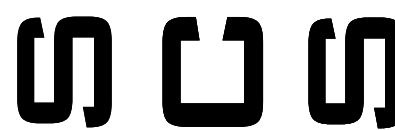




04/05/25 MHS

Site Description
Lot 111, Winterset Park
5th Plat
Street Address
400 SW Waterfall Ct.
Lee's Summit, MO

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Date:	Issued for:
09/28/24	FOR CONSTRUCTION
01/25/25	REVISION #1
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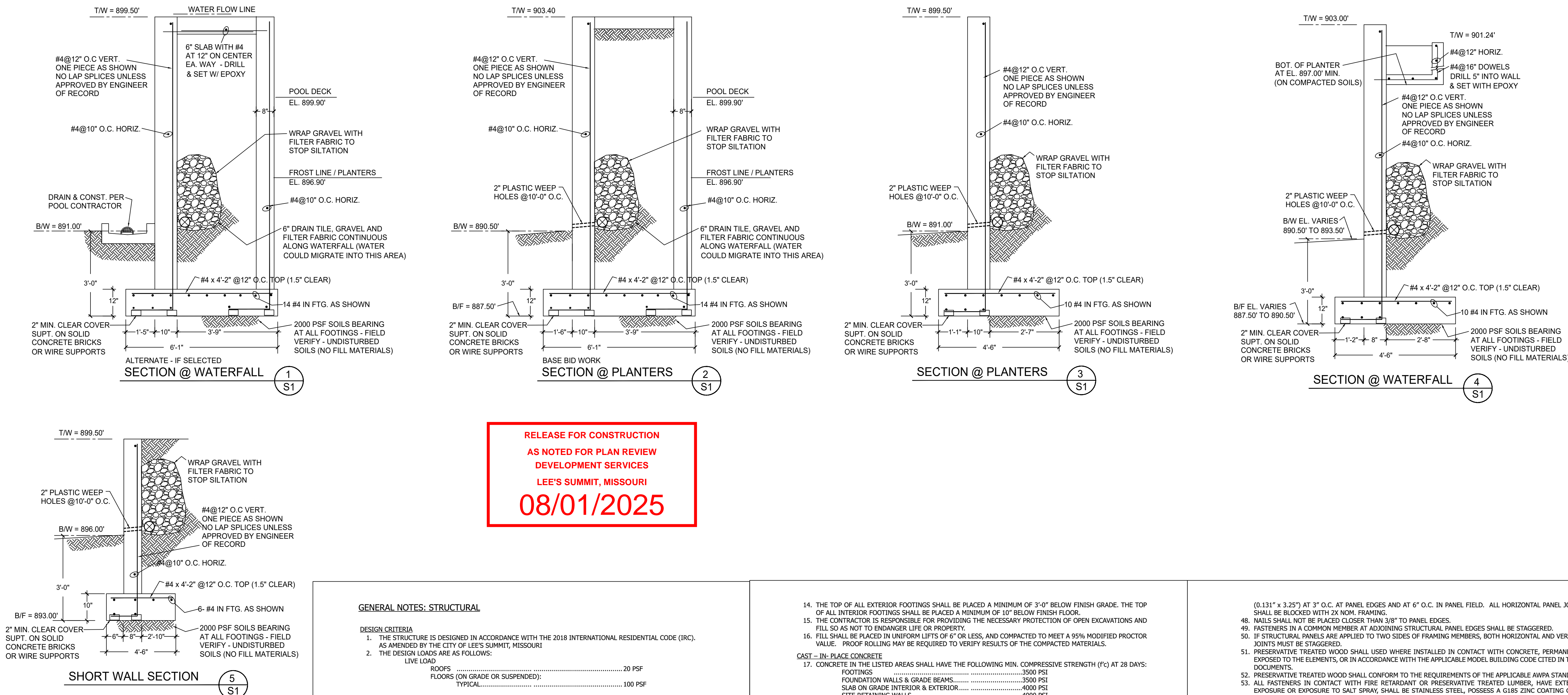
Drawn:
CAS/MHS

Date:
2024-09-28

Sheet Number:

R2

Retaining Wall Sections



GENERAL NOTES: STRUCTURAL

DESIGN CRITERIA

- THE STRUCTURE IS DESIGNED IN ACCORDANCE WITH THE 2018 INTERNATIONAL RESIDENTIAL CODE (IRC), AS AMENDED BY THE CITY OF LEE'S SUMMIT, MISSOURI
- THE DESIGN LOADS ARE AS FOLLOWS:

LIVE LOAD	
ROOFS	20 PSF
FLOORS (ON GRADE OR SUSPENDED):	
TYPICAL	100 PSF

WIND LOAD	
BASIC DESIGN WIND VELOCITY	115 MPH
EXPOSURE	C
IMPORTANCE FACTOR	1.0
INTERNAL PRESSURE COEFFICIENT	+0.18/-0.18
COMPONENT AND CLADDING PRESSURE	25 PSF

SNOW LOAD	
GROUND SNOW LOAD (Pg)	20 PSF
FLAT ROOF SNOW LOAD (Pf)	20 PSF
SNOW EXPOSURE FACTOR (Ce)	1.0
IMPORTANCE FACTOR	1.0
THERMAL FACTOR (Ct)	1.0
DRIFT LOADS	ASCE 7, SECTION 7.

GENERAL NOTES STRUCTURAL

- THE INFORMATION CONTAINED IN THE STRUCTURAL DRAWINGS APPLIES ONLY TO THE STRUCTURAL DESIGN ELEMENTS ASSOCIATED WITH THE SKEENS CONSULTING SERVICES, LLC FURNISHED COMPONENTS. THIS INCLUDES THE PRIMARY STRUCTURAL ELEMENTS RESPONSIBLE FOR RESISTING THE LATERAL AND GRAVITY LOADS AS SPECIFIED BY THE GOVERNING MODEL BUILDING CODE. THIS DOCUMENT ALSO PROVIDES MINIMUM FASTENING REQUIREMENTS FOR SHEATHING MATERIALS.
- THE GENERAL CONTRACTOR MUST CONFIRM THAT EXISTING CONDITIONS ARE COMPATIBLE WITH ASSUMPTIONS STATED IN THE PRODUCTION OF THIS DESIGN DOCUMENT. SKEENS CONSULTING SERVICES, LLC MUST BE CONTACTED IMMEDIATELY IN THE EVENT OF ANY DISCREPANCIES.
- THE GENERAL CONTRACTOR IS SOLELY RESPONSIBLE FOR THE INSTALLATION AND ERECTION OF TEMPORARY SHORING AND/OR BRACING DURING THE CONSTRUCTION PROCESS.
- SELECTIVE DEMOLITION IS REQUIRED ON THIS PROJECT SINCE IT IS AN HISTORIC BUILDING AND THE FACT THAT LIMITED AREAS HAVE BEEN EXPOSED TO THE ELEMENTS RESULTING IN STRENGTH LOSS. IT IS RECOMMENDED THAT A STAGING PLAN AND PRELIMINARY REVIEW OF THE DEMO SEQUENCE BE COMPLETED PRIOR TO DEMOLITION. UNFORESEEN CONDITIONS AND OR CONCERNS SHOULD BE DISCUSS WITH THE ENGINEER OF RECORD PRIOR TO STARTING ANY ADDITIONAL WORK. HEADER REPLACEMENT AND OR REINFORCING WILL REQUIRE TEMPORARY SHORING. TEMPORARY SHORING AND EXCAVATIONS FOR LOAD DISTRIBUTION TO THE SOILS MUST BE CONSIDERED ON THE BALCONY REPLACEMENTS FOR THE FRONT OF THE BUILDING AND ANY EGROSS STRUCTURES ON THE REAR OF THE BUILDING.
- STRUCTURAL PLANS, DETAILS, AND SECTIONS SHALL NOT BE REPRODUCED FOR THE PREPARATION OF SHOP DRAWINGS. THE REPRODUCTION OF ORIGINAL DESIGN DOCUMENTS UNDERMINES THE ADDITIONAL CHECK PROVIDED BY THE INDEPENDENT WORK OF THE DETAILER.
- THE MECHANICAL, ELECTRICAL, AND PLUMBING CONTRACTORS SHALL COORDINATE REQUIRED WALL OPENINGS WITH THE GENERAL CONTRACTOR. OPENINGS CAN NOT DAMAGE THE STRUCTURAL COMPONENTS UNLESS APPROVED BY THE ENGINEER OF RECORD.
- THE STRUCTURAL ENGINEER OF RECORD IS NOT RESPONSIBLE FOR INSPECTION OR QUALITY CONTROL OF CONSTRUCTION.
- ANY QUESTIONS OR COMMENTS RELATING TO THIS DOCUMENT MUST BE FORWARDED TO SKEENS CONSULTING SERVICES, LLC.

GEOTECHNICAL AND FOUNDATION NOTES

- THE FOUNDATION FOR THIS STRUCTURE HAS BEEN DESIGNED BASED ON AN ASSUMED SOIL BEARING CAPACITY OF 1500 P.S.F. IT IS RECOMMENDED THAT SOILS BEARING BE VERIFIED AT THE SITE PRIOR TO ANY FORM PLACEMENT OR ANY CONCRETE PLACEMENT.
- THE SITE SHALL BE GRADED SO AS TO DRAIN WATER AWAY FROM THE PERIMETER OF THE FOUNDATION.
- THE TOP SURFACE OF ALL FOOTINGS SHALL BE LEVEL, SLOPING A MAXIMUM OF ONE UNIT VERTICAL IN TEN UNITS HORIZONTAL. FOOTINGS SHALL BE STEPPED IF THIS SLOPE MUST BE EXCEEDED.

- THE TOP OF ALL EXTERIOR FOOTINGS SHALL BE PLACED A MINIMUM OF 3'-0" BELOW FINISH GRADE. THE TOP OF ALL INTERIOR FOOTINGS SHALL BE PLACED A MINIMUM OF 10" BELOW FINISH FLOOR.
- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE NECESSARY PROTECTION OF OPEN EXCAVATIONS AND FILL SO AS NOT TO ENDANGER LIFE OR PROPERTY.
- FILL SHALL BE PLACED IN UNIFORM LIFTS OF 6" OR LESS, AND COMPACTED TO MEET A 95% MODIFIED PROCTOR VALUE. PROOF ROLLING MAY BE REQUIRED TO VERIFY RESULTS OF THE COMPACTED MATERIALS.

CAST - IN-PLACE CONCRETE

FOOTINGS	3500 PSI
FOUNDATION WALLS & GRADE BEAMS	3500 PSI
SLAB ON GRADE INTERIOR & EXTERIOR	4000 PSI
SITE RETAINING WALLS	4000 PSI

- MATERIALS USED TO PRODUCE CONCRETE AND TESTING THEREOF SHALL COMPLY WITH THE APPLICABLE STANDARDS LISTED IN ACI 318.
- REQUIREMENTS FOR CONCRETE QUALITY, MIXING AND PLACING SHALL CONFORM TO THE REQUIREMENTS OF ACI 318, CHAPTER 5.
- CONCRETE REINFORCEMENT SHALL BE DEFORMED AND MEET THE REQUIREMENTS OF ACI 318, SECTION 3.5. THE MINIMUM SPECIFIED YIELD STRENGTH OF DEFORMED REINFORCEMENT SHALL BE 60,000 PSI.
- ADMIXTURES SHALL MEET THE REQUIREMENTS OF ACI 318, SECTION 3.6.
- NO MIX DESIGNS CONTAINING CALCIUM CHLORIDE SHALL BE USED.
- UNDER NO CIRCUMSTANCES SHALL WATER BE ADDED TO THE MIX AT THE JOBSITE.
- REINFORCEMENT SHALL NOT BE WELDED.
- GRADE SLABS SHALL BE PLACED ON TOP OF A 4" WASHED STONE OR CLEAN DRAINAGE FILL, MINIMUM.
- A MINIMUM 10-MIL VAPOR BARRIER MUST BE PROVIDED BENEATH INTERIOR SLABS ON GRADE. THE VAPOR BARRIER MUST LAP 6" MINIMUM. ALL JOINTS MUST BE APED AND SEALED.
- SLABS ON GRADE SHALL BE 4" MINIMUM AND REINFORCED WITH 6X6-W1.4WV1.4 W.W.F. OR REINFORCING FIBERS IN ACCORDANCE WITH THE REQUIREMENTS OF THE PORTLAND CEMENT INSTITUTE. LAP W.W.F. A MINIMUM OF TWO MESH SPACES AT SPLICES.
- SAWN CONTROL JOINTS MUST BE CUT AS SOON AS POSSIBLE SUCH THAT NO SURFACE DEFECTS ARE INCURED DURING THE PROCESS. WHEN NOT INDICATED ON THE DRAWINGS, CONTROL JOINTS SHALL ENCOMPASS AN AREA NOT LARGER THAN 325 S.F., AND SHALL HAVE AN ASPECT RATIO NOT LARGER THAN 3:2.
- ALL DETAILING, FABRICATION, AND PLACEMENT OF REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF THE ACI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI 309-16).
- REINFORCING STEEL MUST BE FREE OF LOOSE RUST, MILL SCALE, OR ANY OTHER FOREIGN MATERIAL.
- REINFORCEMENT MUST BE ACCURATELY POSITIONED AND TIED IN PLACE PRIOR TO CONCRETE PLACEMENT.
- FORMS SHALL BE CLEANED AND PREPPED FOR EASY REMOVAL.
- TWO #5 X 5'-0" BAR SHALL BE PLACED IN THE TOP THIRD OF SLABS ON GRADE AT ALL RE-ENTRANT CORNERS, FITS, RECESSES AND CHANGES IN SLAB THICKNESS.
- ANCHOR RODS OR BOLTS EMBEDDED INTO CONCRETE SHALL HAVE A MINIMUM DIAMETER OF 1/2" AND SHALL BE EMBEDDED A MINIMUM OF 7". THESE ARE MINIMUM REQUIREMENTS TO BE MET IN THE ABSENCE OF MORE RESTRICTIVE REQUIREMENTS IN THE DESIGN DOCUMENTS.
- ANCHOR RODS OR BOLTS EMBEDDED INTO CONCRETE SHALL BE GRADE 36.
- SHALL BE REINFORCED AT 16" O.C. VERTICALLY WITH GALVANIZED W1.7 LADDER-TYPE REINFORCEMENT, MINIMUM.

STRUCTURAL STEEL

- STRUCTURAL STEEL PIPES SHALL CONFORM TO ASTM A501 OR ASTM A53, TYPE E OR S, GRADE B.
- STRUCTURAL STEEL PLATES SHALL BE ASTM A36.
- BOLTS FOR CONNECTING STRUCTURAL STEEL SHALL BE 3/4" DIAMETER CONFORMING TO ASTM A325-N, UON.
- ANCHOR BOLTS SHALL CONFORM TO ASTM F1554. YIELD STRENGTH SHALL BE 36 KSI.
- STRUCTURAL EPOXY FOR INSTALLING ANCHOR BOLTS IN CONCRETE SHALL BE "SIMPSON SET EPOXY TIE" OR APPROVED EQUIVALENT. INSTALL ANCHOR BOLTS IN CLEAN, DRY HOLES IN STRICT ACCORDANCE WITH EPOXY MANUFACTURERS INSTRUCTIONS. FIELD INSPECTIONS BY A TESTING AGENCY MAY BE REQUIRED BY THE CITY.
- FABRICATION AND ERECTION OF ALL STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE LATEST AISC SPECIFICATIONS.
- ONLY WELDERS WHO HAVE BEEN QUALIFIED BY TESTS AS PRESCRIBED IN THE CURRENT EDITION OF THE 'STRUCTURAL WELDING CODE', AWS D1.1 OF THE AMERICAN WELDING SOCIETY TO PERFORM THE TYPE OF WORK REQUIRED SHALL MAKE WELDS.
- ENCASE ALL STRUCTURAL STEEL BELOW GRADE IN CONCRETE WITH A MINIMUM COVERAGE OF 3".

SAWN LUMBER / LAMINATED LUMBER

- ALL LUMBER SHALL CLEARLY HAVE THE MARK OF A RECOGNIZED LUMBER GRADING OR INSPECTION BUREAU OR AGENCY THAT COMPLIES WITH DOC. #230 OR EQUIVALENT.
- ALL WALL STUDS AND RAFTERS SHALL BE SPF NO. 2 OR BETTER. OTHER FRAMING MEMBERS SHALL BE S.Y.P. NO. 1 OR BETTER.
- PLYWOOD SHEAR WALL ASSEMBLIES SHALL BE 5/8" APA RATED PLYWOOD SHEATHING NAILED WITH 8d NAILS

- (0.131" x 3.25") AT 3" O.C. AT PANEL EDGES AND AT 6" O.C. IN PANEL FIELD. ALL HORIZONTAL PANEL JOINTS SHALL BE BLOCKED WITH 2X NOM. FRAMING.
- NAILS SHALL NOT BE PLACED CLOSER THAN 3/8" TO PANEL EDGES.
- FASTENERS IN A COMMON MEMBER AT ADJOINING STRUCTURAL PANEL EDGES SHALL BE STAGGERED.
- IF STRUCTURAL PANELS ARE APPLIED TO TWO SIDES OF FRAMING MEMBERS, BOTH HORIZONTAL AND VERTICAL JOINTS MUST BE STAGGERED.
- PRESERVATIVE TREATED WOOD SHALL USED WHERE INSTALLED IN CONTACT WITH CONCRETE, PERMANENTLY EXPOSED TO THE ELEMENTS, OR IN ACCORDANCE WITH THE APPLICABLE MODEL BUILDING CODE CITED IN THESE DOCUMENTS.
- PRESERVATIVE TREATED WOOD SHALL CONFORM TO THE REQUIREMENTS OF THE APPLICABLE AWPA STANDARD.
- ALL FASTENERS IN CONTACT WITH FIRE RETARDANT OR PRESERVATIVE TREATED LUMBER, HAVE EXTERIOR EXPOSURE OR EXPOSURE TO SALT SPRAY, SHALL BE STAINLESS STEEL, POSSESS A G185 ZINC COATING OR BE HOT-DIPPED GALVANIZED.
- FASTENING REQUIREMENTS SHALL BE AS INDICATED IN IRC 2012, TABLE 2304.9.1 (FASTENING SCHEDULE) UNLESS OTHERWISE INDICATED IN THE DESIGN DOCUMENTS.
- NAILS AND STAPLES SHALL CONFORM TO THE REQUIREMENTS OF ASTM F 1667.
- FASTENERS SHALL NOT BE DRIVEN BEYOND FLUSH IN THE APPLICATION OF STRUCTURAL PANELS TO FRAMING MEMBERS.
- PNEUMATIC FASTENERS SHALL HAVE THE FOLLOWING DIAMETERS WHEN SUBSTITUTED FOR COMMON SIZED NAILS:

8d (2 1/2")	0.131"
10d (3")	0.148"
16d (3 1/2")	0.162"

- LAMINATED VENEER LUMBER (LVL) SHALL HAVE A MINIMUM FLEXURAL STRESS (Fb) = 2600 PSI, MINIMUM MODULUS OF ELASTICITY (E) = 2,000,000 PSI. (E =2.0)
- PARALLEL STRAND LUMBER (PSL) SHALL HAVE A MINIMUM FLEXURAL STRESS (Fb) = 2500 PSI, MINIMUM MODULUS OF ELASTICITY (E) = 1,800,000 PSI.
- STRUCTURAL CAPACITIES OF WOOD JOISTS SHALL BE ESTABLISHED IN ACCORDANCE WITH ASTM D 5055.
- BOLTS, NUTS, AND WASHERS FOR WOOD CONNECTIONS SHALL BE A-307 HOT DIPPED GALVANIZED.
- HOLDDOWN ANCHORS, STRAPPING, AND TIES MUST BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS WHERE INDICATED ON STRUCTURAL PLANS AND SECTIONS.

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- B. I, Michael Harry Skeens, P.E., Missouri registered engineer PE-2005022157 and a representative of Skeens Consulting Services, LLC do hereby accept limited structural responsibility on this project for only those elements specifically shown on these drawings and in conjunction with the architectural drawings, prepared by Lisbona Architects, Inc., pertaining to the building foundations, structural framing and hereby disclaims any responsibility for the design of "other systems of the project" shown elsewhere in the construction documents and/or required submittals as they being the responsibility of other design professionals, including all other trades, product design, fabrication and construction of prefabricated products which are to be structurally designed by the supplier's licensed engineer to meet performance requirements specified herein. .

Michael Harry Skeens

Engineer's Signature