

STANDING SEAM METAL ROOFING (SEE ROOF PLAN)
 5/4 X CEDAR TRIM BDS.
 1 X 2 CEDAR BATTENS @ 12" O.C. OVER 1/2" AGX PLYWOOD
 THE TYPE OF EXTERIOR FINISH, THE INSTALLATION AND THE WATERPROOFING DETAILS ARE ALL TO BE THE FULL RESPONSIBILITY OF THE OWNER/BLDG. THIS DESIGNER ASSUMES NO RESPONSIBILITY FOR THE INTEGRITY OF THE BLDG ENVELOPE

RIGHT SIDE ELEVATION

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



FRONT ELEVATION

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

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THE CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR THE CORRECT INSTALLATION OF ALL EXTERIOR FINISHES AND WEATHERPROOFING.

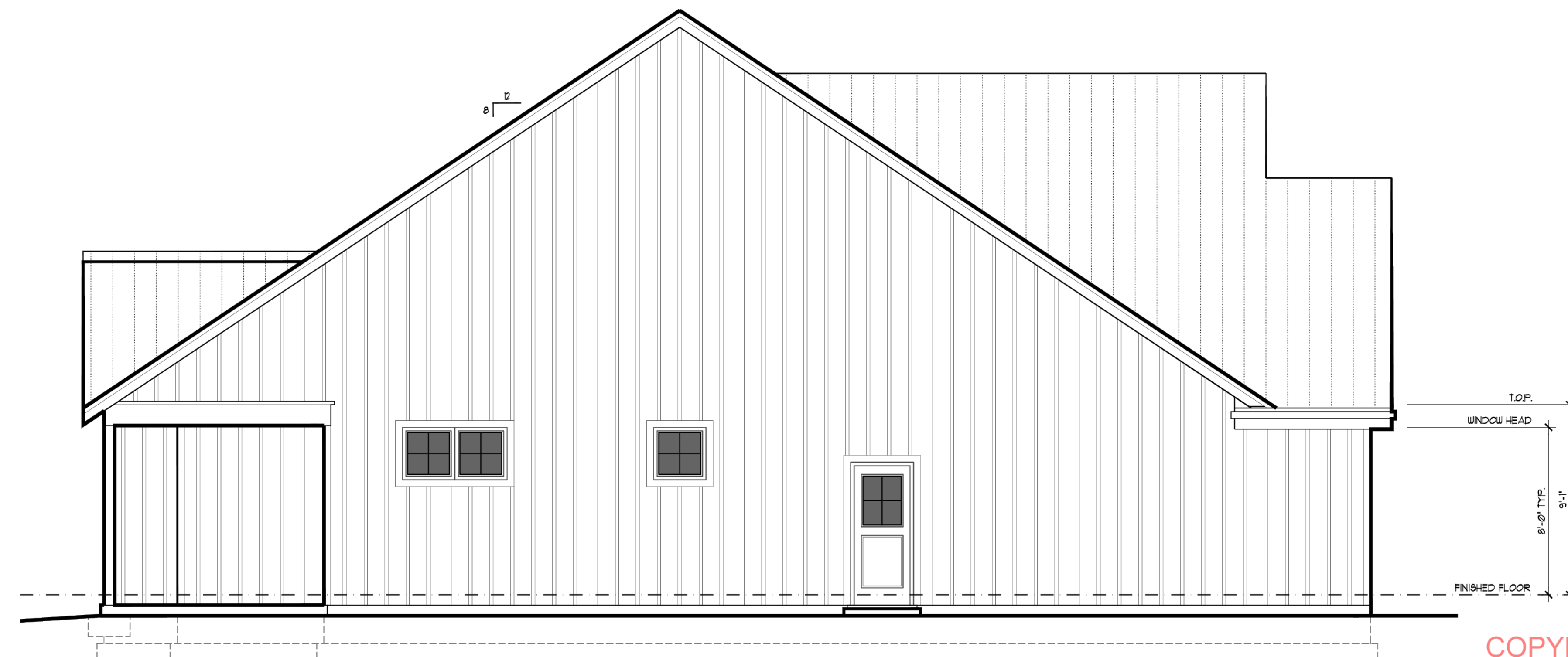
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STANDING SEAM METAL ROOFING (SEE ROOF PLAN)
 G. I. GUTTERS ON 2 X 8 FASCIA CAJ/ DOWNSPOUTS (SEE ROOF PLAN)
 1 X 2 CEDAR BATTENS @ 12" O.C. OVER 1/2" A/CX FLYWOOD
 5/4 X CEDAR TRIM BDS.
 THE TYPE OF EXTERIOR FINISH, THE INSTALLATION AND THE WATERPROOFING DETAILS ARE ALL TO BE THE FULL RESPONSIBILITY OF THE OWNER/BLDR. THIS DESIGNER ASSUMES NO RESPONSIBILITY FOR THE INTEGRITY OF THE BLDG ENVELOPE



REAR ELEVATION

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



LEFT SIDE ELEVATION

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

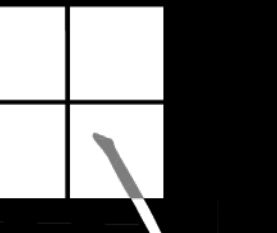
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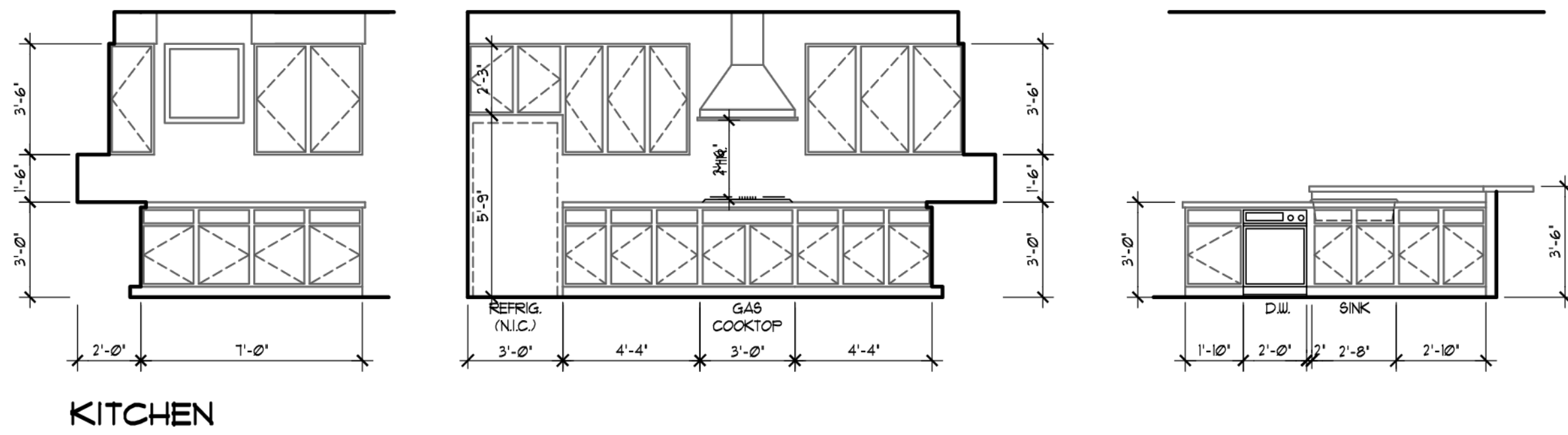
1168D
 PROJECT MANAGER-SRR
 DRAWN 07/28/20 LAW

25# SNOW LOAD

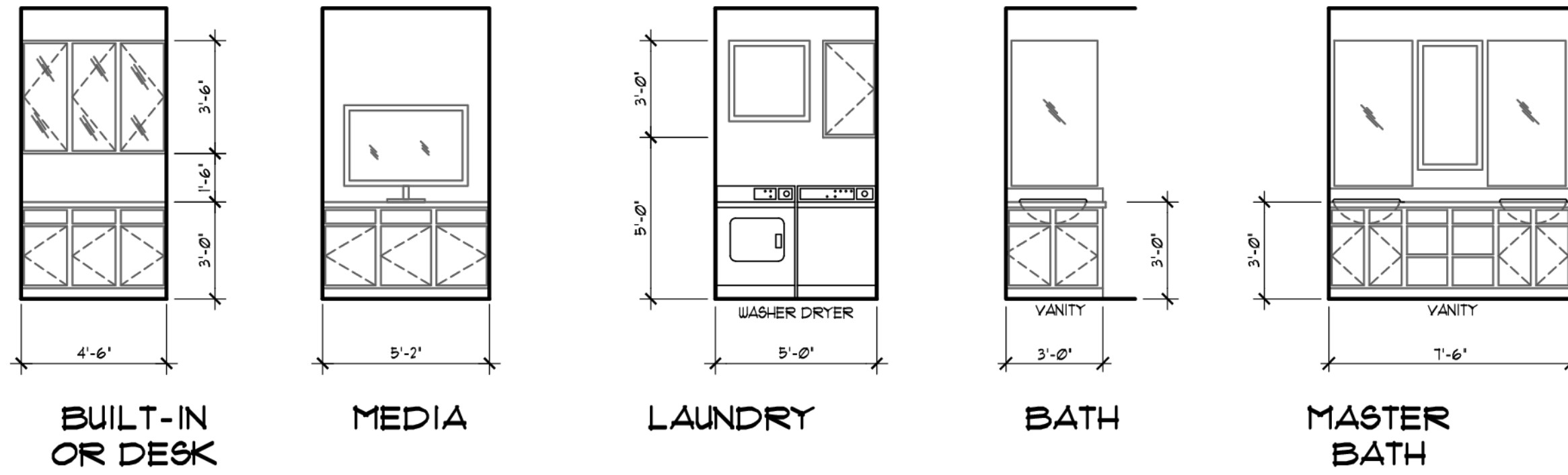
MAIN FLOOR	1852 SQ. FT.
GARAGE AREA	633 SQ. FT.

1168D

2 M



KITCHEN



CABINET ELEVATIONS

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

STRUCTURAL EVALUATION BY:
 HOWERTON SERVICES, PLLC
 3313 CATHEDRAL BELL ROAD
 RALEIGH, NC 27614
 LICENSE P-1716

* ENGINEER'S SEAL APPLIES ONLY TO STRUCTURAL COMPONENTS ON THIS DOCUMENT. SEAL DOES NOT INCLUDE CONSTRUCTION REVIEW, MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES OR SAFETY PRECAUTIONS.

* ANY DEVIATIONS OR DISCREPANCIES ON PLANS ARE TO BE BROUGHT TO IMMEDIATE ATTENTION OF THE ENGINEER. FAILURE TO DO SO WILL VOID ENGINEER'S LIABILITY.



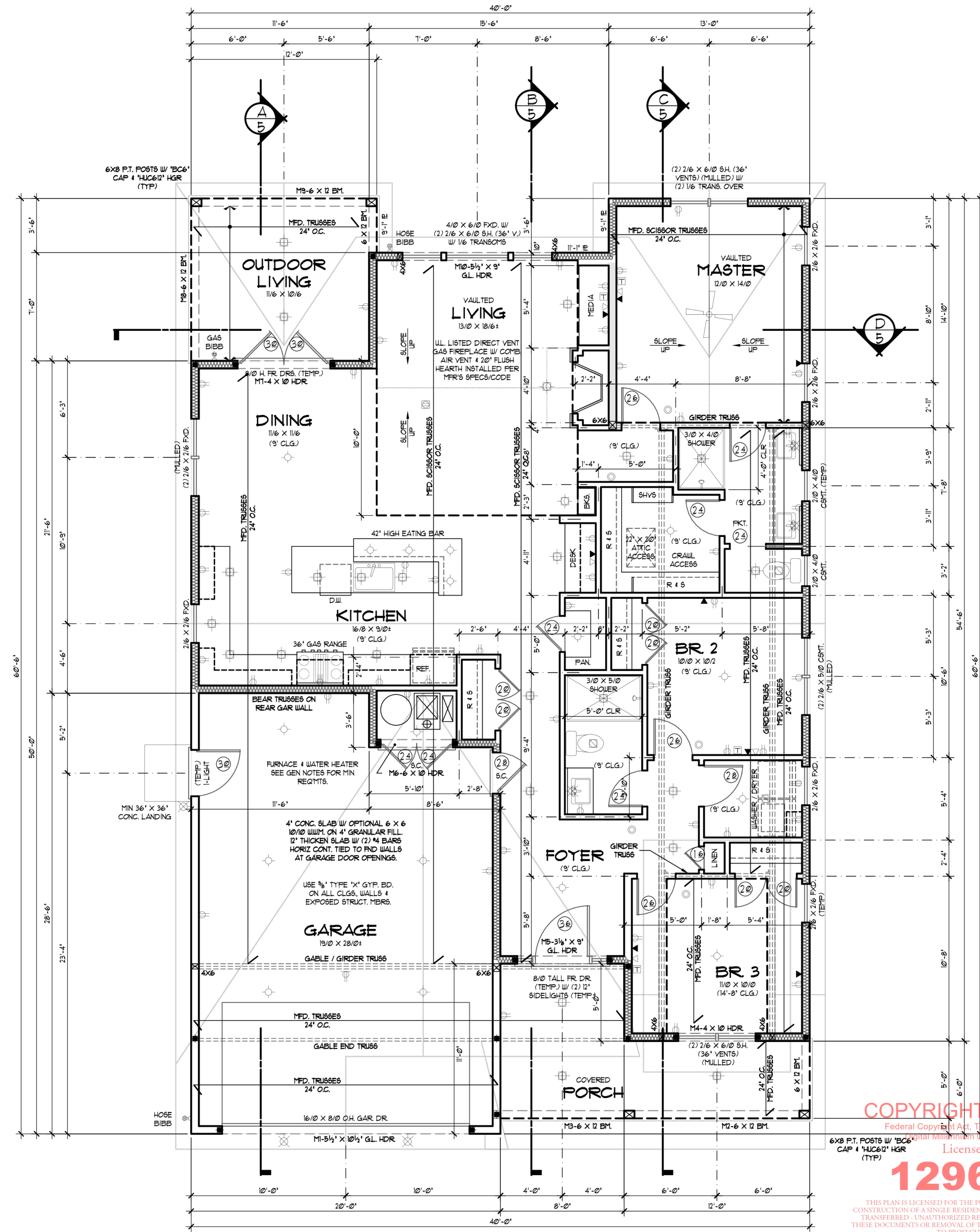
08 27 2024 EDT

LEGEND

- RECESSED LIGHT
- RECESSED DIRECTIONAL LIGHT FIXTURE
- WALL-MOUNT LIGHT
- SURFACE-MOUNT LIGHT
- FLOOD LIGHT
- SURFACE MOUNTED FLUORESCENT
- RECESSED EXHAUST FAN VENTED TO THE EXTERIOR
- CEILING FAN
- DUPLEX OUTLET
- CEILING MOUNTED DUPLEX OUTLET
- 220V OUTLET
- FLUSH FLOOR MOUNTED OUTLET (VERIFY LOC.)
- TELEPHONE OUTLET
- DATA OUTLET
- TELEVISION OUTLET
- SPEAKER LOCATION
- SMOKE / CO DETECTOR (SEE 'GENERAL NOTES' FOR OTHER SPEC'S)
- BEARING POINT LOCATION (PROVIDE SOLID BEARING - MIN. OF MEMBER WIDTH UNO.)
- POINT LOAD FROM ABOVE
- 4 X 4 POST FROM ROOF HIP, VALLEY OR RIDGE DOWN TO BEARING POINT ON WALL BELOW (MAX. OF 45" FROM VERT.)
- BEARING WALL SUPPORTING STRUCTURE ABOVE
- 4 X 10 HDR. # BEARING WALL INT. DOOR & OPENINGS W/ MIN (2) 2 X SUPPORT EA END (UNO.)
- DROPPED STRUCT. MEMBER BEARING # WALL

- ENERGY ENVELOPE KEY
- WALL/FLR/CLG. INSUL.
 - FOUNDATION INSUL.
- (SEE SHEET 'G' FOR INSULATION VALUES)

- C.O. DET LOCATION
- CARBON MONOXIDE ALARMS SHALL BE LOCATED IN EA. BEDROOM OR WITHIN 5 FEET OUTSIDE OF EA. BEDROOM DOOR, AT EVERY FLOOR LEVEL W/ BEDROOMS (SEE SHEET 'G' FOR ADD'L. INFO)



MAIN FLOOR PLAN

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

IF LATERAL ENGINEERING IS REQUIRED, REFER TO ENGINEERING SHEETS FOR LATERAL SPECIFICATIONS

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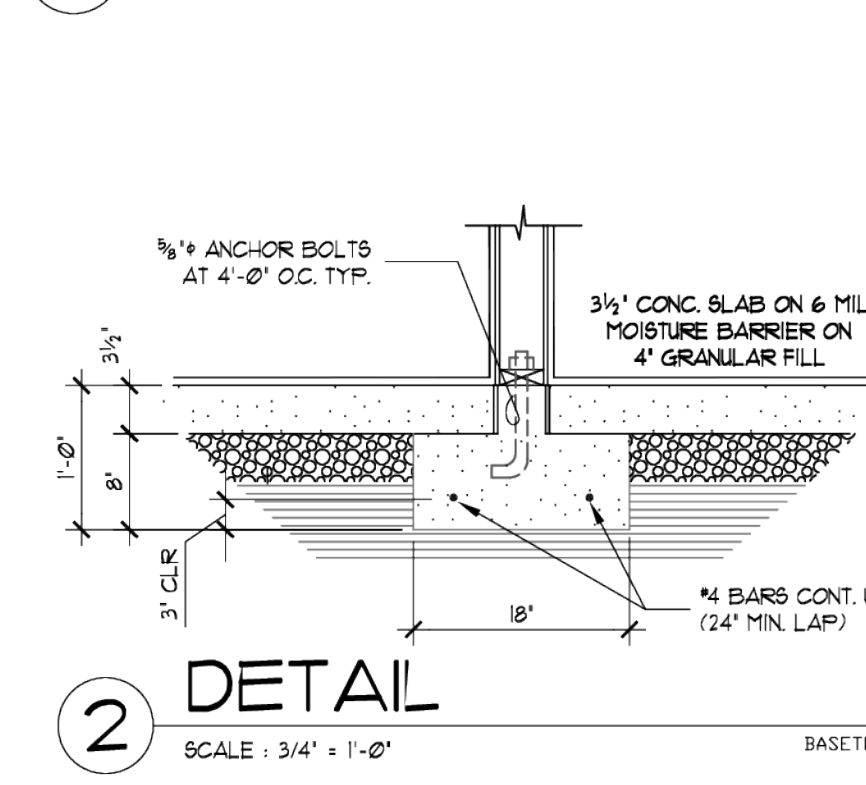
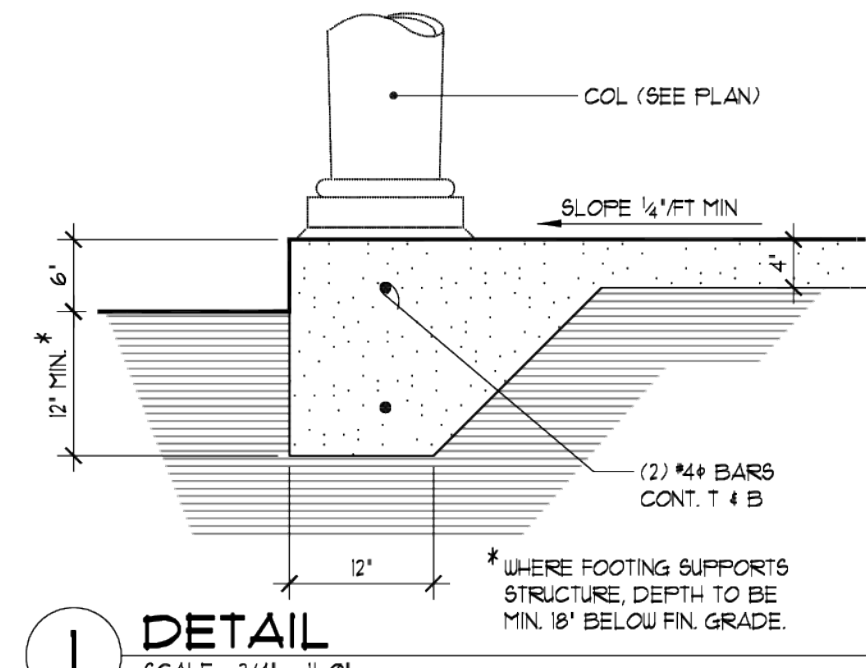
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PROJECT MANAGER: SR
 DRAWN: 07/28/20 LAW

25# SNOW LOAD

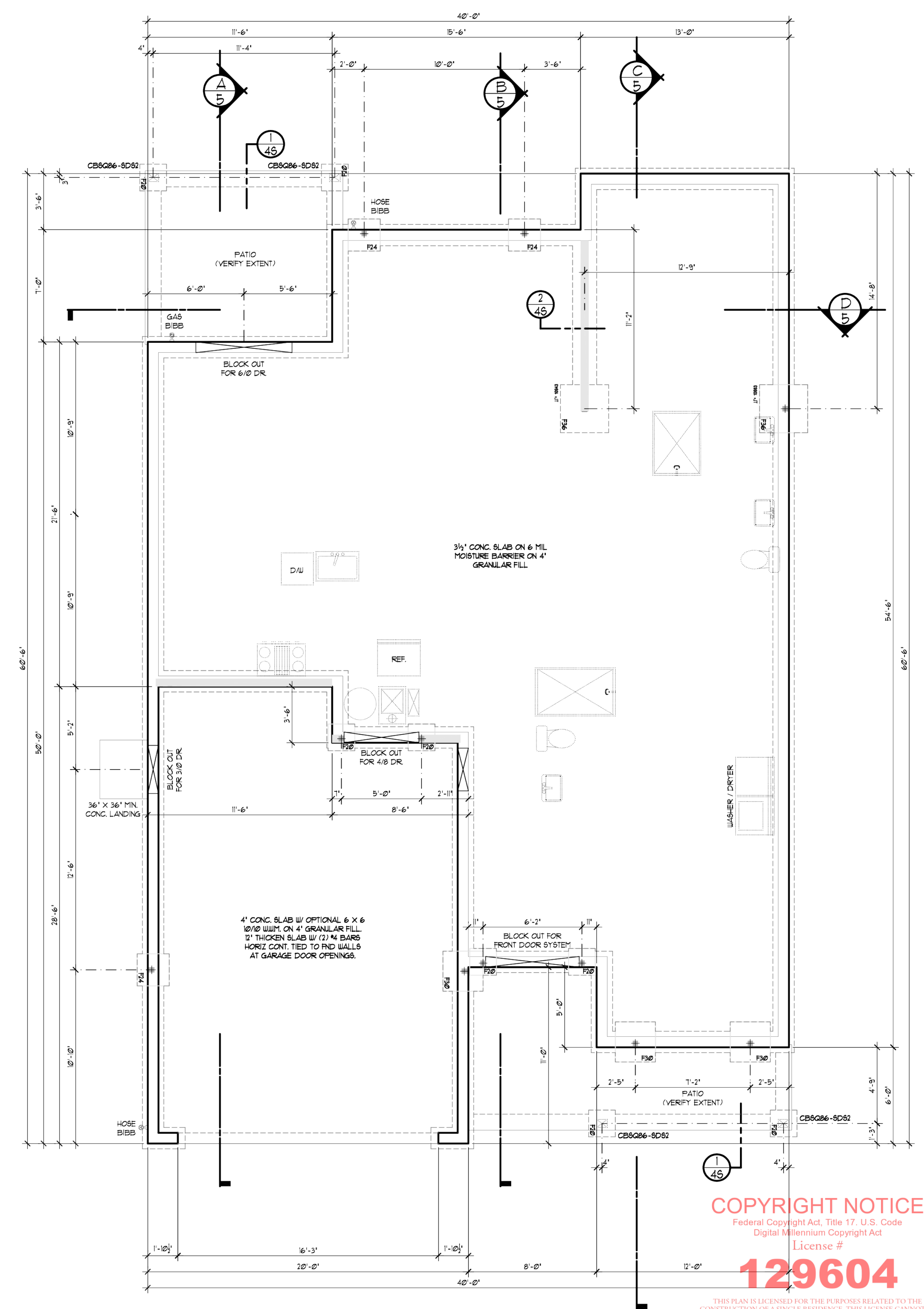
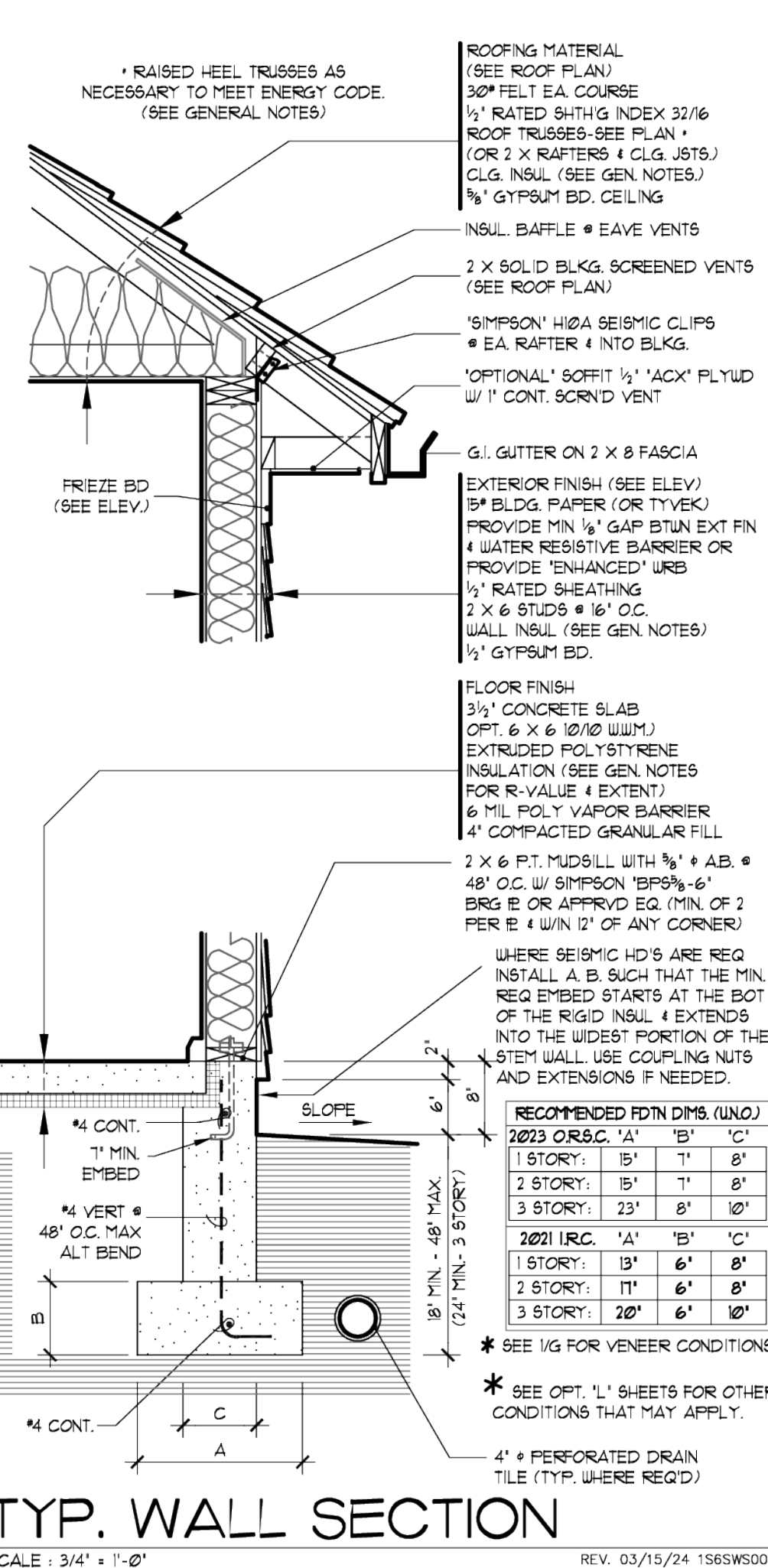
1592 SQ. FT. MAIN FLOOR
 633 SQ. FT. GARAGE AREA



ISOLATED FOOTING SCHEDULE

TAG	FOOTING SIZE	REINFORCING	MAX. BRG.
F10	18" DIA. x 1'	N.A.	2,414 *
F20	20"x20"x10"	N.A.	3,819 *
F24	24"x24"x12"	N.A.	5,409 *
F28	28"x28"x14"	N.A.	7,211 *
F30	30"x30"x15"	N.A.	8,203 *
F36	36"x36"x18"	(4) #4 BARS @ 1' O.C. E/W	12,031 *
F42	42"x42"x21"	(5) #4 BARS @ 8' O.C. E/W	16,531 *
F48	48"x48"x24"	(6) #4 BARS @ 9' O.C. E/W	21,600 *
F54	54"x54"x27"	(6) #4 BARS @ 9' O.C. E/W	27,331 *
F60	60"x60"x30"	(7) #4 BARS @ 9' O.C. E/W	33,750 *

ASSUMED MIN. 4x4" D.P. COLUMN (UNO. - SEE PLANS)
 * 6x6" D.P. COLUMN FOR MAX. BRG.
 ** 3 1/2"x3 1/2" FSL COLUMN FOR MAX. BRG. (OR 6x6 TO 18.52")
 *** 5 1/2"x5 1/2" FSL COLUMN FOR MAX. BRG. (SEE POST-CONN. DETAIL.) SOIL B.P. 1500 PSF



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

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ALAN MASCORD DESIGN ASSOCIATES, INC.
 PROJECT MANAGER/DRN
 DRAWN 07/28/20 LAW

1168D
 4 SM

25# SNOW LOAD

1552 SQ. FT.
 533 SQ. FT.

MAIN FLOOR
 GARAGE AREA

REV. 03/15/24 1565WS00

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ROOF TRUSSES BY OTHERS

ROOF DESIGN NOTES

THIS ROOF HAS BEEN DESIGNED TO SUPPORT CEDAR SHAKE ROOFING MATERIALS AND COMPOSITION ROOFING OF VARIOUS TYPES. THE TABLE BELOW DESCRIBES IN DETAIL THE ASSUMPTIONS MADE IN THE DESIGN OF THE ROOF STRUCTURE OF THIS BUILDING.

ROOF LIVE LOAD (SNOW)	25.0 PSF	3.25 PSF	AVE./WET
FRAMING MATERIALS:	2.0 PSF	33.25 PSF	ACTUAL REQ'D
SHEATHING MATERIALS:	15 PSF	6.75 PSF	SAFETY FACTOR
MISC. MATERIALS:	15 PSF		
ROOFING TYPE	DRY / WET	40.0	PSF TL
MED SHAKES	2.0 / 3.25 PSF		
HVT SHAKES	3.0 / 4.0 PSF		
SHINGLES	2.0 / 3.25 PSF		
COMPOSITION	2.5 / 3.0 PSF		

GYPSUM MATERIALS: ADD 2.0 PSF FOR VAULTED AREAS (COVERED IN SAFETY FACTOR)

NOTE: HIP, VALLEYS & RIDGES SHALL NOT BE LESS IN DEPTH THAN THE END CUT OF THE RAFTERS (FIELD VERIFY ALL CONDITIONS)

LEGEND

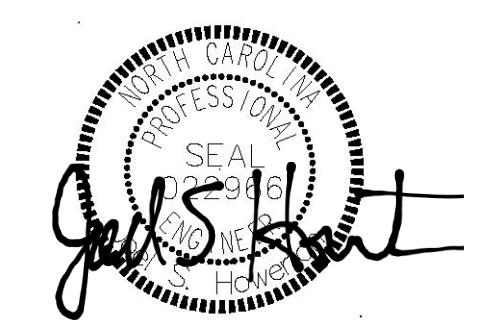
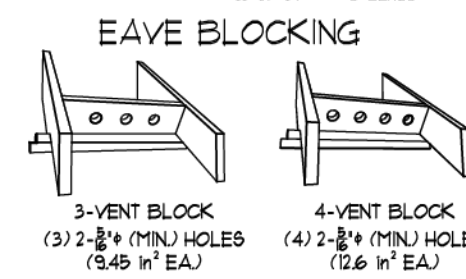
- 4 x 4 WOOD POST FROM RIDGE (HIP OR VALLEY) TO WALL BELOW (MIN. 2" X 4 REQ'D AT WALL BEARING POINT) NOTE: SPLICES IN HIP & VALLEYS CAN ONLY OCCUR @ POST DOWN LOCATIONS
- 49 SQ. IN. ROOF VENTS (SEE VENT TABLE FOR QTY. - 50%/50% SHOW)
- 2X4 FURLIN WALL TO BR. OR WALL BELOW (FRAM'G AT 24" O.C.)
- SHADED AREA DENOTES ROOF FRAMED OVER RAFTERS BELOW
- DOWNSPOUTS

COMP/SHAKE ROOF

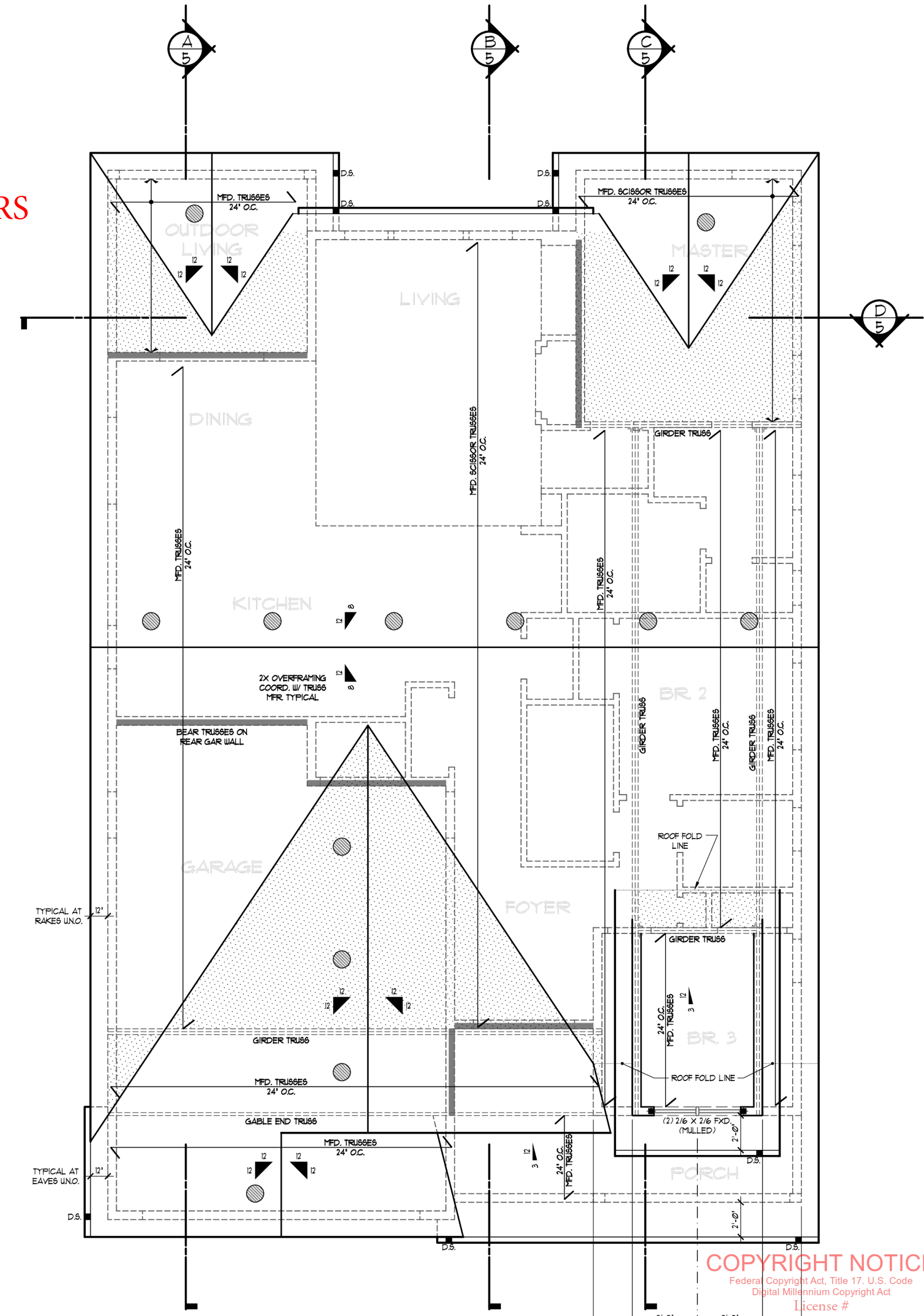
MAXIMUM SPANS PER 2004 IBC/IFC, TBL. RR-2B	SIZE	SPACING	SPAN
2" D.F. L/240			
25" LL & 15" DL			
2X6	12" O.C.	14'-0"	
	16" O.C.	12'-1"	
	24" O.C.	9'-10"	
2X8	12" O.C.	17'-8"	
	16" O.C.	15'-4"	
	24" O.C.	12'-6"	
2X10	12" O.C.	21'-1"	
	16" O.C.	18'-9"	
	24" O.C.	15'-3"	
2X12	12" O.C.	25'-1"	
	16" O.C.	21'-8"	
	24" O.C.	17'-9"	

ROOF VENTS						
ROOF AREA (ft ²) = 2348						
% EAVE	AREA (ft ²)	% ROOF	AREA (ft ²)	3-VENT	4-VENT	49 IN ²
6.0	676.2	4.0	450.8	12	54	9
56.1	639.0	43.3	488.0	60	51	10
53.3	600.1	46.1	526.3	64	48	11
5.0	563.5	5.0	563.5	60	45	12

PER 2004 IBC, FROM 2 THE MIN. NET FREE VENTILATING AREA SHALL BE 1/300 OF THE AREA OF THE VENTED SPACE.
EXCEPTION: THE MIN. NET FREE VENTILATING AREA SHALL BE 1/3000 OF THE VENTED SPACE PROVIDED BOTH OF THE FOLLOWING CONDITIONS ARE MET:
1. IN CLIMATE ZONES 1, 2 AND 3, 4 & 5, 40% OF VENTOR NET AREA IS INSTALLED ON THE WIND-TO-WIND SIDE OF THE CEILING.
2. NOT LESS THAN 40 PERCENT AND NOT MORE THAN 50 PERCENT OF THE REQUIRED VENTILATING AREA IS PROVIDED BY VENTILATORS LOCATED IN THE UPPER PORTION OF THE ATTIC OR RAFTER SPACE. UPPER VENTILATORS SHALL BE LOCATED NOT MORE THAN 3 FEET (914 MM) BELOW THE RIDGE OR HIGHEST POINT OF THE SPACE. LOWER VENTILATORS SHALL BE LOCATED IN THE LOWER PORTION OF THE ATTIC SPACE. LOWER VENTILATORS SHALL BE LOCATED IN THE BOTTOM ONE-THIRD OF THE ATTIC SPACE WHERE THE LOCATION OF WALL OR ROOF FRAMING MEMBERS COMPATIBLE WITH THE INSTALLATION OF UPPER VENTILATORS. INSTALLATION MORE THAN 3 FEET (914 MM) BELOW THE RIDGE OR HIGHEST POINT OF THE SPACE SHALL BE PERMITTED.



08 27 2024 EDT



ROOF PLAN TO BE VERIFIED W/ TRUSS LAYOUT AND DESIGN BY TRUSS MFR. SEE LAYOUT, TRUSS DRAWINGS AND ENGINEERING BY MFR. FOR ADDITIONAL SPECIFICATIONS AND INSTALLATION REQUIREMENTS.

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ROOF FRAMING PLAN

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

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1168D 6 SM
PROJECT MANAGERS
DRAWN 07/28/20 LAW

25# SNOW LOAD
1952 SQ. FT.
MAIN FLOOR
533 SQ. FT.
GARAGE AREA

1168D
6 SM

DISCLAIMER

3/18/20

THESE PLANS HAVE BEEN LICENSED TO THE CUSTOMER FOR USE IN THE CONSTRUCTION OF ONE BUILDING ONLY AND ARE SUBJECT TO THE CONDITIONS OF LICENSE ACCEPTED BY THE CUSTOMER. MULTIPLE-USE BUILDING LICENSES ARE AVAILABLE. USE OF ANY PART OF THE PLANS BY ANY PARTY OTHER THAN THE CUSTOMER...

MASCORD PREPARES ITS PLANS CAREFULLY FOR USE BY ITS CUSTOMERS. HOWEVER, ADAPTATION OF THE PLANS TO MEET SPECIFIC STATE AND LOCAL BUILDING CODES AND REGULATIONS, AND SPECIFIC SITE CONDITIONS, IS THE RESPONSIBILITY OF THE CONTRACTOR. IN ADDITION, MASCORD WILL NOT BE RESPONSIBLE FOR ANY DAMAGES RELATING TO THE ACCURACY AND OVERALL INTEGRITY OF THE PLANS...

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GENERAL NOTES:

10/17/13

1. ALL WORK IS TO COMPLY WITH THE LATEST ADOPTED VERSION OF THE 2015 INTERNATIONAL RESIDENTIAL CODE (IRC) AND/OR ANY APPLICABLE STATE, COUNTY OR LOCAL JURISDICTION.

2. THE CONTRACTOR IS RESPONSIBLE TO CHECK THE PLANS AND IS TO NOTIFY THE DESIGNER OF ANY ERRORS OR OMISSIONS PRIOR TO THE START OF CONSTRUCTION. QUANTITIES CONTRACTOR SHALL VERIFY WITH LOCAL BLDG. DEPT. WHICH CLIMATE ZONE THE PROJECT WILL BE IN.

3. WRITTEN DIMENSIONS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS. DO NOT SCALE THE DRAWINGS.

Table with columns for USE, LL, and DL. Includes rows for UNINHAB. ATTIC VOID STORAGE, TABLE ATTICS & ATTICS SERVED BY STAIR, etc.

(IF YOUR LOCAL AREA REQUIRES DIFFERENT DESIGN LOADS CONSULT WITH A LOCAL QUALIFIED PROFESSIONAL TO DETERMINE THE APPROPRIATE REVISIONS.)

5. INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT:

Table for Climate Zones with columns for Climate Zone, U-Factor, SHGC, etc.

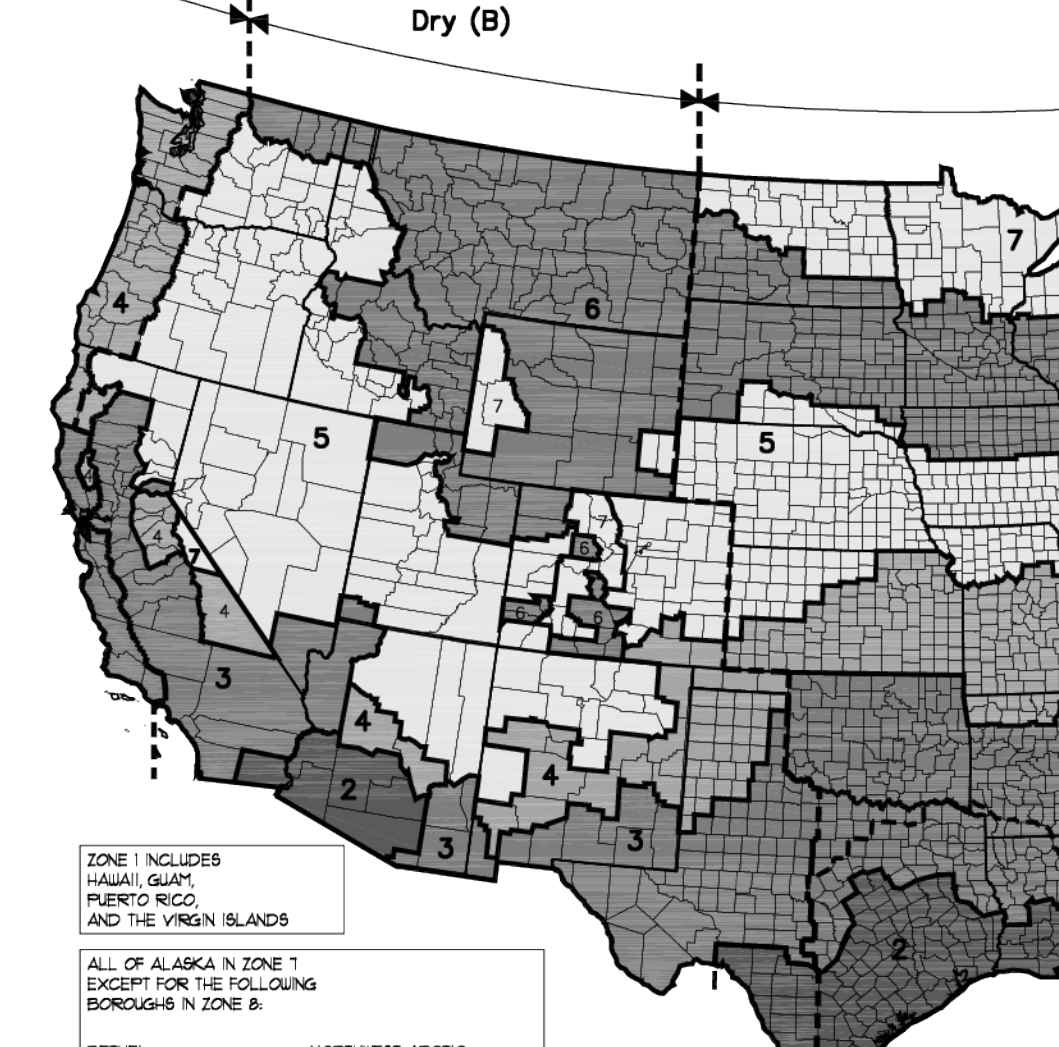
- a. R-values are minimum U-factors and SHGC are maximum. When insul. is installed in a cavity which is less than the labeled design thickness of the insul., the installed R-value of the insul. shall not be less than the R-value specified in the table.

18. LOCAL EXHAUST - BATHROOMS/TOILET ROOMS, UTILITY ROOMS IN DOOR/SWIMMING POOL, 1 SPA IS TO BE VENTED WITH A FAN CAPABLE OF PRODUCING A MIN. 50 CFM INTERMITTENT OR 200 CFM CONT. AND KITCHENS CAPABLE OF 100 CFM INTERMITTENT OR 25 CFM CONT. DUCT LENGTH, DUCT TYPE TO BE DETERMINED PER TABLE R-1802.1. ALL EXHAUST VENTS TO BE VENTED TO EXTERIOR WHERE IT EXCEEDS 50' THE EQUIVALENT LENGTH OF THE DRYER EXHAUST DUCT SHALL BE IDENTIFIED ON A PERMANENT LABEL OR TAG LOCATED WITHIN 6 FEET OF THE EXHAUST DUCT CONNECTION.

19. WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM SHALL CONSIST OF ONE OR MORE SUPPLY OR EXHAUST FANS OR A COMBINATION OF BOTH AND ASSOCIATED DUCTS AND CONTROLS. LOCAL EXHAUST OR SUPPLY FANS ARE PERMITTED TO SERVE AS SUCH A SYSTEM. OUTDOOR AIR DUCTS CONNECTED TO THE RETURN SIDE OF A FAN HANDLER SHALL BE CONSIDERED TO PROVIDE SYSTEM VENTILATION. SYSTEM SHALL BE PROVIDED WITH MANUAL OVERRIDE CONTROL. FRESH-AIR VENTILATOR TO SIZE VENTILATION SYSTEM IN ACCORDANCE WITH SECTION R-1802.3. REGARDING AREA SERVED AND SYSTEM TYPE)

20. SPECIFIC MANUFACTURERS AND MATERIALS SPECIFIED ON THESE PLANS ARE AN INDICATION OF QUALITY AND STRENGTH. VERIFY ALL CONSTRUCTION MATERIAL, SUBSTITUTIONS WITH CURRENT APPLICABLE BUILDING CODES AND LOCAL BUILDING OFFICIALS PRIOR TO INSTALLATION / SUBSTITUTION.

21. THIS DESIGN UNLESS PURCHASED WITH ITS SPECIFIC ENGINEER ANALYSIS, HAS NOT BEEN REVIEWED FOR ANY SPECIFIC LATERAL DESIGN REQUIREMENTS.



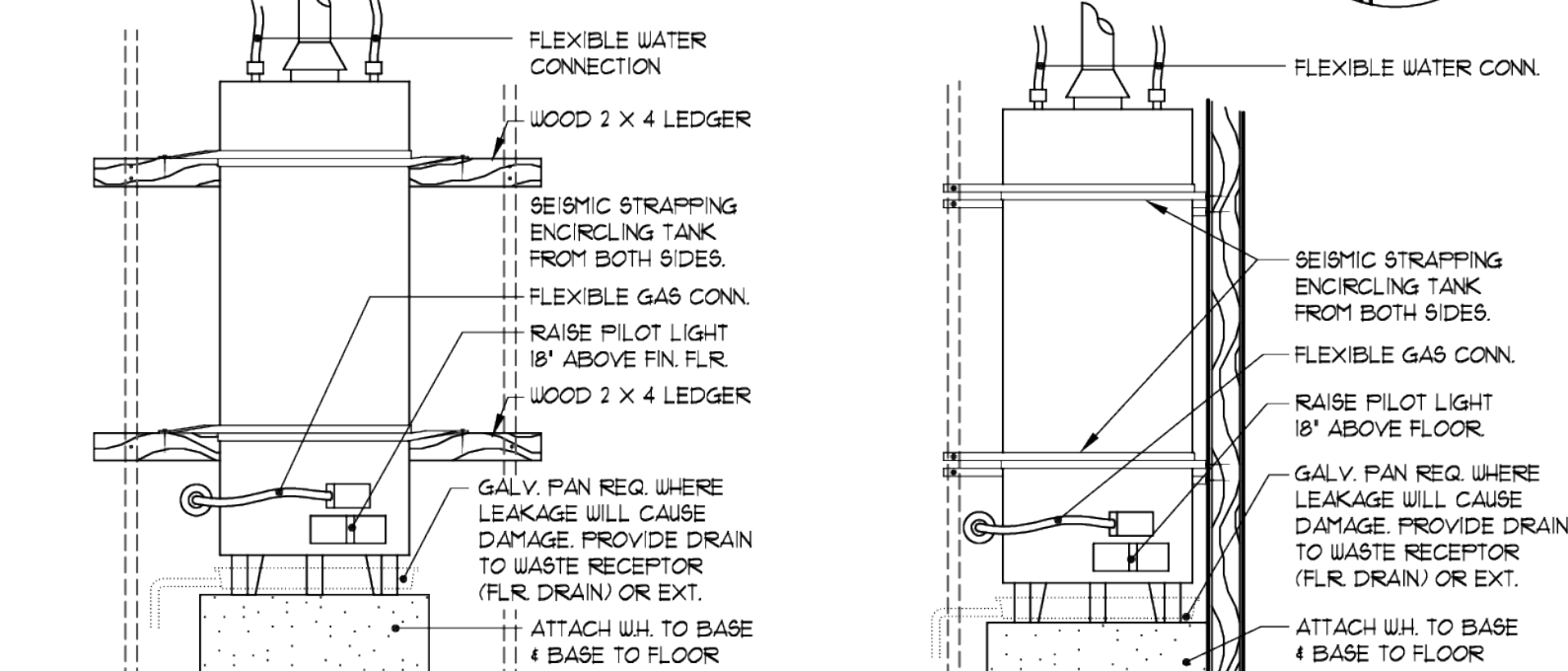
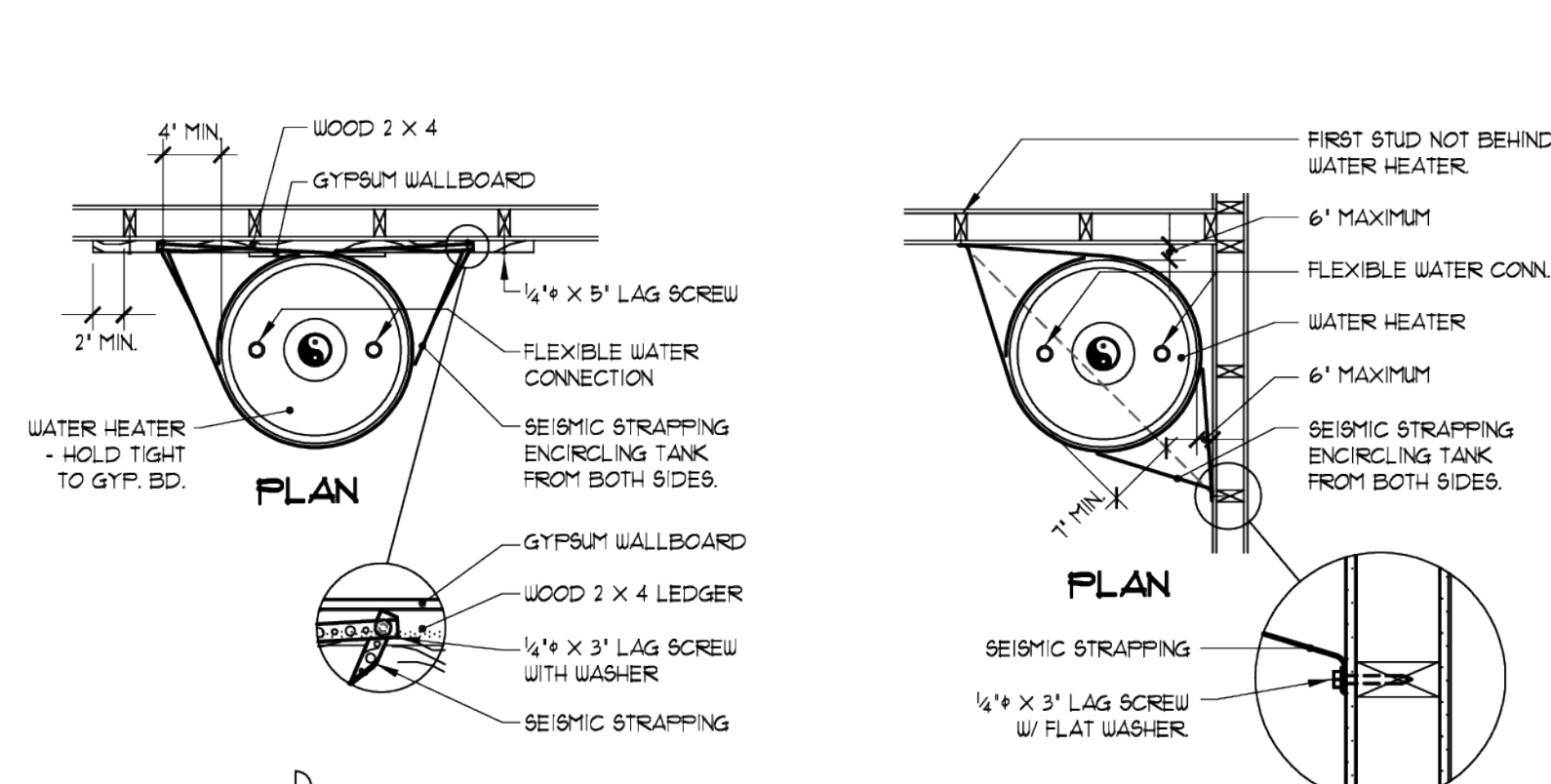
CLIMATE ZONE MAP

FOUNDATION NOTES:

10/17/13

- 1. FOOTINGS ARE TO BEAR ON UNDISTURBED LEVEL SOIL DEVOID OF ANY ORGANIC MATERIAL AND STEEPED AS REQUIRED TO MAINTAIN THE REQUIRED DEPTH BELOW THE FINAL GRADE.
2. CONTINUOUS FOOTINGS ARE DESIGNED PER 2015 IRC TABLE R602.3(1) - SOIL BEARING VALUE OF 1500 PSF.
3. MAX. SLOPE OF CUTS AND FILLS TO BE TWO (2) HORIZ. TO ONE (1) VERT. FOR BLDG. STRUCTURES AND FOUND.

- 7. CONCRETE @ DEWALLS TO HAVE 3/4" IN. TOOLED JOINTS AT 9 FT. (MIN) O.C.
8. REINFORCING STEEL TO BE A-605 GRADE 60. WELDED JOINTS TO HAVE 12" LAPS WITH 180 DEGREE BENDS AT JOINTS.



FRAMING NOTES:

10/17/13

- 1. ALL EXTERIOR WALL OPENINGS & BEARING WALL OPENINGS TO HAVE 4 X 8 HEADERS UNLESS OTHERWISE NOTED ON THE PLAN.
2. ALL EXTERIOR WALLS TO BE BUILT OF 2 X 6 STUDS @ 16" O.C. TYPICALLY UNLESS NOTED OTHERWISE.

- 11. PROVIDE COMBINATION AIR VENTS (W/ SCREEN AND BACK DAMPER) FOR TIGHTLY CLOSED WOOD STOPS, AND ANY APPLIANCES WITH AN OPEN FLAME. REFERENCE FUE GAS APPLIANCE SHALL BE TIGHTLY FITTING AND OPERATED BY A READILY ACCESSIBLE MANUAL OR APPROVED AUTOMATIC CONTROL.

- 12. INTERIOR & EXTERIOR STAIRS SHALL HAVE 4 MEANS TO ILLUMINATE THE STAIRS, INCLUDING LANDINGS & HEADS. INTERIOR STAIRS OF 6' STEPS OR MORE SHALL HAVE THE REQUIRED LIGHTING IN THE IMMEDIATE VICINITY OF THE TOP & BOTTOM OF THE STAIRS.

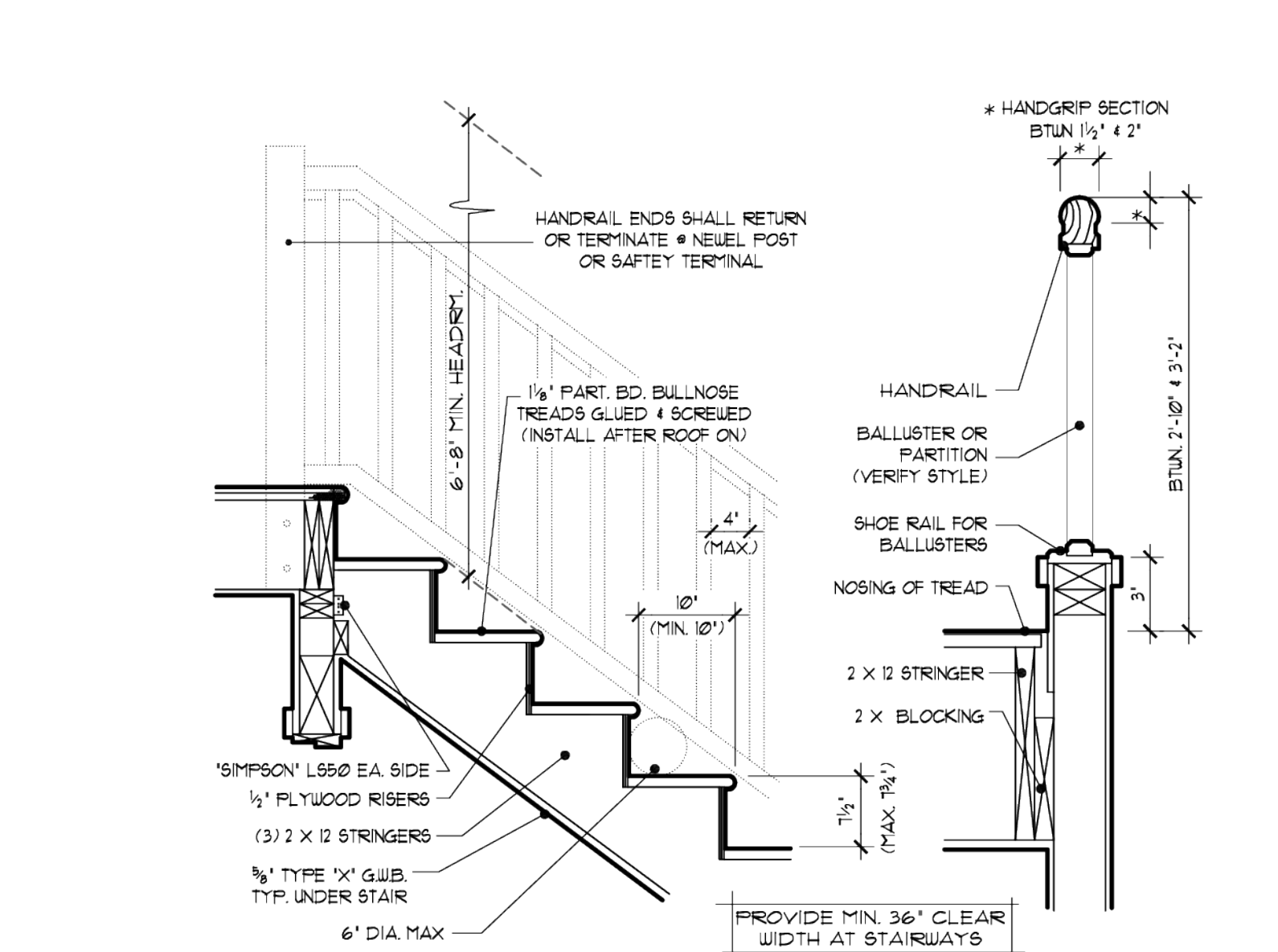
- 13. ROOF BEAMS, HEADERS JOISTS AND RAFTERS NO. 2 DOUGLASS FIR
14. SILL PLATES, BLOCKING BRIDGES ETC. NO. 2 DOUGLASS FIR
15. STUDS OVER 10' HIGH NO. 2 OR BETTER D.F.

Table with columns for JOISTS, FLOOR, CEILING and rows for various joist sizes and spans.

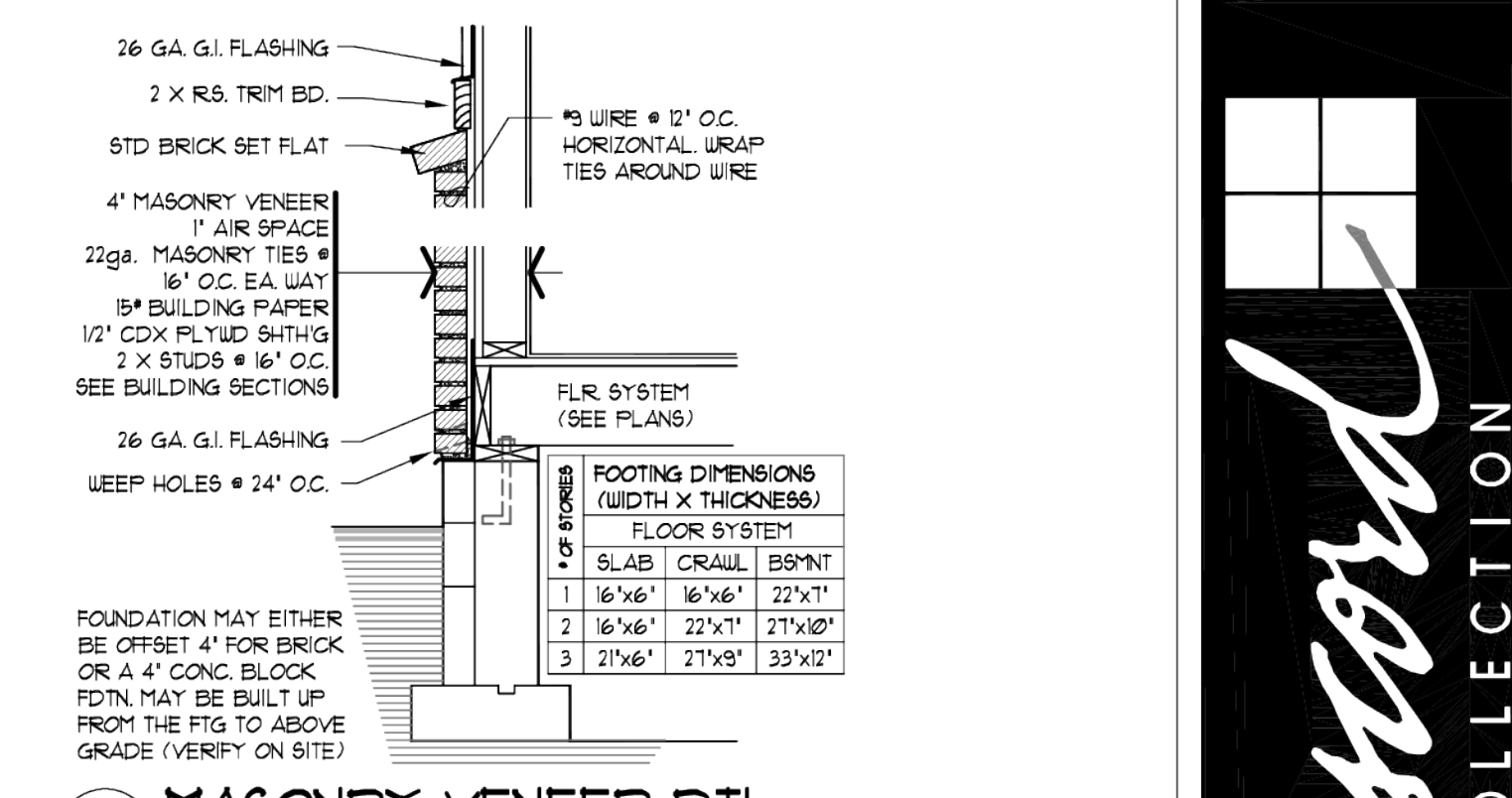
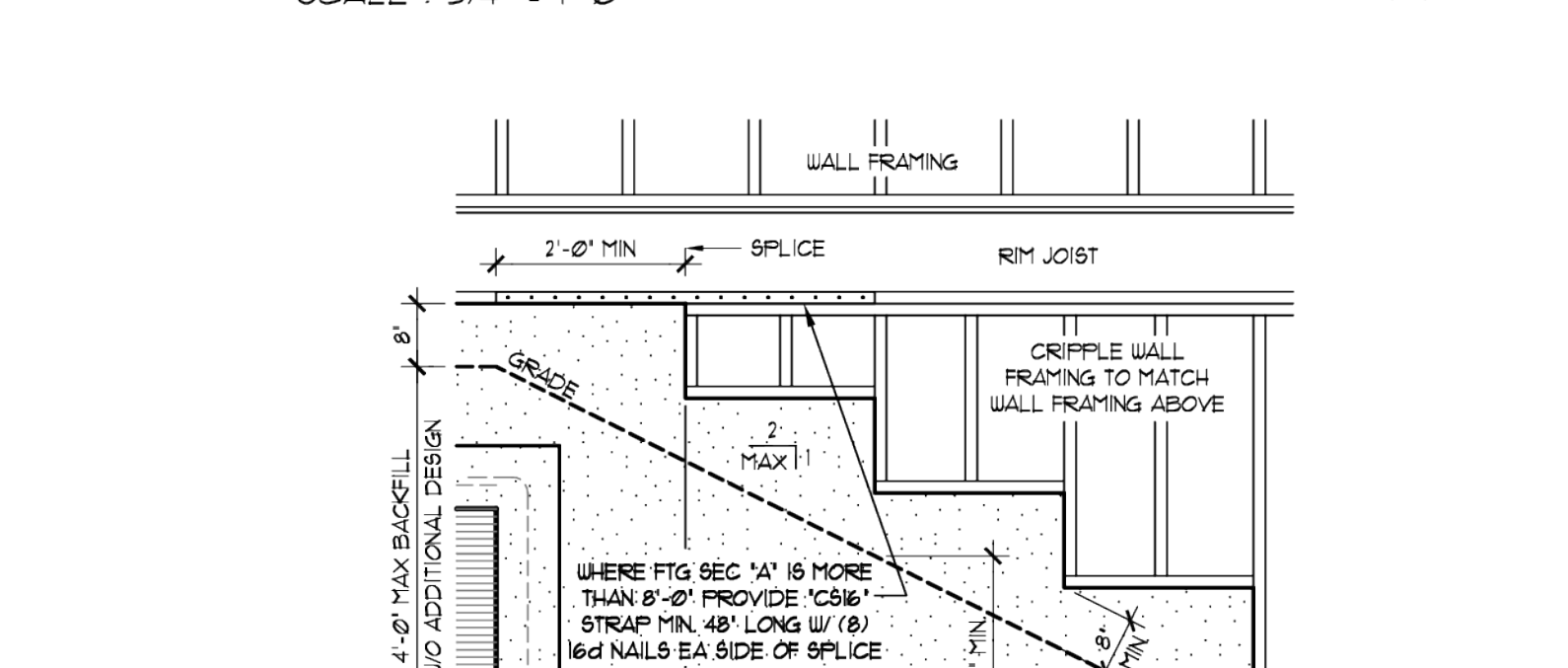
SPAN TABLES

Table with columns for JOISTS, FLOOR, CEILING and rows for various joist sizes and spans.

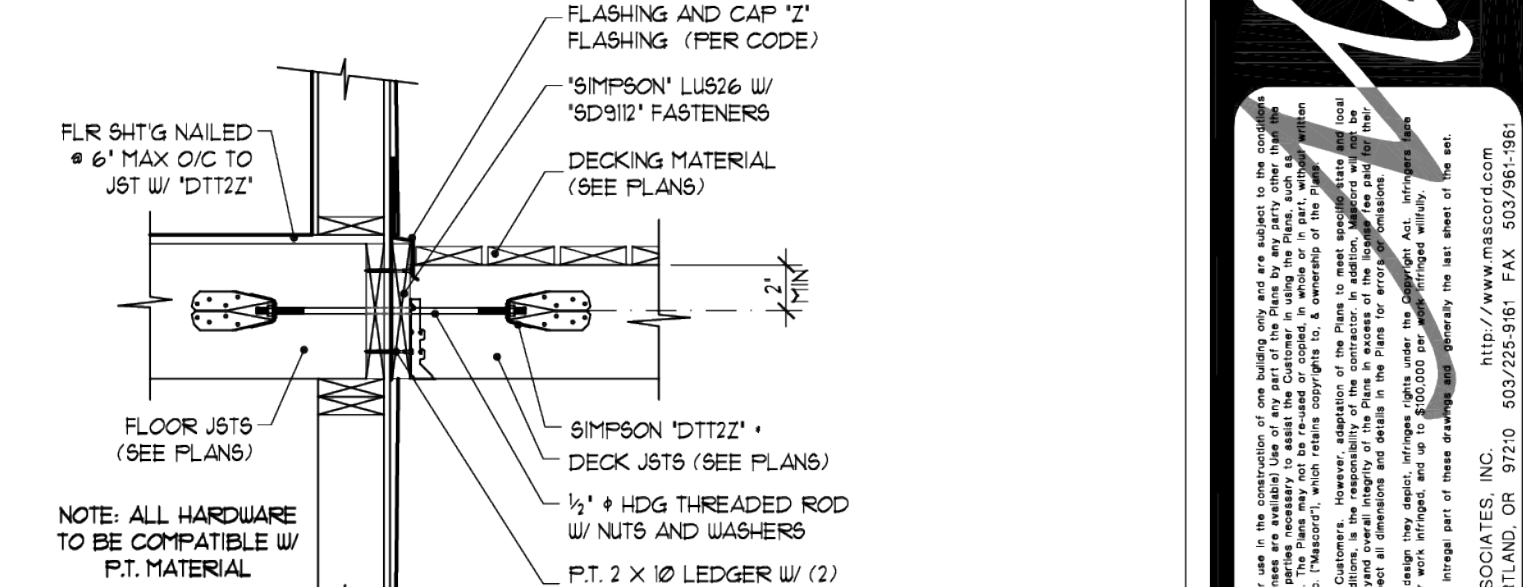
STAIR DETAIL



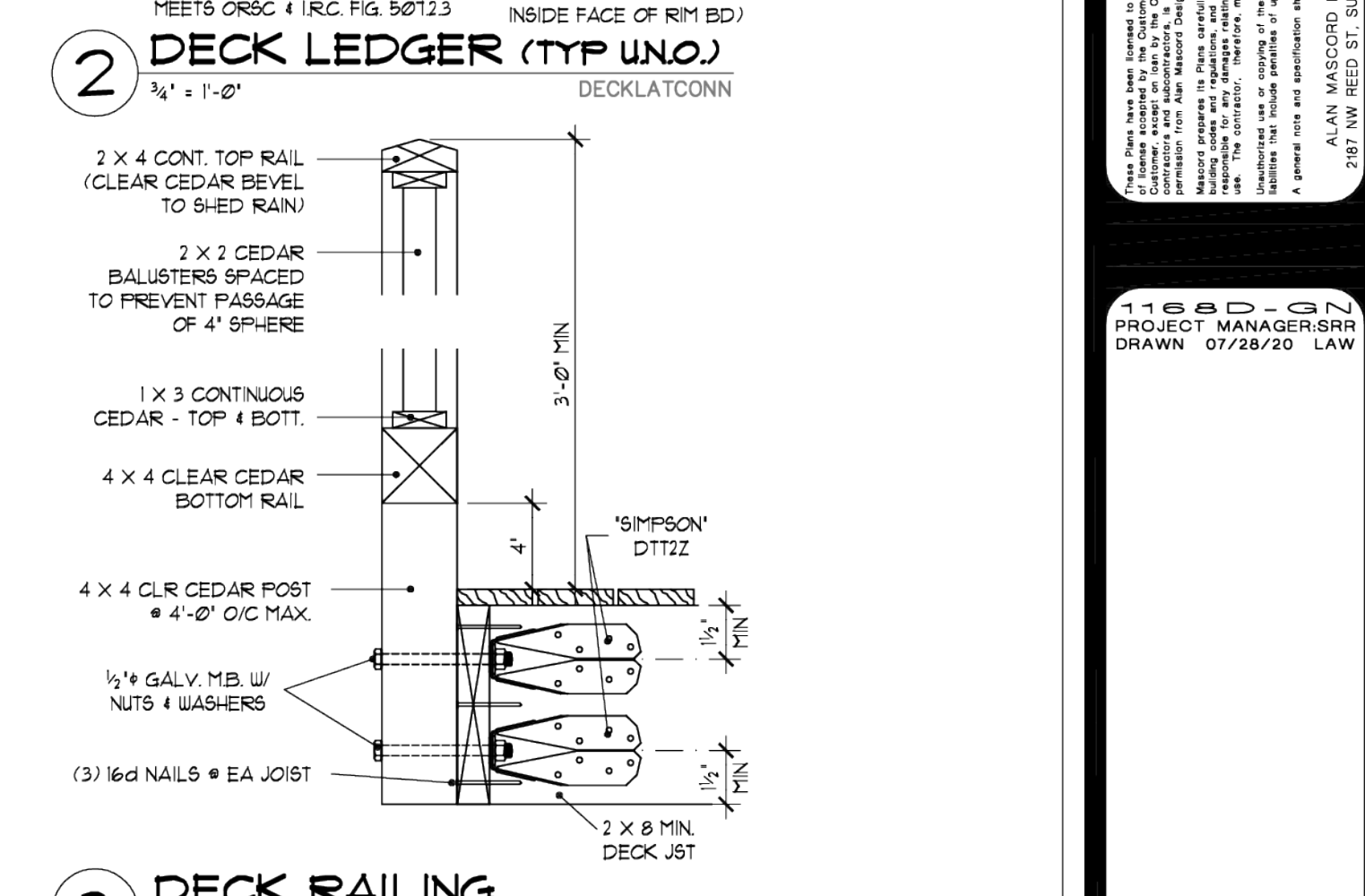
STEP FOOTING DETAIL



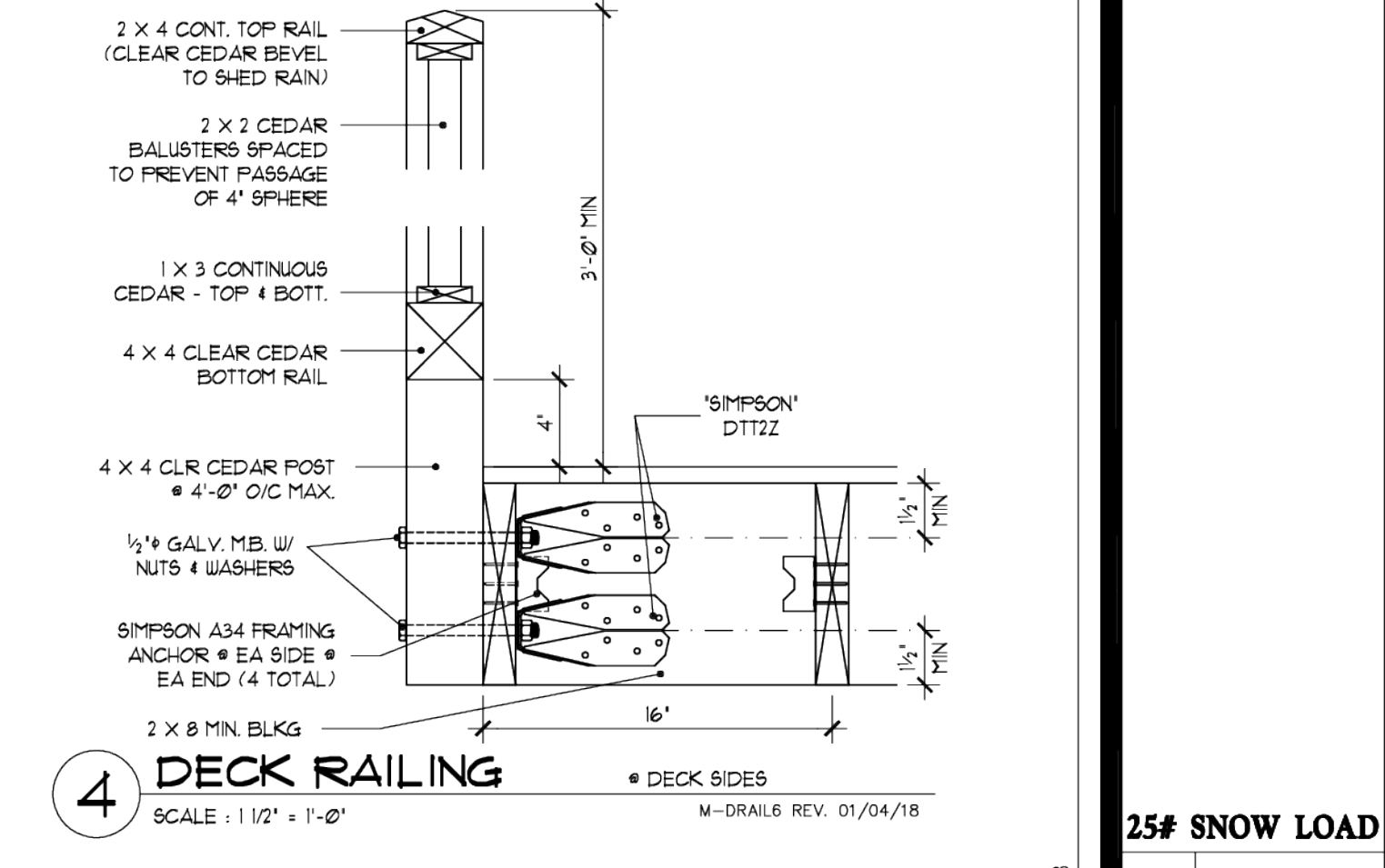
DECK LEDGER (TYP UNO.)



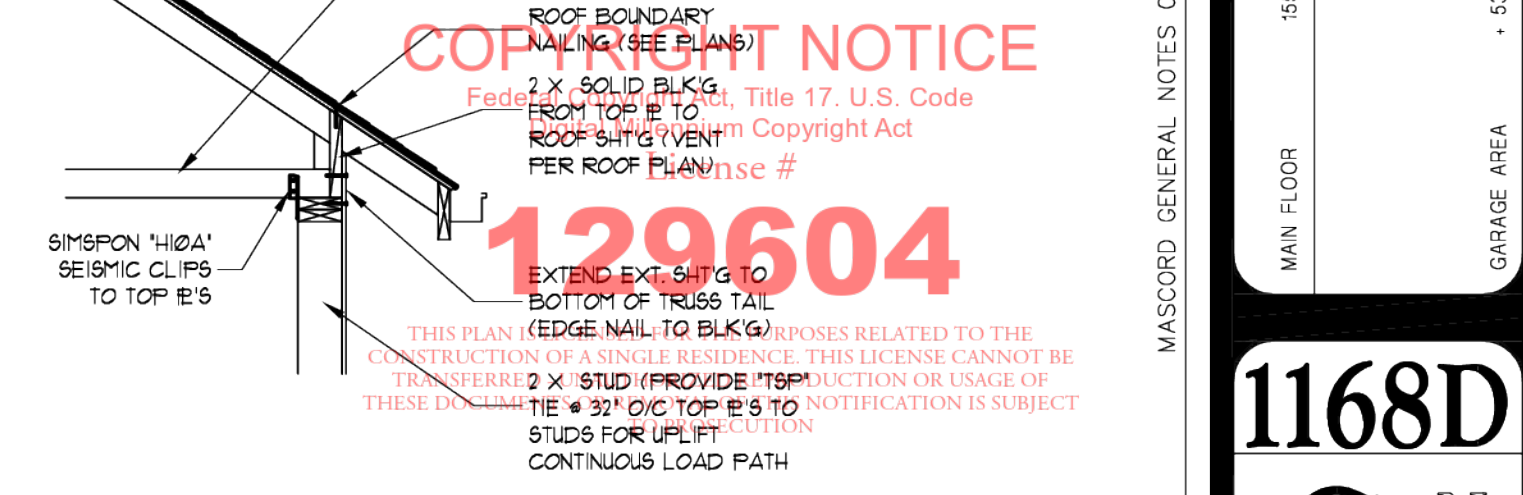
DECK RAILING



DECK RAILING



TRUSS CONNECTION



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RADON MITIGATION

THE FOLLOWING CONSTRUCTION TECHNIQUES AND MEASURES ARE INTENDED TO MITIGATE RADON ENTRY IN NEW CONSTRUCTION. THESE TECHNIQUES MAY BE REQUIRED ON A JURISDICTION-BY-JURISDICTION BASIS. FOR EXAMPLE, IN THE STATE OF OREGON, PER 2014 O.R.S.C., THE COUNTIES OF MULTNOMAH, WASHINGTON, CLACKAMAS, POLK, YAMHILL, HOOD RIVER AND BAKER REQUIRE RADON MITIGATION, AS DO THE COUNTIES OF CLATSOP, FERRY, OKANOGAN, PEND OREILLE, SKAMANIA, SPOKANE AND STEVENS IN THE STATE OF WASHINGTON, PER 2015 I.R.C./U.A.C 51-51-620(1) (AF10) & AF103.

FOLLOWING THE U.S. EPA "MODEL STANDARDS AND TECHNIQUES FOR CONTROL OF RADON IN NEW RESIDENTIAL BUILDINGS", THESE SPECIFICATIONS MEET MOST NATIONAL CODES. THE BUILDER AND HOME OWNER SHOULD CHECK FOR ANY LOCAL VARIANTS TO THESE GUIDELINES.

BUILDING TIGHTNESS MEASURES

THE FOLLOWING ARE POINTS OF ENTRY TO PROTECT FROM PASSAGE OF RADON GAS INTO LIVING SPACE - PROVIDE POLYURETHANE CAULK OR EQUIVALENT SEALANT AT THE FOLLOWING CRITICAL POINTS:

- SLAB ON-GRADE AND BASEMENT WALLS**
- CRACKS IN CONCRETE SLABS
 - COLD JOINT BETWEEN TWO CONCRETE POURS
 - POSES AND JOINTS IN CONCRETE BLOCKS
 - FLOOR-TO-WALL CRACK OR FRENCH DRAIN
 - EXPOSED SOIL, AS IN A SUMP
 - WEERS (DRAIN) TILE, IF DRAINED TO OPEN SUMP
 - MORTAR JOINTS
 - LOOSE FITTING PIPE PENETRATIONS
 - OPEN TOPS OF BLOCK WALLS
 - WATER FROM SOME WELLS
 - UNTRAPPED FLOOR DRAIN TO A DRY WELL OR SEPTIC SYSTEM

- CRAWL SPACE**
- CRACKS IN SUBFLOORING AND FLOORING
 - SPACES BEHIND STUD WALLS AND BRICK VENEER WALLS THAT REST ON UNCAFFED HOLLOW-BLOCK FOUNDATION
 - ELECTRICAL PENETRATIONS
 - LOOSE-FITTING PIPE PENETRATIONS
 - OPEN TOPS OF BLOCK WALLS
 - WATER FROM SOME WELLS
 - HEATING DUCT REGISTER PENETRATIONS
 - COLD-AIR RETURN DUCTS IN CRAWL SPACE

CONDENSATE DRAINS SHALL BE RUN TO THE EXTERIOR USING NON-PERFORATED PIPE OR SHALL BE PROVIDED WITH AN APPROVED TRAP.

SUMP PITS THAT SERVE AS END POINT FOR A SUB-SLAB OR EXTERIOR DRAIN TILE LOOP SYSTEM AND SUMP PITS WHICH ARE NOT SEALED FROM THE SOIL, SHALL BE FITTED WITH A GASKETED OR SEALED LID. WHERE THE SUMP IS USED AS THE SUCTION POINT IN A SUB-SLAB DEPRESSURIZATION SYSTEM, THE LID MUST BE DESIGNED TO ACCOMMODATE THE VENT PIPE. WHERE USED AS A FLOOR DRAINING, THE SUMP PIT LID SHALL HAVE A TRAPPED INLET.

DUCTWORK WHICH PASSES THROUGH OR BENEATH A CONCRETE FLOOR SLAB SHALL BE FREE OF SEAMS AND MUST BE PERFORMANCE TESTED. DUCTWORK PASSING THROUGH A CRAWLSPACE MUST HAVE ALL SEAMS AND JOINTS SEALED (PER M16(03)). ALL JOINTS OF DUCT SYSTEMS USED IN THE HEATING OR COOLING OF A CONDITIONED SPACE SHALL BE SEALED BY MEANS OF TAPES, MASTIC, AEROSOL SEALANT, GASKETING OR OTHER APPROVED CLOSURE SYSTEMS. WHERE MASTIC IS USED TO SEAL OPENINGS GREATER THAN 1/4", A COMBINATION OF MASTIC AND MESH SHALL BE USED.

CRAWLSPACE ACCESS OR UNDER-FLOOR MECHANICAL EQUIPMENT ACCESS OR ANY OTHER ACCESS POINT FROM THE HABITABLE SPACE INTO THE CRAWL SPACE, SUCH AS DOORS OR PANELS, MUST BE CLOSED AND GASKETED TO CREATE AN AIRTIGHT SEPARATION.

AIR HANDLING UNITS IN CRAWL SPACES SHALL BE SEALED TO PREVENT AIR FROM BEING DRAIN INTO THE UNIT.

CRAWL SPACE RADON MITIGATION

IN ADDITION TO THE CRAWL SPACE SEALING REQUIREMENTS, ONE OF THREE RADON MITIGATION METHODS SHALL BE IMPLEMENTED:

- METHOD #1 - MECHANICAL VENTILATION (AF1035, EXCEPTION)**
- PROVIDE AN APPROVED MECHANICAL CRAWL SPACE VENTILATION SYSTEM OR OTHER EQUIVALENT SYSTEM.
- METHOD #2 - PASSIVE SUB-MEMBRANE DEPRESSURIZATION SYSTEM (AF1035)**
- PROVIDE FOUNDATION VENTILATION SYSTEM (SEE FOUNDATION NOTES FOR CRAWLSPACE VENTING)
 - PROVIDE A SOIL-GAS RETARDER, SUCH AS 6 MIL POLYETHYLENE OR EQUIVALENT (SEE GAS-RETARDER NOTES)
 - PROVIDE A VENT STACK (SEE VENT STACK NOTES)

- METHOD #3 - CRAWLSPACE VENTILATION AND BUILDING TIGHTNESS**
- PROVIDE NO LESS THAN ONE NET SQ. FT. OF CRAWLSPACE FOUNDATION VENT AREA PER EACH 150 SQ. FT. OF UNDER-FLOOR AREA (SEE FOUNDATION NOTES FOR CRAWLSPACE VENTING LOCATION REQUIREMENTS)
 - OPERABLE LOUVERS, DAMPERS, OR OTHER MEANS TO TEMPORARILY CLOSE OFF VENT OPENINGS ARE NOT ALLOWED TO MEET THE REQUIREMENTS OF THIS RADON MITIGATION METHOD.
 - DUELLINGS SHALL BE TESTED WITH A BLUENER DOOR DEPRESSURIZING THE DUELLING TO 50 PASCALS FROM AMBIENT CONDITIONS AND FOUND TO EXHIBIT NO MORE THAN 50 AIR CHANGES PER HOUR.
 - INSTALL A MECHANICAL EXHAUST SUPPLY, OR COMBINATION VENTILATION SYSTEM PROVIDING WIDE-BUILDING VENTILATION RATES AS PER TABLE N10(U3).

VENTILATION AIR REQUIREMENTS (cfm)

FLOOR AREA (FT ²)	0-1	2-3	4-5	6-1	>1
<1500	30	45	60	75	90
1501-3000	45	60	75	90	105
3001-4500	60	75	90	105	120
4501-6000	75	90	105	120	135
6000-15000	90	105	120	135	150
>15000	105	120	135	150	165

SLAB ON-GRADE/BASEMENT RADON MITIGATION

A PASSIVE SUB-SLAB DEPRESSURIZATION SYSTEM SHALL BE INSTALLED DURING CONSTRUCTION IN BASEMENT OR SLAB-ON-GRADE BUILDINGS. FOLLOW THE NOTES HERE REGARDING BUILDING TIGHTNESS MEASURES AND ASSEMBLE THE FOLLOWING ELEMENTS OF THIS MITIGATION SYSTEM:

- PROVIDE A RADON VENT PIPE EXTENDING FROM A GAS PERMEABLE LAYER BENEATH THE SLAB FLOOR SYSTEM THROUGH THE FLOORS OF THE BUILDING AND TERMINATING AT THE ROOF.
- SEE NOTES REGARDING VENT PIPE, SOIL-GAS-RETARDER AND SLAB SUBFLOOR PREPARATION.

SLAB SUB-FLOOR PREPARATION

- A LAYER OF GAS-PERMEABLE MATERIAL SHALL BE PLACED UNDER ALL CONCRETE SLABS AND OTHER FLOOR SYSTEMS THAT DIRECTLY CONTACT THE GROUND, AND ARE WITHIN THE WALLS OF THE LIVING SPACES OF THE BUILDING. THE GAS-PERMEABLE LAYER SHALL CONSIST OF ONE OF THE FOLLOWING:
 1. A UNIFORM LAYER OF CLEAN AGGREGATE, A MINIMUM OF 4 INCHES THICK. THE AGGREGATE SHALL CONSIST OF MATERIAL SMALL ENOUGH TO PASS THROUGH A 2" SIEVE AND BE RETAINED BY A 1/8" SIEVE.
 2. A UNIFORM LAYER OF SAND (NATIVE OR FILL), A MINIMUM OF 4 INCHES THICK, OVERLAIN BY A LAYER OR STRIPS OF GEO-TEXTILE DRAINAGE MATTING DESIGNED TO ALLOW THE LATERAL FLOW OF SOIL GASES.

SOIL-GAS-RETARDER

- THE SOIL IN CRAWLSPACES SHALL BE COVERED WITH A CONTINUOUS LAYER OF MINIMUM 6-MIL POLYETHYLENE SOIL-GAS-RETARDER. THE GROUND COVER SHALL BE LAPPED A MINIMUM OF 12 INCHES AT JOINTS AND SHALL EXTEND TO ALL FOUNDATION WALLS ENCLOSED THE CRAWL SPACE AREA.
- THE SHEETING SHALL FIT CLOSELY AROUND ANY PIPE, WIRE OR OTHER PENETRATIONS OF THE MATERIAL.
- ALL FRACTURES OR TEARS IN THE MATERIAL SHALL BE SEALED OR COVERED WITH ADDITIONAL SHEETING.

VENT PIPE (RADON)

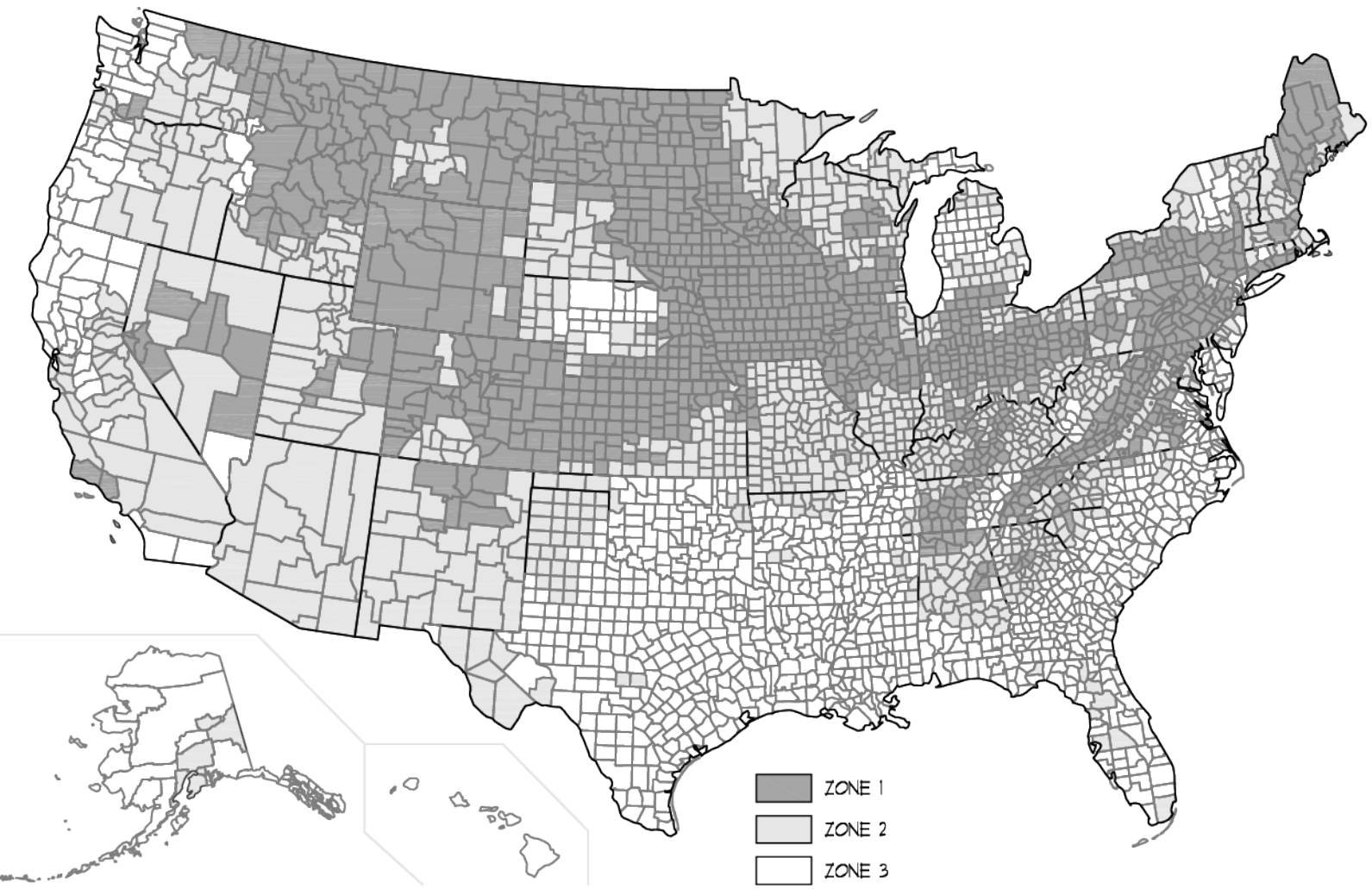
- A PLUMBING TEE OR OTHER APPROVED CONNECTION SHALL BE INSTALLED HORIZONTALLY BENEATH THE SOIL-GAS-RETARDER SHEETING AND CONNECTED TO A 3" OR 4" DIAMETER FITTING WITH A VERTICAL VENT PIPE INSTALLED THROUGH THE SHEETING.
- THE VENT PIPE SHALL BE EXTENDED UP THROUGH THE BUILDING FLOORS TO TERMINATE AT LEAST 12 INCHES ABOVE THE ROOF SURFACE IN A LOCATION AT LEAST 10 FEET AWAY FROM ANY WINDOW OR OTHER OPENING INTO THE CONDITIONED SPACES OF THE BUILDING THAT IS LESS THAN 2 FEET BELOW THE EXHAUST POINT, AND 10 FEET FROM ANY WINDOW OR OTHER OPENING IN ADJOINING OR ADJACENT BUILDINGS.
- IN BUILDINGS WHERE INTERIOR FOOTINGS OR OTHER BARRIERS SEPARATE THE SUB-SLAB AGGREGATE OR OTHER GAS-PERMEABLE MATERIAL, EACH AREA SHALL BE FITTED WITH AN INDIVIDUAL VENT PIPE.
- MULTIPLE VENT PIPES SHALL CONNECT TO A SINGLE VENT THAT TERMINATES ABOVE THE ROOF OR EACH INDIVIDUAL VENT PIPE SHALL TERMINATE ABOVE THE ROOF.
- ALL COMPONENTS OF THE RADON VENT PIPE SYSTEM SHALL BE INSTALLED TO PROVIDE POSITIVE DRAINAGE TO THE GROUND BENEATH THE SLAB OR SOIL-GAS-RETARDER.
- RADON VENT PIPES SHALL BE ACCESSIBLE FOR FUTURE FAN INSTALLATION THROUGH AN ATTIC OR OTHER AREA OUTSIDE THE HABITABLE SPACE, OR AN APPROVED ROOF TOP ELECTRICAL SUPPLY MAY BE PROVIDED FOR FUTURE USE FOR A POWERED RADON VENT FAN.
- ALL EXPOSED AND VISIBLE INTERIOR RADON VENT PIPES SHALL BE IDENTIFIED WITH AT LEAST ONE LABEL ON EACH FLOOR AND IN ACCESSIBLE ATTICS. THE LABEL SHALL READ: "RADON REDUCTION SYSTEM".

POWER SOURCE REQUIREMENT

- TO ACCOMMODATE FUTURE INSTALLATION OF AN ACTIVE SUB-MEMBRANE OR SUB-SLAB DEPRESSURIZATION SYSTEM, AN ELECTRICAL CIRCUIT TERMINATED IN AN APPROVED BOX SHALL BE INSTALLED DURING CONSTRUCTION IN THE ATTIC OR OTHER ANTICIPATED LOCATION OF VENT PIPE FANS. ELECTRICAL SUPPLY SHALL ALSO BE ACCESSIBLE IN ANTICIPATED LOCATION OF SYSTEM. Code FAILURE ALARMS. License #

COMBINATION FOUNDATIONS

- COMBINATION BASEMENT/CRAWL SPACE OR SLAB-ON-GRADE CRAWL SPACE FOUNDATIONS SHALL HAVE SEPARATE RADON MITIGATION SYSTEMS IN EACH TYPE OF FOUNDATION AREA. PASSIVE SUB-SLAB AND PASSIVE SUB-MEMBRANE RADON VENT PIPES MAY BE CONNECTED TO A SINGLE VENT TERMINATING ABOVE THE ROOF, OR EACH VENT MAY INDIVIDUALLY CONTINUE TO TERMINATE ABOVE THE ROOF (SEE VENT PIPE NOTES). ELEMENTS OR REMOVAL OF THIS NOTIFICATION IS SUBJECT TO PRODUCTION.

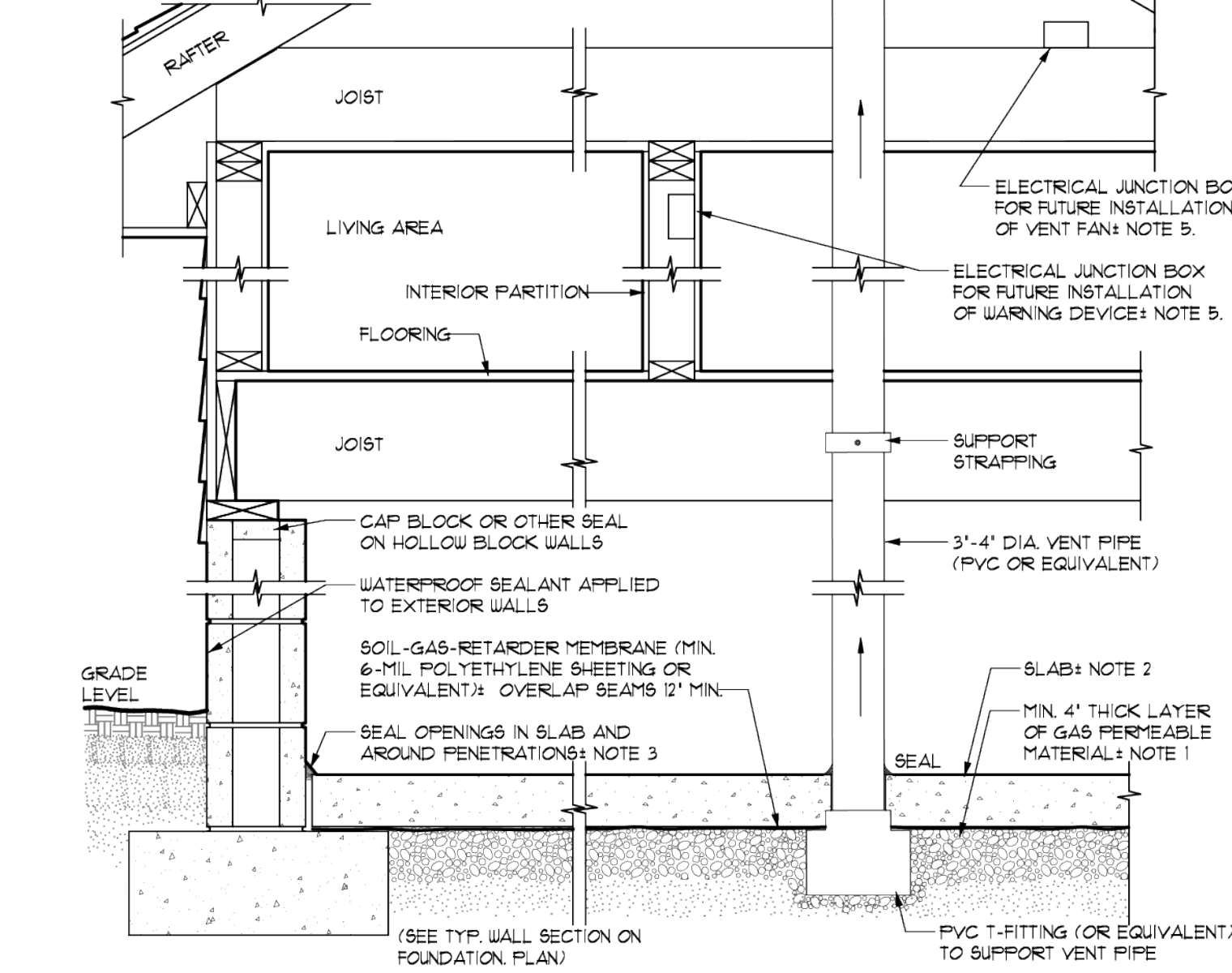


DISCLAIMER: THE PURPOSE OF THIS MAP IS TO ASSIST NATIONAL, STATE AND LOCAL ORGANIZATIONS TO TARGET THEIR RESOURCES AND TO IMPLEMENT RADON-REDUCTION BUILDING CODES. ALL HOMES SHOULD BE TESTED REGARDLESS OF GEOGRAPHIC LOCATION. EPA RECOMMENDS THAT THIS MAP BE SUPPLEMENTED WITH ANY AVAILABLE LOCAL DATA IN ORDER TO FURTHER UNDERSTAND AND PREDICT THE RADON POTENTIAL FOR A SPECIFIC AREA.

EPA RADON ZONES

PASSIVE SUB-SLAB DEPRESSURIZATION RADON CONTROL SYSTEM FOR NEW CONSTRUCTION

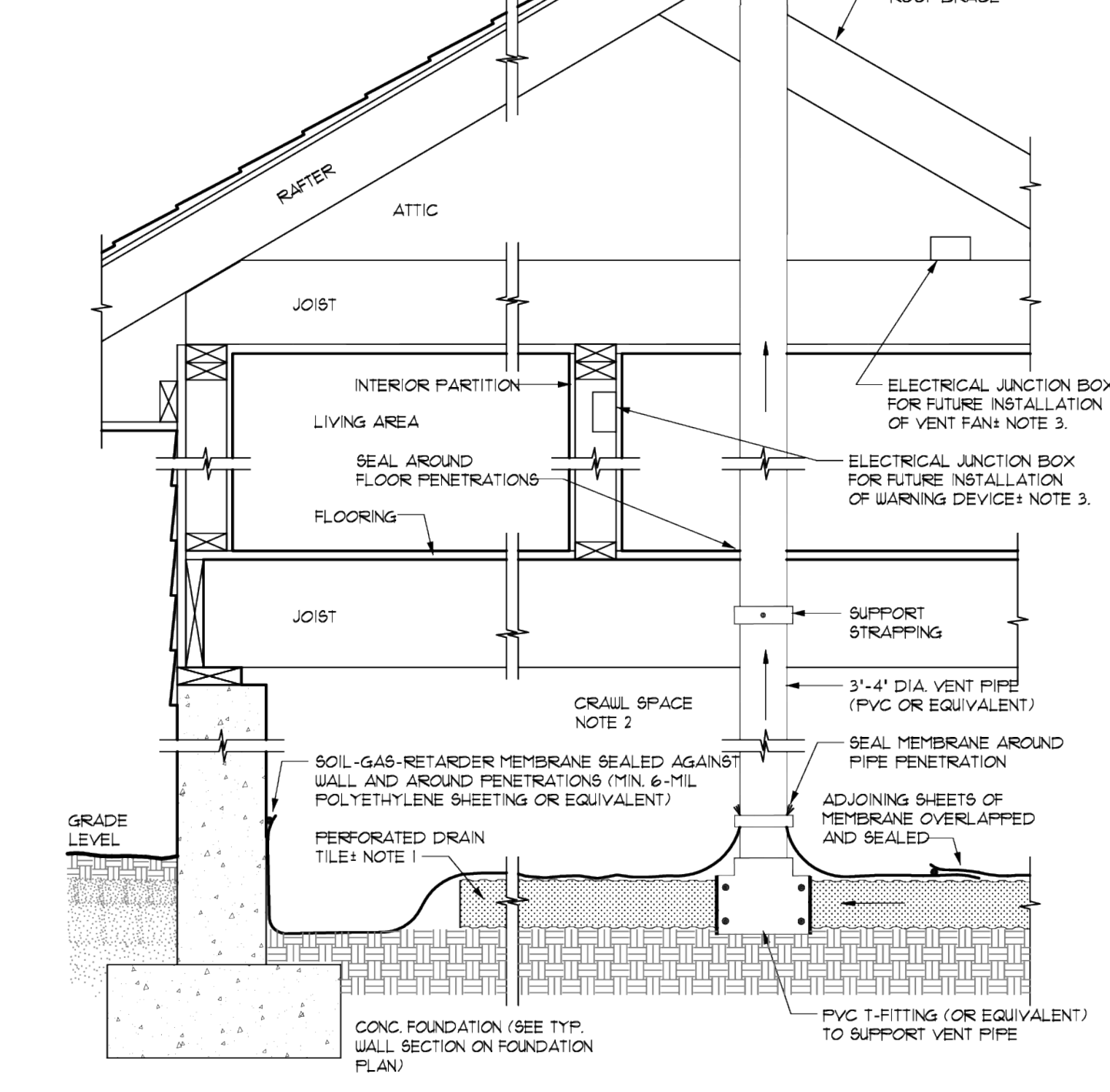
- NOTES:
1. ALL CONCRETE SLABS THAT COME IN CONTACT WITH THE GROUND SHALL BE LAID OVER A GAS PERMEABLE MATERIAL MADE UP OF EITHER A MINIMUM 4" THICK UNIFORM LAYER OF CLEAN AGGREGATE, OR A MINIMUM 4" THICK UNIFORM LAYER OF SAND, OVERLAIN BY A LAYER OR STRIPS OF MANUFACTURED MATTING DESIGNED TO ALLOW THE LATERAL FLOW OF SOIL GASES.
 2. ALL CONCRETE FLOOR SLABS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL BUILDING CODES. ADDITIONAL REFS: AMERICAN CONCRETE INSTITUTE PUBLICATIONS 'ACI302R' & 'ACI308R', OR THE POST-TENSIONING INSTITUTE MANUAL, 'DESIGN AND CONSTRUCTION OF POST-TENSIONED SLABS ON GROUND'.
 3. ALL OPENINGS, GAPS AND JOINTS IN FLOOR AND WALL ASSEMBLIES IN CONTACT WITH SOIL OR GAPS AROUND PIPES, TOILETS, BATHTUBS OR DRAINS PENETRATING THESE ASSEMBLIES SHALL BE FILLED OR CLOSED WITH MATERIALS THAT PROVIDE A PERMANENT AIR-TIGHT SEAL. SEAL LARGE OPENINGS WITH NON-SHRINK MORTAR, GROUTS OR EXPANDING FOAM MATERIALS AND SMALLER GAPS WITH AN ELASTOMERIC JOINT SEALANT, AS DEFINED IN ASTM C920-07.
 4. VENT PIPES SHALL BE INSTALLED SO THAT ANY RAINWATER OR CONDENSATION DRAINS DOWNWARD INTO THE GROUND BENEATH THE SLAB OR SOIL-GAS-RETARDER MEMBRANE.
 5. CIRCUITS SHOULD BE A MINIMUM 15 AMP, 120 VOLT.



SLAB ON-GRADE/BELOW-GRADE (BASEMENTS) SUB-MEMBRANE DEPRESSURIZATION SYSTEM

PASSIVE RADON CONTROL SYSTEM IN CRAWL SPACE FOR NEW CONSTRUCTION

- NOTES:
1. INSTALL A LENGTH OF 3" OR 4" DIAMETER PERFORATED DRAIN TILE HORIZONTALLY BENEATH THE SHEETING AND CONNECT TO THE 1" FITTING WITH THE VERTICAL STANDPIPE THROUGH THE SOIL-GAS-RETARDER MEMBRANE. THIS HORIZONTAL PIPE SHOULD NORMALLY BE PLACED PARALLEL TO THE LONG DIMENSION OF THE HOUSE AND SHOULD EXTEND NO CLOSER THAN 6 FEET TO THE FOUNDATION WALL.
 2. VENTILATE CRAWLSPACES IN CONFORMANCE WITH LOCAL CODES. VENTS SHALL BE OPEN TO THE EXTERIOR AND BE OF NONCLOSEABLE DESIGN.
 3. CIRCUITS SHOULD BE A MINIMUM 15 AMP, 120 VOLT.



CRAWLSPACE SUB-MEMBRANE DEPRESSURIZATION SYSTEM