

NOTE:

ALL CONSTRUCTION SHALL CONFORM TO 2018 INTERNATIONAL RESIDENTIAL CODE OR ATTACHED ENGINEER SPECIFICATIONS WHERE APPLICABLE.

ELEVATIONS:
GARAGE DOORS SHALL MEET DASMA FOR ULTIMATE DESIGN WIND SPEED OF 115 MPH REQUIREMENTS.
WALL FRAMING SHALL BE DOUGLAS FIR LARCH #2 UNLESS OTHERWISE NOTED. IN BEARING WALLS, STUDS WHICH ARE NOT MORE THAN TEN FEET IN LENGTH SHALL BE SPACED NOT MORE THAN IS SPECIFIED BY IRC TABLE R602.3(5) FOR CORRESPONDING STUD SIZE.
WATER-RESISTIVE EXTERIOR WALL BARRIER IN WALL SECTION SHALL COMPLY WITH IRC R703.2.
WHEN APPLICABLE, CONTINUOUS STUDS BETWEEN FLOOR AND ROOF/CEILING DIAPHRAGM SHALL COMPLY WITH IRC R602.3.

ALL UNMARKED HEADERS SHALL BE A MINIMUM #2 DOUGLAS FIR LARCH (2) 2 X 10 ON LOAD BEARING WALLS.

SHIPLAP SIDING MUST BE FASTENED AT BOTH UNDERLAP AND OVERLAP.

FRONT ELEVATION

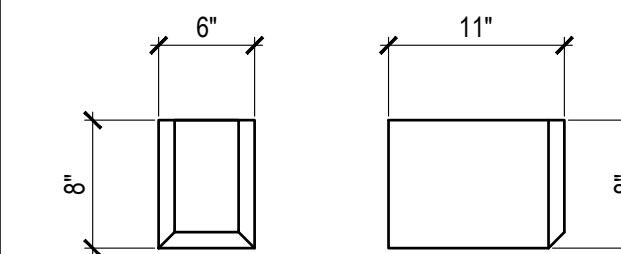
SCALE: 1/4" = 1'-0"

2

BRACKET DETAIL

SCALE: 1" = 1'-0"

3



GENERAL NOTES

DIMENSIONAL LUMBER IS LABELED PER INDUSTRY STANDARD TERMINOLOGY. ACTUAL LUMBER SIZING IS EXPECTED TO VARY PER VENDOR.

WINDOW SIZES ARE WRITTEN IN FEET AND INCHES PER INDUSTRY STANDARDS. EX: 3050 SH = 3'-0" X 5'-0" SINGLE HUNG, 3066 FIX = 3'-0" X 6'-6" FIXED.

SHEET INDEX

- A1. FRONT AND REAR ELEVATION
- A2. LEFT AND RIGHT ELEVATION
- A3. FOUNDATION LEVEL PLAN
- A4. MAIN LEVEL PLAN
- A5. ROOF PLAN

| FINISHED | |
|--------------------------------|------|
| MAIN FLOOR | 1749 |
| FINISHED STAIRS TO LOWER LEVEL | 21 |
| TOTAL | 1770 |
| UNFINISHED | |
| LOWER LEVEL - UNFINISHED | 1521 |
| UPPER COVERED DECK | 141 |
| LOWER COVERED DECK | 141 |
| GARAGE | 692 |

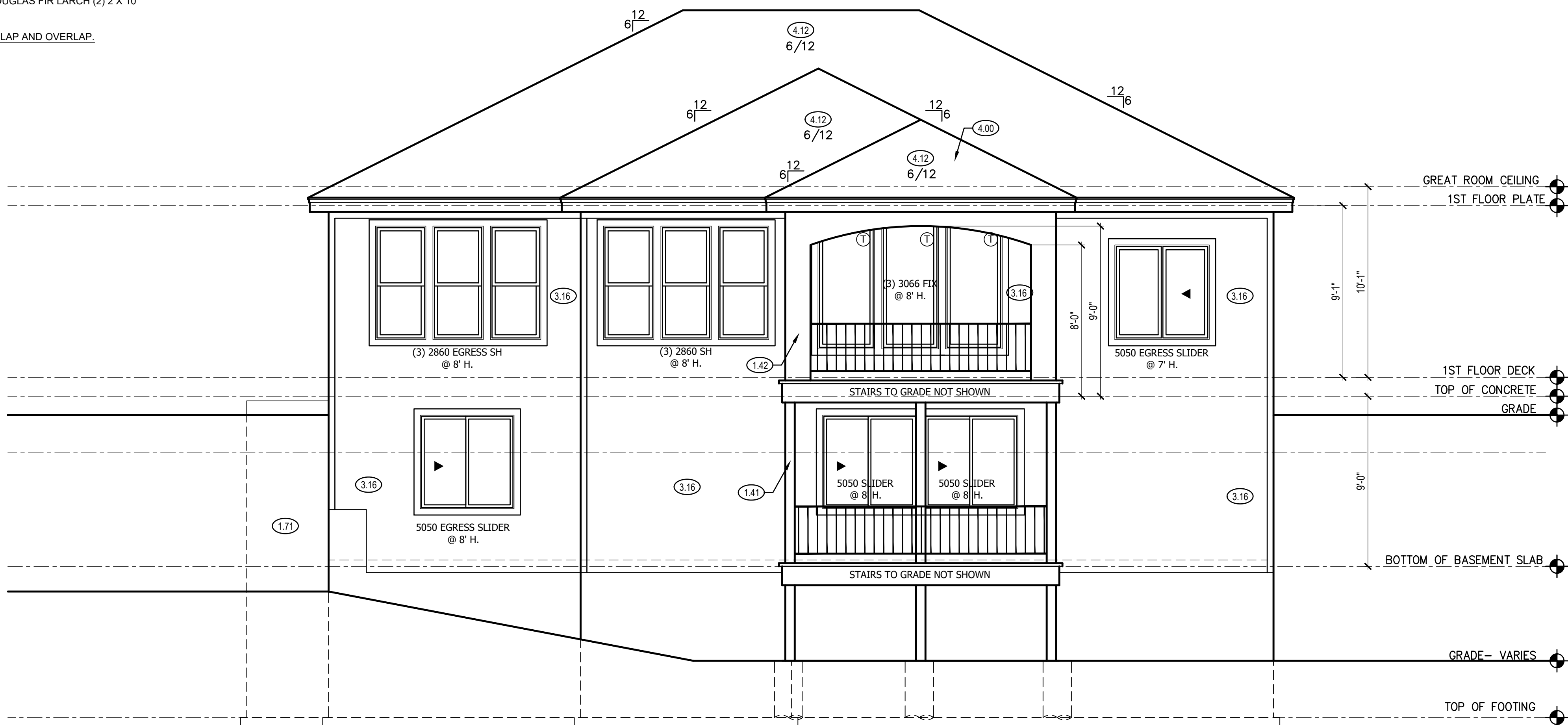
| | | |
|----------|----------|---------|
| ENGINEER | TRUSS | I-JOIST |
| RES | PROBUILD | N/A |

| REVISIONS | | |
|-----------|------|-------------|
| NO. | DATE | DESCRIPTION |
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |

REAR ELEVATION

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

1



CPG DBA

SUMMIT
HOMES

120 SE 30TH ST.
LEE'S SUMMIT, MO 64082
816-246-6700

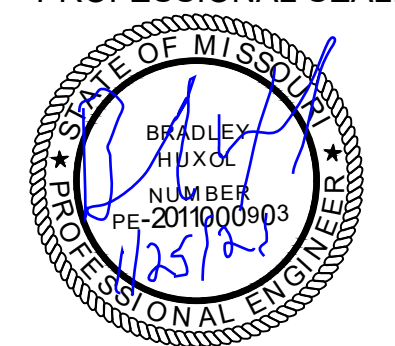
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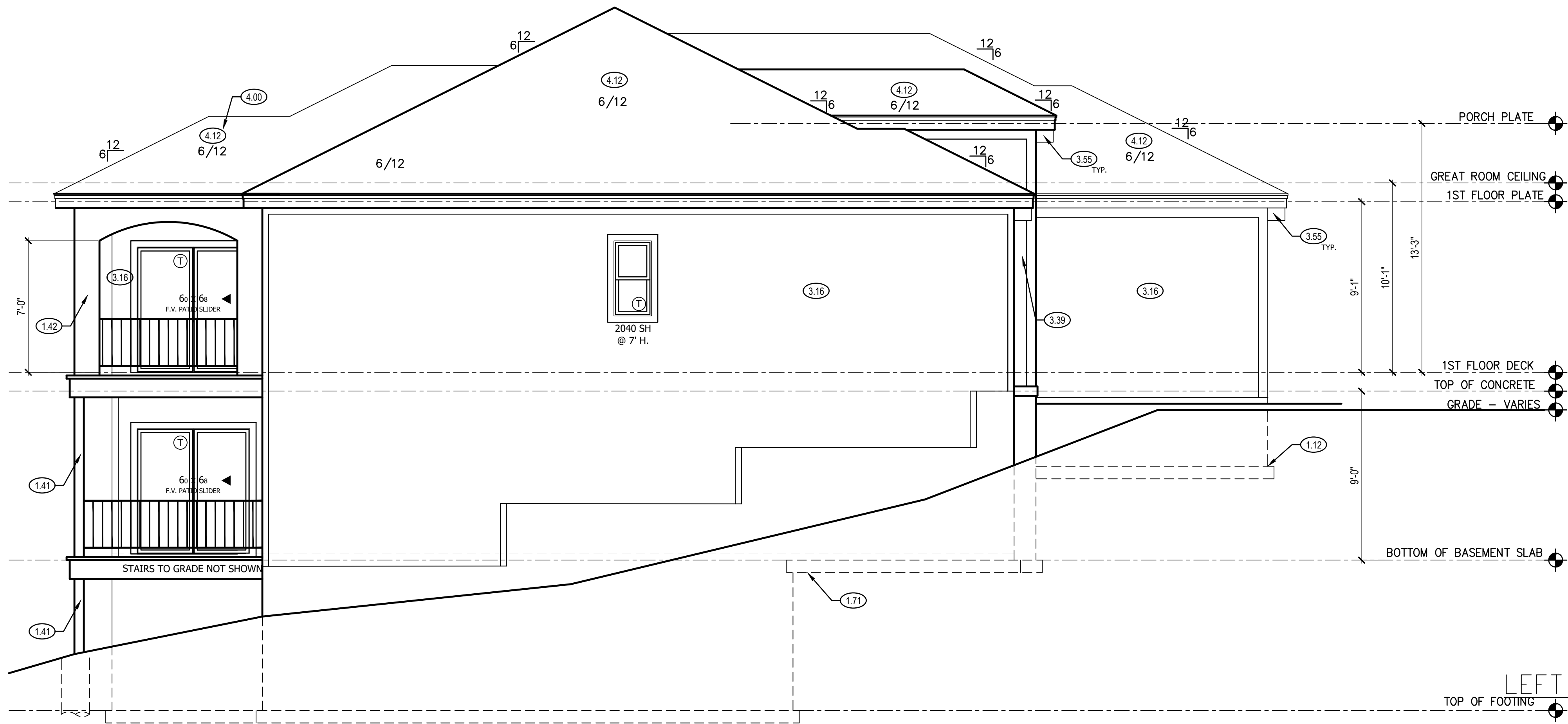
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600 SW JEFFERSON SUITE 300
LEE'S SUMMIT, MO 64063
816-399-4901

DRAWN BY:
J. ROSENBLUM

ISSUE DATE:
01.05.21

SHEET NUMBER:

A1.0



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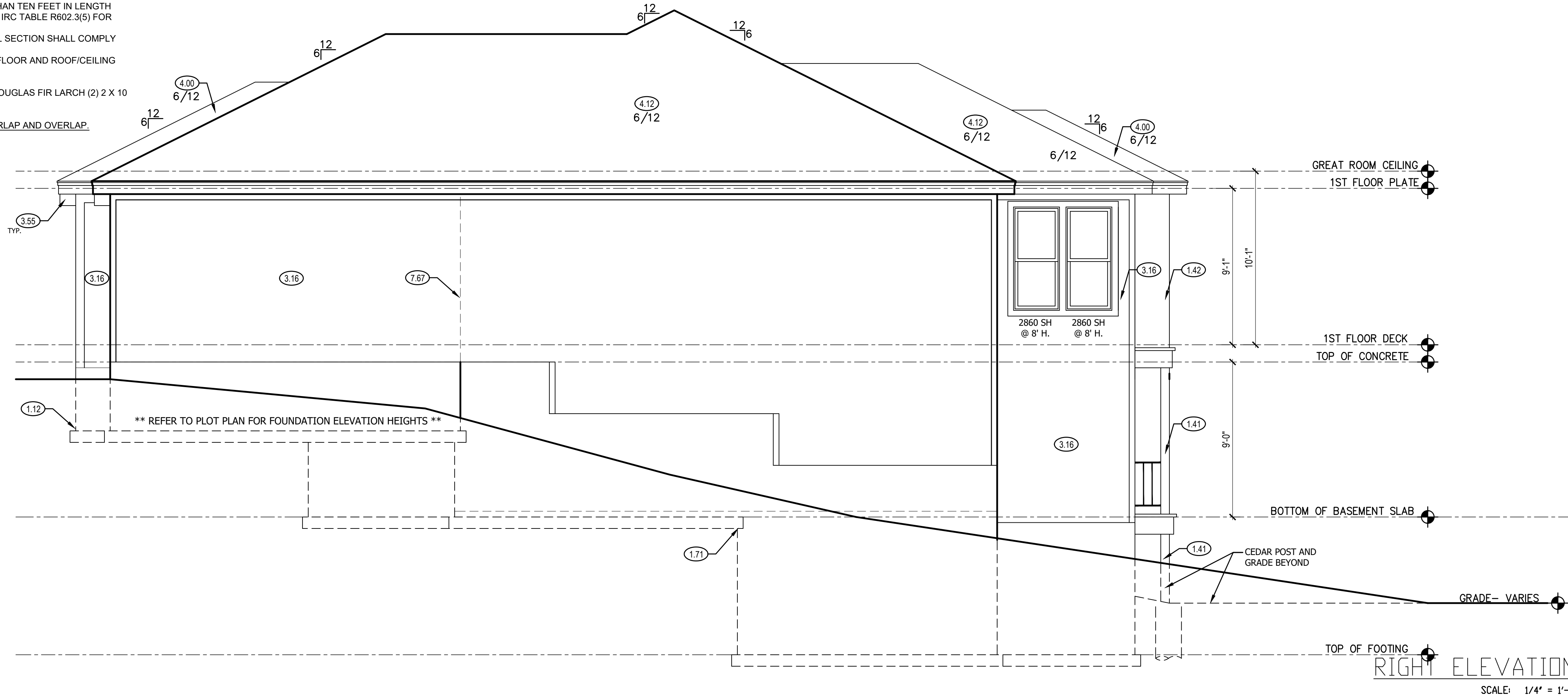
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ALL UNMARKED HEADERS SHALL BE A MINIMUM #2 DOUGLAS FIR LARCH (2) 2 X 10 ON LOAD BEARING WALLS.

SHIPLAP SIDING MUST BE FASTENED AT BOTH UNDERLAP AND OVERLAP.



LEFT & RIGHT SIDE ELEVATION NOTES

- 1.12 TOP OF FOOTING DEPTH DETERMINED PER SITE.
- 1.41 6X6 CEDAR POST
- 1.42 STUCCO LEGS FOR COVERED PATIO
- 1.71 CONCRETE WINDOW WELL FOR EGRESS WITH LADDER. PROVED SLEEVE THROUGH WALL FOR FOUNDATION DRAIN. TOP OF WINDOW WELL TO BE 3" BELOW TOP OF FOUNDATION.
- 3.16 STUCCO, SHEATHED WITH 15/32" THICK OSB RATED 24/0 SHEATHING. EXTEND STUCCO TO WITHIN 8" OF FINISHED GRADE. 5/4X6 LP SMART TRIM AROUND WINDOWS AND DOORS ON FRONT ELEVATION UNLESS NOTED OTHERWISE.
- 3.39 2X6 STUD WALL WITH STUCCO. ALLOW 2" MIN ON FRONT/SIDES FOR STUCCO TO FIT WITHIN BOUNDARY OF STOOP.
- 3.55 6"X8"X11" CEDAR CORBEL WITH CHAMFERED EDGES, RE: 3/A1
- 4.00 COVERING WILL HAVE 1 ROOF VENT AND 4 SOFFIT VENTS
- 4.12 CLAY TILE ROOF SYSTEM. INSTALL PER CODES AND MANUFACTURER'S RECOMMENDATION.
- 7.67 BACK WALL OF GARAGE.

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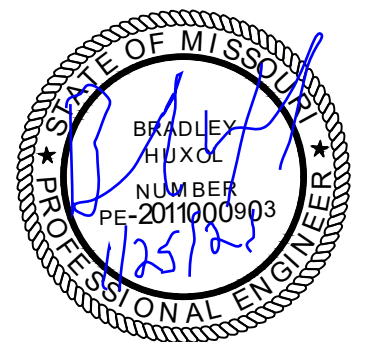
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600 SW JEFFERSON SUITE 300
LEE'S SUMMIT, MO 64063
816-399-4901

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J. ROSENBLUM

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GENERAL NOTES

DIMENSIONAL LUMBER IS LABELED PER INDUSTRY STANDARD TERMINOLOGY. ACTUAL LUMBER SIZING IS EXPECTED TO VARY PER VENDOR.

WINDOW SIZES ARE WRITTEN IN FEET AND INCHES PER INDUSTRY STANDARDS. EX: 3050 SH = 3'-0" X 5'-0" SINGLE HUNG, 3066 FIX = 3'-0" X 6'-6" FIXED.

NOTE:

ALL CONSTRUCTION SHALL CONFORM TO 2018 INTERNATIONAL RESIDENTIAL CODE OR ATTACHED ENGINEER SPECIFICATIONS WHERE APPLICABLE.

ALL UNMARKED HEADERS SHALL BE A MINIMUM #2 DOUGLAS FIR LARCH (2) 2 X 10 ON LOAD BEARING WALLS.

DETAILS AND NOTES:
BASEMENT EGRESS WINDOWS ARE TO COMPLY WITH IRC R310.2.
WINDOW FALL PROTECTION REQUIREMENTS TO COMPLY WITH SECTION R612.2.
STAIRS SHALL COMPLY WITH IRC R311.7. THE MAXIMUM RISER HEIGHT OF STAIRWAYS SHALL NOT EXCEED 7-3/4" AND THE TREADS SHALL PROVIDE A MINIMUM TREAD DEPTH OF 10" (IRC 2018 R311.7.5.1).
SELF CLOSING DEVICES ARE REQUIRED FOR GARAGE TO DWELLING SEPARATION DOORS.
STEEL COLUMNS WILL BE A MINIMUM OF SCHEDULE 40.

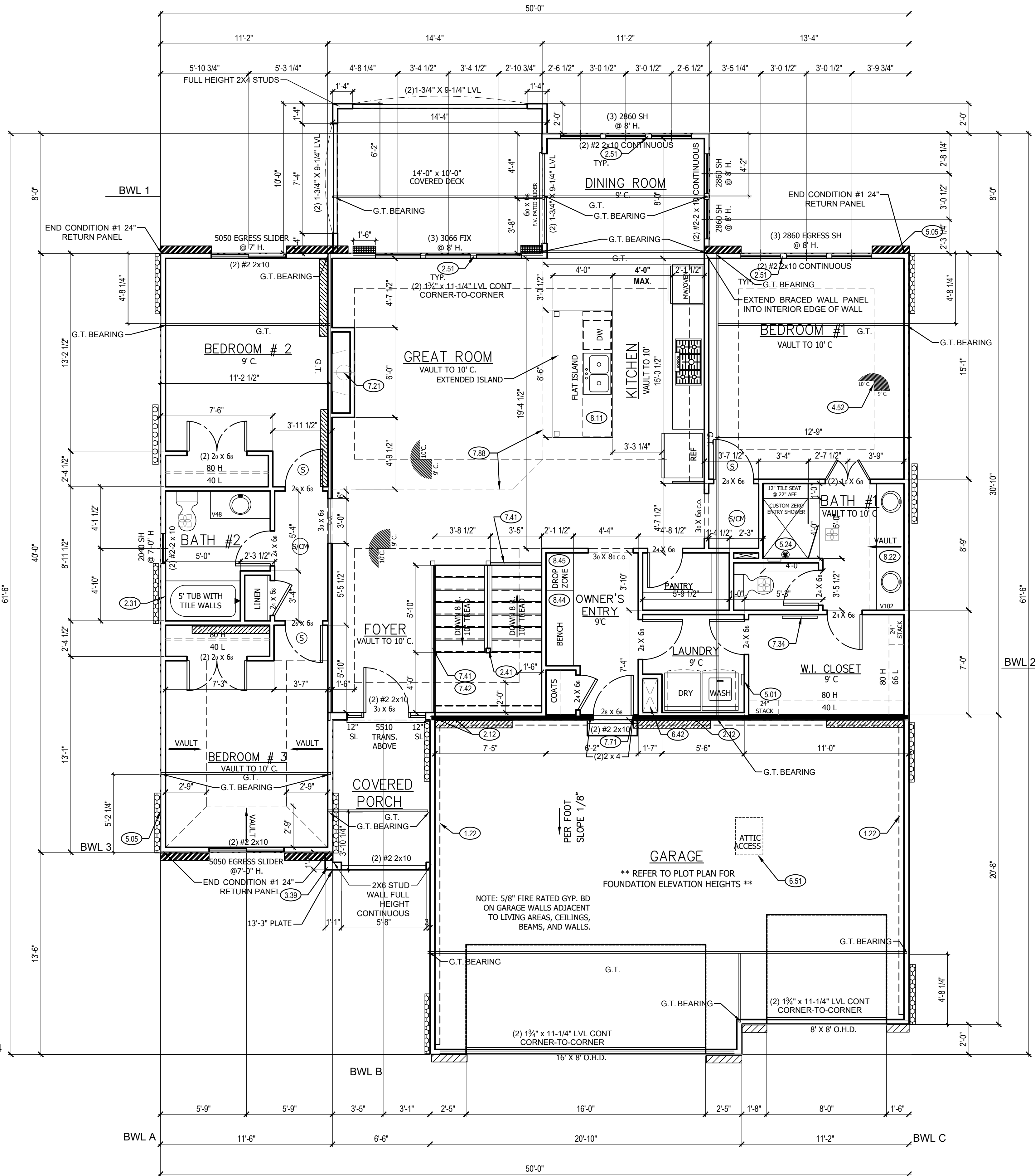
ENERGY REQUIREMENTS SHALL CONFORM TO THE IRC CHAPTER 11.
SECURITY SHALL CONFORM TO IRC R326/KC8RC.
AN ACCESSIBLE CONNECTION POINT WILL BE PROVIDED TO A 20 FOOT CONCRETE ENCASED ELECTRODE (FOOTING REBAR) FOR THE ELECTRICAL SERVICE GROUNDING ELECTRODE CONDUCTOR (UFER GROUND).
CARBON MONOXIDE DETECTORS WILL BE PROVIDED IN ACCORDANCE WITH IRC SECTION R315.
THE BUILDING THERMAL ENVELOPE IS REQUIRED TO BE SEALED (2018 IRC SECTION N1102.4.1 AND TABLE N1102.4.1.1).
DUCTS, AIR HANDLERS, FILTER BOXES AND BUILDING CAVITIES USED AS DUCTS SHALL BE SEALED (2018 IRC SECTION N1103.2.2).

FLOOR PLANS:
LEDGERS (FLOOR AND CEILING) SHALL BE IN ACCORDANCE WITH IRC 507.
ALL CANTILEVERS SHALL HAVE AT LEAST A 3:1 BACK SPAN.
A MINIMUM OF DOUBLE JOIST UNDER EACH BEARING WALL IS REQUIRED.

ALL WALLS UNDER 12' SHALL BE DOUGLAS FIR LARCH #2 2X4 STUDS AT 16" O.C. FULL HEIGHT CONTINUOUS (UNLESS OTHERWISE NOTED).

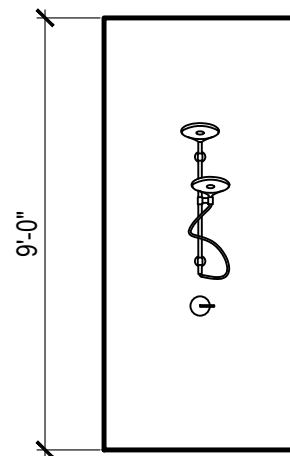
ALL WALLS 12' AND OVER SHALL BE DOUGLAS FIR #2 (M-12) LUMBER 2X6 STUDS AT 16" O.C. FULL HEIGHT CONTINUOUS (UNLESS OTHERWISE NOTED).

| IRC TABLE N1102.1.2 (R402.1.2) INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT (PARTIAL) | | | | | | | | | |
|--|------------------------|--------------------|----------------------------|-----------------|-------------------------|-------------------|---------------|------------------------|-----------------------|
| CLIMATE ZONE | FENESTRATION U-FACTOR* | SKYLIGHT† U-FACTOR | GLAZED FENESTRATION SHGC** | CEILING R-VALUE | WOOD FRAME WALL R-VALUE | MASS WALL R-VALUE | FLOOR R-VALUE | BASEMENT† WALL R-VALUE | SLAB† R-VALUE & DEPTH |
| 4 EXCEPT MARINE | .32 | .55 | .40 | 49 | 20 OR 13+5 | 8/13 | 19 | 10/13 | 10, 2 FT |



MAIN FLOOR PLAN NOTES

- 1.22 EXPOSED TOP OF FOUNDATION WALL.
- 2.12 2X6 STUD WALL.
- 2.31 SIX SIDED TUB ASSEMBLY INCLUDING THERMOPLY ON EXTERIOR WALL TO 2" ABOVE TOP OF TUB DECK OR TUB/SHOWER UNIT.
- 2.41 CURB STAIR SYSTEM WITH OPEN HANDRAILS.
- 2.51 3 STUDS BETWEEN WINDOW UNITS.
- 3.39 2X6 STUD WALL WITH STUCCO. ALLOW 2" MIN ON FRONT/SIDES FOR STUCCO TO FIT WITHIN BOUNDARY OF STOOP.
- 4.52 SINGLE BOX VAULT WITH LIGHT TRAY.
- 5.01 PLUMBING FOR WASHER ON INTERIOR WALL.
- 5.05 HOSE BIBB.
- 5.24 CUSTOM ZERO ENTRY SHOWER. TUFF FORM BASE WITH TILE WALLS AND FRAMELESS GLASS ENCLOSURE. 12" TILE SEAT AT 22" AFF. HYDRORAIL SHOWER HEAD (RE: DETAIL 3/A4. INSTALL PER MANUFACTURER SPECIFICATIONS) AND SOAP NICHE. SEE DETAIL.
- 6.42 HVAC - BUMP TRUSSES AS NECESSARY FOR HVAC ACCESS.
- 6.51 1'-10"x3'-0" MINIMUM ATTIC ACCESS WITH 3/4" BACKER BOARD AND 2 LATCHES. BUMP TRUSSES FOR ATTIC ACCESS.
- 7.21 DIRECT VENT FIREPLACE. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. FIREPLACE PLATFORM DIMENSIONS 7 3/4" TALL, 37" WIDE, 16" DEEP. INSTALL INSULATION AND AIR BARRIER BEHIND PLATFORM.
- 7.34 FRAMED MIRROR.
- 7.41 OPEN HANDRAILS.
- 7.42 PROVIDE ADDITIONAL BLOCKING UNDER SUBFLOOR @ 6'-0" O.C. FOR OPEN HANDRAIL.
- 7.71 20 MINUTE FIRE RATED SOLID CORE WITH SELF-CLOSING HINGES.
- 7.88 CHANGE IN FLOORING MATERIAL.
- 8.11 24" CABINET + 12" OVERHANG FLAT ISLAND. VERIFY LOCATION WITH PERSONAL BUILDER.
- 8.22 CONTINUOUS FLAT VANITY.
- 8.44 BENCH WITH COAT HOOKS.
- 8.45 DROP ZONE/CHARGING STATION.



HYDRORAIL SHOWER SYSTEM

SCALE:

4

GENERAL NOTES

WINDOWS TO COMPLY WITH IRC R312.2 FOR FALL PROTECTION.

ALL EXTERIOR WALLS, INTERIOR BEARING WALLS, AND INTERIOR BRACED WALLS ARE AT 16" O.C. UNLESS NOTED OTHERWISE.

ALL INTERIOR NON-LOAD BEARING, NON-BRACED, NON-CABINET WALLS ARE ALLOWED AT 24" O.C.

ROOF AND CEILING FRAMING ARE PRE-ENGINEERED WOOD TRUSSES UNLESS NOTED OTHERWISE.

DIMENSIONAL LUMBER IS LABELED PER INDUSTRY STANDARD TERMINOLOGY. ACTUAL LUMBER SIZING IS EXPECTED TO VARY PER VENDOR.

HVAC DUCTWORK RUNNING THROUGH THE ATTIC SPACE SHALL BE HUNG FROM ABOVE TO ALLOW COMPLETE INSULATION SURROUND.

PROVIDE BLOCKING AT ALL CEILING JUMPS FOR INSULATION.

2X6 EXTERIOR WALL OVER 12' SHALL BE DOUGLAS FIR #2.

SMOKE AND CARBON MONOXIDE DETECTORS SHOW ON PLANS ARE TO BE CONSIDERED RECOMMENDATIONS ONLY. FINAL PLACEMENT IS TO BE DETERMINED BY MUNICIPAL REQUIREMENTS.

WINDOW SIZES ARE WRITTEN IN FEET AND INCHES PER INDUSTRY STANDARDS. EX: 3050 SH = 3'-0" X 5'-0" SINGLE HUNG, 3066 FIX = 3'-0" X 6'-6" FIXED.

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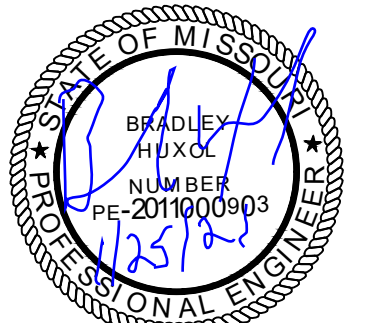
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600 SW JEFFERSON SUITE 300
LEE'S SUMMIT, MO 64063
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DRAWN BY:
J. ROSENBLUM

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A4.0

MAIN FLOOR PLAN

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

1

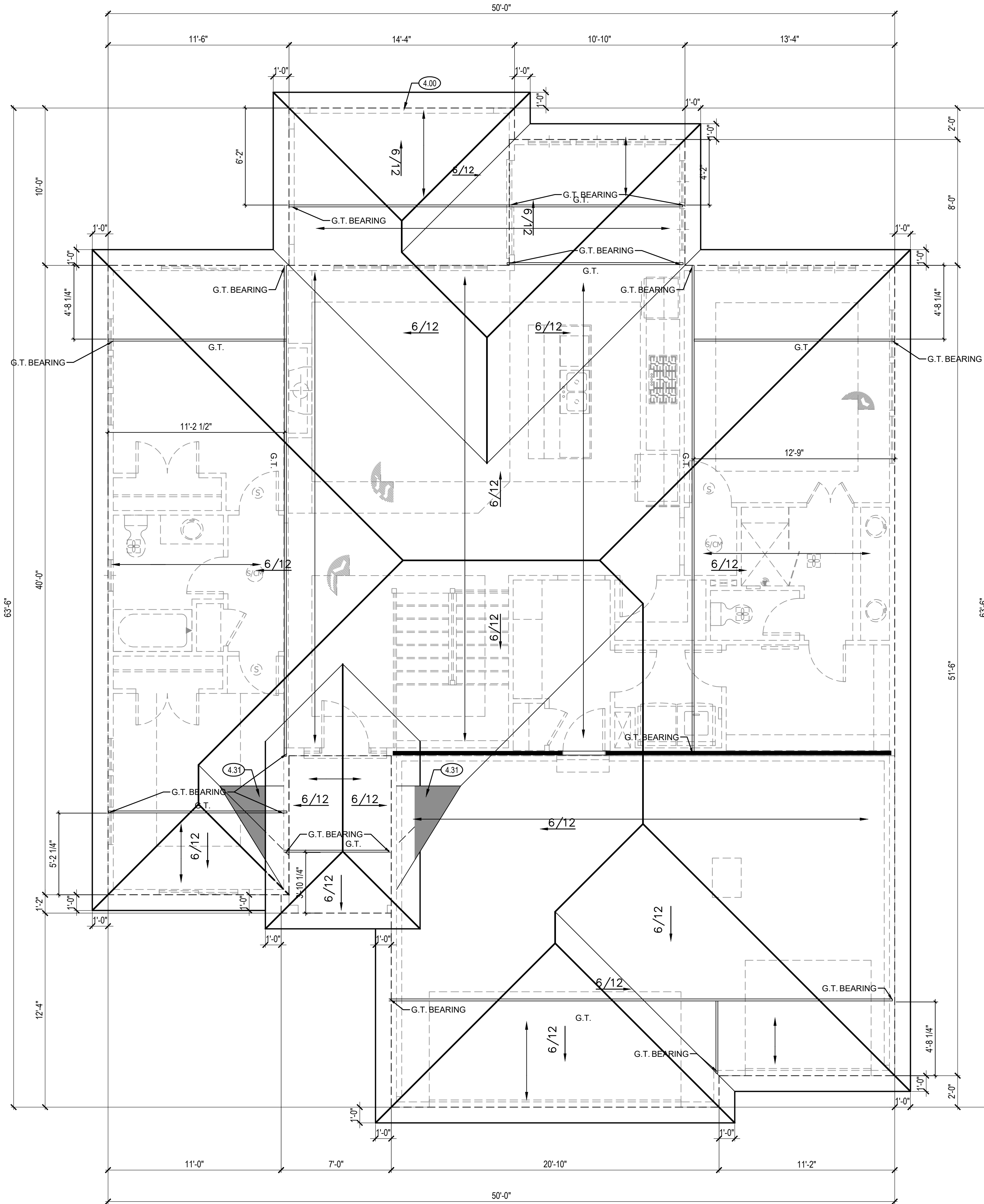
- TRUSS ROOF NOTES: (BY OTHERS)
- DESIGNED FOR CLAY TILE ROOF COVERING
TOP CHORD:
LIVE LOAD/SNOW LOAD (PSF): 25
DEAD LOAD (PSF): 20
BOTTOM CHORD:
DEAD LOAD (PSF): 10
 - ALL EXTERIOR HEADERS SHALL BE MIN. (2) #2 x 10
UNLESS OTHERWISE NOTED.
 - CONSULT ENGINEER IF TRUSSES BEAR ON INTERIOR WALLS
SHOWN AS NON-LOAD BEARING ON APPROVED PRINTS.
 - MIN. (4) 2 x 4 OR (4) 2 x 6 (DEPENDING ON WALL THICKNESS)
BELOW EACH BEARING POINT OF EACH GIRDER TRUSS,
UNLESS OTHERWISE NOTED.
 - PROVIDE 2x SOLID BLOCKING SUPPORT BELOW ALL POINT
LOADS CONTINUOUS TO BEARING STRUCTURE AND/OR
FOUNDATION BELOW.
 - ROOF IS ENGINEERED TO COMPLY WITH IRC 802

→ = ASSUMED ROOF TRUSS FRAMING DIRECTION
— "G.T." = ASSUMED GIRDER TRUSS LOCATION.
— = ASSUMED INTERIOR LOAD BEARING WALLS.

NOTE:
ALL CONSTRUCTION SHALL CONFORM TO 2012 INTERNATIONAL RESIDENTIAL
CODE OR ATTACHED ENGINEER SPECIFICATIONS WHERE APPLICABLE.

ROOF:
ROOF IS DESIGNED FOR 20 PSF SNOW LOAD.
WOOD TRUSSES SHALL BE IN ACCORDANCE WITH IRC SECTION R802.10.
CEILING JOIST OR RAFTER TIE CONNECTIONS BETWEEN RAFTERS, RIDGE BEAM,
REQUIRED COLLAR TIES OR RIDGE STRAPS SHALL COMPLY WITH DETAILS AND
IRC SECTION R802, R802.3, R802.3.1, R802.11.

ALL UNMARKED HEADERS SHALL BE A MINIMUM #2 DOUGLAS FIR LARCH (2) 2 X 10
ON LOAD BEARING WALLS.



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

ROOF PLAN NOTES

- COVERING WILL HAVE 1 ROOF VENT AND 4 SOFFIT VENTS
- CLAY TILE ROOF SYSTEM. INSTALL PER CODES AND MANUFACTURER'S RECOMMENDATION.
- BUILD CRICKET VALLEY AWAY FROM INTERSECTION FOR POSITIVE DRAINAGE.

GENERAL NOTES

- ROOF AND CEILING FRAMING ARE PRE-ENGINEERED ROOF TRUSSES.
- ASPHALT SHINGLES MIN 2/12. FLASH ALL PENETRATIONS AND INTERSECTIONS.
- VENT EACH ENCLOSED ATTIC SPACE. NET AREA OPENING = 1/50TH OF VENTED AREA OR 1/300TH IF 580% OF VENTING NEAR TOP.
- BUILD CRICKET VALLEY AWAY FROM INTERSECTION FOR POSITIVE DRAINAGE. SEE FRAMING SPECIFICATIONS FOR DETAILS.
- DIMENSIONAL LUMBER IS LABELED PER INDUSTRY STANDARD TERMINOLOGY. ACTUAL LUMBER SIZING IS EXPECTED TO VARY PER VENDOR.
- HVAC DUCTWORK RUNNING THROUGH ATTIC SHALL BE HUNG FROM ABOVE TO ALLOW COMPLETE INSULATION SURROUND.
- PROVIDE BLOCKING AT ALL CEILING JUMPS FOR INSULATION.
- PROVIDE FOAM INSULATION AT EXTERIOR WHERE MAIN LEVEL ROOF LINE MEETS UPPER LEVEL WALLS.

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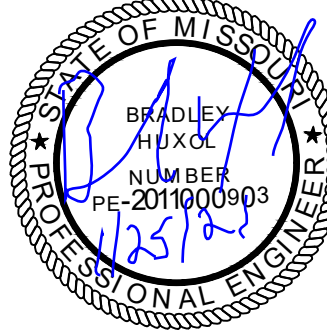
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GENERAL NOTES

PLANS SHALL COMPLY WITH THE 2018 INTERNATIONAL RESIDENTIAL CODE (IRC) WITH AMENDMENTS AS ADOPTED BY THE APPROPRIATE GOVERNING JURISDICTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IF ANY CHANGES OR DEVIATIONS FROM THE PLAN ARE MADE DURING CONSTRUCTION. THE ENGINEER OF RECORD MAY REQUIRE REVISED DRAWING OR CALCULATIONS AT ITS DISCRETION.

IF DISCREPANCIES ARE IDENTIFIED THE MOST CONSERVATIVE SPECIFICATION SHALL APPLY.

LOADING

| DEAD | | |
|-------------------------------------|---------|---|
| LIGHT ROOF | 10 PSF | (CONCRETE, SLATE, TILE) |
| HEAVY ROOF | +10 PSF | |
| ROOF + CEILING (NO STORAGE) | 15 PSF | |
| ROOF + CEILING (STORAGE) | 20 PSF | |
| CEILING JOISTS (STORAGE) | 10 PSF | |
| EXTERIOR BACONIES / DECK | 10 PSF | |
| INTERIOR FLOOR (MAIN FLOOR) | 15 PSF | |
| INTERIOR FLOOR (UPPER FLOORS) | 10 PSF | |
| 8" THICK MASONRY WALL | 80 PSF | |
| 6" THICK MASONRY WALL | 85 PSF | |
| EXTERIOR LIGHT FRAMED WOOD WALLS | 15 PSF | * (INTERIOR WALLS INCLUDED IN 15 PSF DEAD LOAD) |
| INTERIOR LIGHT FRAMED WOOD WALLS | 10 PSF* | |
| | | |
| LIVE | | |
| ROOF LIVE LOAD | 15 PSF | (HABITABLE) |
| FLOOR LIVE LOAD | 40 PSF | |
| GARAGE | 50 PSF | (UN-INHABITABLE) |
| STORAGE | 20 PSF | |
| GUARDRAIL | | |
| CONTINUOUS LINEAR | 50 PLD | |
| MAXIMUM POINTLOAD | 200 LBS | |
| SNOW | | |
| GROUND SNOW LOAD | 20 PSF | |
| WIND | | |
| ULTIMATE DESIGN WIND SPEED VELOCITY | 115 MPH | |
| EXPOSURE CATEGORY | B | |

SOIL AND SITE ASSUMPTIONS:

- FOUNDATION DESIGN ASSUME A MINIMUM SOIL BEARING PRESSURE FOR THE SITE OF 2,000 PSF. CONTRACTOR TO VISUALLY INSPECT SITE OR PROVIDE GEOTECHNICAL INVESTIGATION TO VERIFY MINIMUM ACCEPTABLE SOIL CONDITIONS SW, SP, SM, SC, GM, AND GX AS DEFINED PER IRC TABLE R301.5. THE CONTRACTOR IS RESPONSIBLE FOR ANY SOIL CONDITION THAT DOES NOT MEET THE MINIMUM REQUIREMENTS AND CONTACTING THE ENGINEER OF RECORD.
- PROVIDE A MINIMUM SOIL COVER OF 36 INCHES MEASURED FROM THE BOTTOM OF CONCRETE ON ALL FOUNDATIONS.
- ACCESSORY STRUCTURES WITH AN EAVE HEIGHT LESS THAN 10'-0" AND AN AREA LESS THAN 600 FT² MAT PROVIDE A MINIMUM SOIL COVER OF 12 INCHES MEASURED FROM THE BOTTOM OF CONCRETE.
- SITE GRADING SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM THE STRUCTURE AT A MINIMUM OF 0.5%.
- LATERAL SOIL PRESSURES
 - ACTIVE 30 PSF
 - AT-REST 60 PSF
 - PASSIVE 150 PSF

FOUNDATION NOTES:

FOUNDATION ANCHORAGE (IRC 403.1.6)

SILL PLATES SHALL BE BOLTED TO THE FOUNDATION WALL WITH A MINIMUM 1/2" DIAMETER ANCHOR BOLTS EMBEDDER AT LEAST 7" INTO THE CONCRETE. BOLTS SHALL BE SPACED NO GREATER THAN 6" O.C. THERE SHALL BE A MINIMUM OF TWO BOLTS PER PLATE SECTION, WITH A BOLT PLACED WITHIN 12" AND NOT CLOSER THAN 7 BOLT DIAMETERS, OF THE END OF EACH PLATE SECTION. A PROPERLY SIZED NUT AND WASHER SHALL BE TIGHTENED ON EACH BOLT TO THE PLATE. (NOTE: 7" EMBEDMENT + 1-1/2" SILL PLATE + 3/4" FOR NUT AND WASHER EXCEEDS A 9" LONG BOLT.)

WALL BRACING METHODS PER IRC R602 MAY REQUIRE ADDITIONAL ANCHORAGE.

CONCRETE SLABS PLACED ON FILL MATERIAL WHICH EXCEEDS 24" OF COMPACTED GRANULATED MATERIAL (SAND OR GRAVEL) OR 8" OF EARTH: THIS MAY OCCUR AT GARAGE FLOOR FILLS, OR OVER EXCAVATED AREAS UNDER FLOOR SLABS. THE DESIGN AND INSTALLATION DETAILS IN THIS DOCUMENT (WHERE APPLICABLE BASED ON SIZE AND SPACING LIMITATIONS) MAY BE USED IN LIEU OF PROVIDING A SEPARATE DESIGN. STRUCTURAL SLABS EXCEEDING THE SPANS AND CONDITIONS OF THE APPROVED DETAILS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER.

SLABS AT MAX 4" OVER-DIG ADJACENT TO FOUNDATION WALL: WHERE SOIL IS EXCAVATED FOR A MAXIMUM DIMENSION OF 4" HORIZONTALLY ADJACENT TO A FOUNDATION WALL, THE STANDARD OVER-DIG DETAIL MAY BE USED IN LIEU OF A COMPLETE STRUCTURAL SLAB. SEE "TYPICAL FOOTING/FOUNDATION WALL/STANDARD SLAB AT MAX 4" OVER-DIG DIAGRAM FOR DETAILS.

VAPOR RETARDER / BARRIER (IRC R506.2.3)

A 6 MIL POLYETHYLENE OR APPROVED VAPOR RETARDER WITH JOINTS LAPPED A MINIMUM OF 6" IS REQUIRED BETWEEN THE CONCRETE FLOOR SLAB AND THE BASE COURSE OR PREPARED SUBGRADE, (NOT REQUIRED FOR GARAGE SLABS OR DETACHED ACCESSORY BUILDINGS)

FOUNDATION AND LOT GRADING (IRC R401.3)

GRADES SHALL BE SLOPED AWAY FROM THE FOUNDATION A MINIMUM OF 6" IN THE FIRST 10'. ALTERNATE APPROACHES MAY BE APPROVED IF THE ALTERNATE DESIGN IS EQUIVALENT IN EFFECTIVENESS AND PERFORMANCE, AND PROVIDES FOR POSITIVE SITE DRAINAGE.

IRC R403.1.4

- THE BOTTOM OF ALL FOOTINGS SHALL EXTEND NOT LESS THAN 36" BELOW GRADE FOR FROST PROTECTION.
- FOOTINGS FOR FREESTANDING ACCESSORY STRUCTURES WITH AN AREA OF 600 SF OR LESS AND AN EAVE HEIGHT OF 10' OR LESS SHALL EXTEND BELOW GRADE A MINIMUM OF 12".

FOOTINGS:

EXTERIOR WALLS, BEARING WALLS, COLUMN AND PIERS SHALL BE SUPPORTED ON CONTINUOUS SOLID MASONRY OR CONCRETE FOOTINGS, OR APPROVED STRUCTURAL SYSTEM TO SAFELY SUPPORT THE IMPOSED LOADS AND SHALL BE SIZED AND REINFORCED IN ACCORDANCE WITH THIS STANDARD OR SHALL BE ENGINEERED DESIGN. FOOTINGS UNDER FOUNDATION WALLS SHALL BE CONTINUOUS AROUND THE STRUCTURE AND FROM ONE LEVEL TO THE NEXT. THE CONTINUOUS TRANSITIONS BETWEEN FOOTINGS AT DIFFERENT LEVELS ENCLOSING USABLE SPACE SHALL BE MADE BY APPROVED SOLID JUMPS OR SUPPORT SYSTEMS TO PROVIDE SAFE SUPPORT OF THE STRUCTURE. SEE "TYPICAL FOOTING/FOUNDATION WALLS/STANDARD SLAB AT MAXIMUM 4" OVER-DIG AND "FOOTING JUMP" DIAGRAMS FOR MORE DETAIL (PER KC, MO STANDARDS)

CONCRETE

- ALL CONCRETE CONSTRUCTION SHOULD CONFORM TO ACI 318-11 AND THE 2018 INTERNATIONAL RESIDENTIAL CODE.
- THE MINIMUM CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE AS SPECIFIED IN IRC TABLE R402.2.
- CONCRETE MIX TO UTILIZE A MAXIMUM WATER-CEMENT MATERIALS RATIO OF 0.45 FOR ALL APPLICATIONS. ALL CONCRETE TO HAVE MAXIMUM 0.10 PERCENT WATER SOLUBLE CHLORIDE CONTENT BY WEIGHT OF CEMENT. ADMIXTURES SHALL NOT CONTAIN ANY CHLORIDES.
- CONCRETE POURED AGAINST AN EXISTING SURFACE SHOULD BE ROUGHENED TO A MINIMUM 1/4 INCH AMPLITUDE.
- REBAR CLEAR DISTANCE SHALL BE AS FOLLOWS:
 - CAST AGAINST AND PERMANENT CONTACT WITH GROUND 3 IN
 - EXPOSED TO WEATHER OR IN CONTACT WITH GROUND 2 IN
 - NOT EXPOSED TO WEATHER OR GROUND 1.5 IN
- CONCRETE MIX DESIGN SHALL BE 6% (±1%) AIR-ENTRAINED FOR GARAGE SLABS, FOOTINGS, WALLS, OR FLATWORK EXPOSED TO WEATHER.
- SHORING AND RESHORING:
 - SHORING AND SUPPORTING FORMWORK SHALL NOT BE REMOVED FROM HORIZONTAL MEMBERS BEFORE CONCRETE STRENGTH REACHES 70% OF STRENGTH DETERMINED BY CYLINDERS OR 28 DAYS.
 - SHORING MAY NOT BE REMOVED SOONER THAN RECOMMENDED BY ASTM 374-04 SECTION 3.7.2.3.

MINIMUM STANDARDS:

CONCRETE SHALL BE 6% (±1%) AIR-ENTRAINED FOR GARAGE SLABS AND FOR ALL LOCATION'S FOOTINGS, WALLS OR FLATWORK WHERE EXPOSED TO WEATHER. REBAR SHALL BE MINIMUM 60 KSI UNLESS NOTED OTHERWISE. REINFORCING BAR SHALL BE GRADE 60 MINIMUM.

CONCRETE REINFORCEMENT STEEL

- REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
- SMOOTH BARS OR WELDED WIRE FABRIC SHALL CONFORM TO ASTM 185.
- ALL REBAR LAP SPLICES SHALL BE CLASS B LAP SPLICES AS SHOWN ON THE LAP SPLICE SCHEDULE.
- DEVELOPMENT LENGTH NOTED IS EQUAL TO 80% OF THE LENGTH NOTED IN THE LAP SPLICE SCHEDULE.
- 90% HOOK SHOWN IN DRAWINGS SHALL BE STANDARD PER ACI 318-14
 - STRAIGHT EXTENSION LENGTH = 12X d_{bar}
 - BEND DIAMETER = 12X d_{bar}
- LAP SPLICE SCHEDULE (SEE TABLE 1.1)
- HOOKED DOWELS:
 - HOOKED DOWELS FROM FOUNDATIONS TO WALL SHALL BE PROVIDED TO MATCH VERTICAL WALL REINFORCING AND EXTENDED TO 3" CLEAR FROM BOTTOM OF FOUNDATION
 - HOOKED DOWELS MATCH SLAB REINFORCING FROM SLAB TO WALLS OR SLAB TO FOUNDATION
- PROVIDE 2 - #5 BARS AROUND PERIMETER OF ALL SUSPENDED SLABS
- HORIZONTAL WALL REINFORCING SHALL TERMINATE AT THE END OF THE WALL WITH A STANDARD HOOK
- TOP AND BOTTOM HORIZONTAL REINFORCING SHALL BE PLACED 1-1/2" TO 2" FROM THE TOP AND BOTTOM OF THE WALL

FOOTNOTES:

- WALL HEIGHT IS MEASURED FROM THE TOP OF THE WALL TO THE TOP OF THE FLOOR SLAB.
- VERTICAL REINFORCEMENT FOR CONCRETE WALLS THAT ARE NOT FULL HEIGHT AND FOR REINFORCEMENT SPACED 24" O.C. MAY BE PLACED IN THE MIDDLE OF THE WALL. OTHER WALLS SHALL HAVE VERTICAL REINFORCEMENT PLACE AS FOLLOWS:
 - A. 8" WALL - MINIMUM 5" FROM THE OUTSIDE FACE.
 - B. 10" WALL - MINIMUM 6-3/4" FROM THE OUTSIDE FACE.
 - C. EXTEND BARS TO WITHIN 8" OF THE TOP OF THE WALL.
- HORIZONTAL REINFORCEMENT:
 - A. ONE BAR SHALL BE PLACED WITHIN 12" OF THE TOP OF THE WALL.
 - B. OTHER BARS SHALL BE EQUALLY SPACED WITH SPACING NOT TO EXCEED 24" O.C.
 - C. HORIZONTAL BARS SHOULD BE AS CLOSE TO THE TENSION FACE AS POSSIBLE (INTERIOR); AND BEHIND THE VERTICAL REINFORCEMENT (I.E. 2" TOWARD THE INSIDE).
 - D. SUPPLEMENTAL REINFORCEMENT AT CORNERS - PLACE 1 #4 REBAR 48" LONG AT 45 DEGREE ANGLE AT CORNERS OF OPENINGS. PLACE REINFORCEMENT WITHIN 6" OF THE EDGE OF INSIDE CORNERS.
- REINFORCEMENT SHALL BE LAPPED A MINIMUM 24" AT ENDS, SPLICES, AND AROUND CORNERS.
- AT MASONRY LEDGES THE MINIMUM WALL THICKNESS SHALL BE 3-1/2". LEDGES SHALL NOT EXCEED A DEPTH OF MORE THAN 24" BELOW THE TOP OF THE WALL FOR WALL THICKNESS LESS THAN 4" PROVIDE #4 BARS AT MAXIMUM 24" O.C. TO WITHIN 8" OF THE TOP OF THE WALL.
- STRAIGHT WALLS MORE THAN 5' TALL AND MORE THAN 16" LONG SHALL BE PROVIDED WITH EXTERIOR BRACED RETURN WALLS. WALL LENGTH SHALL BE MEASURED USING INSIDE THE SHORTEST DIMENSION BETWEEN INTERSECTING WALLS (SEE TYPICAL DEAD MAN SECTION).

TABLE 1.1

| NORMAL WEIGHT CONCRETE LAP SPLICE SCHEDULE, IN | | | | |
|---|----------|--------|------------|--------|
| BAR SIZE | TOP BARS | | OTHER BARS | |
| | CASE 1 | CASE 2 | CASE 1 | CASE 2 |
| #3 | 28 | 42 | 22 | 32 |
| #4 | 37 | 56 | 29 | 43 |
| #5 | 47 | 70 | 36 | 54 |
| #6 | 56 | 84 | 43 | 64 |

STEEL DECK - SUSPENDED SLABS

- STEEL DECK QUALITY, FABRICATION, DELIVERY, INSTALLATION AND ATTACHMENT SHALL COMPLY WITH THE PROVISIONS OF THE STEEL DECK INSTITUTE, SDI.
- STEEL ROOF DECK SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE ON CONSTRUCTION DRAWINGS:
 - WIDE RIB CONFIGURATION
 - 1.5" DEPTH
 - 24GA DESIGN THICKNESS
 - MAXIMUM SINGLE SPAN OF 4'-8" OR CONTINUOUS SPAN OF 5'-10"
 - GALVANIZE PER ASTM A653 OR SHOP PRIME PER ASTM A1008
 - ATTACH STEEL ROOF DECK TO SUPPORTS WITH #12 TEK AT 18" O.C.
 - ATTACH STEEL ROOF DECK SIDELAPS WITH #10 TEK OR CRIMP/BUTTON PUNCH AT 36" O.C. OR MID-SPAN, WHICHEVER IS SMALLER
- CONTRACTOR AND/OR DECK MANUFACTURER SHALL FURNISH ALL NECESSARY DECK CLOSURE ACCESSORIES TO PROVIDE A FINISHED SURFACE FOR THE APPLICATION OF ROOF INSULATION AND ROOF COVERING.
- STEEL FLOOR DECK SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE ON CONSTRUCTION DRAWINGS:

STEEL DECK - SUSPENDED SLABS
STEEL DECK QUALITY, FABRICATION, DELIVERY, INSTALLATION AND ATTACHMENT SHALL COMPLY WITH THE PROVISIONS OF THE STEEL DECK INSTITUTE, SDI.
CONTRACTOR AND/OR DECK MANUFACTURER SHALL FURNISH ALL NECESSARY DECK CLOSURE ACCESSORIES TO PROVIDE A FINISHED SURFACE FOR THE APPLICATION OF ROOF INSULATION AND ROOF COVERING.
STEEL FLOOR DECK SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE ON CONSTRUCTION DRAWINGS:

- 2" COMPOSITE DECK WITH 6" TOTAL SLAB THICKNESS
- 19GA DESIGN THICKNESS
- MAXIMUM SINGLE SPAN DURING CONSTRUCTION OF 8', 2 SPAN OF 10'-1", OR 3 SPAN OF 10'-5".
- MAXIMUM SPAN SHALL NOT EXCEED 12.5'.
- PROVIDE W2.1xW2.1 WELDED WIRE MESH OR #4 @ 12" O.C. EACH WAY. PROVIDE 2" REBAR COVER MEASURED FROM TOP OF THE SLAB
- GALVANIZE PER ASTM A653
- MINIMUM BEARING LENGTH AT EDGE SUPPORTS IS 2"
- MINIMUM BEARING LENGTH AT INTERIOR SUPPORTS IS 4"
- ATTACH STEEL COMPOSITE FLOOR DECK TO SUPPORTS WITH 5/8" ARC PUDDLE WELDS AT 12" O.C. MECHANICAL FASTENERS EITHER POWDER ACTUATED, PNEUMATICALLY DRIVEN, OR SCREWS MAY BE USED IN LIEU OF WELDING PROVIDED THEY ARE APPROVED.
- ATTACH STEEL ROOF DECK SIDELAPS WITH #10 TEK OR CRIMP/BUTTON PUNCH AT 36" O.C. OR MID-SPAN, WHICHEVER IS SMALLER.

CONTRACTOR AND/OR DECK MANUFACTURER SHALL FURNISH ALL NECESSARY POUR STOPS, COLUMN CLOSURES, END PLATES, AND COVER PLATES AS NEEDED.

STRUCTURAL STEEL

- STEEL DESIGN, FABRICATION, AND ERECTION SHALL CONFORM WITH AMERICAN INSTITUTE OF STEEL CONSTRUCTION.
- STEEL GRADE AND SPECIFICATION SHALL BE AS FOLLOWS:

| | |
|--|---|
| HOLLOW STRUCTURAL SECTIONS: CHANNELS, PLATES AND ANGLES: WIDE FLANGES: COLUMNS: ANCHOR RODS: | ASTM A500 (Fy = 46 KSI) ASTM A36 (Fy = 36 KSI) ASTM A992 (Fy = 50 KSI) ASTM A53 GR. B (Fy= 35 KSI) ASTM F1554 (Fy = 36 KSI) |
|--|---|
- BOLTS SHALL CONFORM TO ASTM A307
- WELDING SHALL CONFORM TO THE AWS CODES FOR BUILDING CONSTRUCTION. WELDING SHALL BE PERFORMED IN ACCORDANCE TO WELDING PROCEDURE SPECIFICATION (WPS) AS REQUIRED IN AWS D1.1 THE WPS VARIABLES SHALL BE WITHIN THE PARAMETERS ESTABLISHED BY THE FILLER-METAL MANUFACTURER.
- WELDS SHALL USE E70XX ELECTRODES AND A MINIMUM OR 3/16" SIZE UNLESS NOTED OTHERWISE.
- ALL WELDS SPECIFIED AS FIELD WELDS MAY BE SHOP WELDED AT THE CONTRACTOR'S OPTION IF ERECTION CAN STILL BE EXECUTED.

ENERGY REQUIREMENTS:

- LIGHTING FIXTURES PENETRATING THE THERMAL ENVELOPE SHALL BE IC-RATED, LEAKAGE RATED, AND SEALED TO THE GYPSUM WALLBOARD AS REQUIRED PER IRC N1102.4.4.
- PROGRAMMABLE THERMOSTATS SHALL BE INSTALLED AS REQUIRED PER N1103.1.1.
- AIR HANDLERS SHALL BE RATED FOR MAXIMUM 2% AIR LEAKAGE RATE PER N1103.3.2.1.
- BUILDING FRAMING CAVITIES SHALL NOT BE USED AS DUCTS OR PLENUMS.
- HOT WATER PIPES SHALL BE INSULATED AS REQUIRED PER N1103.4.
- ALL EXHAUST FANS SHALL TERMINATE TO THE BUILDING EXTERIOR AS REQUIRED PER IRC M1504.3.
- MAKEUP AIR SYSTEMS SHALL BE INSTALLED FOR KITCHEN EXHAUST HOODS THAT EXCEED 400 CFM AS REQUIRED PER M1503.6.
- AN AIR HANDLING SYSTEM SHALL NOT SERVE BOTH THE LIVING SPACE AND THE GARAGE PER M1601.6 ENERGY CONSERVATION.

GARAGES:

- THE GARAGE FLOOR SHALL SLOPE TOWARDS THE GARAGE DOORWAYS.
- DOORS BETWEEN THE GARAGE AND THE DWELLING - MINIMUM 1-3/8" SOLID CORE OR HONEY COMBED STEEL DOOR OR 20 MINUTE FIRE RATED.
- THE GARAGE SHALL BE SEPARATED FROM THE DWELLING AND IT'S ATTIC AREAS BY A MINIMUM 5/8" GYPSUM BOARD APPLIED TO THE GARAGE SIDE WHERE A FLOOR/CEILING SPACE IS PROVIDED ABOVE.
- THE GARAGE COLUMNS AND BEAMS SUPPORTING THE SEPARATION SHALL ALSO BE PROTECTED WITH 5/8" GYPSUM BOARD OR EQUIVALENT. WHERE HABITABLE SPACE OCCURS ABOVE THE GARAGE THE FLOOR CEILING ASSEMBLY SHALL BE PROTECTED WITH A MINIMUM PS TYPE "X" GYPSUM BOARD ON THE GARAGE CEILING.
- GARAGE DOOR AND FRAME - THE "H" FRAME FOR THE ATTACHMENT OF THE TRACK AND COUNTER BALANCE SHALL CONSIST OF THE FOLLOWING 2x6 VERTICAL JAMBS RUNNING FROM THE FLOOR TO CEILING, ATTACHED WITH 1-3/4"x0.120" NAILS AT 7" O.C. STAGGERED WITH (7) 3-1/4"x0.120" NAILS THROUGH THE JAMB INTO THE HEADER. A MINIMUM OF 2x8 HEADER FOR ATTACHMENT OF COUNTER BALANCE SYSTEM.
- SELF CLOSING DEVICES SHALL BE INSTALLED FOR GARAGE AND/OR DWELLING SEPARATION DOORS PER R302.5.1.
- GARAGE VEHICLE DOORS AND FRAMES SHALL BE DESIGNED AND INSTALLED TO MEET THE 90 MPH WIND LOAD REQUIREMENTS OF DASMA 108 AND ASTM E330-96 (IRC 301.2.1).

STAIRWAYS:

- STAIRWAYS SHALL PROVIDE A MAXIMUM 7-3/4" RISE AND A MINIMUM 10" RUN.
- PROVIDE GUARD RAILS BETWEEN 36" GUARD RAILS ON THE OPEN SIDES OF RAISED FLOORS, PORCHES AND BALCONIES; MINIMUM 34" GUARD RAILS ON THE OPEN SIDES OF STAIRWAYS LOCATED MORE THAN 30" ABOVE THE FLOOR OR GRADE BELOW.
- GUARD RAIL ENCLOSURES SHALL HAVE INTERMEDIATE RAILS OF ORNAMENTAL PATTERNS THAT DO NOT ALLOW PASSAGE OF A SPHERE 4" IN DIAMETER.
- EACH STAIRWAY OF THREE OR MORE RISERS SHALL PROVIDE A CONTINUOUS HANDRAIL ON AT LEAST ONE SIDE BETWEEN 34" AND 38" ABOVE THE NOSING OF THE TREADS.
- HANDRAILS SHALL HAVE A CIRCULAR CROSS SECTION OF 1-1/4" TO 2-5/8" OR OTHER APPROVED GRASPABLE SHAPE PER IRC R311.5.6.
- MINIMUM 6'-8" OF HEADROOM CLEARANCE IS REQUIRED IN STAIRWAYS.
- ENCLOSED ACCESSIBLE SPACE UNDER STAIRWAYS SHALL HAVE WALLS AND THE UNDERSIDE OF THE STAIR AND LANDING PROTECTED WITH 1/2" GYPSUM BOARD ON ENCLOSURE SIDE PER IRC R311.2.2.

GLAZING

- GLAZING IN HAZARDOUS LOCATIONS AS IDENTIFIED IN IRC R308.4 SHALL BE OF APPROVED SAFETY GLAZING MATERIALS; GLASS IN STORM DOORS; INDIVIDUAL FIXED OR OPENABLE PANELS ADJACENT TO A DOOR WHERE THE NEAREST VERTICAL EDGE IS WITHIN A 24" ARCH OF THE DOOR IN A CLOSED POSITION AND WHOSE BOTTOM EDGE IS WITHIN 60" OF THE FLOOR; WALLS ENCLOSING STAIRWAYS AND LANDINGS WHERE THE GLAZING IS WITHIN 60" OF THE TOP OR BOTTOM OF THE STAIR; ENCLOSURES FOR SPAS, TUBS, SHOWERS, AND WHIRLPOLS; GLAZING IN FIXED OR OPENABLE PANELS EXCEEDING 8 SF AND WHOSE BOTTOM EDGE IS LESS THAN 18" ABOVE THE FLOOR OR WALKING SURFACE WITHIN 36".
- WINDOW FALL PROTECTION SHALL BE PROVIDED IN ACCORDANCE WITH R312.2.

EMERGENCY EGRESS AND RESCUE

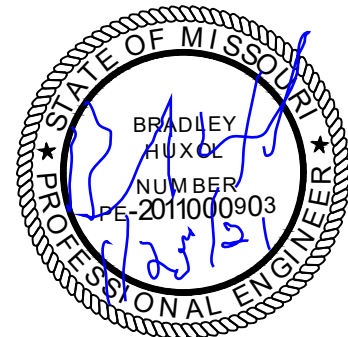
- PROVIDE ONE WINDOW FROM EACH BEDROOM THAT HAS A MINIMUM OPENABLE AREA OF 5.7 SF WITH A MINIMUM OPENABLE HEIGHT OF 24" AND WIDTH OF 21"
- BASEMENT EGRESS TO MEET THE REQUIREMENTS OF IRC R310.
- PROVIDE SMOKE ALARMS IN EACH SLEEPING ROOM, OUTSIDE OF EACH SLEEPING AREA AND ON EACH FLOOR INCLUDING BASEMENTS. ALARMS SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTUATION OF ONE ALARM WILL ACTIVATE ALL OF THE ALARMS IN THE DWELLING.
- CARBON MONOXIDE DETECTORS SHALL BE INSTALLED AS REQUIRED PER R315.

FRAMING NOTES:

- ALL LUMBER SIZES ARE DOUGLAS FIR-LARCH #2 UNLESS OTHERWISE NOTED.
- ALL UNMARKED HEADERS SHALL BE A MINIMUM #2 DOUGLAS FIR LARCH (2) 2x10 ON LOAD BEARING WALLS.
- ALL HEADER/BEAMS TO BEAR ON A MINIMUM OF (2) 2x4 POSTS UNLESS NOTED OTHERWISE.
- DOUBLE JOIST UNDER INTERIOR NON-LOAD BEARING WALLS.
- CANTILEVERS, OVER BEAMS, AND DOOR JAMBS SHALL BE BLOCKED
- ANY WOOD MEMBERS IN CONTACT WITH CONCRETE OR MASONRY (OR THE FURRING THEY ARE ATTACHED TO) SHALL BE OF DECAY RESISTANT MATERIAL.
- INTERIOR NON LOAD BEARING WALLS SHALL BE ISOLATED FROM THE FLOOR FRAMING ABOVE UNLESS THE INTERIOR NON LOAD BEARING WALL RESTS DIRECTLY ON A FOOTING.
- LVL STRENGTH SHALL BE VERSA-LAM 3100 Fb UNLESS NOTED OTHERWISE.



RESIDENTIAL ENGINEERING SERVICES, LLC
WWW.RES-KC.COM
600 SW JEFFERSON ST SUITE 300
LEES SUMMIT, MO 64063
(816) 399-4901



GENERAL NOTES

| 2018 IRC TABLE R602.3(1) (SEE IRC FOR FOOTNOTES) | | | |
|--|--|--|--|
| ITEM | DESCRIPTION OF BUILDING ELEMENTS | NUMBER AND TYPE OF FASTENER | SPACING AND LOCATION |
| ROOF | | | |
| 1 | BLOCKING BETWEEN CEILING JOISTS OR RAFTERS TO TOP PLATE | 4-8D BOX (2-1/2"x0.113") OR 3-8D COMMON (2-1/2" x 0.131"); OR 3-10D BOX (3" x 0.128"); OR 3-3" x 0.131" NAILS | TOE NAIL |
| 2 | CEILING JOISTS TO TOP PLATE | 4-8D BOX (2-1/2"x0.113") OR 3-8D COMMON (2-1/2" x 0.131"); OR 3-10D BOX (3" x 0.128"); OR 3-3" x 0.131" NAILS | PER JOIST, TOE NAIL |
| 3 | CEILING JOISTS NOT ATTACHED TO PARALLEL RAFTER LAPS OVER PARTITIONS | 4-10D BOX (3" X 0.128"); OR 3-16D COMMON (3-1/2" X 0.162"); OR 4-3" X 0.131" NAILS | FACE NAIL |
| 4 | CEILING JOIST ATTACHED TO PARALLEL RAFTER (HEEL JOINT) | TABLE R802.5.2 | FACE NAIL |
| 5 | COLLAR TIE TO RAFTER, FACE NAIL OR 1-1/4"x20 GAGE RIDGE STRAP TO RAFTER | 4-10D BOX (3" X 0.128"); OR 3-10D COMMON (3" X 0.148"); OR 4-3" X 0.131" NAILS | FACE NAIL EACH RAFTER |
| 6 | RAFTER OR ROOF TRUSS TO PLATE | 3-16d BOX NAILS (3-1/2"x0.135") OR 3-10d COMMON NAILS (3"x0.148"); OR 4-10D BOX (3" X .128"); OR 4-3" X 0.131" NAILS | 2 TOE NAILS ON ONE SIDE AND 1 TOE NAIL ON OPPOSITE SIDE OF EACH RAFTER OR TRUSS |
| 7 | ROOF RAFTERS TO RIDGE, VALLEY OR HIP RAFTERS OR ROOF RAFTER TO MINIMUM 2" RIDGE BEAM | 4-16D (3-1/2"x0.135") ; OR 3-10D COMMON (3" x 0.148"); OR 4-10D BOX (3" x 0.128"); OR 4-3" X0.131" NAILS | TOE NAIL |
| | | 3-16d BOX NAILS (3-1/2"x0.135") OR 2-16D COMMON NAILS (3-1/2"x0.162"); OR 3-10D BOX (3" x .128"); OR 3-3" X 0.131" NAILS | END NAIL |
| WALL | | | |
| 8 | STUD TO STUD (NOT AT BRACED WALL PANELS) | 16D COMMON (3-1/2" X 0.162") | 24" O.C. FACE NAIL |
| | | 10d BOX (3"x0.128"); OR 3" x 0.131" NAILS | 16" O.C. FACE NAIL |
| 9 | STUD TO STUD AND ABUTTING STUDS AT INTERSECTING WALL CORNERS (AT BRACED WALL PANELS) | 16D BOX (3-1/2"x0.135"); OR 3" X 0.131" NAILS | 12" O.C. FACE NAIL |
| | | 16D COMMON (3-1/2" X 0.162") | 16" O.C. FACE NAIL |
| 10 | BUILT-UP HEADER (2" TO 2" HEADER WITH ½" SPACER) | 16D COMMON (3-1/2"x0.162") 16D BOX (3-1/2" X 0.135) | 16" O.C. ALONG EACH EDGE FACE NAIL 12" ALONG EACH EDGE FACE NAIL |
| 11 | CONTINUOUS HEADER TO STUD | 5-8D BOX (2-1/2" X 0.113"); OR 4-8D COMMON (2-1/2" X 0.131"); OR 4-10D BOX (3" X 0.128") | TOENAIL |
| 12 | TOP PLATE TO TOP PLATE | 16D COMMON (3-1/2" X 0.162") 10d BOX (3"x0.128"); OR 3" X 0.131" NAILS | 16" O.C. FACE NAIL 12" O.C. FACE NAIL |
| 13 | DOUBLE TOP PLATE SPLICE | 8-16D COMMON(3-1/2" X 0.162"); OR 12-16D BOX (3-1/2" X 0.135); OR 12-10D BOX (3" X 0.128"); OR 12-3" X 0.131" NAILS | FACE NAIL ON EACH SIDE OF END JOINT (MINIMUM 24" LAP SPLICE LENGTH EACH SIDE OF END JOINT) |
| 14 | BOTTOM PLATE TO JOIST, RIM JOIST, BAND JOIST OR BLOCKING (NOT AT BRACED WALL PANELS) | 16D COMMON (3-1/2" X 0.162") 16D BOX (3-1/2"x0.135"); OR 3" X 0.131" NAILS | 16" O.C. FACE NAIL 12" O.C. FACE NAIL |
| 15 | BOTTOM PLATE TO JOIST, RIM JOIST, BAND JOIST BLOCKING (AT BRACED WALL PANELS) | 3-16d BOX NAILS (3-1/2"x0.135") OR 2-16D COMMON (3-1/2"x0.162"); OR 4-3" X 0.131" NAILS | 3 EACH 16" O.C. FACE NAIL 2 EACH 16" O.C. FACE NAIL 4 EACH 16" O.C. FACE NAIL |
| 16 | TOP OR BOTTOM PLATE TO STUD | 4-8D BOX (2-1/2"x0.113") OR 3-16D BOX (3-1/2" x 0.135"); OR 4-8D COMMON (2-1/2" X 0.131"); OR 4-10D BOX (3" x 0.128"); OR 4-3" x 0.131" NAILS | TOE NAIL |
| | | 3-16D BOX (3-1/2" x 0.135"); OR 2-16D COMMON (3-1/2" x 0.162"); OR 3-10D BOX (3" x 0.128"); OR 3-3" x 0.131" NAILS | END NAIL |
| 17 | TOP PLATES, LAPS AT CORNERS AND INTERSECTIONS | 3-10D BOX (3" X 0.128"); OR 2-16D COMMON (3-1/2" X 0.162"); OR 3-3" X 0.131" NAILS | FACE NAIL |
| 18 | 1" BRACE TO EACH STUD AND PLATE | 3-8D BOX (2-1/2" X 0.113"); OR 2-8D COMMON (2-1/2" X 0.131"); OR 2-10D BOX (3" X 0.128"); OR 2 STAPLES 1-3/4" | FACE NAIL |
| 19 | 1"x6" SHEATHING TO EACH BEARING | 3-8D BOX (2-1/2" X 0.113"); OR 2-8D COMMON (2-1/2" X 0.131"); OR 2-10D BOX (3" X 0.128"); OR 2 STAPLES, 1" CROWN, 16 GA., 1-3/4" LONG | FACE NAIL |
| 20 | 1"x8" AND WIDER SHEATHING TO EACH BEARING | 3-8D BOX (2-1/2" X 0.113"); OR 3-8D COMMON (2-1/2" X 0.131"); OR 3-10D BOX (3" X 0.128"); OR 3 STAPLES, 1" CROWN, 16 GA., 1-3/4" LONG | FACE NAIL |
| | | WIDER THAN 1" X 8" 4-8D BOX (2-1/2" X 0.113"); OR 3-8D COMMON (2-1/2" X 0.131"); OR 3-10D BOX (3" X 0.128"); OR 4 STAPLES, 1" CROWN, 16 GA., 1-3/4" LONG | |

| TABLE R507/2 FASTENER SPACING FOR A SOUTHERN PINE OR HEM-FIR DECK LEDGER 2" NOMINAL SOLID SAWN SPRUCE-PINE-FIR BAND JOIST (DECK LIVE LOAD = 40PSF, DECK DEAD LOAD = 10 PSF) | | | | | | | |
|---|--------------------------------|-----------|------------|-------------|-------------|-------------|-------------|
| JOIST SPAN | 6' AND LESS | 6'1 TO 8' | 8'1 TO 10' | 10'1 TO 12' | 12'1 TO 14' | 14'1 TO 16' | 16'1 TO 18' |
| CONNECTION DETAILS | ON CENTER SPACING OF FASTENERS | | | | | | |
| 1/2" DIAMETER LAG SCREW WITH 15/32" MAX SHEATHING | 30 | 23 | 18 | 15 | 13 | 11 | 10 |
| 1/2" DIAMETER BOLT WITH 15/32" MAX SHEATHING | 36 | 36 | 34 | 29 | 24 | 21 | 19 |
| 1/2" DIAMETER BOLT WITH 15/32" MAX SHEATHING AND 1/2" STACKED WASHERS | 36 | 36 | 29 | 24 | 21 | 18 | 16 |

| 2018 IRC TABLE R602.3(1) (SEE IRC FOR FOOTNOTES) | | | | |
|--|---|--|--|-------------------------------|
| FLOOR | | | | |
| 21 | JOST TO SILL, TOP PLATE OR GIRDER | 4-8D BOX (2-1/2" X 0.113"); OR 3-8D COMMON (2-1/2" X 0.131"); OR 3-10D BOX (3" X 0.128"); OR 3-3" X 0.131" NAILS | TOE NAIL | |
| 22 | RIM JOIST, BAND JOIST OR BLOCKING TO SILL OR TOP PLATE (ROOF APPLICATIONS ALSO) | 8d BOX (2-1/2"x0.113") | 4" O.C. TOE NAIL | |
| | | 8D COMMON (2-1/2" X 0.131"); OR 10D BOX (3" X 0.128"); OR 3" X 0.131" NAILS | 6" O.C. TOE NAIL | |
| 23 | 1"x6" SUBFLOOR OR LESS TO EACH JOIST | 3-8D BOX (2-1/2" X 0.113"); OR 2-8D COMMON (2-1/2" X 0.131"); OR 3-10D BOX (3" X 0.128"); OR 2 STAPLES, 1" CROWN, 16 GA., 1-3/4" LONG | FACE NAIL | |
| FLOOR | | | | |
| 24 | 2" SUBFLOOR TO JOIST OR GIRDER | 3-16D BOX (3-1/2" X 0.135"); OR 2-16D COMMON (3-1/2"x0.162") | BLIND AND FACE NAIL | |
| 25 | 2" PLANKS (PLANK & BEAM - FLOOR & ROOF) | 3-16D BOX (3-1/2" X 0.135"); OR 2-16D COMMON (3-1/2"x0.162") | AT EACH BEARING, FACE NAIL | |
| 26 | BAND OR RIM JOIST TO JOIST | 3-16D COMMON (3-1/2" X 0.162"); OR 4-10 BOX (3" X 0.128"); OR 4-3" X 0.131" NAILS ; OR 4-3" X 14 GA. STAPLES, 1 1/8" CROWN | END NAIL | |
| 27 | BUILT-UP GIRDERS AND BEAMS, 2" LUMBER LAYERS | 20D COMMON (4" X 0.192"); OR | NAIL EACH LAYER AS FOLLOWS: 32" O.C. AT TOP END AND BOTTOM AND STAGGERED. | |
| | | 10D BOX (3" X 0.128"); OR 3" X 0.131" NAILS | 24" O.C. FACE NAIL AT TOP AND BOTTOM STAGGERED ON OPPOSITE SIDES | |
| | | AND: 2-20D COMMON (4" X 0.192"); OR 3-10D BOX (3" X 0.128"); OR 3-3" X 0.131" NAILS | FACE NAIL AT ENDS AND AT EACH SPLICE | |
| 28 | LEDGER STRIP SUPPORTING JOISTS OR RAFTERS | 4-16D BOX (3-1/2" X 0.135"); OR 3-16D COMMON (3-1/2" X 0.162"); OR 4-10D BOX (3" X 0.128"); OR 4-3" X 0.131" NAILS | AT EACH JOIST OR RAFTER, FACE NAIL | |
| 29 | BRIDGING OR BLOCKING TO JOIST | 2-10D BOX (3" X 0.128"); OR COMMON (2-1/2" X 0.131"; OR 2-3" X 0.131") NAILS | EACH END, TOE NAIL | |
| ITEM | DESCRIPTION OF BUILDING ELEMENTS | NUMBER AND TYPE OF FASTENER | SPACING OF FASTENERS | |
| | | | EDGES (IN) | INTERMEDIATE SUPPORTS (IN) |
| 30 | 3/8" - 1/2" | 6d COMMON (2"x0.113") NAILS (SUBFLOOR, WALL) 8d COMMON (2-1/2"x0.131") NAIL (ROOF); OR RSRS-01 (2-3/8" X 0.113") NAIL (ROOF) | 6 | 12 |
| 31 | 19/32"-1" | 8d COMMON NAIL (2-1/2"x0.131"); OR RSRS-01 (2-3/8" X 0.113") NAIL (ROOF) | 6 | 12 |
| 32 | 1-1/8" - 1-1/4" | 10d COMMON (3"x0.148") NAIL OR 8D (2-1/2"x0.131") DEFORMED NAIL | 6 | 12 |
| OTHER WALL SHEATHING | | | | |
| 33 | 1/2" STRUCTURAL CELLULOSIC FIBERBOARD SHEATHING | 1-1/2" GALVANIZED ROOFING NAIL, 7/16" HEAD DIAMETER, OR 1-1/4" LONG 16 GA. STAPLE WITH 5/16" OR 1" CROWN | 3 | 6 |
| 34 | 25/32" STRUCTURAL CELLULOSTIC FIBERBOARD SHEATHING | 1-3/4" GALVANIZED ROOFING NAIL, 7/16" HEAD DIAMETER, OR 1-1/2" LONG 16 GA STAPLE WITH 5/16" OR 1" CROWN | 3 | 6 |
| 35 | 1/2" GYPSUM SHEATHING | 1-1/2" GALVANIZED ROOFING NAIL; STAPLE GALVANIZED, 1-1/2" LONG; 1-1/4" SCREWS, TYPE "W" OR "S" | 7 | 7 |
| 36 | 5/8" GYPSUM SHEATHING | 1-3/4" GALVANIZED ROOFING NAIL; STAPLE GALVANIZED, 1-5/8" LONG; 1-5/8" SCREWS, TYPE "W" OR "S" | 7 | 7 |
| WOOD STRUCTURAL PANELS, COMBINATION SUBFLOOR UNDERLAYMENT TO FRAMING | | | | |
| 37 | 3/4" AND LESS | 6D DEFORMED (2"x0.120") NAIL OR 8D COMMON (2-1/2"x0.131") NAIL | 6 | 12 |
| 38 | 7/8" - 1" | 8D COMMON (2-1/2"x0.131") NAIL OR 8D DEFORMED (2-1/2"x0.120") NAIL | 6 | 12 |
| 39 | 1-1/8" - 1-1/4" | 10D COMMON (3"x0.148") NAIL OR 8D DEFORMED (2-1/2"x0.120") NAIL | 6 | 12 |

| TABLE R507.2.1 PLACEMENT OF LAG SCREWS AND BOLTS IN DECK LEDGERS AND BAND JOISTS | | | | |
|--|----------|-------------|------|-------------|
| MINIMUM END AND EDGE DISTANCES AND SPACING BETWEEN ROWS (INCHES) | | | | |
| | TOP EDGE | BOTTOM EDGE | ENDS | ROW SPACING |
| LEDGER | 2 | 1/4 | 2 | 1-5/8 |
| BAND JOIST | 3/4 | 2 | 2 | 1-5/8 |

| REQUIREMENTS FOR WOOD STRUCTURAL PANEL WALL SHEATHING USED TO RESIST WIND PRESSURES IRC TABLE 602.3(3) (PARTIAL) | | | | | | |
|--|------------------|---|--------------------------------------|-----------------------|--------------------|-----------------|
| MINIMUM NAIL | | MINIMUM WOOD STRUCTURAL PANEL SPAN RATING | MINIMUM NOMINAL PANEL THICKNESS (IN) | MAX WALL STUD SPACING | PANEL NAIL SPACING | |
| SIZE | PENETRATION (IN) | | | | EDGES (IN O.C.) | FIELD (IN O.C.) |
| 6d COMMON | 1.5 | 24/0 | 3/8 | 16 | 6 | 12 |
| 8d COMMON | 1.75 | 24/16 | 7/16 | 16 | 6 | 12 |
| | | | | 24 | 6 | 12 |

| MINIMUM WALL STUD FRAMING NOMINAL SIZE AND GRADE | MAXIMUM PONY WALL HEIGHT (FEET) | MAXIMUM TOTAL WALL HEIGHT (FEET) | MAXIMUM OPENING WIDTH (FEET) | TENSION STRAP CAPACITY REQUIRED (POUNDS) FOR 90 MPH EXPOSURE B |
|--|---------------------------------|----------------------------------|------------------------------|--|
| 2x4 NO 2 GRADE | 0 | 10 | 18 | 1,000 |
| | 1 | 10 | 9 | 1,000 |
| | | | 16 | 1,000 |
| | | | 18 | 1,000 |
| | | | 9 | 1,200 |
| | 2 | 10 | 16 | 1,000 |
| | 2 | 12 | 18 | 2,025 |
| | | | 9 | 2,400 |
| | | | 16 | 1,200 |
| | | | 18 | 3,200 |
| 2x6 STUD GRADE | 4 | 12 | 9 | 3,200 |
| | 2 | 12 | 16 | 2,350 |
| | | | 18 | DR |
| | | | 9 | 1,000 |
| | | | 16 | 2,050 |
| | 4 | 12 | 9 | 1,500 |
| | | | 16 | 3,150 |
| | | | 18 | 3,675 |

| MINIMUM LENGTH OF BRACED WALL PANELS TABLE R602.10.5 (PARTIAL) | | | | |
|--|--|-------------------------|--------|---------|
| METHOD | | MINIMUM LENGTH (INCHES) | | |
| | | WALL HEIGHT | | |
| | | 8 FEET | 9 FEET | 10 FEET |
| PFH | SUPPORTING ROOF ONLY | 16 | 16 | 16 |
| | SUPPORTING ONE STORY AND ROOF | 24 | 24 | 24 |
| PFG | | 24 | 27 | 30 |
| CS-PF | | 16 | 18 | 20 |
| CS-WSP | ADJACENT CLEAR OPENING HEIGHT (INCHES) | | | |
| | LESS THAN OR EQUAL TO 64 | 24 | 27 | 30 |

| BRACED METHODS TABLE R602.10.4 (PARTIAL) | | | |
|--|--|--|--|
| METHODS, MATERIAL | MINIMUM THICKNESS | CONNECTION CRITEIA | |
| | | FASTENERS | SPACING |
| WSP - WOOD STRUCTURAL PANEL | 3/8 | EXTERIOR SHEATHING PER TABLE R602.3(3) | 6" EDGES, 12" FIELD |
| | | INTERIOR SHEATHING PER TABLE R602.3(1) OR R602.3(2) | VARIES BY FASTENER |
| CS-WSP CONTINUOUSLY SHEATHED WOOD STRUCTURAL PANEL | 3/8 | EXERIOR SHEATHING PER TABLE R602.3(3) | 6" EDGES, 12" FIELD |
| | | INTERIOR SHEATHING PER TABLE R602.3(1) OR R602.3(2) | VARIES BY FASTENER |
| PFH - PORTAL FRAME WITH HOLD DOWNS | 3/8 | SEE IRC SECTION R602.10.6.2 | SEE IRC SECTION R602.10.6.2 |
| PFG - PORTAL FRAME AT GARAGE | 3/8 | SEE IRC SECTION R602.10.6.3 | SEE IRC SECTION R602.10.6.3 |
| LIB LET-IN-BRACING | 1x4 WOOD OR APPROVED METAL STRAPS AT 45 TO 60 DEGREE ANGLES FOR MAX 16" STUD SPACING | WOOD: 2-8d COMMON NAILS OR 3-8d NAILS | WOOD: PER STUD AND TOP AND BOTTOM PLATES |
| GB-GYPSUM BOARD | 1/2 | METAL STRAP: PER MANUFACTURER | METAL: PER MANUFACTURER |
| | | NAILS OR SCREWS PER TABLE R602.3(1) FOR EXTERIOR LOCATIONS | FOR ALL BRACED WALL PANEL LOCATIONS: 7" EDGES (INCLUDING TOP AND BOTTOM PLATES) 7" FIELD |
| | | NAILS OR SCREWS PER TABLE R702.3.5 FOR INTERIOR LOCATIONS | |

| ENGINEERED LUMBER MINIMUM DESIGN REQUIREMENTS | | | |
|---|----------|---------|----------|
| | fb (PSI) | E (PSI) | Fv (PSI) |
| VERSA-LAM LVL | 3100 | 2.0x106 | 285 |
| DOUGLAS FIR-LARCH #2 | 900 | 1.6x106 | 180 |

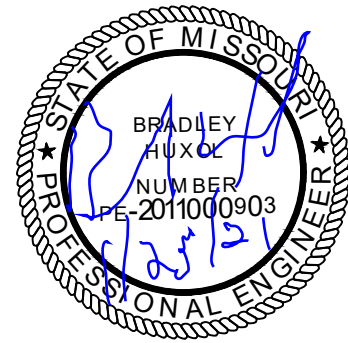


1
S1.0

END CONDITIONS FOR BRACED WALL LINES WITH CONTINUOUS SHEATHING (IRC FIGURE R602.10.7) N.T.S.



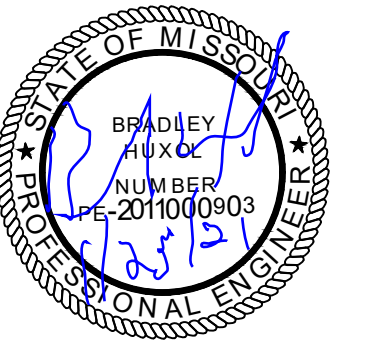
RESIDENTIAL ENGINEERING SERVICES, LLC
WWW.RES-KC.COM
600 SW JEFFERSON ST SUITE 300
LEES SUMMIT, MO 64063
(816) 399-4901



FRAMING DETAILS

SHEET #

S1.0

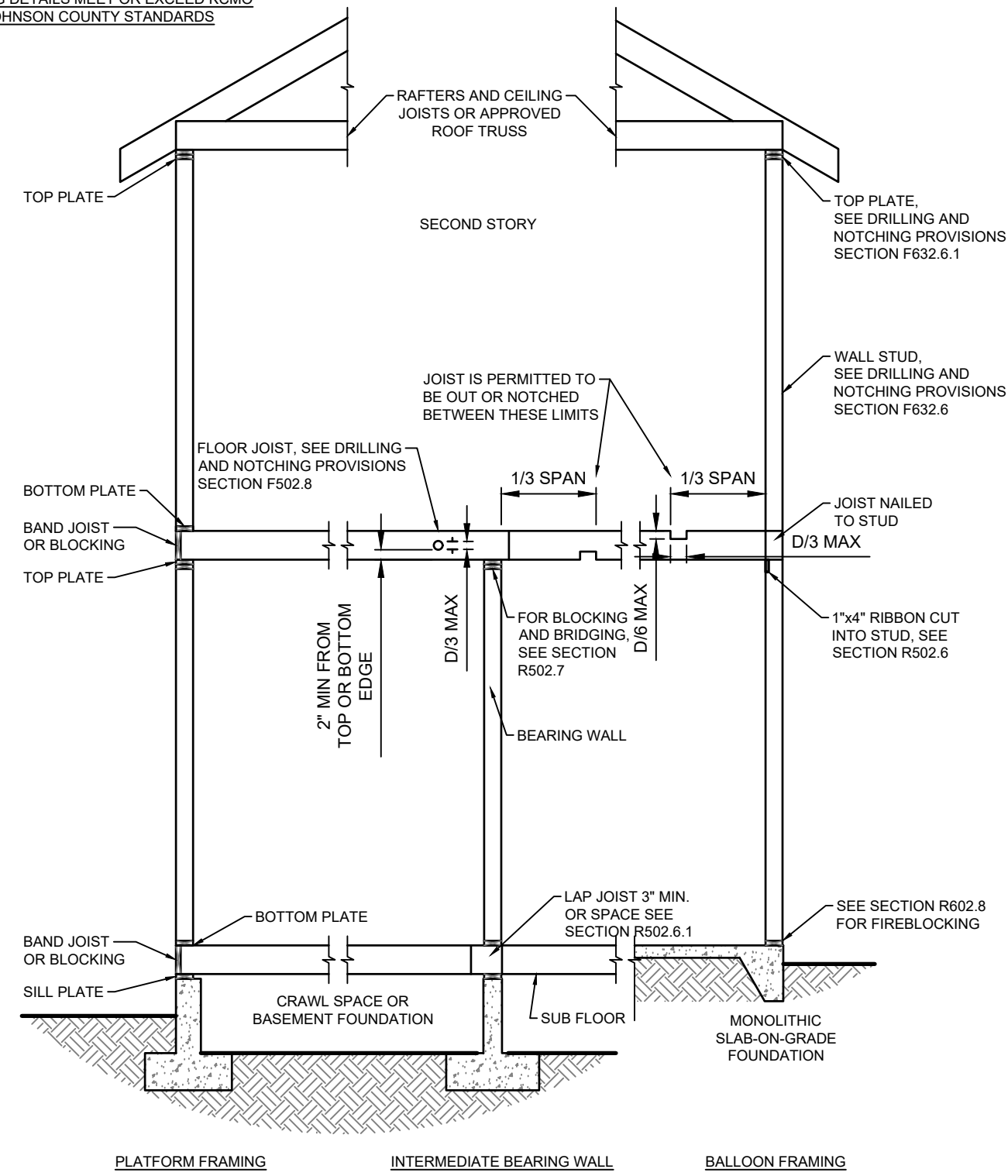


STRUCTURAL DETAILS

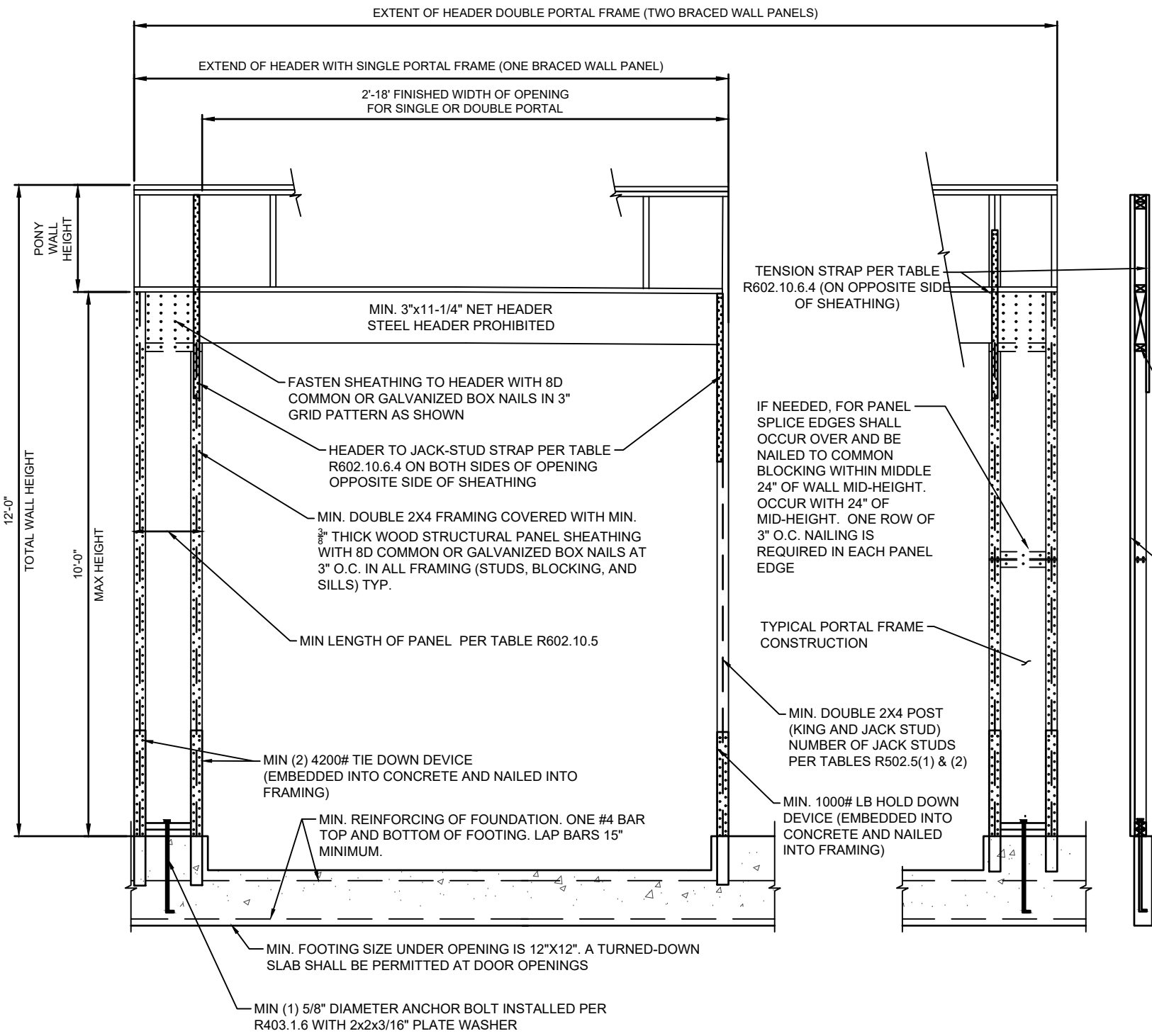
SHEET #

S2.0

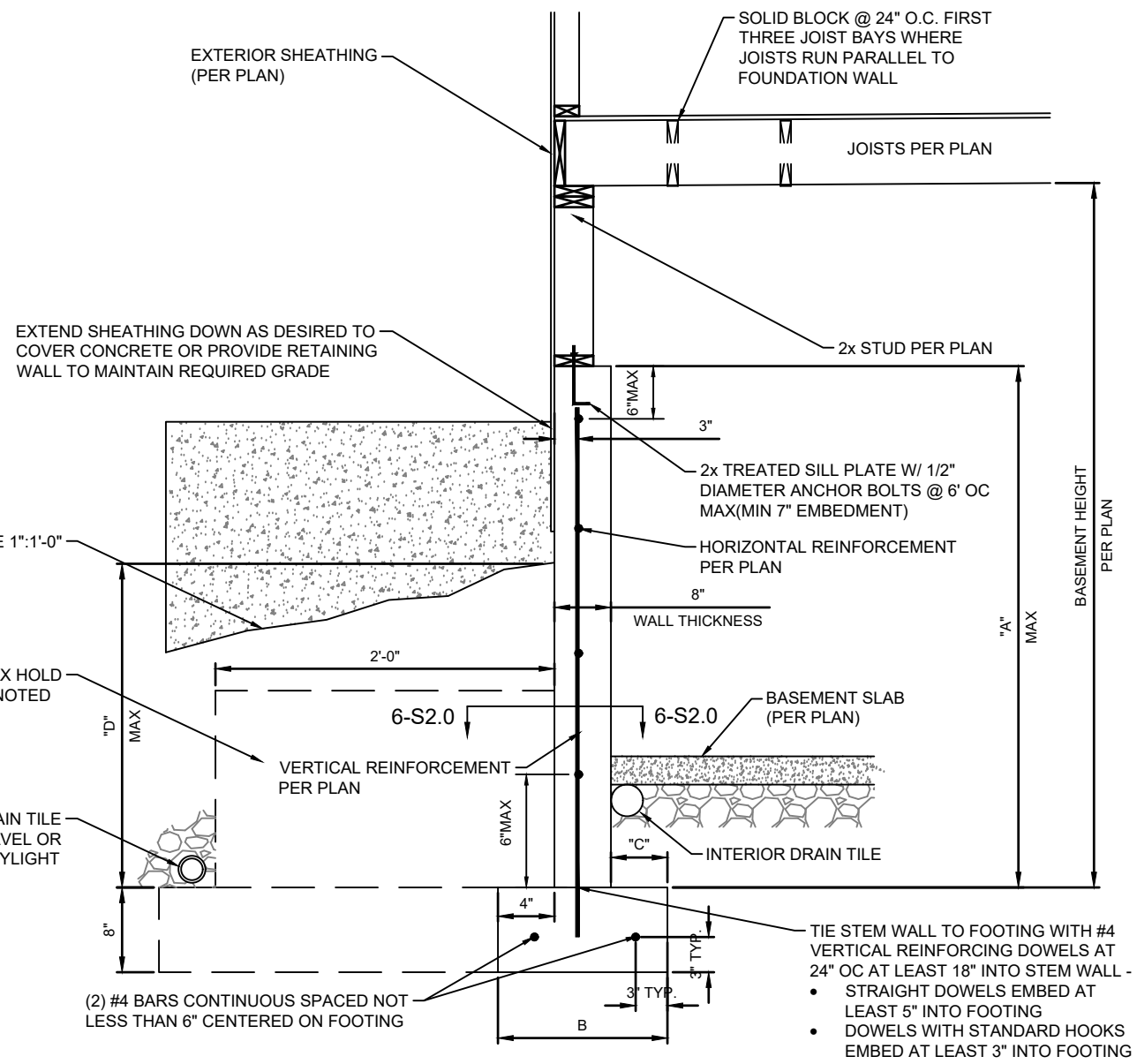
THE FOLLOWING DETAILS MEET OR EXCEED KCMO
CPD-DS, AND JOHNSON COUNTY STANDARDS



11
S2.0
TYPICAL WALL, FLOOR AND ROOF
FRAMING (IRC FIGURE R602.3(1))
N.T.S.



FRONT ELEVATION
SECTION
12
S2.0
PORTAL FRAME WITH HOLD DOWNS
(METHOD PFH) IRC FIGURE R602.10.6.2
N.T.S.



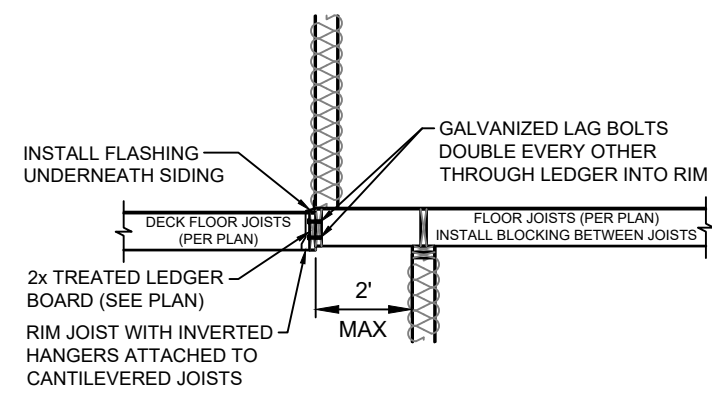
| CONCRETE DIMENSIONS | | | |
|---------------------|-------|-----|-------|
| "A" | "B" | "C" | "D" |
| 4'-0" | 1'-4" | 4" | 3'-4" |
| 6'-0" | 1'-4" | 4" | 4'-4" |
| 9'-0" | 1'-8" | 5" | 4'-4" |

DIMENSIONS SHOWN ARE FOR THE MAXIMUM UNINTERRUPTED WALL PANEL LENGTH BEFORE DEAD-MAN INSTALLATION. A MINIMUM 2' RETURN OR OFFSET IN THE FOUNDATION WALL SHALL SUBSTITUTE AS DEAD-MAN AND/OR BREAK IN THE WALL PANEL LENGTH.

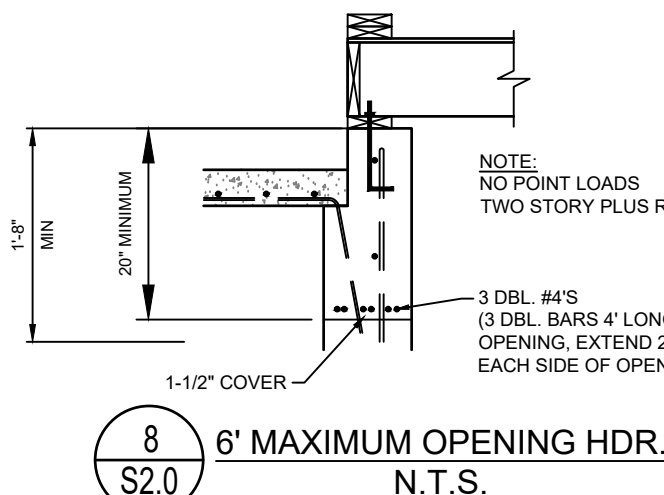
VERTICAL REINFORCING STEEL TO EXTEND TO WITHIN 6" OF TOP WALL. MINIMUM (1) #4 HORIZONTAL BAR WITHIN 12" OF TOP AND BOTTOM OF WALL.

THE BASEMENT SLAB IS AN INTEGRAL PART OF THE "UNRESTRAINED" FOUNDATION WALL DESIGN. THEREFORE IF THE WALL IS BACKFILLED PRIOR TO PLACEMENT OF THE BASEMENT SLAB, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY BRACING THE WALL UNTIL THE BASEMENT SLAB HAS BEEN PLACED.

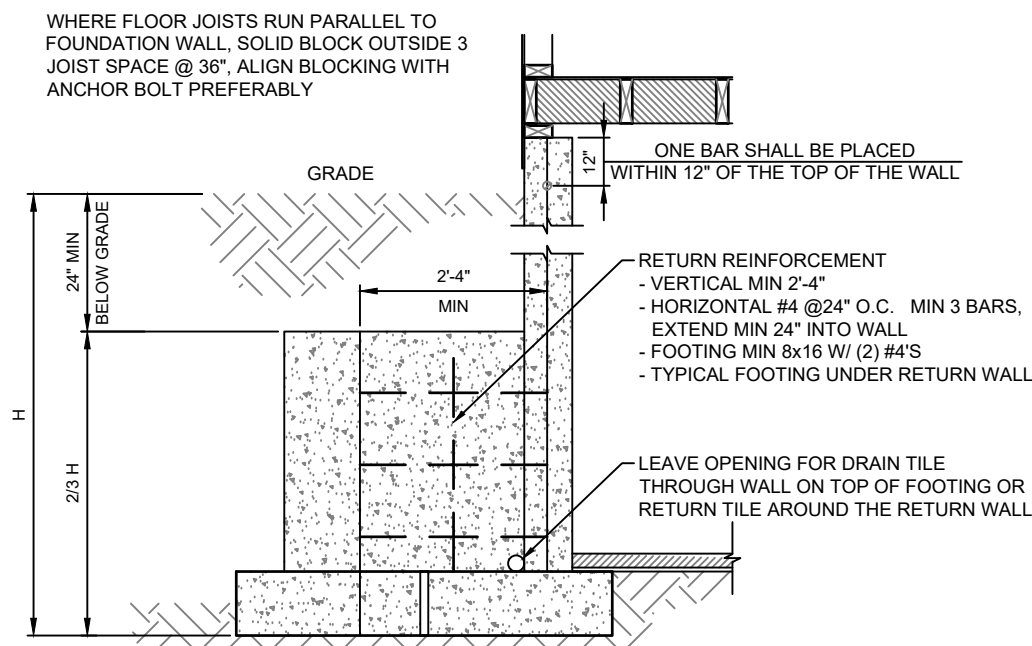
13
S2.0
TYPICAL "UNRESTRAINED" FOUNDATION WALL DETAIL
N.T.S.



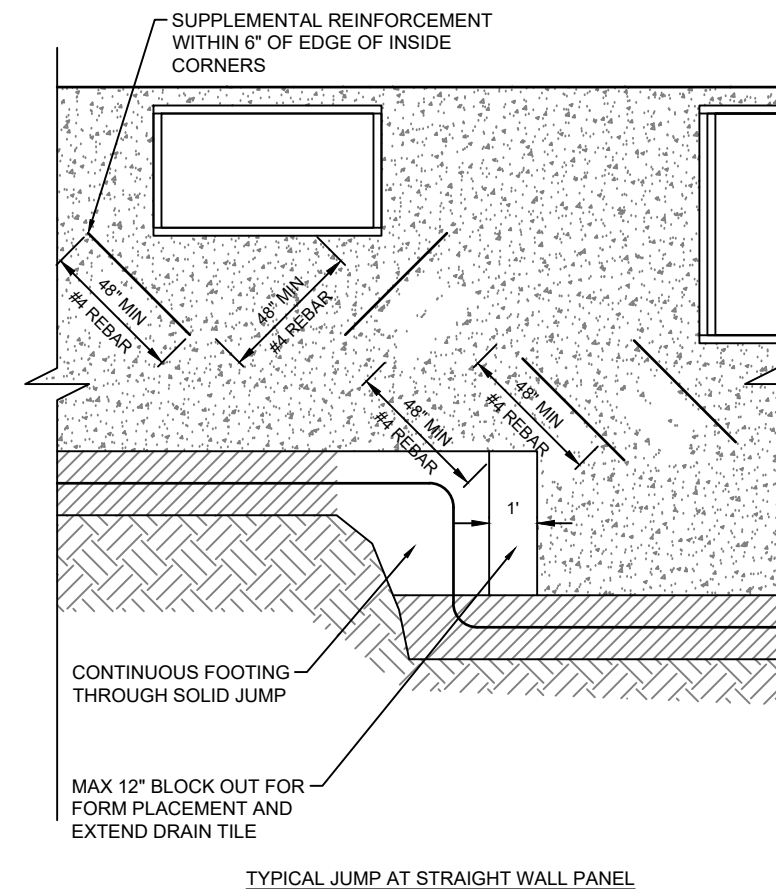
10
S2.0
TYPICAL CANTILEVER FRAMING WITH
DECK ATTACHMENT
N.T.S.



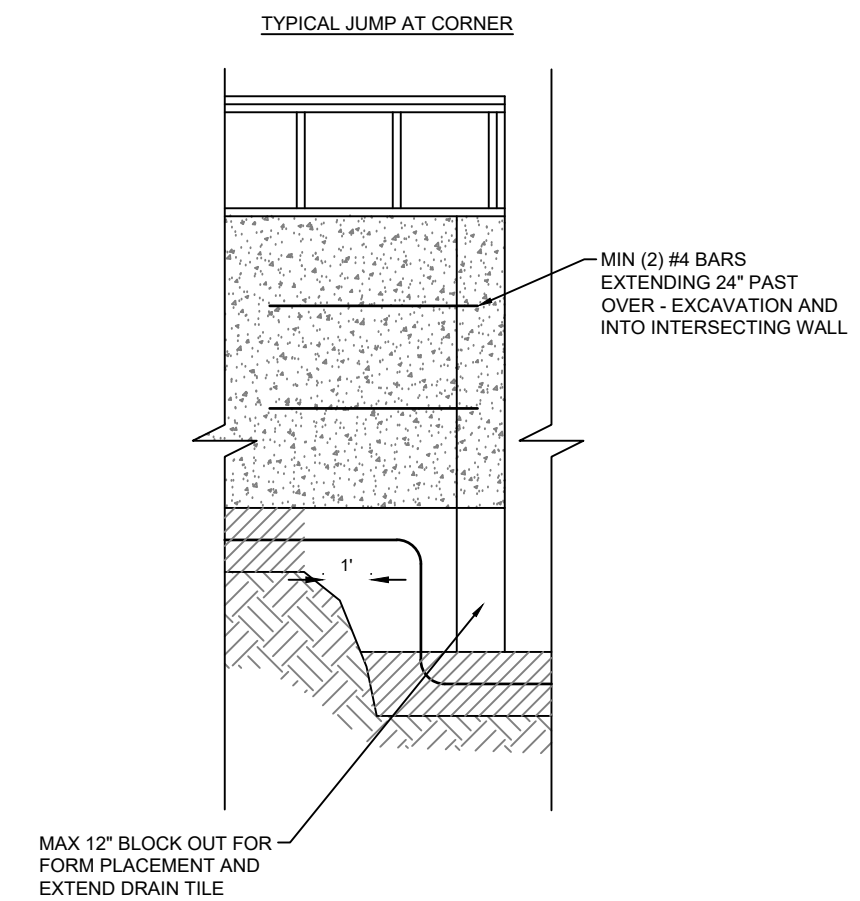
8
S2.0
6' MAXIMUM OPENING HDR.
N.T.S.



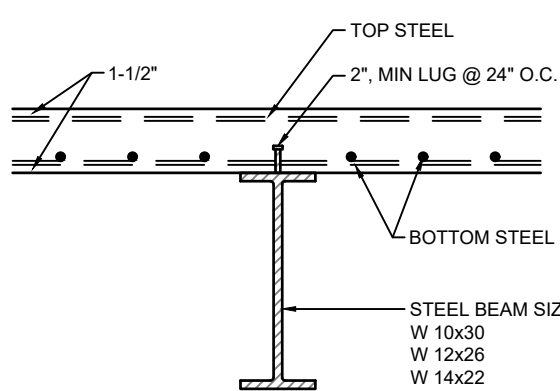
7
S2.0
TYPICAL DEAD MAN SECTION
N.T.S.



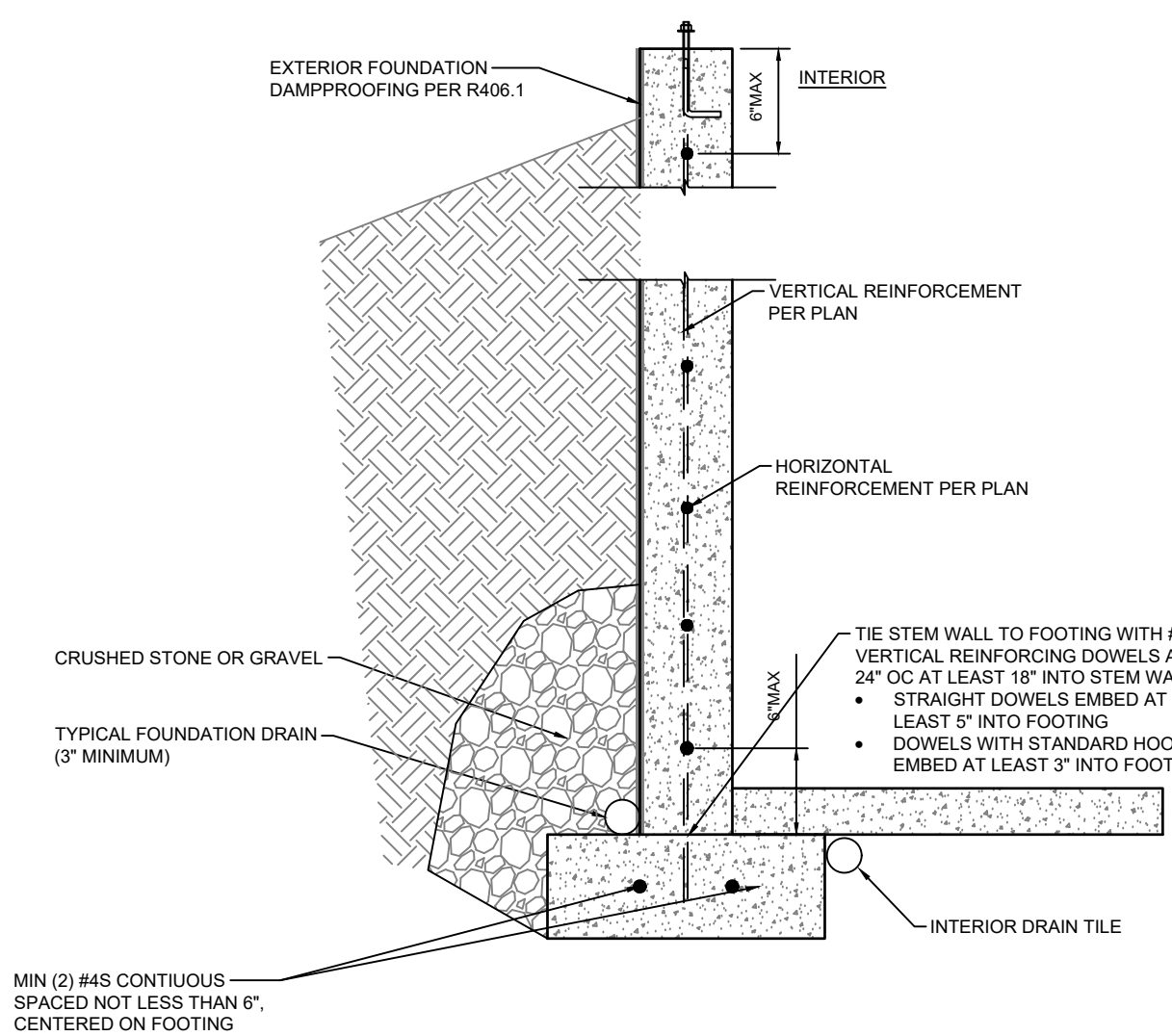
6
S2.0
FOUNDATION WALL JUMP DETAIL
N.T.S.



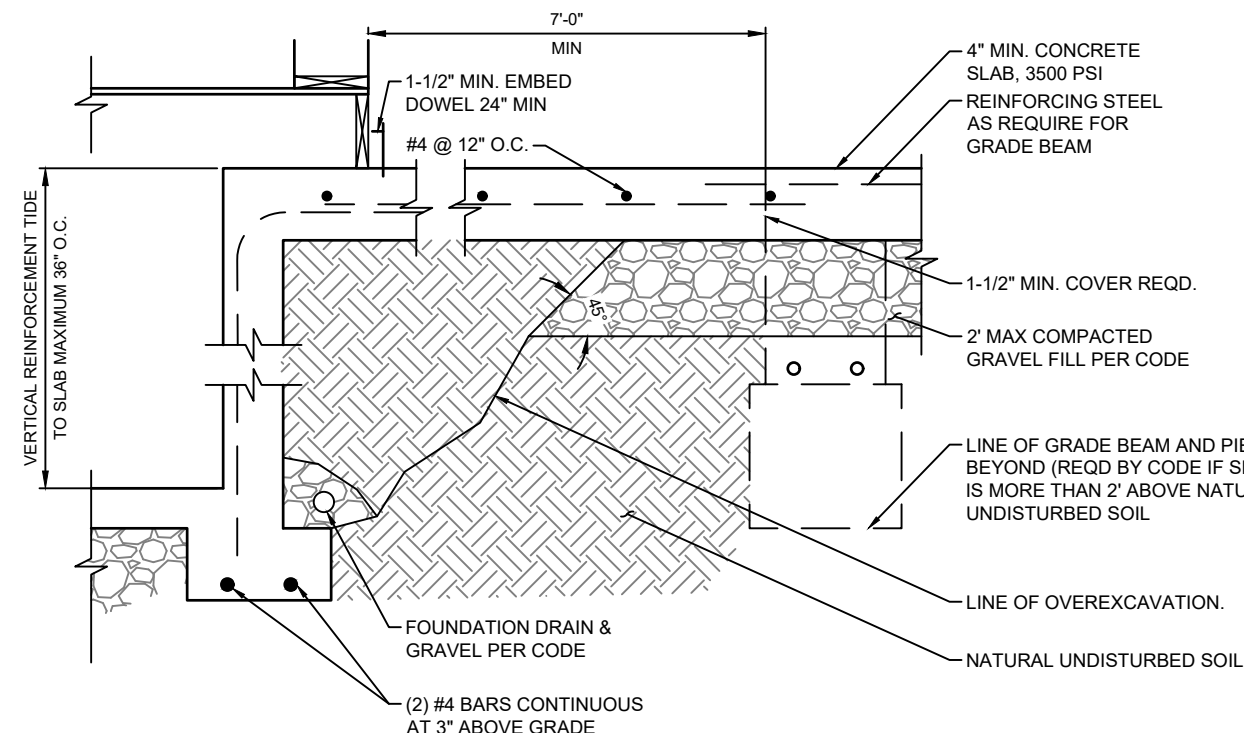
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S2.0
FOUNDATION WALL JUMP DETAIL
N.T.S.



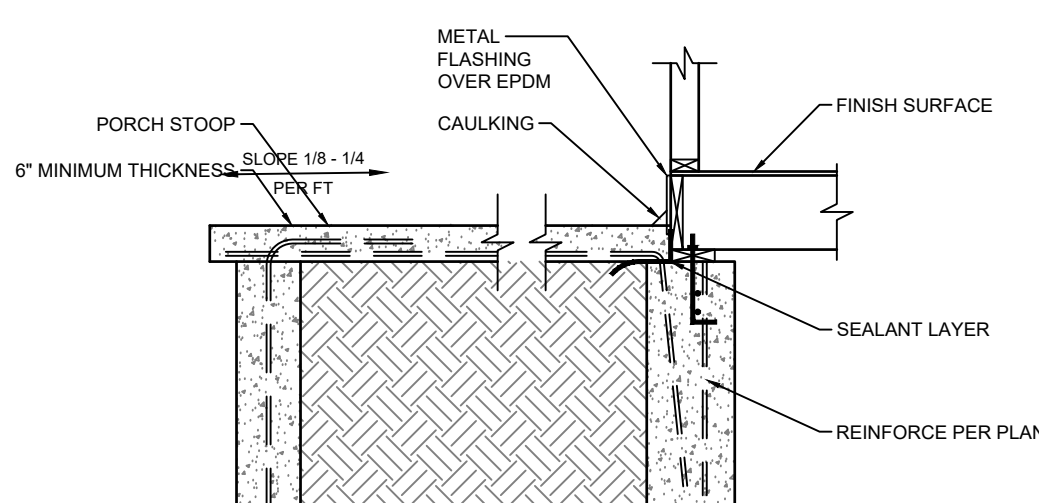
9
S2.0
SLAB OVER BEAM
N.T.S.



4
S2.0
TYPICAL WALL SECTION DETAIL
N.T.S.



3
S2.0
TYPICAL FOOTING/FOUNDATION WALL/STANDARD
SLAB AT MAX 4' OVERDIG
N.T.S.

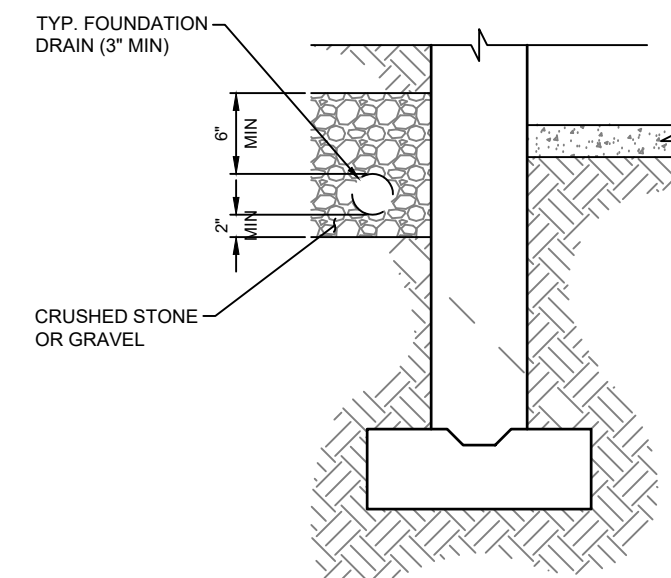


ELEVATED PORCH SLABS SPANNING 6' OR LESS IN ANY ONE DIRECTION CAN BE CONSTRUCTED AS FOLLOWS:

- MAX SPAN OF 6'
- MINIMUM THICKNESS OF 6"
- #4 BARS AT 12" O.C. EACH WAY
- MINIMUM 1-1/2" OF CONTINUOUS BEARING AT THE EDGES OF THE SLAB.

ELEVATED PORCH SLAB SPANNING GREATER THAN 6' SHALL BE TREATED AS AN ELEVATED GARAGE SLAB.

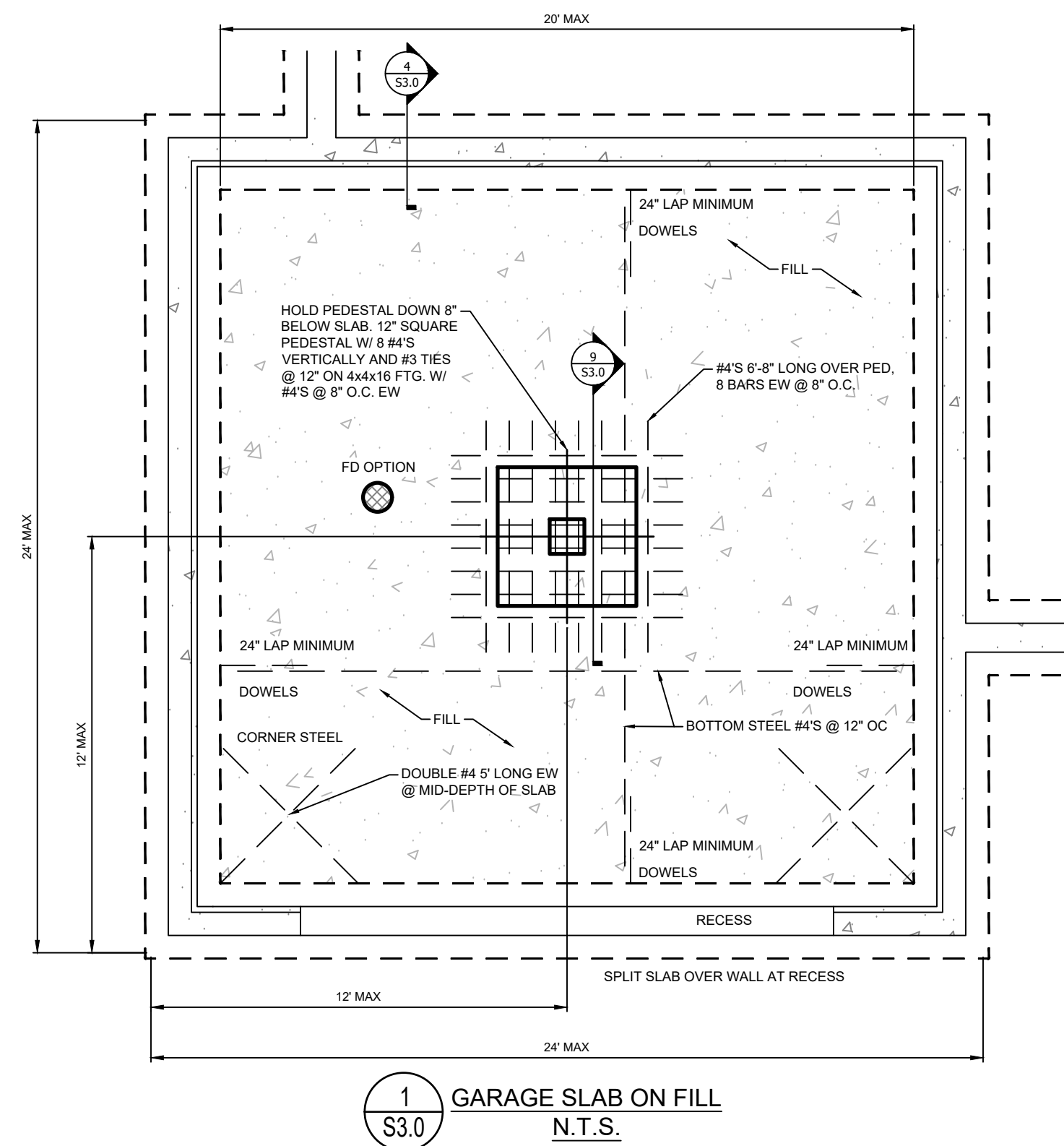
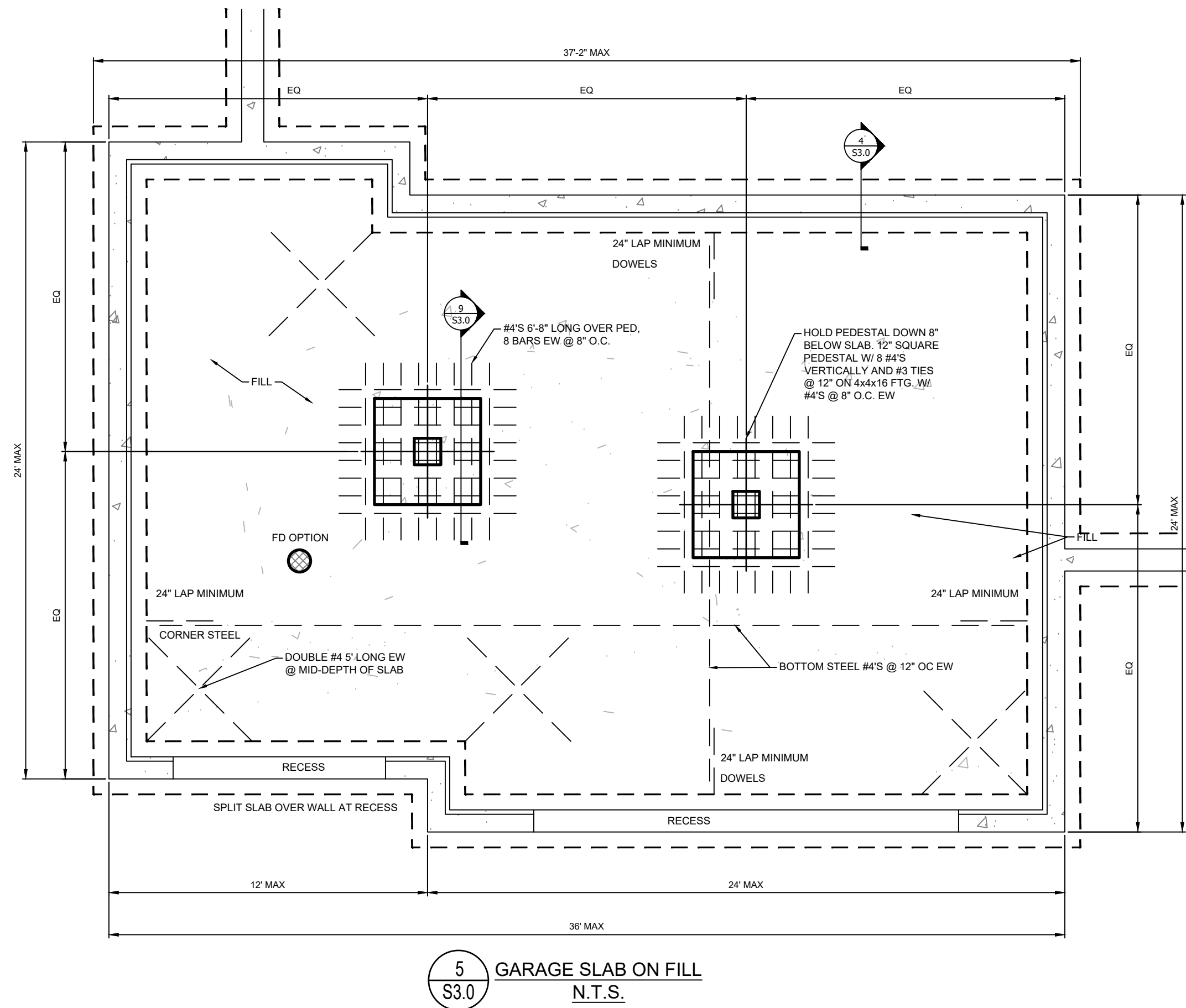
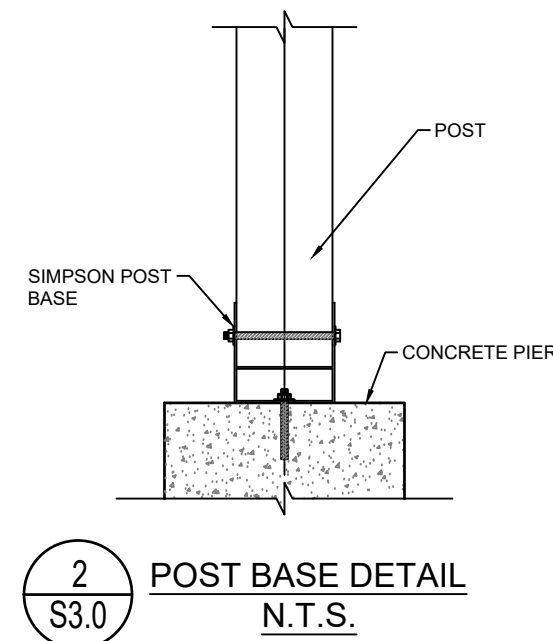
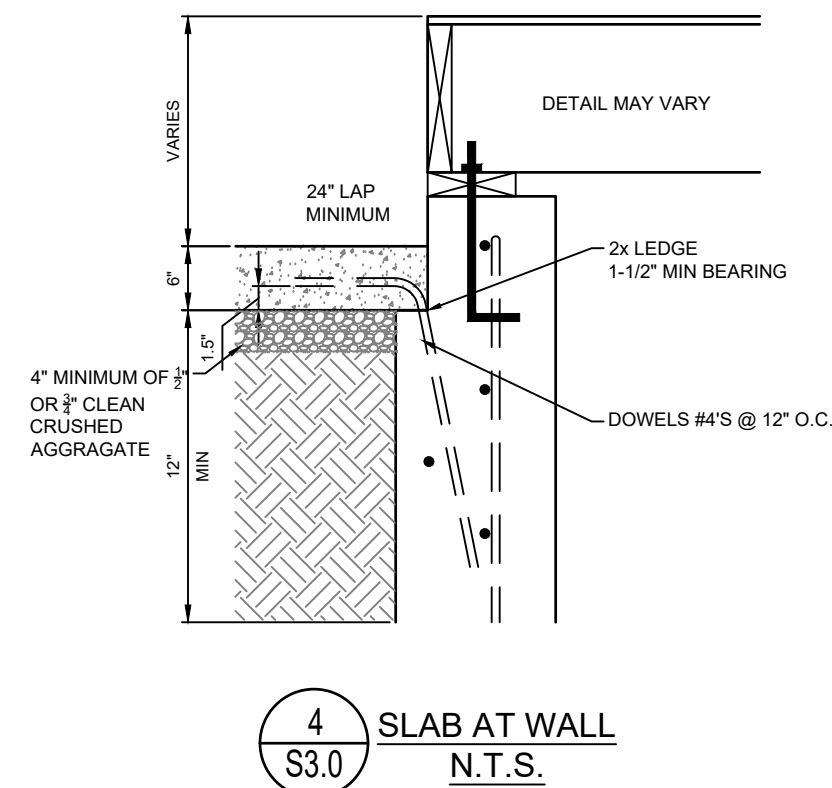
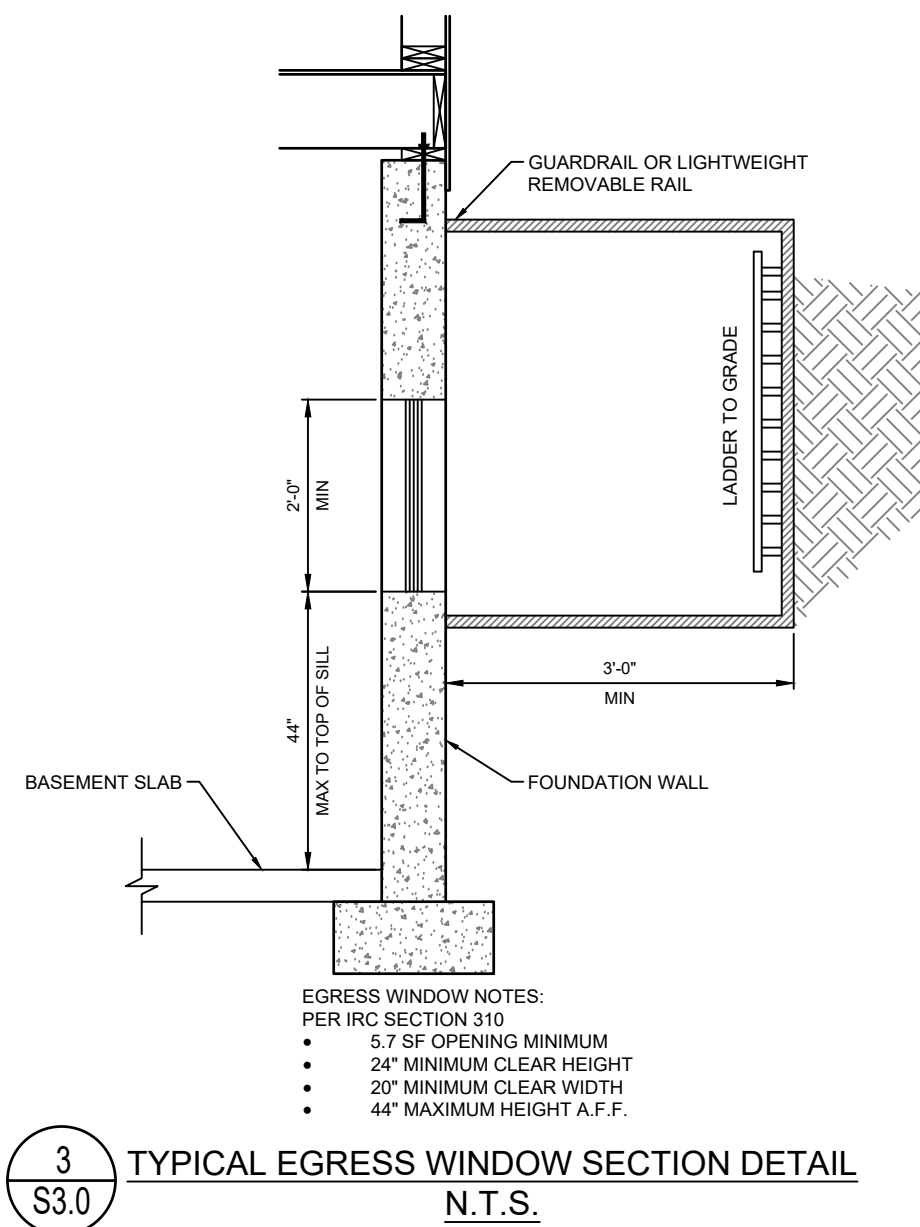
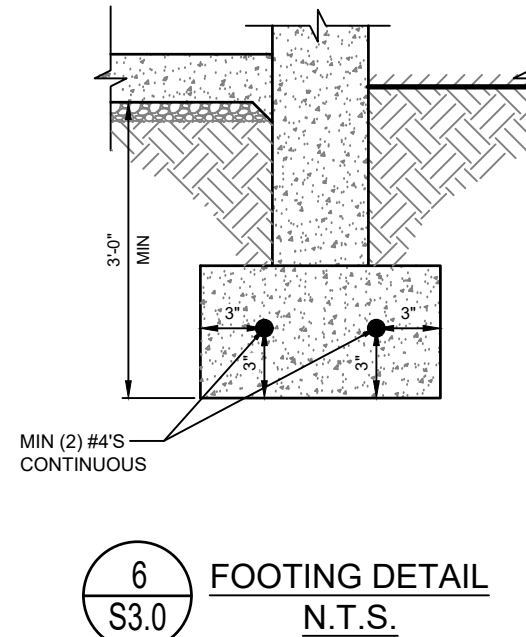
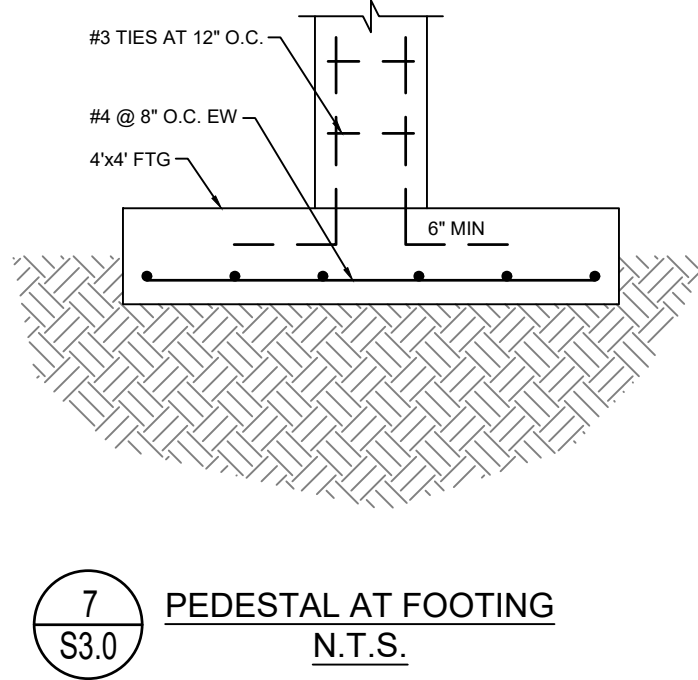
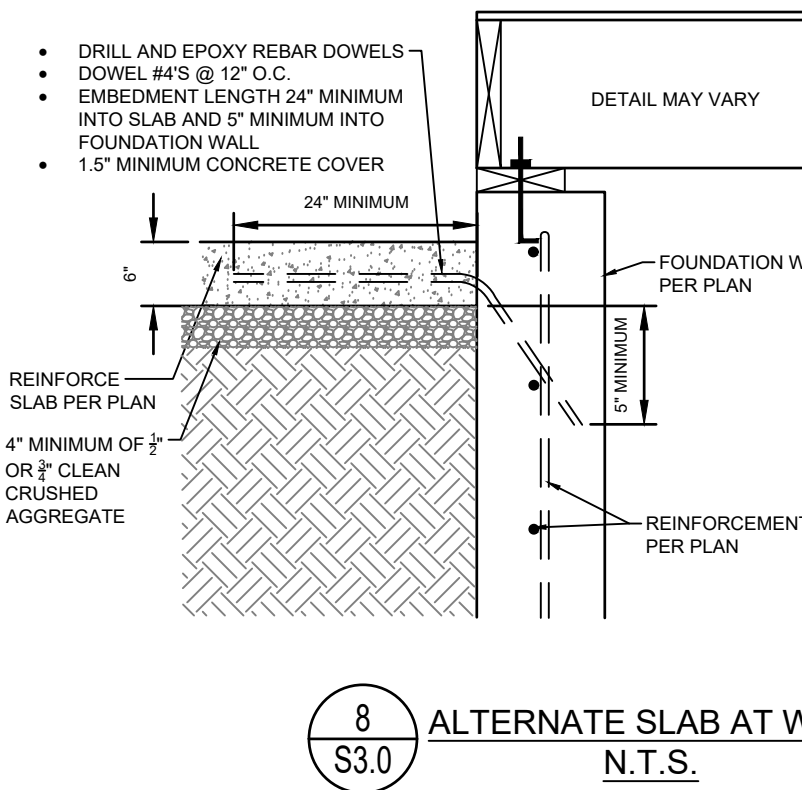
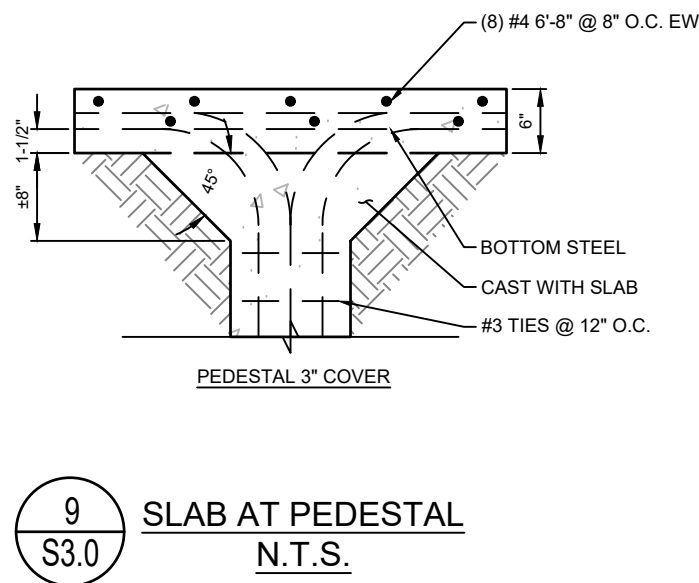
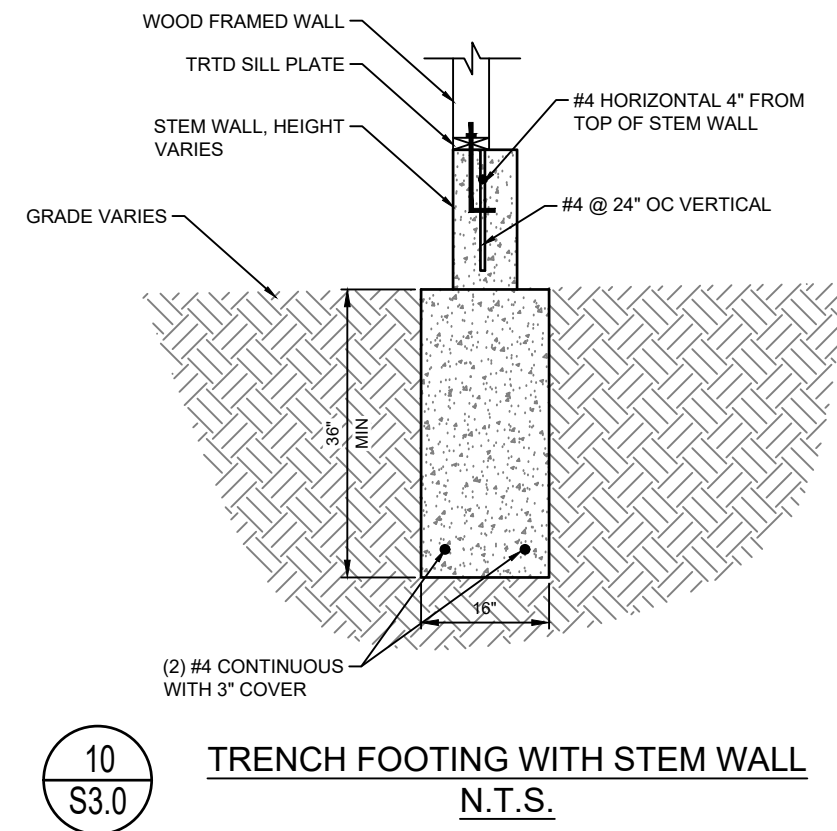
2
S2.0
STANDARD PORCH SLAB
N.T.S.



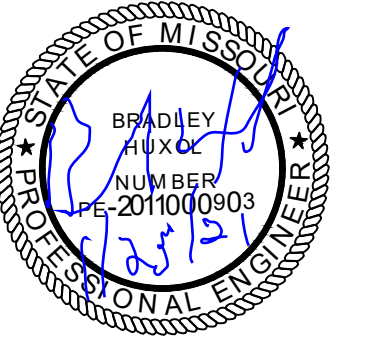
INSTALLATION OF A CONTINUOUS FOUNDATION DRAIN IS REQUIRED WHERE HABITABLE OR USABLE SPACE FOR ANY PORTION OF THE STRUCTURE IS LOCATED BELOW GRADE. THE FOUNDATION DRAIN SHALL BE AT OR BELOW THE AREA BEING PROTECTED. DRAINAGE TILE SHALL BE PLACED WITH POSITIVE OR NEUTRAL SLOPE TO MINIMIZE THE ACCUMULATION OF DEPOSITS IN THE DRAINAGE PIPE. PLACEMENT OF DRAIN TILE DIRECTLY ON TOP OF THE FOOTING IS ACCEPTABLE. (IRC R403) SEE "TYPICAL FOOTING/FOUNDATION WALL/STANDARD SLAB AT MAXIMUM 4' OVERDIG" AND "FOUNDATION DRAIN DETAIL AT RAISED SLAB" DIAGRAMS FOR DETAILS.

1
S2.0
FOUNDATION DRAIN DETAIL & RAISED SLAB
N.T.S.

THE FOLLOWING DETAILS MEET OR EXCEED KCMO
CPD-DS, AND JOHNSON COUNTY STANDARDS



RESIDENTIAL ENGINEERING SERVICES, LLC
WWW.RES-KC.COM
600 SW JEFFERSON ST SUITE 300
LEES SUMMIT, MO 64063
(816) 399-4901



FOUNDATION DETAILS

SHEET #

S3.0

HELIX REQUIREMENTS:

- FOUNDATION WALL SHALL NOT EXCEED 9' HEIGHT.
- DEAD MAN SHALL BE A MAXIMUM 3'8" FROM TOP OF FOUNDATION WALL ELSE HELIX NOT PERMITTED.

ALL CONCRETE SHALL BE REINFORCED WITH HELIX MICRO REBAR ALONG WITH ANY ADDITIONAL REBAR AS NOTED:

- 9.0 LB/CUBIC YARD DOSAGE OF HELIX 5-25.
- VERIFY DOSAGE AT FORM INSPECTION.
- SEE MIXING REQUIREMENTS ON THIS PAGE.
- MINIMUM 3000 PSI FOOTING COMPRESSIVE STRENGTH.
- MINIMUM 3000 PSI WALL COMPRESSIVE CONCRETE STRENGTH.
- AIR ENTRAINED BETWEEN 5-7% OF CONCRETE VOLUME.
- GRADE 60 REINFORCING STEEL UNLESS OTHERWISE NOTED.
- LAP SPLICES 24" MINIMUM.
- ASSUMED 2000 PSF BEARING (TO BE VERIFIED BY GEOTECHNICAL ENGINEER).
- WALL SHALL BE BACK-FILLED WITH CLEAN, LEAN CLAY, OR BETTER, LOW VOLUME CHANGE MATERIAL. ON-SITE MATERIAL MAY BE USED IF DEEMED ACCEPTABLE BY THE GEOTECHNICAL ENGINEER.

HELIX ALTERNATE DESIGN NOT VALID IF ANY ONE OF THE FOLLOWING CONDITIONS ARE MET:

- NON-UNIFORM FOOTING SUPPORT (IE. CAST IN PLACE PIERS, PUSH PILES).
- DAYLIGHT WALLS EXCEEDING 6' TALL FOR A LENGTH GREATER THAN 6'.

HELIX DOSING INSTRUCTIONS:

MIXING SHOULD BE DONE ACCORDANCE WITH ASTM C94 AND THE MIXING INSTRUCTIONS BELOW. THE DOSAGES OF HELIX ADDED TO THE MIX SHOULD BE NOTED ON THE BATCH DOCUMENTATION IN ACCORDANCE WITH UNIFORM EVALUATION SERVICE ER 279 SECTION 5.15. VERIFIED USING PROCEDURE IN ER 279 APPENDIX A.

A SLUMP OF 125 MM OR 5" OR HIGHER WILL FACILITATE STRIKE OFF. A SLUMP OF LESS THAN 4" IS NOT RECOMMENDED AS THIS WILL PREVENT SURFACE SEGREGATION OF THE CEMENT AND FINES FROM THE AGGREGATE AND HELIX. SLUMP SHOULD BE MEASURED ON THE INITIAL LOAD AND ADJUSTMENTS MADE WITH A WATER REDUCER OR PLASTICIZER (NOT WATER).



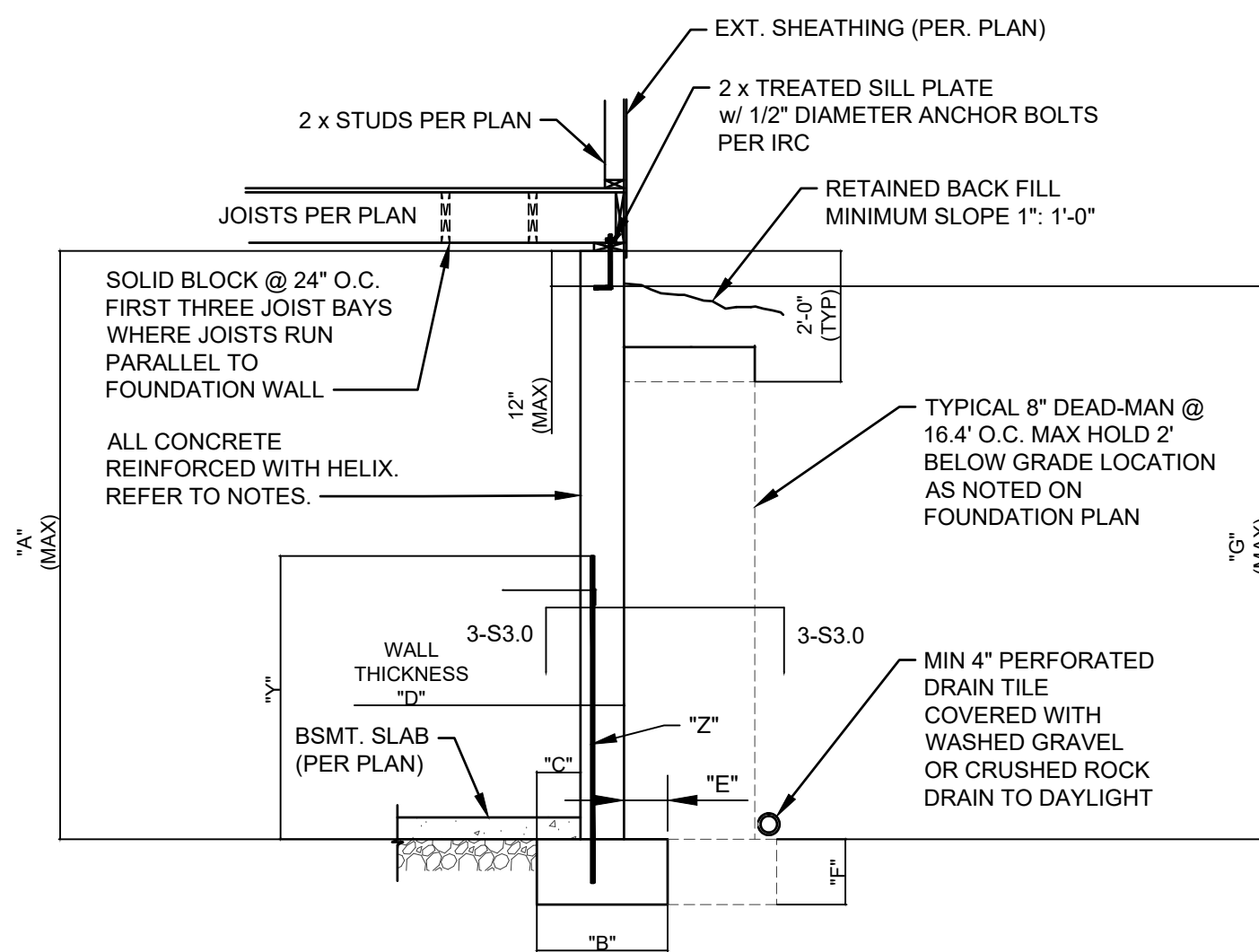
1
S3.1
TYPICAL DEAD MAN SECTION
N.T.S.



3
S3.1
TYPICAL DEAD MAN SECTION
N.T.S.















2
S3.1
FOUNDATION WALL JUMP DETAIL
N.T.S.



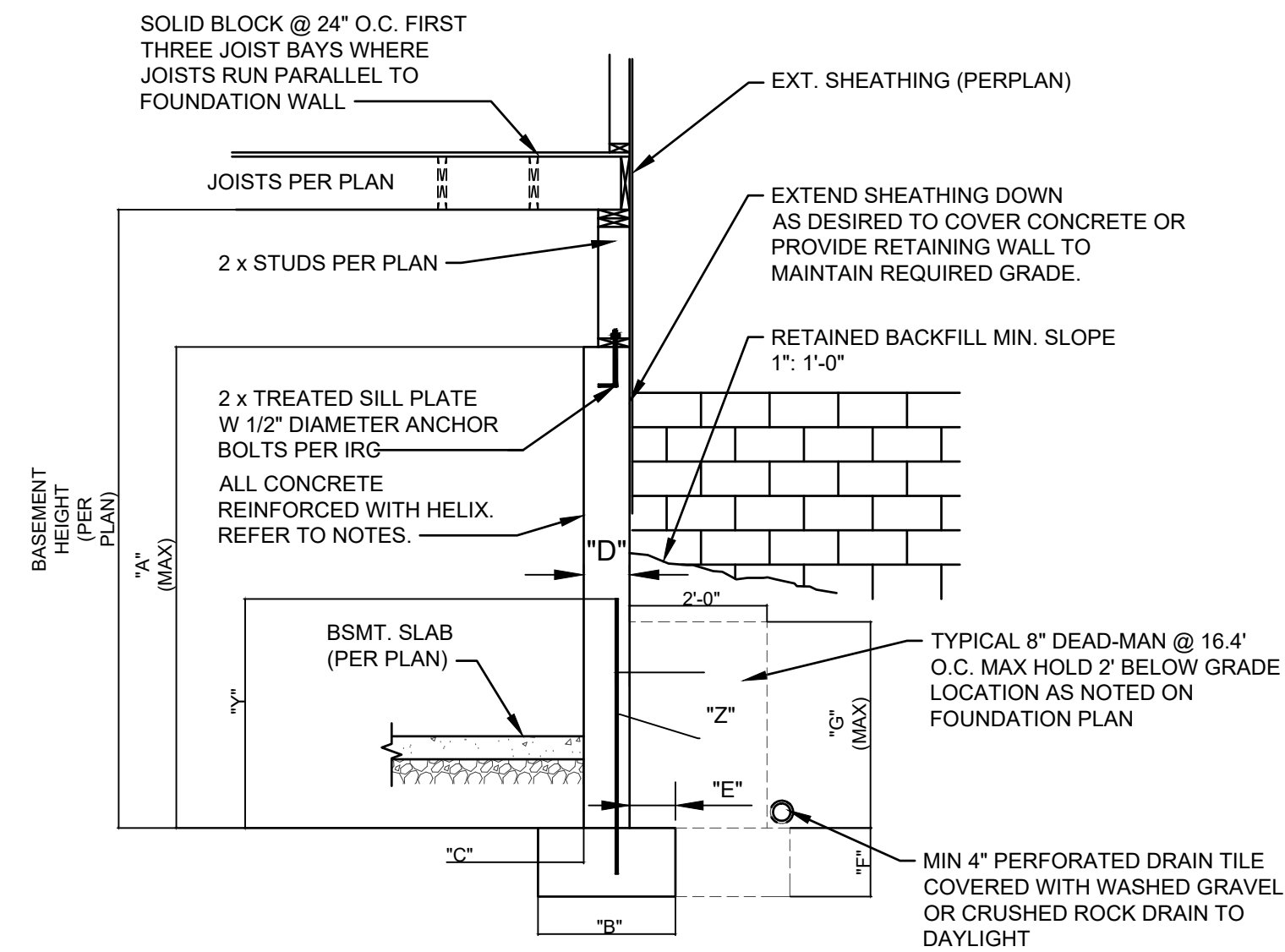
| CONCRETE DIMENSIONS | | | | | | HEIGHT ABOVE FOOTING | REINFORCING BARS (GRADE 60) | HELIX DOSAGE |
|---------------------|-------|-----|-----|-----|-----|----------------------|-----------------------------|--------------------|
| "A" | "B" | "C" | "D" | "E" | "F" | "G" | "Y" | "Z" |
| 8'-0" | 1'-4" | 4" | 8" | 4" | 8" | 7'-8" | 2'-6" | 4 BARS AT 24" O.C. |
| 9'-0" | 1'-4" | 4" | 8" | 4" | 8" | 8'-6" | 2'-6" | 4 BARS AT 24" O.C. |

DIMENSIONS SHOWN IS FOR THE MAXIMUM UNINTERRUPTED WALL PANEL LENGTH BEFORE DEAD-MAN SHALL BE INSTALLED. A MINIMUM 2' RETURN OFFSET IN THE FOUNDATION WALL SHALL SUBSTITUTE AS DEAD-MAN AND/OR BREAK IN THE WALL PANEL LENGTH. WALL WILL NOT ACHIEVE FULL STRENGTH UNTIL FIRST FLOOR DECK AND BASEMENT SLAB HAVE BEEN PLACED.

4
S3.1
TYPICAL FOUNDATION WALL DETAIL
N.T.S.

| HELIX FOOTING TABLE | | | | | HELIX DOSAGE |
|---|---------------|-------|--|---|---------------|
| ALL STRIP FOOTINGS AND GRADE BEAMS | | | | | 9 LB/CU FT |
| ISOLATED FOOTINGS AND COLUMN PADS | | | | | |
| SYM | PIER PAD SIZE | DEPTH | MINIMUM REINFORCEMENT GRADE 60 KSI STEEL | SCHEDULE 40 STEEL COLUMN, MIN FY = 35 KSI | HELIX DOSAGE |
|  | 30"x30" | 1'-0" | (5) #4 BAR E.W. | 3" DIAMETER | 12.5 LB/CU FT |
|  | 36"x36" | 1'-0" | (6) #4 BAR E.W. | 3" DIAMETER | 12.5 LB/CU FT |
|  | 42"x42" | 1'-2" | (7) #4 BAR E.W. | 3" DIAMETER | 12.5 LB/CU FT |
|  | 48"x48" | 1'-4" | (8) #4 BAR E.W. | 3" DIAMETER | 12.5 LB/CU FT |
|  | 48"x48" | 1'-4" | (8) #4 BAR E.W. | N/A | 12.5 LB/CU FT |
|  | 54"x54" | 1'-4" | (9) #4 BAR E.W. | 3.5" DIAMETER | 12.5 LB/CU FT |
|  | 60"x60" | 1'-6" | (10) #4 BAR E.W. | 3.5" DIAMETER | 12.5 LB/CU FT |
| SYM | PIER DIAMETER | DEPTH | MINIMUM REINFORCEMENT GRADE 60 KSI STEEL | | HELIX DOSAGE |
|  | 12" | 3'-0" | (4) VERTICAL #4 | | 12.5 LB/CU FT |
|  | 16" | 3'-0" | (4) VERTICAL #4 | | 12.5 LB/CU FT |
|  | 18" | 3'-0" | (4) VERTICAL #4 | | 12.5 LB/CU FT |
|  | 24" | 3'-0" | (4) VERTICAL #4 | | 12.5 LB/CU FT |
|  | 28" | 3'-0" | (4) VERTICAL #4 | | 12.5 LB/CU FT |

COLUMN AND PAD SIZES ARE FOR A MAXIMUM COLUMN HEIGHT OF 10'. COLUMNS GREATER THAN 10' REQUIRE A SEPARATE ENGINEERED DESIGN. FOOTINGS A-F SPACING OF 6" O.C. WITH 3" CLEAR COVER.



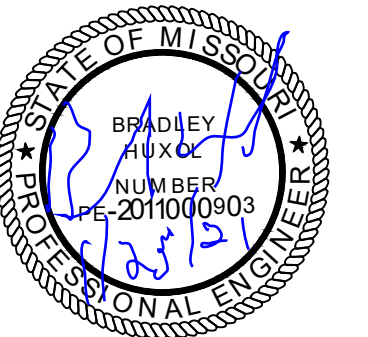
| CONCRETE DIMENSIONS | | | | | | HEIGHT ABOVE FOOTING | REINFORCING BARS (GRADE 60) | HELIX DOSAGE |
|---------------------|-------|-----|-----|-----|-----|----------------------|-----------------------------|--------------------|
| "A" | "B" | "C" | "D" | "E" | "F" | "G" | "Y" | "Z" |
| 8'-0" | 1'-4" | 4" | 8" | 4" | 8" | 3'-4" | 2'-6" | 4 BARS AT 24" O.C. |
| 8'-0" | 1'-4" | 4" | 8" | 4" | 8" | 4'-4" | 2'-6" | 4 BARS AT 24" O.C. |

DIMENSIONS SHOWN IS FOR THE MAXIMUM UNINTERRUPTED WALL PANEL LENGTH BEFORE DEAD-MAN SHALL BE INSTALLED. A MINIMUM 2' RETURN OFFSET IN THE FOUNDATION WALL SHALL SUBSTITUTE AS DEAD-MAN AND/OR BREAK IN THE WALL PANEL LENGTH. THE BASEMENT SLAB IS AN INTEGRAL PART OF THE "UNRESTRAINED" FOUNDATION WALL DESIGN. THEREFORE, IF THE WALL IS BACKFILLED PRIOR TO PLACEMENT OF THE BASEMENT SLAB, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY BRACING THE WALL UNTIL THE BASEMENT SLAB HAS BEEN PLACED.

5
S3.1
TYPICAL "UNRESTRAINED" FOUNDATION
WALL DETAIL
N.T.S.



RESIDENTIAL ENGINEERING SERVICES, LLC
WWW.RES-KC.COM
600 SW JEFFERSON ST SUITE 300
LEES SUMMIT, MO 64063
(816) 399-4901



HELIX DETAILS

SHEET #

S3.1