1'-0"

DIV-COMM-LOT-UNIT		COM-LOT		STREET ADDRESS		CITY		STATE		APT. NO.		ZIP	
MODEL		DRAWING TITLE		OPTION DESCRIPTION		SET NO.		VERSION		DRAWN BY		DATE	
ASPHEN		SECOND FLOOR PLAN											
SHEET NO.		A-8		10									

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13-AS-5012-08a.LSDA 2020 1:10:11-Complete RIVA DETACHED ASPEN_ASP00_01 VELL_P_06-0082.10 A-8_PLN2_LS.dwg 06/30/20 1:46 pm



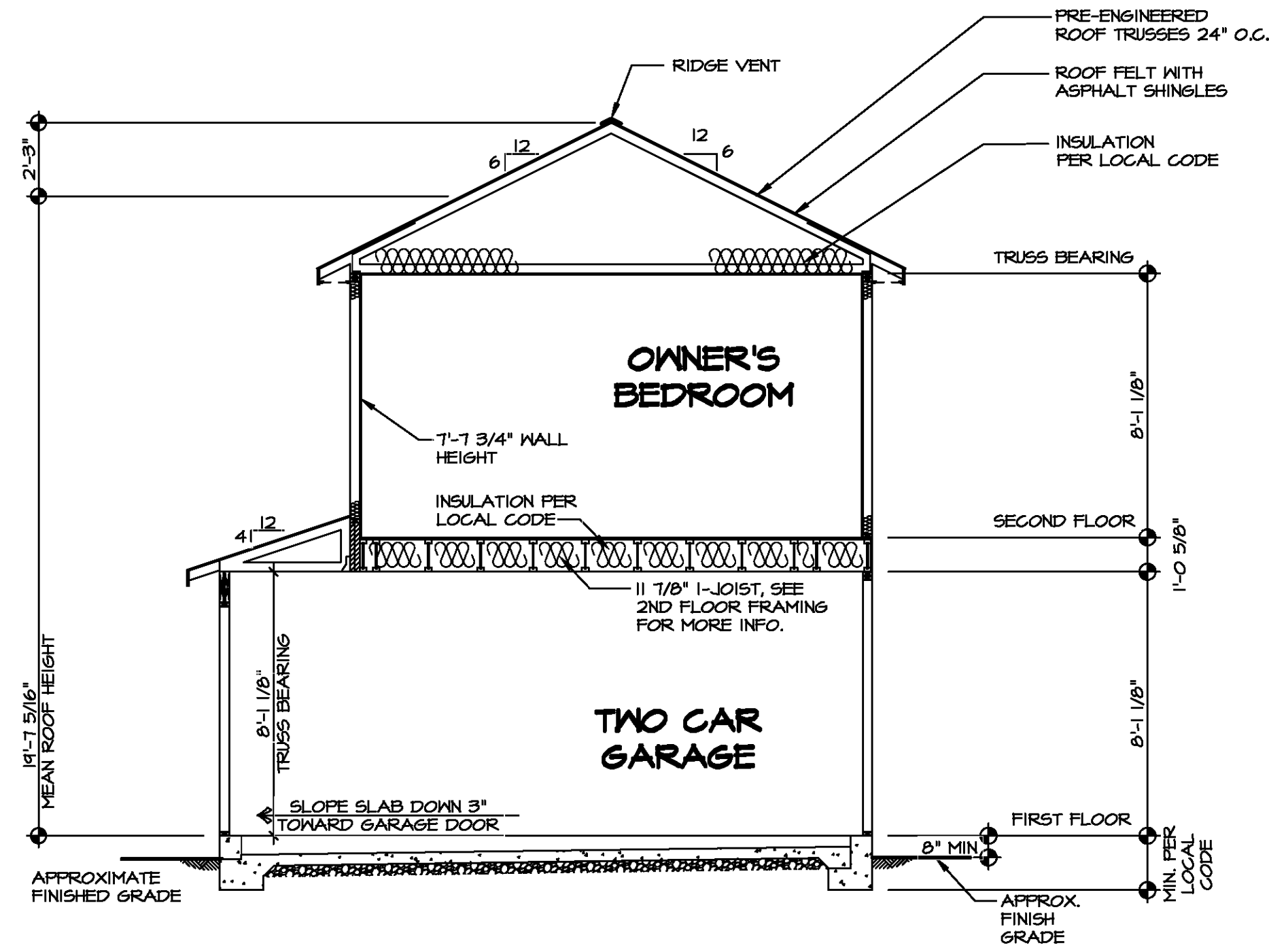
BUILDING SECTION - FOYER
 SCALE: 1/4" = 1'-0"



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

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SHEET NO.	A-9
MODEL	ASPEN
DRAWING TITLE	BUILDING SECTION - FOYER
OPTION DESCRIPTION	
SET NO.	ASPOO
VERSION	01
DRAWN BY	
DATE	
OPTION	



BUILDING SECTION - GARAGE
 SCALE: 1/4" = 1'-0"

SHEET NO. A-10	MODEL ASPEN	SET NO. ASP00 VERSION 01	DIV-COMM-LOT-UNIT -----
		DRAWING TITLE BUILDING SECTION - GARAGE	COMM-LOT -----
OPTION DESCRIPTION 12	DRAWN BY DATE: OPTION	STREET ADDRESS CITY STATE ZIP	APT. NO. -----

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V:\As-Sold\2-09s\ASDA 2020 1st\Hoff-Complete\NVA DETACHED\ASPEN_ASP00-01\ELL_P_06-0082\12_A-10_SECT_GAR_LS.dwg 06/30/20 - 1:45 PM

BRACED WALL LINE SCHEDULE				
WIND SPEED (MFL)	IDENTIFIER	ACTUAL (FT)	REQUIRED (FT)	METHOD
130 MPH	BWL 100.00	16.81'	9.15'	CONTINUOUS (2 SIDES)
130 MPH	BWL 101.00	21.04'	14.78'	NSP (2 SIDES)
130 MPH	BWL 102.00	34.15'	9.62'	NSP (2 SIDES)
130 MPH	BWL 103.00	17.00'	14.16'	NSP (2 SIDES)
130 MPH	BWL 200.00	14.00'	5.10'	NSP (2 SIDES)
130 MPH	BWL 201.00	24.33'	7.14'	NSP (2 SIDES)
130 MPH	BWL 202.00	34.50'	5.51'	NSP (2 SIDES)
130 MPH	BWL 203.00	19.46'	5.76'	NSP (2 SIDES)
130 MPH	BWL 204.00	4.50'	3.02'	NSP (2 SIDES)
130 MPH	BWL 205.00	12.00'	5.10'	NSP (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 SECRI TECHNICAL EVALUATION REPORT: STRUCTURAL PERFORMANCE UNDER LATERAL LOAD CONDITIONS IS DESIGNED. INSTALLATION SHALL BE PERFORMED IN ACCORDANCE WITH THE PROVISIONS FOR WOOD STRUCTURAL PANELS (NSP/CS-NSP) AS DEFINED IN THE APPROPRIATE TER SECTION.

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

SHEATHING	FASTENER	SPACING	
		EDGES	FIELD
1/8" WOOD STRUCTURAL PANELS OR EQUIVALENT (W METHOD NSP, CS-NSP, CS-G)	8d COMMON NAILS	6" O.C.	12" O.C.
	ALTERNATIVE FASTENER 1-3/4" 16-GAUGE CORROSION RESISTANT STAPLES	3" O.C.	12" O.C.
1/2" GYPSUM WALLBOARD (W METHOD NSP, CS-NSP, CS-G)	1-1/4" LONG, 1/4" HEAD, 20# DIA. ANNULAR-RINGED NAILS	7" O.C.	7" O.C.
	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	3" O.C.	3" O.C.
	1-1/4" 16-GAUGE CORROSION RESISTANT STAPLES	3" O.C.	3" O.C.
1/2" GYPSUM WALLBOARD BLOCKED AT THE EDGES (W 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.

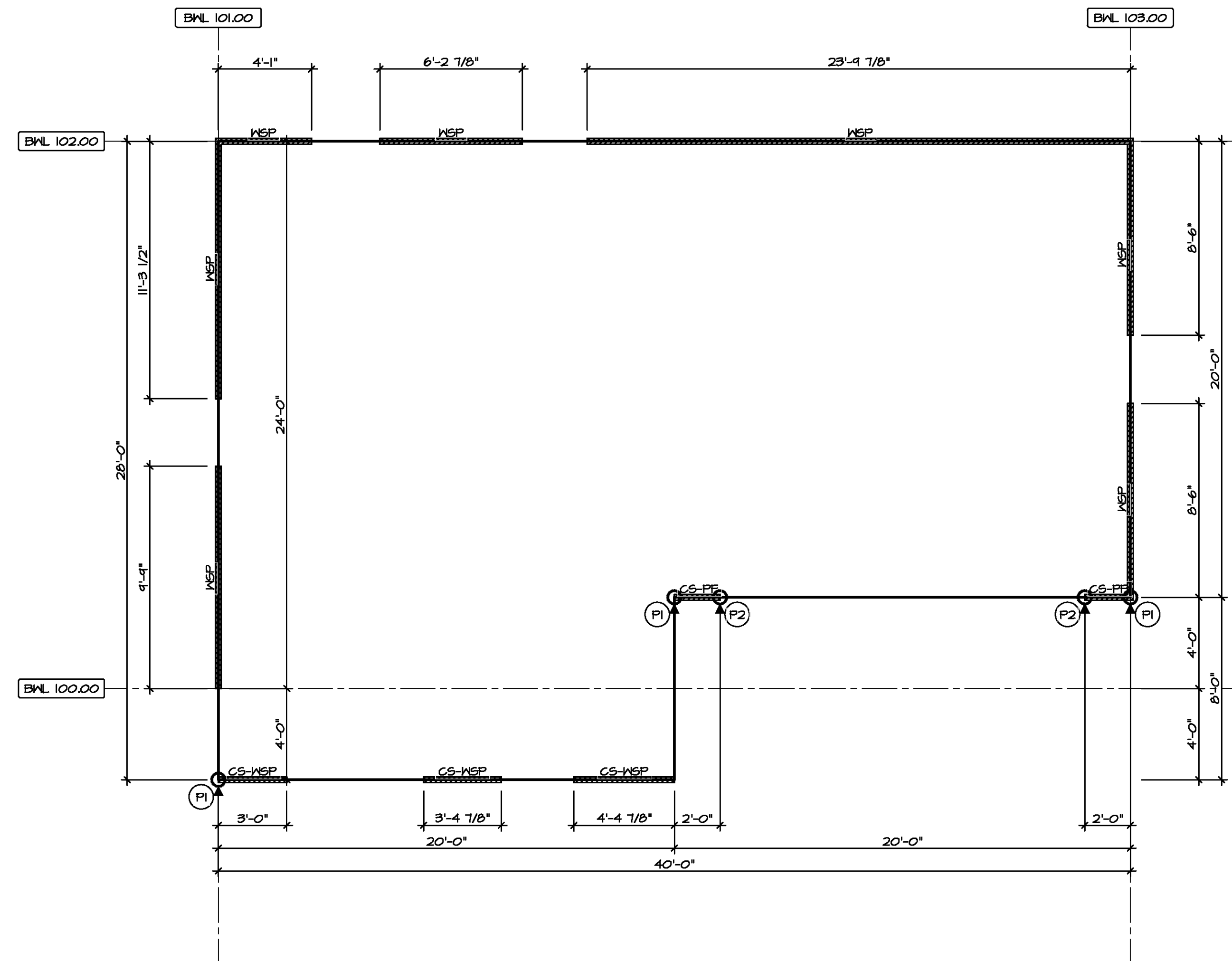
NOTES:
 1. MINIMUM 1/16" CROWN WIDTH FOR STAPLES IN WOOD STRUCTURAL PANEL.
 2. SPECIFIED GYPSUM FASTENINGS REQUIRED ONLY WHERE METHOD GB IS IDENTIFIED. SEE PHASE SPECS FOR TYPICAL GYPSUM FASTENER SPACING.
 3. USE OF STAPLES IN WOOD STRUCTURAL PANEL AS FASTENING METHOD ON WALLS PER ENGINEERED ALTERNATIVE.

LEGEND	
BWL XXXXX	BRACED WALL LINE I.D.
---	BRACED WALL LINE
---	HOUSE WALL
	BRACED WALL PANEL
NSP	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 6/NB-2)
LIB	LET-IN BRACINGS (SEE STANDARD DETAIL F / NB-2)
CS-NSP	CONTINUOUS SHEATHING - WOOD STRUCTURAL PANEL
CS-PF	CONTINUOUS SHEATHING - PORTAL FRAME, SEE FLOOR PLANS FOR PORTAL FRAME HEADER INFORMATION (SEE STANDARD DETAIL A, C / NB-2)
CS-G	CONTINUOUS SHEATHING - WOOD STRUCTURAL PANEL ADJACENT TO GARAGE OPENINGS
⊙	HOLD-DOWN 1. SEE SHEET NB-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.



**SECOND FLOOR
 BRACED WALL DETAIL**
 2
 5-5 SCALE: 1/4" = 1'-0"

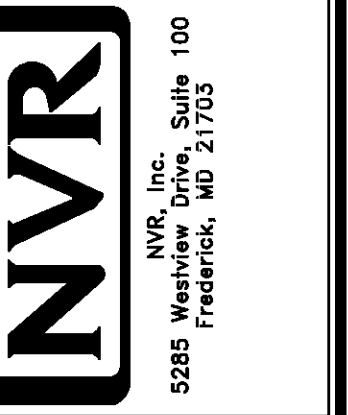


**FIRST FLOOR
 BRACED WALL DETAIL**
 1
 5-5 SCALE: 1/4" = 1'-0"



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

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MODEL: ASPEN
 SHEET NO. S-5
 SET NO. ASP00
 VERSION 01
 DRAWN BY
 DATE:
 OPTION
 DRAWING TITLE: BRACED WALL PANEL DETAIL
 OPTION DESCRIPTION: 2B

