R.E.O. ENGINEERING, P.C.
CIVIL ENGINEERING CONSULTANTS
1805 WATERS ROAD · HARRISONVILLE · MISSOURI · 64701 · 816-380-5150
FACSIMILE: 816-884-3250 EMAIL: MAIL@REOENGINEERING.COM

March 28, 2024

Shane Veritasi
206 SW Lakeview
Lee's Summit, MO

RE: R.E.O. Project 24-043
Roof structure addition to house
206 SW Lakeview, Lee's Summit, MO

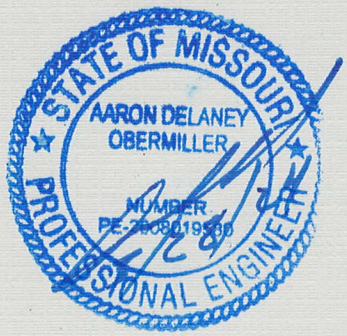
Dear Mr. Veritasi,

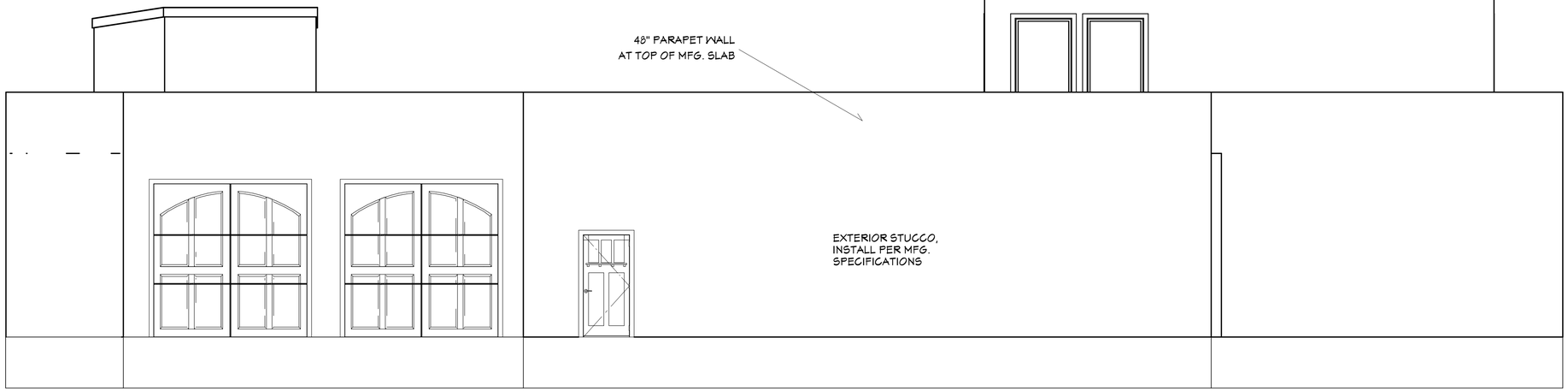
Attached please find structural plans and revised elevations for the light-framed living space construction at the top of the hollow core slab deck at the above referenced residential construction. The 10-inch hollow core panels are suitable for the addition indicated light-framed construction loads at the living space and utility space. Manufactured panels and topping slab are installed per the manufacturer's requirements. Light-framed construction shall be installed as indicated and comply with applicable sections of the 2018 IRC. No modifications are required to the existing concrete support walls or slab construction for the framing addition. If there are any questions regarding this analysis, please contact our Offices.

Very Truly Yours,

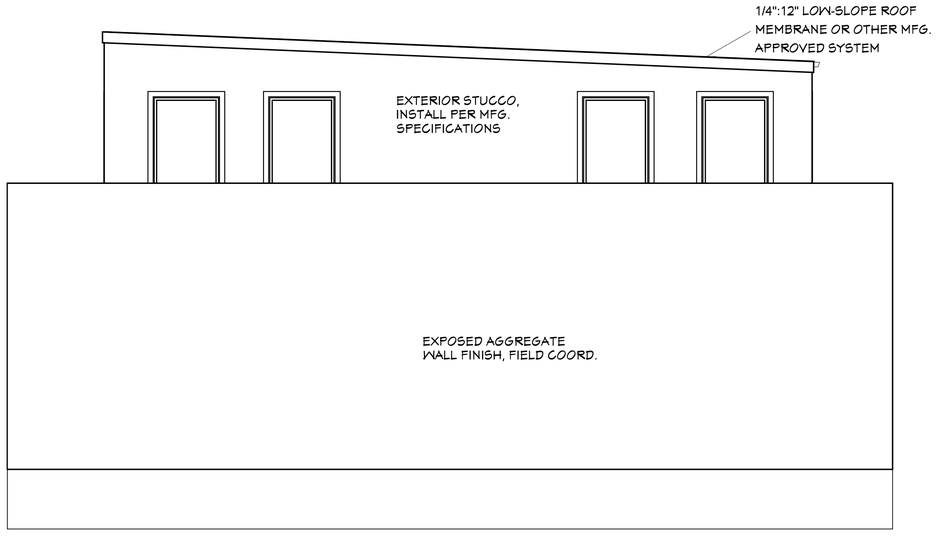
R.E.O. ENGINEERING, P.C.

By:_____, President
Aaron D. Obermiller, P.E.

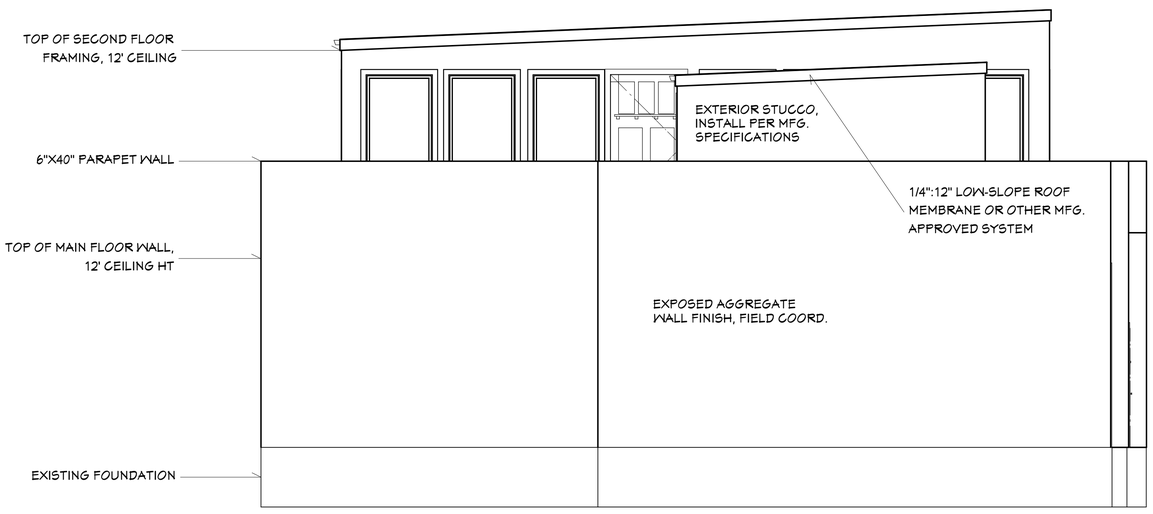




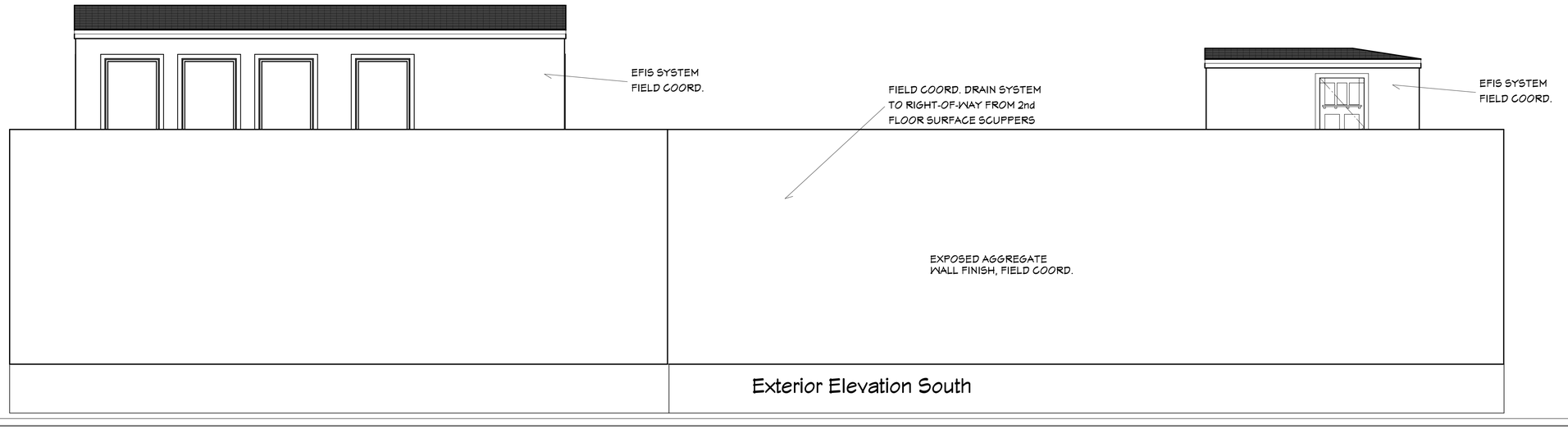
Exterior Elevation North



Exterior Elevation West



Exterior Elevation East



Exterior Elevation South

STATE OF MISSOURI
AARON DELANEY OBERMILLER
NUMBER 2008019580
PROFESSIONAL ENGINEER
AARON D. OBERMILLER, P.E.
2008019580
3/29/2024

REVISION TABLE

NUMBER	DATE	REVISED BY	DESCRIPTION
A	03-28-24	SUBMITTAL	PRINT

VERITASI
206 SW LAKEVIEW
LEE'S SUMMIT, MO

AS-BUILT RESIDENCE
CONCRETE & TRADITIONAL
FRAMED CONSTRUCTION

R ENGINEERING, P.C.
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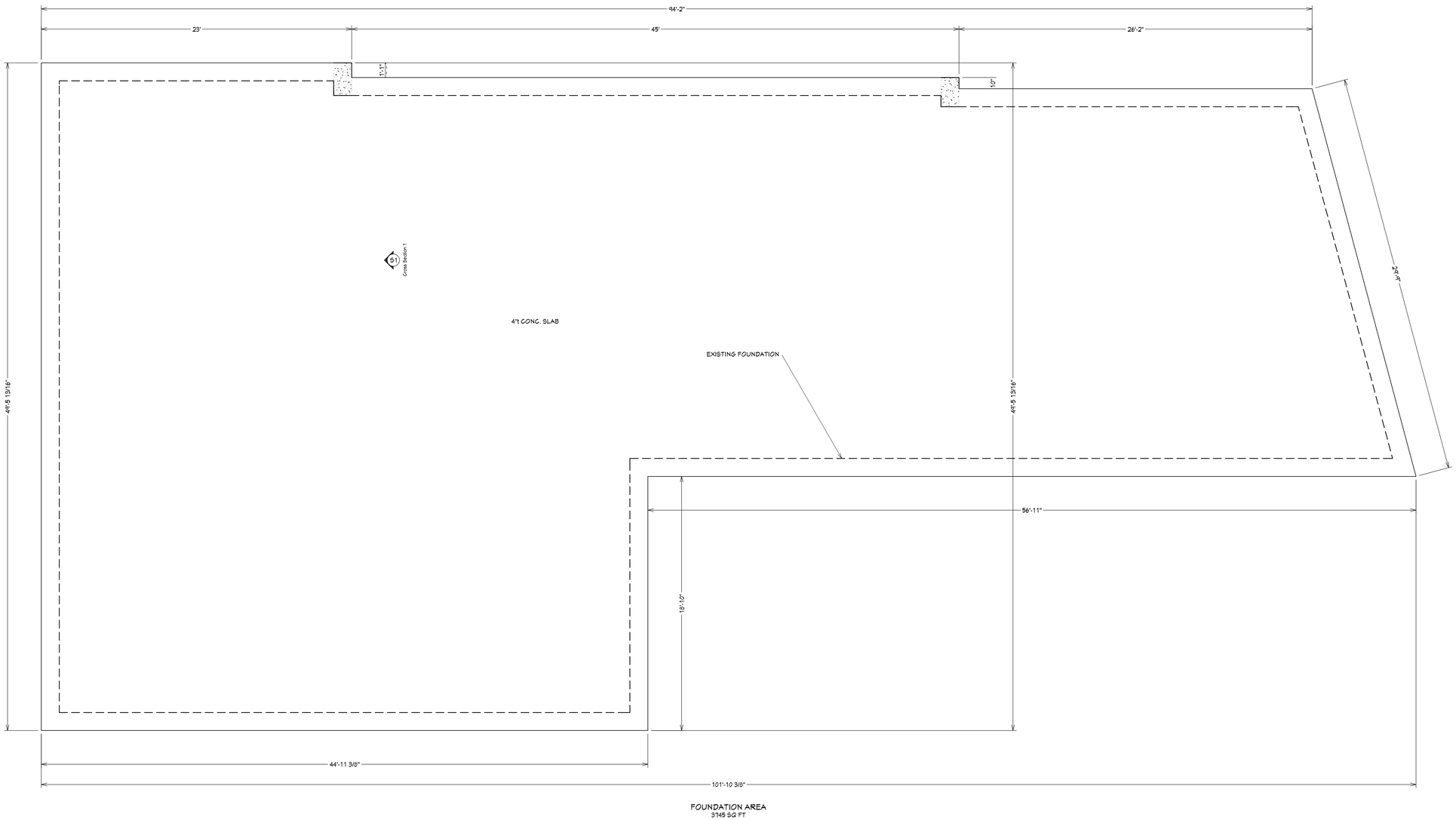
PH: (816) 380 - 5150 FAX: (816) 884 - 3250
EMAIL: MAIL@REDENGINEERING.COM

PROJECT #:
24-043

SCALE:
1/4" : 12"

SHEET:
1 6



Foundation Plan

STATE OF MISSOURI
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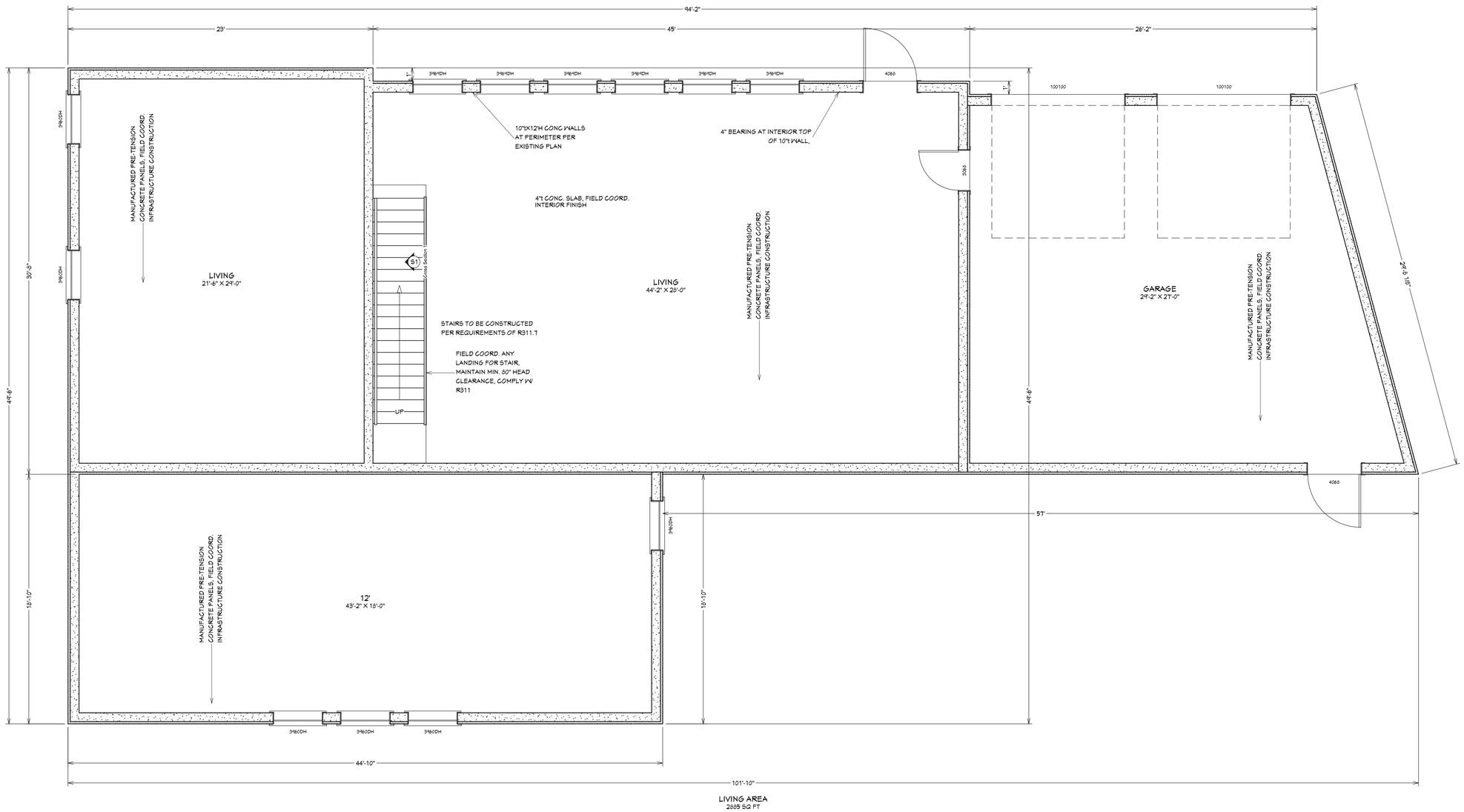

Main Floor Layout

STATE OF MISSOURI
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PROFESSIONAL ENGINEER
AARON D. OBERMILLER, P.E.

2008019580

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LEE'S SUMMIT, MO
MAIN FLOOR PLAN

AS-BUILT RESIDENCE
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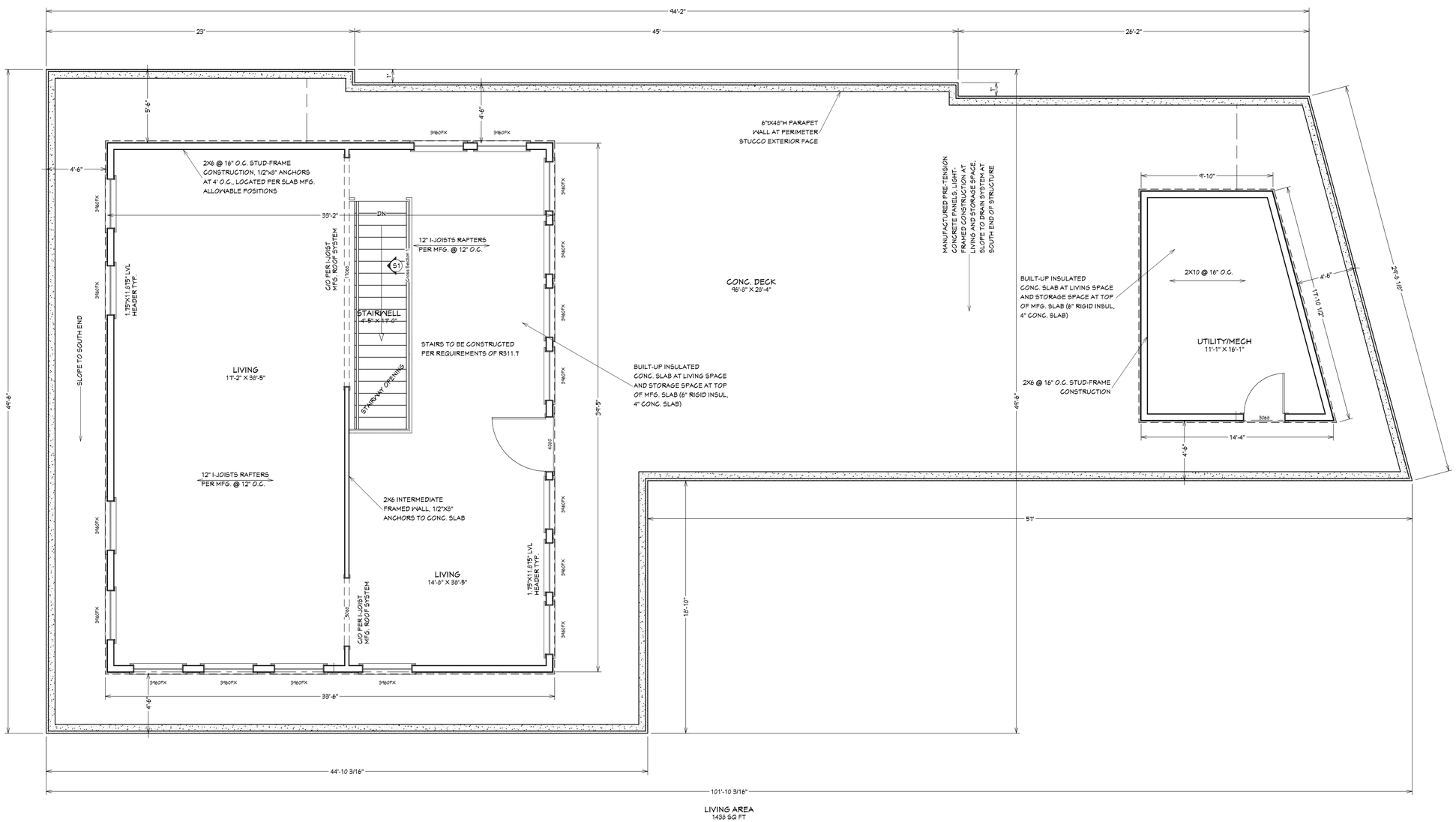

2nd Floor Layout

AARON O. OBERMILLER, P.E.
2008819580
3/29/2024

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VERITASI
206 SW LAKEVIEW
LEE'S SUMMIT, MO
SECOND FLOOR PLAN

AS-BUILT RESIDENCE
CONCRETE & TRADITIONAL
FRAMED CONSTRUCTION

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PH: (816) 380 - 5150 FAX: (816) 884 - 3250
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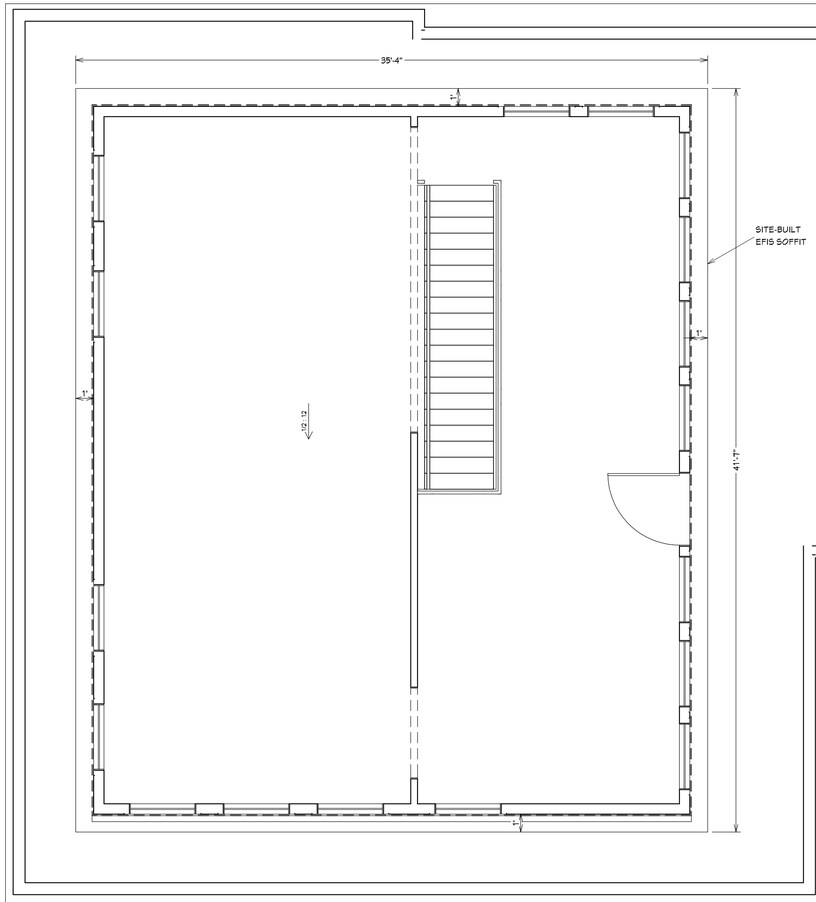
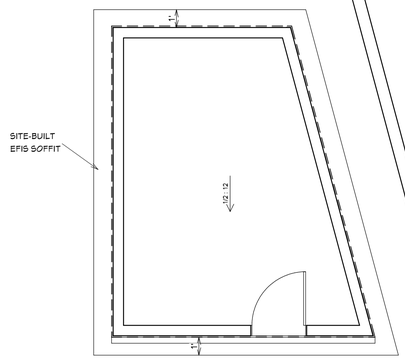
PROJECT #: 24-043

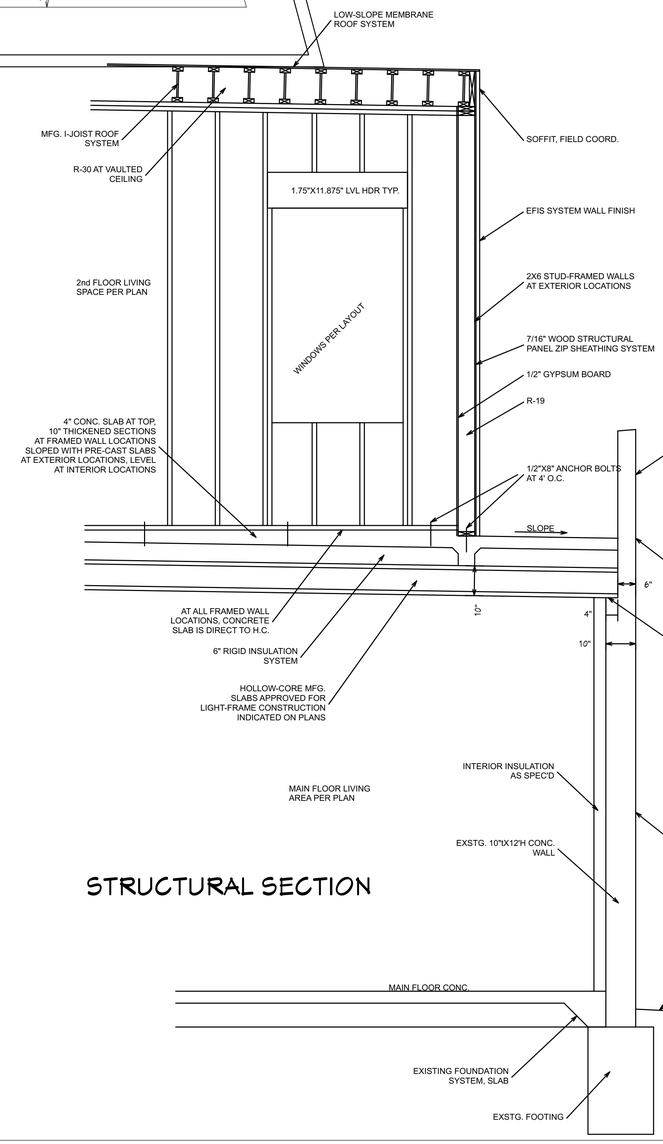
SCALE: 1/4" : 12"

SHEET: 4 6



Roof Plan View





STRUCTURAL SECTION

STATE OF MISSOURI
AARON DELANEY OBERMILLER
NUMBER 2008019580
PROFESSIONAL ENGINEER
AARON D. OBERMILLER, P.E.
2008019580
3/29/2024

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VERITASI
206 SW LAKEVIEW
LEE'S SUMMIT, MO
ROOF PLAN & SECTION

AS-BUILT RESIDENCE
CONCRETE & TRADITIONAL
FRAMED CONSTRUCTION

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SCALE:
1/4" : 12"

SHEET:
5 | 6

FOUNDATION REQUIREMENTS:

CONCRETE
Concrete strength shall comply with the following minimum strength requirements at 28 days and shall be 6% (+/- 1.5%) entrained air for footings, walls or exterior flatwork and no air added (entrapped air) for interior flatwork:
- 2,500 psi for basement floor slabs on undisturbed grade.
- 3,000 psi for footings, foundation walls, structural floor slabs.
- 3,500 psi for carport and garage floor slabs on undisturbed grade.
- 3,500 psi for structural floor slabs or per engineered design, whichever is greater.

Recommendation: Minimum allowable footing concrete cure time prior to wall placement is 24 hours.

FOOTINGS
Exterior walls, bearing walls, columns and piers shall be supported on continuous solid masonry or concrete footings, or other approved structural system to safely support the imposed loads and shall be sized and reinforced in accordance with Table 1 or designed for the imposed load. 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 2/S2).

FOOTINGS - MINIMUM DEPTH
The minimum frost footing depth shall be not less than 36" below grade. Footings for freestanding accessory structures with an area of 600 square feet or less and an eave height of 10 feet or less are permitted to extend below grade 12" and have a minimum width of 12".

DAMP PROOFING
One coat (minimum) of damp proofing or equivalent foundation membrane shall be applied to exterior wall surfaces below grade. Sealing tie holes, voids and honeycombed areas with sealant before damp proofing is recommended. Waterproofing in accordance with IRC section 406.2 will not be required unless a groundwater investigation indicates excessive hydrostatic pressure, a high water table, or other severe soil-water conditions are known to exist and the foundation walls retain earth.
Recommendation: The use of waterproofing in accordance with IRC section R406.2 combined with a minimum 4"perforated foundation drainage pipe.

FOUNDATION DRAINAGE
Installation of a continuous foundation drain consisting of a minimum 4 inch perforated pipe around the entire structure is required where habitable or usable space for any portion of the structure is located below grade. The top of the perforated pipe shall be at or below the area being protected. The pipe shall be placed with positive or neutral slope to minimize the accumulation of deposits in the drainage pipe. Placement of the drain tile on top of the footing is acceptable. Vertical drains shall be installed in window wells and connected directly to the perimeter foundation drain. Coarse, clean, rock shall extend 2 inches below and 6 inches above the perforated pipe, and extend 12 inches beyond the outside edge of the footing and covered with an approved filter membrane. The perforated pipe shall terminate to grade or be connected to a minimum 24 inch diameter or 20 inch square sump pit which shall extend a minimum 24 inches below the bottom of the basement floor per IRC section R405.2.3. The sump shall be capable of positive gravity or mechanical drainage to remove any accumulated water and discharge to daylight.

BACKFILL
Placing backfill prior to bracing or supporting the top of the foundation wall may cause foundation walls to become displaced or cracked. Backfilling any wall before seven days to allow the wall to gain sufficient strength to support the imposed loads is prohibited. Inspectors may require engineering certification and correction of any cracked or bowed wall conditions observed. Recommendation: Do not backfill an unsupported straight run of wall over 16 feet in length between corners and cross walls unless adequate bracing is provided or the floor framing has been set and nailed in place and anchor bolts tightened. To improve foundation drainage, backfill with washed gravel or clean crushed rock at least one sieve size larger than drain pipe perforations, to a point not less than 2' below finished grade. Encase bottom, dirt side and top of backfill with approved filter membrane. Backfill high enough so there is a minimum 6" fall in the first 10' away from the house.

FOUNDATION ANCHORAGE
Where floor joist and/or blocking are connected to the sill to provide top of wall bracing anchor bolts shall be spaced not more than 3 feet on center. Walls with monolithic slabs may have anchor bolts spaced at 6 feet on center. Sill plates shall be bolted to the foundation with minimum 1/2-inch diameter anchor bolts embedded at least 7 inches into the concrete. A bolt shall be placed within 12 inches, 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. For walls over 9 feet use a minimum 2x6 plate and blockings shall be in line with anchor bolts.
Design specific anchoring may be required by the designer for walls 9 feet tall or more. These anchoring devices may be required to be secured in place to the forms prior to concrete placement. Recommendation: It is recommended that a minimum 2x6 inch sill plate be used to ensure sufficient strength is provided to transfer loads from the anchor bolts to the floor system.

TOP OF WALL RESTRAINT
Where joists run perpendicular to foundation walls, they shall be fastened to plates with three 8d toenails. Where joists run parallel to full height foundation walls, solid blocking for a minimum of three joist spaces shall be provided at a maximum of 3 feet centers to transfer lateral loads on the wall to the floor diaphragm. The blocking shall be securely nailed to the joists and flooring. If ducts are installed in a joist space(s), nail 2 x 4's flat 3 foot o.c. within the joist space(s) and then provide the solid blocking as noted below in a total of 3 joist spaces. Secure each 2x4 to the sill plate with 3-8d nails. (See 7/S3)

VAPOR RETARDED (VAPOR BARRIER)
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 per IRC section R506.2.3.
Commentary: The American Concrete Institute's "Guide for Concrete Floor and Slab Construction" (ACI 302) does not recommends a blotter layer where spaces are finished and when vapor sensitive floor coverings are installed. All edges and seams should be sealed and punctures minimized. Use water reducing admixtures to reduce bleeding, shrinkage, and curing time. This vapor retarder minimizes moisture migration through the slab to: retard mold development, improve adhesion of grouted or cemented floor surfaces, control radon sources, and improve the livability of the basement spaces.

FLOOR SLAB PLACEMENT AND BOND BREAK AS STRUCTURAL SUPPORT
Basement floor slabs shall be a minimum 3 1/2 inches thick and placed on a 4-inch base of sand, gravel or stone. The vapor retarder (see below) is placed between the slab and the base course or prepared sub-grade in basements and living areas. The vapor retarder is not required for garage slabs, porches, stoops or other exterior slabs.
The basement floor shall be isolated from column pads, interior columns and interior-bearing walls by approved material to act as a bond breaker. Interior columns and bearing walls shall be supported on a separate interior footing (not on top of the floor slab). The vapor retarder will be considered adequate to act as a bond break between the basement floor slab, columns and column footings, and interior bearing wall footings (See 4/S2).
Note:
1. Isolation of column from floor slab at column pedestals in the garage is not required.
2. Where structural slabs are specified, do not sawcut the slab without the approval of the design professional.

FOUNDATION AND LOT GRADING
Grades shall be sloped away from the foundation a minimum of 6 inches in the first 10 feet. Alternate approaches may be approved if the alternate design is equivalent in effectiveness and performance and provides for positive site drainage. Grading shall conform to that illustrated on the approved plot plan.

CONCRETE SLABS PLACED ON FILL
This section applies to concrete slabs placed on fill material which exceeds 24 inches of granulated material (sand or gravel) or 8 inches of earth. This may occur at garage floor fills, or over-excavated areas under floor slabs or patios exceeding the previously specified fill limitations. 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. Designs for structural slabs exceeding the spans and conditions of the approved details shall be designed by a Kansas-registered design professional.
Elevated Slabs
Elevated slabs are slabs constructed over usable, accessible space. All elevated garage slabs must be designed by a Missouri licensed Engineer or Architect or by using the approved details in this document. Engineered designs shall be supported with calculations. The design and calculations shall bear the seal and signature of the Missouri licensed designer and must reflect the concentrated load requirement specified in IRC Table R301.5, footnote a.
Elevated porch slabs spanning 6'-0" or less in any one direction can be constructed as follows:
- Minimum 6" thickness.
- #4 bars at 12" o.c. each way placed 2-1/2" above bottom of slab.
- There shall be a minimum 2" continuous bearing at the edges of the slab.

Elevated porch slabs spanning more than 6'0" in shall comply with the reinforcement spacing for elevated garage steel schedule.

GENERAL NOTES - CONSTRUCTION SHALL COMPLY WITH 2018 IRC; LOADING - 20PSF LL, 90MPH, 3-SEC GUST:

WINDOW GLAZING
GLAZING IN HAZARDOUS LOCATIONS AS IDENTIFIED IN IRC SECTION R308.4 SHALL BE APPROVED SAFTY 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 CLOSED POSITION AND WHOSE BOTTOM EDGE IS WITHIN 60" OF THE FLOOR: WALLS ENCLOSED STAIRWAYS AND LANDINGS WHERE THE GLAZING IS WITHIN 60" OF THE TOP OR BOTTOM OF THE STAIR: ENCLOSURES FOR SPAS, TUBS, SHOWERS, AND WHIRLPOOLS: GLAZING IN FIXED OR OPENABLE PANELS EXCEEDING 9 SQ. FT. AND WHOSE BOTTOM EDGE IS LESS THAN 18" ABOVE THE FLOOR OR WALKING SURFACE WITH IN 36"

EMERGENCY EGRESS
PROVIDE ONE WINDOW FROM EACH BEDROOM THAT HAS A MIN. OPENING AREA OF 5.7 SR. FT. WITH A MIN. OPENING HEIGHT OF 24" AND WIDTH OD 21"

INSULATION VALUES:
CONSTRUCTION TO COMPLY WITH THE 2012 ENERGY CONSERVATION CODE, 2018 IRC. TABLE R1102.1.1 MIN. INSULATION SHALL BE PROVIDED ADJACENT TO HABITABLE AREAS AS FOLLOWS:

EXTERIOR FRAMED WALLS	R-13
FLOOR OVER HEATED SPACE	R-19
FLOOR OVER OUTSIDE AIR (UNCONDITIONED)	R-19
ATTIC - BLOWN IN	R-49
CATHEDRAL CEILING	R-38
DUCT WORK	R-8
BASEMENT WALLS (CAVITY)	R-13
BASEMENT WALLS (CONTINUOUS)	R-10
SLABS (FOR A MIN. DEPTH OF 2')	R-10
WINDOW U-FACTOR	0.35 OR BETTER

GARAGE
1. THE GARAGE FLOOR SHALL BE SLOPED TOWARD GARAGE DOORS
2. DOORS BETWEEN GARAGE AND DWELLING - MIN 1 3/4" SOLID CORE OR HONEY COMBED STEEL DOOR OR 20 MIN. RATED; SELF-CLOSING
3. GARAGE TO HAVE 5/8" TYPE X GYPSUM THROUGHTOUT
4. THE H-FRAME SHALL CONSIST OF 2X6 FRAMING

GENERAL NOTES (CONT):

FRAMING
1 ALL LUMBER SIZES ARE FOR #2 DF OR AS SPECIFIED IN PLAN/DETAILS
2 ALL HEADERS TO BE MIN. (2) #2-2X10 OR AS NOTED IN PLAN
3 BLOCK CANTILEVERS, DOOR JAMBS, AND OVER BEAMS
4 ALL HEADERS TO BEAR ON MIN. OF (2) 2X4 STUDS FOR 6' AND GREATER OPENINGS
5 JOIST UNDER BEARING PARTITIONS SHALL BE DOUBLED AND COMPLY WITH IRC SEC. R502.4
6 WATER-RESISTIVE BARRIER SHALL BE PROVIDED OVER ALL EXTERIOR WALL PER IRC SEC. R703
7 WHERE CEILING JOIST ARE NOT INSTALLED CONNECTED TO THE RAFTERS AT THE TOP PLATE AND/OR WHERE CEILING JOIST ARE NOT INSTALLED IN THE LOWER 1/3 OF ATTIC SPACE, RAFTER TIES SHALL BE INSTALLED IN THE LOWER 1/3 OF ATTIC SPACE
8 COLLAR TIES SHALL BE PROVIDED IN THE ATTIC SPACE IN UPPER 1/3 OF ATTIC
9 ROOF IS DESIGNED FOR 20 P.S.F. ROOF SNOW LOAD (MIN.)
10 MIN 20 YR. ASPHALT SHINGLES
11 RAFTER TIES SHALL NOT BE REQUIRED WHEN A STRUCTURAL RIDGE HAS BEEN PROVIDED AND ADEQUATELY DESIGNED (AS IN A FULLY VAULTED ROOM) SUCH SHALL BE NOTED AS "STRUCTURAL" ON THE PLAN. PER IRC SEC. 802.3
12 SHEATHING SHALL BE ATTACHED PER IRC TABLE
13 WOOD STRUCTURAL PANELS FOR BRACED WALL REQUIREMENTS SHALL BE APA RATED AND ATTACHED WITH 8d COMMON NAILS 6" O.C. PERIMETER, 12" FIELD
14 GYPSUM BOARD PANELS IN BRACED WALL METHOD GB (R602.10.2 2012 IRC) : MIN. 1/2" GYPSUM BOARD WITH NO. 6 1-1/4" TYPE W OR S SCREWS @ 7" O.C. EDGES AND WALL (4'-0" LONG, BOTH FACES OF WALL

GUARDS
R312.2 Guard opening limitations. Required guards on open sides of stairways, raised floor areas, balconies, and porches shall have intermediate rails or ornamental closures that do not allow passage of a sphere 4" or more in diameter.

DETECTORS
SECTION R315 CARBON MONOXIDE ALARMS
R315.1 Carbon monoxide alarms. For new construction, an approved carbon monoxide alarm shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms in dwelling units within which fuel-fired appliances are installed and in dwelling units that have attached garages.
R315.2 Carbon monoxide detection systems. Carbon monoxide detection systems that include carbon monoxide detectors and audible notification appliances, installed and maintained in accordance with this section for carbon monoxide alarms and NFPA 720, shall be permitted.
The carbon monoxide detectors shall be listed as complying with UL 2075. Where a household carbon monoxide detection system is installed, it shall become a permanent fixture of the occupancy, owned by the homeowner and shall be monitored by an approved supervising station.
R314 PROVIDE SMOKE ALARMS IN EACH SLEEPING ROOM, OUTSIDE OF EACH SLEEPING ROOM AND ON EACH FLOOR, INCLUDING BASEMENT. ALARMS SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTIVATION OF ONE ALARM WILL
ACTIVATE ALL OF THE ALARMS IN THE DWELLING. (SECTION R314.5)

FROST FOUNDATION WALL
FROST DEPTH FOUNDATION WALLS TO HAVE 2 ~ #4's CONTINUOUS HORIZONTAL, 3" COVER TO TOP, 3" COVER TO BASE OF WALL (TOP OF FOOTING); VERTICAL REINFORCEMENT #4's @ 36" O.C. BASE OF FOOTING TO BE 36" BELOW ADJACENT GRADE, CURB WALL ABOVE GRADE (TO PORCH SLAB OR GARAGE WALL) AS NECESSARY IN FIELD

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GENERAL NOTES

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