

General

Plans shall comply with the 2018 International Residential Code with amendments as adopted by the governing jurisdiction. If any changes or deviations from the plans are made during construction, the contractor shall notify the appropriate authority and the engineer of record, either (or both) of whom may require revised drawing or calculations at its discretion.

Where discrepancies exist between the standard comments, notes from the design professional or the code, the most restrictive shall apply.

The suspended slab shall comply with the following design loads:

Minimum dead load (psf) = (average slab thickness) x 150pcf
 Minimum live load (psf) = 50

The slab shall be designed for a single concentrated live load of 2000 lbs, acting over any 4.5"x4.5" area. It shall not be considered to act concurrently with the uniformly distributed design live load.

Slab and Foundation Notes:

- The foundation design shall be based on a minimum soil bearing capacity of 2000 psf, unless otherwise indicated on the plans or if modified by an engineering report based on actual site conditions.
- Concrete shall meet the following specified design strength criteria:
 - 3000psi for footings & foundation walls
 - 3500psi for garage floor slabs.
- Footings shall extend below the frost line; minimum depth 36 inches below grade.
- Unless otherwise noted on the plans or if site conditions require otherwise, footings shall be a minimum of 16 inches wide and 8 inches deep with 2 - #4 bars continuous.
- Column pads shall be a minimum 30" x 30" x 12" with 4 - #4 bars each way unless otherwise noted.
- Unless otherwise noted on the plans, foundation walls shall be minimum 8 inches thick. Foundation walls greater than 10'-0" tall require a separate engineered design. Provide a 2'-0" long interior or exterior dead-men for any straight wall panels exceeding 20'-0" in length.
- Reinforcement shall be minimum grade 40 unless otherwise noted. Reinforcement shall lap a minimum of 24 inches at ends, splices, and around corners.
- Foundation wall shall be backfilled with a clean lean clay (or better) low volume change material. On-site material may be used if deemed acceptable by the geotechnical engineer of record.
- Garage beam above shall clearspan, if applicable. No point loads shall be placed on the slab.
- Embed bars 24" or drill and epoxy min. 5" at foundation walls.
- Shore decking a 6'-0" maximum during construction, if applicable.
- Concrete floor slabs shall be a minimum 4" thick over a minimum 4" base of 1/2" or 3/4" clean graded rock, unless noted otherwise or if site conditions require otherwise.
- Provide a min 6 mil thick polyethylene moisture barrier over porous gravel base under basement floor slab per R406.2. Lap joints minimum 6".
- Basement foundation sill plates shall be bolted to the foundation with a minimum of 1/2" anchor bolts embedded at least 7" into the concrete and spaced not more than 3'-0" on center and within 12" of each end piece.
- Foundation walls shall be damp-proofed per IRC section R406.
- Interior bearing walls and columns shall be isolated from the basement floor slab.
- Interior non-bearing walls, other than those resting directly on the footing, shall be insulated from the floor framing above.
- All earth retaining structures on site greater than 4'-0" tall (excluding concrete foundation walls restrained at both top and bottom) shall require a separate engineered design as required by the code authority.
- Any geotechnical improvement methods and/or structural solutions (such as drilled piers) employed to address unacceptable subgrade conditions shall be submitted to EOR as engineered shop drawings for review and approval.
- Foundation walls will not achieve full strength until the basement slab and the first floor deck have been properly placed. If backfilling the interior of the foundation wall with greater than 8" of earthen fill or 24" of granular fill, a structural basement slab (to be designed or design reviewed by Apex Engineers), or alternate engineered solution (i.e. engineered fill) will be required.

Concrete

- Concrete shall be air entrained with a minimum compressive strength at 28 days of 2,500 psi for basement and interior floor slabs, 3,000 psi for basement and foundation walls and 3,500 psi for porches, carport and garage floor slabs.

Foundation Drainage

- Foundation Drainage shall be provided in accordance with IRC R405. Drains shall be provided around all concrete foundations that retain earth and enclose habitable or usable spaces located below grade. Drainage tiles, gravel or crushed stone drains, perforated pipe or other approved systems or materials shall be installed at or below the area to be protected and shall discharge by gravity or mechanical means into an approved drainage system. Gravel or crushed stone drains shall extend at least 1foot (305 mm) beyond the outside edge of the footing and 6 inches (152 mm) above the top of the footing and be covered with an approved filter membrane material. The top of open joints of drain tiles shall be protected with strips of building paper. Perforated drains shall be surrounded with an approved filter membrane or the filter membrane shall cover the washed gravel or crushed rock covering the drain. Drainage tiles or perforated pipe shall be placed on a minimum of 2 inches (51 mm) of washed gravel or crushed rock at least one sieve size larger than the tile joint opening or perforation and covered with not less than 6 inches (152 mm) of the same material.

Foundation Waterproofing and Dampproofing

- Foundation waterproofing and dampproofing shall be provided in accordance with IRC 406. Except where required by Section R406.2 to be waterproofed, foundation walls that retain earth and enclose interior spaces and floors below grade shall be dampproofed from the top of the footing to the finished grade. Concrete walls shall be dampproofed by applying any one of the below listed dampproofing materials or any one of the waterproofing materials listed in Section R406.2 to the exterior of the wall.

- Bituminous coating.
- Three pounds per square yard (1.63 kg/m2) of acrylic modified cement.
- One-eighth inch (3.2 mm) coat of surface-bonding cement complying with ASTM C 887.
- Any material permitted for waterproofing in Section R406.2.
- Other approved methods or materials.

In areas where a high water table or other severe soil-water conditions are known to exist, exterior foundation walls that retain earth and enclose interior spaces and floors below grade shall be waterproofed from the top of the footing to the finished grade. Walls shall be waterproofed in accordance with one of the following:

- Two-ply hot-mopped felts.
- Fifty-five-pound (25 kg) roll roofing.
- Six-mil (0.15 mm) polyvinyl chloride.
- Six-mil (0.15 mm) polyethylene
- Forty-mil (1mm) polymer-modified asphalt.
- Sixty-mil (1.5 mm) flexible polymer cement.
- One-eighth-inch (3 mm) cement-based, fiber-reinforced, waterproof coating.
- Sixty-mil (0.22 mm) solvent-free liquid-applied synthetic rubber.

Steel Notes

- All structural steel to be fabricated and erected in accordance with AISC "Code of Standard Practice of Steel Buildings and Bridges."
- Splicing of steel members, unless shown on the drawings, is prohibited without the written approval of the engineer.
- Changes in size or position of the structural elements, and holes, slots, cuts, etc. through any member, are not permitted unless they are detailed on the approved shop drawings.
- No final bolting or welding shall be made until as much of the structure as will be stiffened thereby has been properly aligned.

STEEL MATERIAL SCHEDULE	
STEEL MEMBERS	MATERIAL
WIDE FLANGE SHAPES (W)	ASTM A992
HIGH STRENGTH BOLTS	ASTM F3125, GRADE A325
ANCHOR BOLTS (HEX-HEAD U.N.O.)	ASTM F1554 (36 ksi)

RELEASE FOR CONSTRUCTION AS NOTED ON PLANS REVIEW DEVELOPMENT SERVICES LEE'S SUMMIT, MISSOURI
 06/15/2021



PROJECT: LOT 101 MONTICELLO 4728 SARATOGA CR LEE'S SUMMIT, MO 64064
 CLIENT: D & D BUILDING

PROJECT #	
DRAWING NAME	
GENERAL NOTES	
COMMENTS:	
DATE:	
DRAWN BY: APEX CHECKED BY: BDC	

SHEET #
S1.0



APEX ENGINEERS

1625 LOCUST ST
KANSAS CITY, MO 64108
816.421.3222
www.apex-engineers.com



STRUCTURAL DESIGN REVIEW
KANSAS ENGINEERING LICENSE:
E-992
MISSOURI ENGINEERING LICENSE:
2003004673

PROJECT:
LOT 101 MONTICELLO
4728 SARATOGA CR
LEES SUMMIT, MO 64064
CLIENT:
D & D BUILDING

PROJECT #

DRAWING NAME

**SUSPENDED
SLAB DETAILS**

COMMENTS:

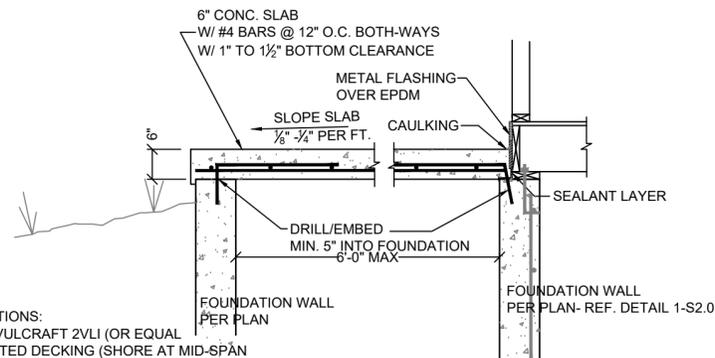
DATE:

DRAWN BY: APEX
CHECKED BY: BDC

SHEET #

20 RELEASE FOR
CONSTRUCTION
AFTER PLANS REVIEW
DEVELOPMENT SERVICES
LEES SUMMIT, MISSOURI

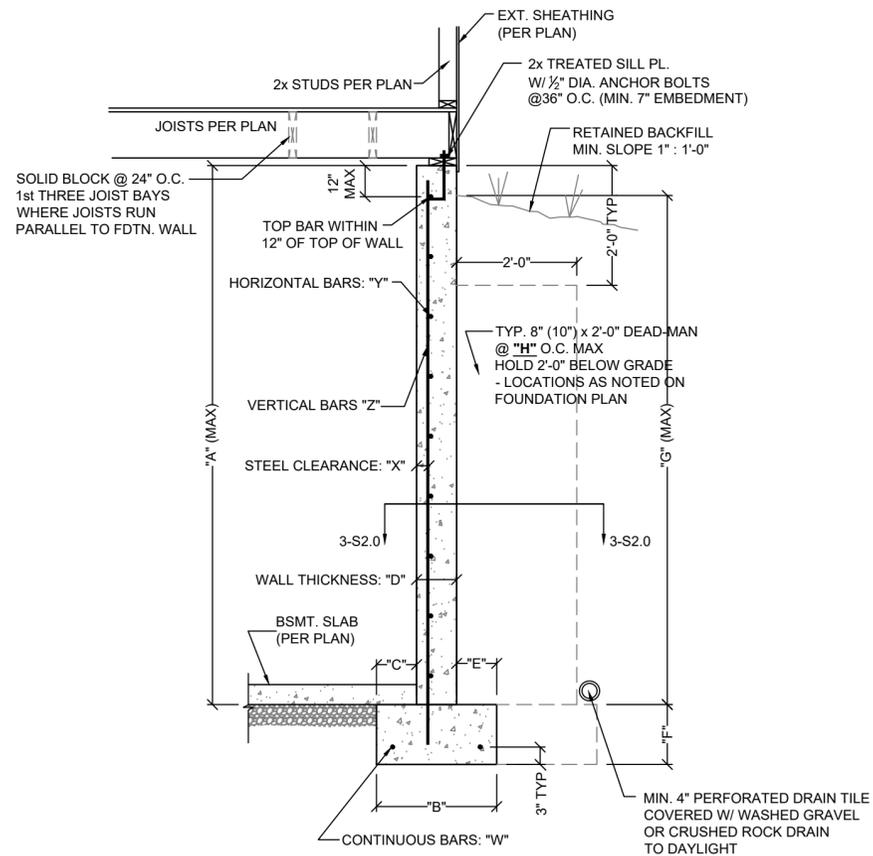
06/15/2021



FORMWORK OPTIONS:

- 1) PROVIDE VULCRAFT 2VLI (OR EQUAL CORRUGATED DECKING (SHORE AT MID-SPAN DURING CONSTRUCTION)) or
- 2) PLYWOOD FORMS WITH EXPANDABLE BAR JOISTS OR TEMPORARY FRAMED WALLS BY CONTRACTOR

7
S2.0 SUSPENDED PORCH STOOP DETAIL
1/2" = 1'-0"



1
S2.0 TYPICAL FOUNDATION WALL DETAIL
1/2" = 1'-0"

CONCRETE DIMENSIONS								REINFORCING BARS (GRADE 40 BARS)			
"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H" ¹	"W"	"X"	"Y"	"Z"
8'-0"	1'-4"	4"	8"	4"	8"	7'-6"	20'-0"	(2) #4	2 1/2"	#4's @ 24" O.C.	#4's @ 24" O.C.
9'-0"	1'-4"	4"	8"	4"	8"	8'-6"	20'-0"	(2) #4	2 1/2"	#4's @ 24" O.C.	#4's @ 24" O.C.
10'-0"	1'-8"	5"	10"	5"	10"	9'-6"	20'-0"	(3) #4	2 1/2"	#4's @ 18" O.C.	#4's @ 18" O.C.

1. DIMENSION SHOWN IS FOR MAXIMUM UNINTERRUPTED WALL PANEL LENGTH BEFORE A DEAD-MAN SHALL BE INSTALLED. NOTE, A MINIMUM 2'-0" RETURN OR OFFSET IN THE FOUNDATION WALL SHALL SUBSTITUTE AS A DEAD-MAN AND/OR BREAK IN THE WALL PANEL LENGTH.
2. VERTICAL REINFORCING STEEL TO EXTEND TO WITHIN 9" OF TOP OF WALL. MINIMUM (1) #4 HORIZONTAL BAR WITHIN 12" OF TOP & BOTTOM OF WALL.
3. BURIED CONCRETE FOUNDATION WALLS UP TO 9'-0" TALL MAY BE 8" NOMINAL THICKNESS W/ #4 BARS @ 24" O.C. BOTH-WAYS OVER 16" x 8" CONCRETE FOOTING W/ (2) #4 BARS CONTINUOUS, UNLESS OTHERWISE REQUIRED BY ENGINEERING REPORT BASED ON ACTUAL SITE CONDITIONS.
4. WALL WILL NOT ACHIEVE FULL STRENGTH UNTIL FIRST FLOOR DECK AND BASEMENT SLAB HAVE BEEN PLACED.
5. THIS DETAIL IS TYPICAL TO THE PROJECT AND SHOULD BE USED, UNLESS OTHERWISE NOTED ON THE PLAN.

4
S2.0 POUR STOP DETAIL
1/2" = 1'-0"

3
S2.0 GARAGE SLAB BEAM BEARING
1/2" = 1'-0"

6
S2.0 GARAGE SLAB BEARING
1/2" = 1'-0"

5
S2.0 GARAGE SLAB BEAM BEARING
1/2" = 1'-0"

2
S2.0 CONCRETE HEADER DETAIL
1/2" = 1'-0"

STEEL DECKING NOTES:
- MINIMUM 1/2" BEARING
- FASTEN TO SUPPORT STEEL W/ 1/4" VISIBLE PUDDLE WELDS @ EDGE RIBS & 12" CTRS. ALONG END BEARING
- FASTEN SIDE LAPS & PERIMETER EDGES @ 36" CTRS. W/ #10 TEK SCREWS OR 1/2" PUDDLE WELDS
- MAX UNSUPPORTED CONSTRUCTION SPAN 6'-0"

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