

GENERAL NOTES:

APPLICABLE CODES:

- A. These general notes apply to all structural drawings. This project is designed in accordance with the International Building Code (IBC), 2015 Edition and the 'Minimum Design Loads for Buildings and Other Structures' (ASCE/SEI 7-10).
- B. All material and workmanship shall be in accordance with applicable provisions of the codes specified above.

LOADS USED IN DESIGN:

A. Gravity Loading	
Roof Snow Loads	5 psf
Roof Live Load	20 psf
Roof Dead Load	
15 psf	
B. Wind Loading	
Floor Live Loads:	40 psf
Velocity Ultimate (3 sec gust)	115 mph
Exposure	C
Risk Factor	II
Internal Pressure Coeff., GCpi	-0.18 / 0.18 (Enclosed)
C. Seismic	
Sds	0.083
Sd1	0.042
Site Class	D
Seismic Group	A
Fa	1.6
Fv	2.4
SMs	0.125
SM1	0.063

COORDINATION:

- A. DO NOT SCALE PLANS. The layout shown is based solely on the architectural plans by JV Design and Built LLC, job no. 19-02, dated 12-08-2019. Changes affecting the layout shown must be specific and clearly conveyed to GreenWorks Engineering and Consulting in written form as a change for inclusion into these plans.
- B. Contractor and/or client shall verify all dimensions and layout prior to construction. All dimensions shall be checked against the architectural plans referenced above and any discrepancies shall be brought to the attention of the Architect and Engineer of Record immediately. Refer to mechanical, electrical and architectural plans for openings not shown on the structural plans.
- C. Shop drawings shall be prepared by the fabricator. Copying of these construction documents for use as shop drawings will not be permitted.
- D. All temporary shoring shall be the responsibility of the contractor.
- E. Design is based on the current applicable building codes listed above and shall be void if the building code at the time of construction changes from the codes listed above.

CONCRETE:

- A. Concrete has been designed and shall be constructed in accordance with the American Concrete Institute 'Building Code Requirement Reinforced Concrete' and 'Specifications for Structural Concrete for Buildings'(ACI 318 and ACI 301) latest editions. Section 1.3"Inspection" of ACI 318 is deleted in its entirety, see 'Field Observations' paragraph. All concrete shall be of stone aggregate, unless noted otherwise.
- B. Concrete Mixes: See specifications for any additional durability requirements.
 - Mix 'A' For Slabs on Grade
 - 4,000 psi minimum compressive strength at 28 days.
 - Type I/II Cement, minimum of 540 pounds per cubic yard.
 - Fly Ash not allowed.
 - 1" maximum aggregate size.
 - 3% maximum entrained air.
 - 4" maximum slump (8" with super-plasticizer).
 - Water reducing agent (use in accordance with manufacturer's recommendations).
 - Mix 'B' For Footings, Grade Beams, and Miscellaneous Concrete
 - 3,500 psi minimum compressive strength at 28 days.
 - Type I/II Cement, minimum of 470 pounds per cubic yard.
 - 3/4" maximum aggregate size.
 - 6% maximum entrained air.
 - 4" maximum slump (8" with super-plasticizer).
- C. Reinforcing shall be new billet steel conform to ASTM A615, grade 60, except ties shall be grade 40. Provide not less than (2) #4 around all sides of all openings in concrete and extend 2'-0" past edges of openings. No splices of reinforcement are permitted except as detailed or authorized by the Engineer of Record. Where permitted use contact lap splices, (36) bar diameters minimum.
- D. For the proper placement of the reinforcement provide chairs, bolsters, additional reinforcement, and accessories necessary to support the reinforcement at the positions shown on plans. Support of reinforcement on form ties, wood, brick, brickbat or other unacceptable material, will not be permitted.
- E. Grout under base plates and bearing plates shall be high strength, non-shrink, non-metallic grout with a minimum compressive strength, at 28 days, of 7,500 psi.
- F. Reinforcement shall be placed so that the following minimum concrete cover is provided, unless noted otherwise.
 - 1) Concrete poured against earth. 3" Clear
 - 2) Formed surfaces exposed to earth or weather.
 - a) #6 Bars and larger. 2" Clear
 - b) #5 Bars and smaller. 1-1/2" Clear
 - 3) Concrete not exposed to earth or weather. 3/4" Clear
 - 4) Beams, columns, ties, stirrups or spirals around primary reinforcement, or primary reinforcement with no ties, stirrups or spirals. 1-1/2" Clear
 - 5) Slabs. Placed at center (U.N.O.)
- G. Welded Wire Fabric (WWF) shall conform to ASTM A185. Provide WWF in flat sheets, rolled sheets are not allowed. Where permitted use contact lap splices, (50) bar diameters minimum.
- H. Foundation walls below grade shall have backfill placed equally on both sides until the required levels are reached. Walls shall be appropriately shored when backfill is placed on one side only.
- I. Additional (2) #4 bars (one each face) with a 2'-0" projection shall be placed diagonally across the corners of all openings and at vertical steps in walls unless otherwise detailed on plans.
- J. The contractor is responsible for determining when it is safe to remove forms and/or shoring. Forms and shoring must not be removed until the walls are strong enough to support their own weight and any superimposed loads. For foundation walls, this typically requires 12 hours of cumulative curing time at a temperature of 50° F or more. Concrete must be adequately covered during cold periods to maintain this surface temperature. Due to varying weather conditions, alternative curing processes, and the use of Type I/II cement, GreenWorks Engineering suggests forms remain in place a minimum of 3 days to assure this performance specification has been met. When forms are stripped there must be no excessive deflection, distortion, discoloration and no evidence of damage to the concrete. Adequate thermal protection of the concrete shall be continued after stripping for a cumulative period of 48 hours at 50° F, or more, after the initial pour. See applicable notes for specifications on when to backfill foundation walls.

K. Field Quality Control

- 1) Reference standard: ACI 301 Chapters 16 and 17, in latest edition.
- 2) Slump tests: The contractor shall provide necessary equipment and shall make test in conformity with ASTM C143. The contractor shall make slump tests on the first concrete truck of each pour and as often as deemed necessary by the contractor to maintain the required slump when directed by the Architect or Engineer of Record.
- 3) Control tests:
 - a) Control tests of concrete work shall be made on every 50 cubic yards or fraction thereof of concrete placed and, in any case, minimum of once during each day's pour.
 - b) Each test shall consist of four standard 6" test cylinders cast and cured in accordance with ASTM C31 and ASTM C172.
 - c) Sample concrete at point of placement.
 - d) One cylinder shall be tested at the end of 7 days after placing, two cylinders shall be tested at 28 days after placing and the remaining cylinder shall be stored until its disposition is determined by the Architect.
 - e) In general, remaining cylinder will be tested only when previous test reports indicated unsatisfactory results.
 - f) Tests on remaining cylinder shall be at the expense of the contractor.
 - g) Architect and /or Engineer of Record reserves the right to stop future concrete work when the 7 or 28 day tests indicate unsatisfactory results until, in the opinion of the Architect and/or Engineer of Record, proper corrective measures have been taken to insure quality concrete in future work and corrections deemed necessary have been made.
 - h) Tests shall be made at time control tests are taken and so stated in reports to determine slump, air content, unit weight and temperature of concrete.
 - i) All tests shall be made in accordance with ASTM C138 or ASTM C231.
- 4) Slab tolerance: Maintain surface flatness with maximum variation of 1/8" in 20 feet.

STRUCTURAL STEEL:

- A. Structural steel, including cast in angles, plates or other sections shall be detailed and erected in accordance with the American Institute of Steel Construction (AISC) Specifications and Code of Standard Practice, latest edition.
- B. All wide flange and channel structural steel shall conform to ASTM A992. All HSS members shall conform to ASTM A500, Grade-B. Pipe columns shall conform to ASTM A53, Grade-B. All other structural shapes and miscellaneous steel shall conform to ASTM A36 unless otherwise noted.
- C. Column base plates shall be set on 1 1/2" non-shrink high density grout with a minimum of (4) 3/4"Ø x 1'-0" anchor bolts, unless noted otherwise.
- D. Shop connections shall be welded with E70xx electrodes and ground smooth where exposed. Field connections shall be made with bolts conforming to ASTM A325N unless otherwise noted. Field welds shall be made with E70xx electrodes. All welding shall be in accordance with AWS "Structural Welding Code", latest edition and performed by certified, licensed welder.
- E. All beam connections not detailed on the drawings shall be standard framed beam connections as shown in Table II and III of the AISC "Manual of Steel Construction", latest edition, designed to carry the full capacity of the uniformly loaded member, unless noted otherwise.
- F. Headed stud anchors shall conform to AWS D1.1 and shall be automatically end welded.
- G. Steel stairs to be detailed and designed by others unless noted otherwise. Stair detailer shall provide shop drawings and calculations prepared and stamped by a structural engineer registered in the state of Texas, for review by the Engineer of Record to verify they conform to the requirements of the basic structure. Fabrication shall not proceed until completion of shop drawing review by the Engineer of Record.
- H. All exposed structural steel shall be hot dipped galvanized.
- I. Field Quality Control: Inspect in accordance with AISC specifications. Materials engineer shall visually inspect all field welded connections and visually inspect all bolted connections to ascertain that all welds, bolts, nuts and required washers have been installed and are of proper type and that all facing surfaces have been brought into snug contact.

WOOD:

- A. Framing lumber shall be Southern Pine (unless noted otherwise) and as follows or better:
 - 2x4 studs Stud Grade
 - 2x6 or larger studs. #2 Grade
 - Plates. #3 Grade
 - Joists and Rafters #2 Grade
 - 2x and 4x Beams #2 Grade
 - 6x or larger Beams #1 Grade Beam and Stringer
 - Glue-Lam Beams 24F-V4 DF/DF unless noted otherwise
 - Posts. #1 Grade Post and Timber
 - LVL 2.0 E - Fb 2800
- B. All wood construction shall be in conformance with the provisions of "The National Design Specification for Wood Construction", latest edition.
- C. Laminated Veneer Lumber (LVL) and prefab joists shall be manufactured by 'TrusJoist' or equivalent or shall meet APA Performance Standards, and installed per manufacturers specifications. Supplier shall furnish shop drawings showing all joists, bridging, blocking and miscellaneous accessories for review by the structural engineer prior to fabrication.
- D. Where not otherwise shown on plans, all nailing or screwing shall be as indicated in the current Building Code. All sheathing must be nailed. Adhesives SHALL NOT be used in place of nailing.
- E. Metal connectors to be provided by 'Simpson Strong-Tie' or equivalent.
- F. APA rated OSB may be used in lieu of plywood with prior approval from Engineer of Record.
- G. Minimum treatment for pressure treated lumber shall be as follows:
 - 1) Wood not in contact with soil 0.25 ACQ
 - 2) Wood in contact with soil 0.40 ACQ
- H. Pressure treated lumber that has been cut shall be site treated at each cut.
- I. Bolt holes in lumber shall be drilled as bolt diameter plus 1/16".

METAL WOOD FRAMING HARDWARE:

- A. All metal wood framing hardware shall be provided by 'Simpson Strong-Tie' or equivalent.
- B. All metal hardware shall be installed per manufacturer's recommendations.
- C. All metal fasteners and hardware in contact with pressure treated lumber shall be Hot Dipped Galvanized or ZMax coated (G=185).

SHEATHING and DECKING:

- A. Roof sheathing/decking shall be a minimum of 7/16" thick CDX plywood or APA rated O.S.B. C-D interior grade with exterior glue. Minimum panel span rating of 48/24.
- B. Floor sheathing/decking shall be a minimum of 23/32" thick CDX plywood or APA rated O.S.B. C-D interior grade with exterior glue. Minimum panel span rating of 48/24.
- C. Gypsum sheathing for shear walls shall be a minimum of 1/2" thick and free of imperfections and shall conform to ASTM C79.
- D. Exterior wall sheathing shall be a minimum of 7/16" thick plywood or APA rated O.S.B.

WIRE NAILS:

- A. Nail installation and materials shall be in compliance with A.I.T.C., NDS, and all applicable building code requirements.
- B. Gun nails may be used in lieu of hand nailing. Gun nail substitutions shall be as follows:

8d	0.113" x 2.5"
10d	0.123" x 3.0"
12d	0.123" x 3.25"
16d	0.133" x 3.5"
- C. Nails shall have a minimum penetration of 10 times the wire diameter unless noted otherwise on the plans.
- D. Edge distance for all nails shall be a minimum of 4 times the wire diameter unless noted otherwise on the plans.
- E. All nails listed /specified on the plans shall be Common.

STRUCTURAL LEGEND	
(S)	DETAIL # OR LETTER SHEET DETAIL IS ON
①	SEE PLAN NOTES
[B]	BEAM/HDR SCHEDULE
[H]	HANGER SCHEDULE
[C]	COL/POST SCHEDULE
LA	SOLID BOX INDICATES LOAD FROM ABOVE (CONTINUE POST DOWN TO FOUNDATION BELOW)
LA	OPEN BOX INDICATES LOAD FROM ABOVE (CARRIED BY BEAM OR HEADER BELOW)
←	JOIST/RAFTER SPAN
← CANT	CANTILEVER JOIST
T	HANGER (PER PLAN)
---	HEADER / BEAM
/ / /	RAFTER BRACING
←	JOIST/RAFTER SPAN (BEAR ON BEAM)
	PLATE
	JOIST/RAFTER SPAN (FLUSH FRAME TO BEAM)
	REV REVERSE
	RS RING SHANK
A.F.F.	ABOVE FINISH FLOOR
A.B.	ANCHOR BOLT
CANT.	CANTILEVER
C	CENTER LINE
CONT.	CONTINUOUS
ϕ	DIAMETER
(D)	DROPPED BEAM
E.N.	EDGE NAILING
EXIST.	EXISTING
F.F.	FINISH FLOOR
(F)	FLUSH BEAM
G.T.	GIRDER TRUSS
HSS	HOLLOW STRUCTURAL SECTION
K	KING STUD
K.P.	KING POST
L.L.H.	LONG LEG HORIZONTAL
L.L.V.	LONG LEG VERTICAL
LVL	LAMINATED VENEER LUMBER
O.C.	ON CENTER
O.S.B.	ORIENTED STRAND BOARD
P.T.	PRESSURE TREATED
REV	REVERSE
SIM	SIMILAR
S.P.N.	SILL PLATE NAILING
T	TRIMMER
TYP	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE

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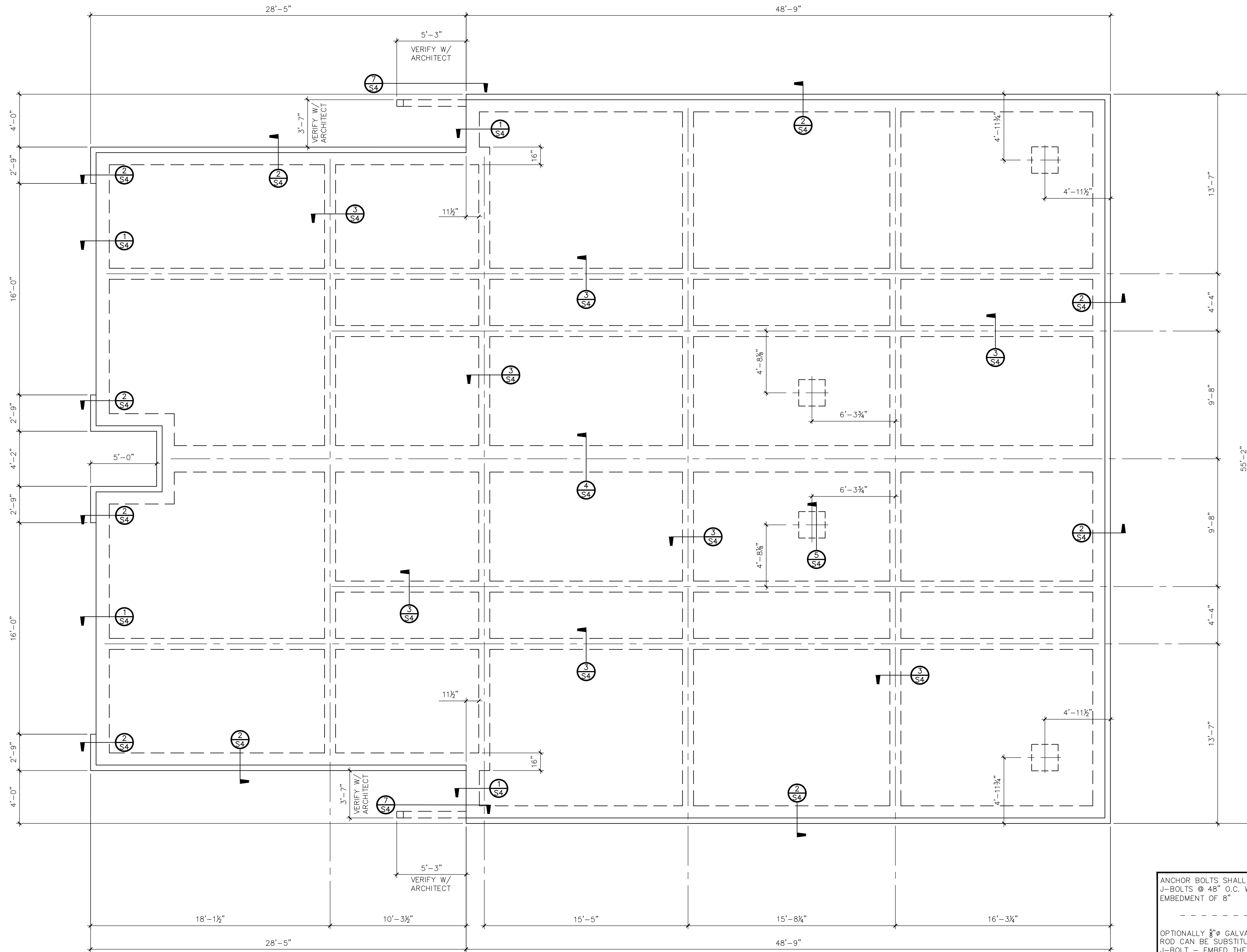
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ANCHOR BOLTS SHALL BE 3/8" GALVANIZED J-BOLTS @ 48" O.C. W/ A MINIMUM EMBEDMENT OF 8"

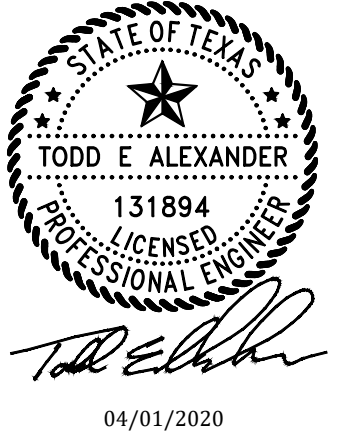
OPTIONALLY 3/8" GALVANIZED THREADED ROD CAN BE SUBSTITUTED FOR THE J-BOLT - EMBED THE THREADED ROD 8" AND EPOXY W/ SIMPSON STRONG-TIE SET-XP EPOXY THE J-BOLTS CAN BE

FOUNDATION DESIGN IS BASED ON ALLOWABLE SOIL BEARING CAPACITY OF 2,500 PSF PER GEOTECHNICAL REPORT BY ECS SOUTHWEST, LLP, PROJECT NO. 20:1151 DATED MARCH 2, 2020. GENERAL CONTRACTOR SHALL FOLLOW ALL RECOMMENDATIONS IN SAID REPORT.

FOUNDATION PLAN

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

VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION



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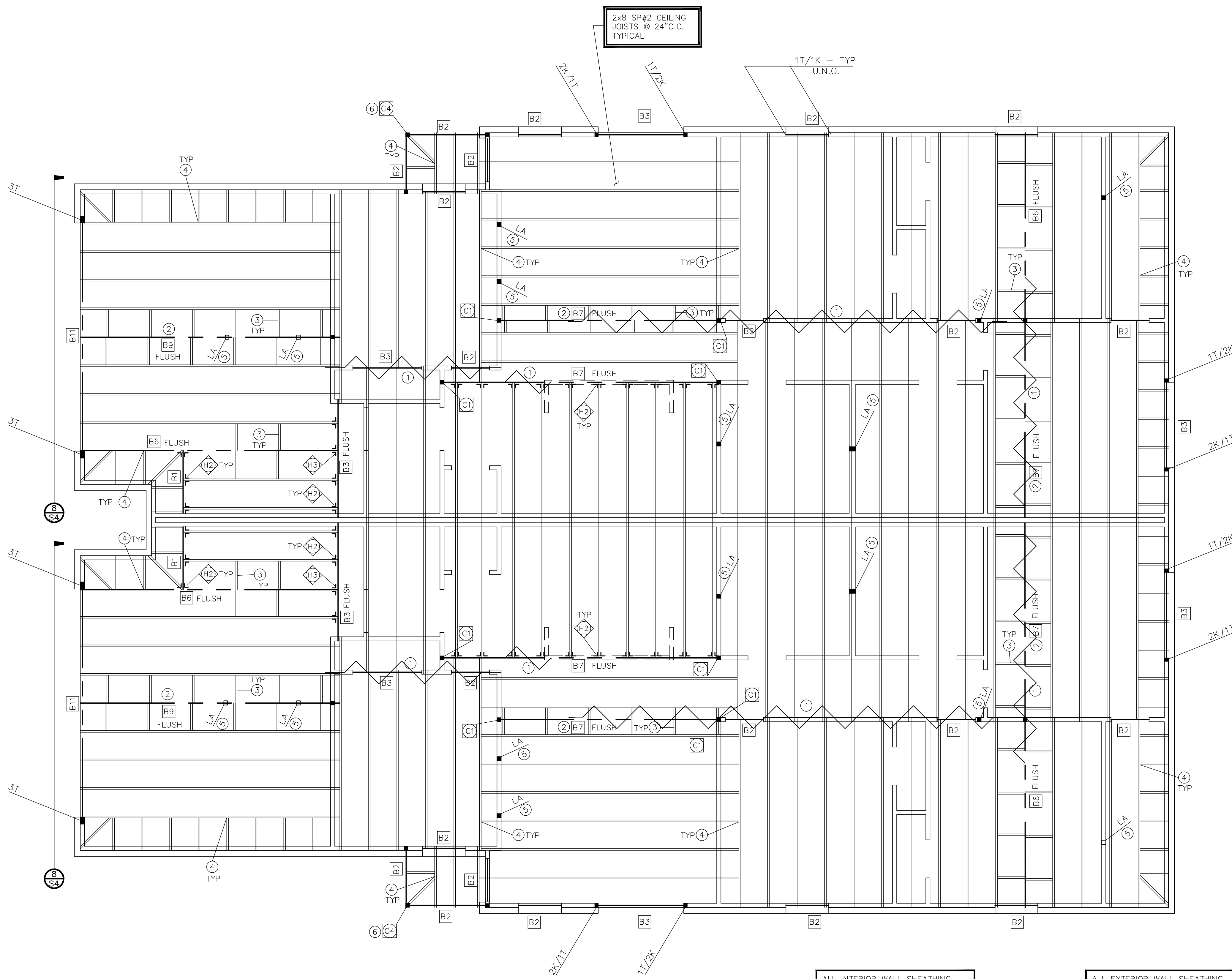
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S1

OF 5

PROJECT No. 17573



- PLAN NOTES**
- 1 RAFTER BRACING CONSISTING OF A FLAT 2x6 SP#2 PLACED AGAINST BOTTOM OF RAFTERS WITH 2x4 STUD KICKERS AT 48" O.C. TO TOP PLATE OF WALL OR CEILING BEAM BELOW
 - 2 SIMPSON H2.5A HOLD DOWNS AT EACH END OF CEILING BEAM / JOIST
 - 3 2x8 BLOCKS EACH SIDE OF BEAM @ 36" O.C.
 - 4 (3) 16d RS NAILS TOE-NAILED
 - 5 (2) SIMPSON H2.5A HOLD DOWNS FROM COLUMN ABOVE TO SUPPORTING BEAM/WALL
 - 6 (2) LCE4 CORNER COLUMN CAP AND (1) ABU44Z COLUMN BASE

BEAM / HEADER SCHEDULE

NOTE: MEMBERS ARE ASSUMED TO BE DROPPED UNLESS NOTED OTHERWISE

B1	(1) 2x8
B2	(2) 2x6
B3	(2) 2x8
B4	(2) 2x10
B5	(1) 1-3/4" x 7-1/4" 2.0E-2800 DF LVL
B6	(2) 1-3/4" x 7-1/4" 2.0E-2800 DF LVL
B7	(3) 1-3/4" x 7-1/4" 2.0E-2800 DF LVL
B8	(1) 1-3/4" x 9-1/2" 2.0E-2800 DF LVL
B9	(2) 1-3/4" x 9-1/2" 2.0E-2800 DF LVL
B10	(3) 1-3/4" x 9-1/2" 2.0E-2800 DF LVL
B11	(2) 1-3/4" x 11-7/8" 2.0E-2800 DF LVL

COLUMN SCHEDULE

NOTE: COLUMN CALLOUTS SHOWN @ ENDS OF WINDOWS / DOORS TO BE INTERPRETED AS TRIMMER/KING STUD

C1	(2) 2x4
C2	(3) 2x4
C3	(4) 2x4
C4	4x4 PRESSURE TREATED POST

HANGER SCHEDULE

NOTE: HANGERS SHALL BE SIMPSON STRONG-TIE HANGERS OR EQUIVALENT

H1	TJC57
H2	LUS28
H3	LUS48

ALL INTERIOR CEILING SHALL BE SHEATHED WITH 5/8" TYPE "X" GYP-BOARD W/ #6x1-1/4" TYPE S OR W/ DRYWALL SCREWS @ 6" O.C. ALONG ALL EDGES AND 12" O.C. IN FIELD

ALL INTERIOR WALL SHEATHING SHALL BE 1/2" GYP-BOARD W/ No. 6 x 1-1/4" TYPE S OR W/ DRYWALL SCREWS @ 6" O.C. ALONG ALL EDGES AND 12" O.C. IN FIELD

ALL EXTERIOR WALL SHEATHING SHALL BE 15/32" PLYWOOD OF 7/16" OSB W/ 8d RS NAILS AT 6" O.C. ALONG SUPPORTED EDGES AND 12" O.C. IN FIELD

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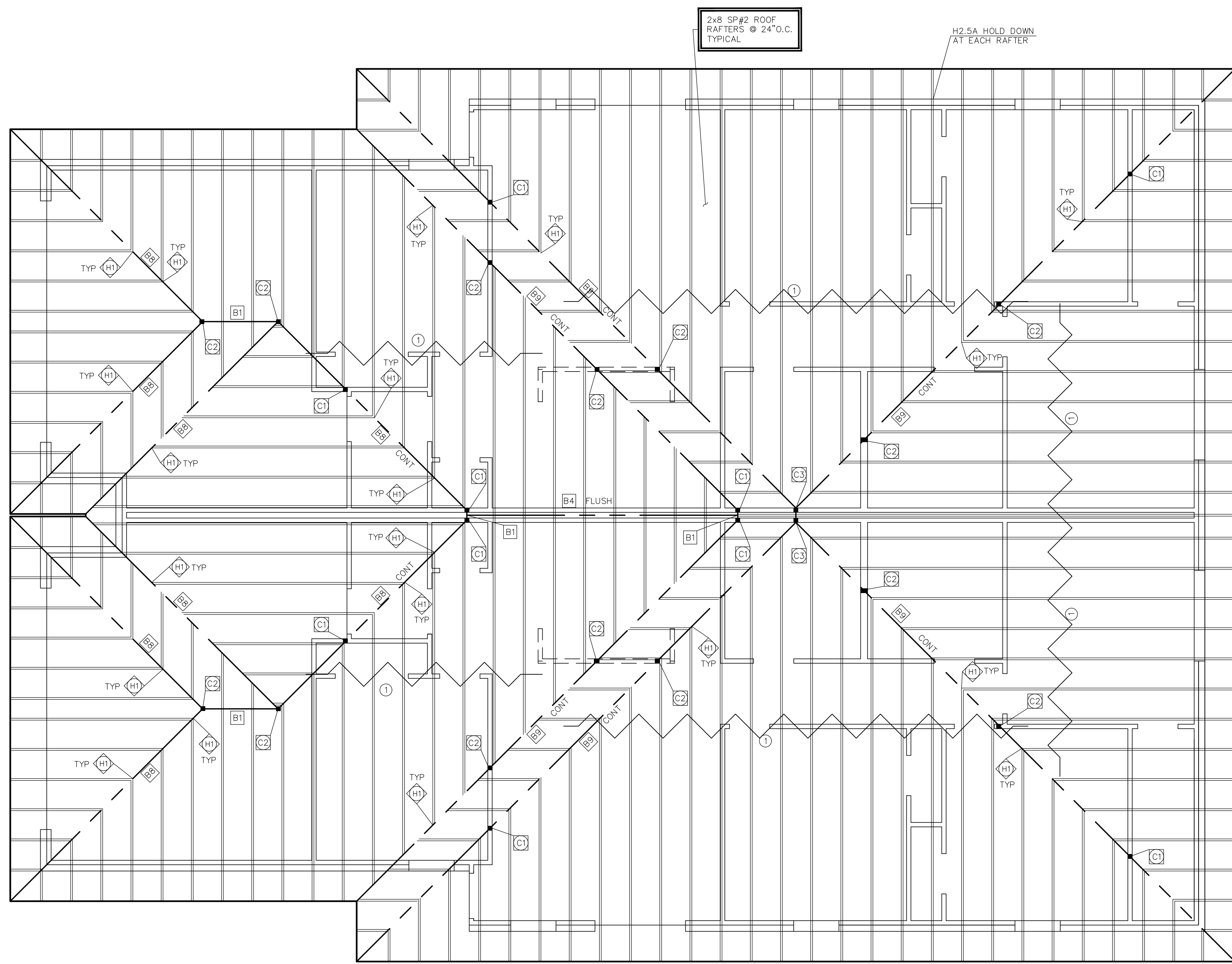
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CEILING FRAMING PLAN
 SCALE: 1/4" = 1'-0"



PLAN NOTES

① RAFTER BRACING CONSISTING OF A FLAT 2x6 SP#2 PLACED AGAINST BOTTOM OF RAFTERS WITH 2x4 STUD KICKERS AT 48" O.C. TO TOP PLATE OF WALL OR CEILING BEAM BELOW

BEAM / HEADER SCHEDULE

NOTE: MEMBERS ARE ASSUMED TO BE DROPPED UNLESS NOTED OTHERWISE

B1	(1) 2x8
B2	(2) 2x6
B3	(2) 2x8
B4	(1) 2x10
B5	(1) 1-3/4" x 7-1/4" 2.0E-2800 DF LVL
B6	(2) 1-3/4" x 7-1/4" 2.0E-2800 DF LVL
B7	(3) 1-3/4" x 7-1/4" 2.0E-2800 DF LVL
B8	(1) 1-3/4" x 9-1/2" 2.0E-2800 DF LVL
B9	(2) 1-3/4" x 9-1/2" 2.0E-2800 DF LVL
B10	(3) 1-3/4" x 9-1/2" 2.0E-2800 DF LVL
B11	(2) 1-3/4" x 11-7/8" 2.0E-2800 DF LVL

COLUMN SCHEDULE

NOTE: COLUMN CALLOUTS SHOWN @ ENDS OF WINDOWS / DOORS TO BE INTERPRETED AS TRIMMER/KING STUD

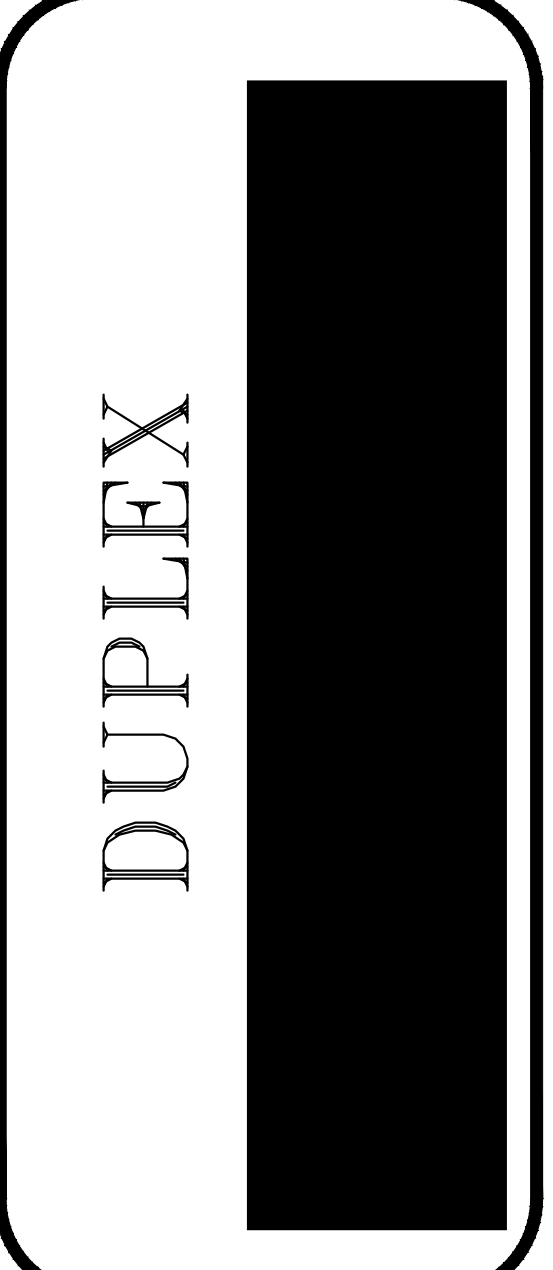
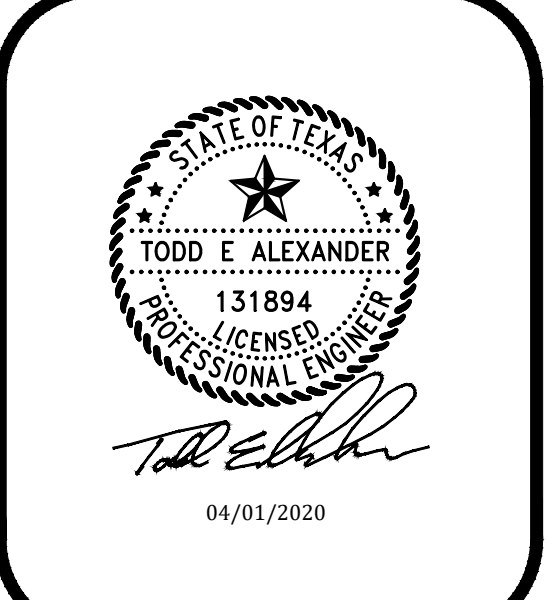
C1	(2) 2x4
C2	(3) 2x4
C3	(4) 2x4
C4	4x4 PRESSURE TREATED POST

HANGER SCHEDULE

NOTE: HANGERS SHALL BE SIMPSON STRONG-TIE HANGERS OR EQUIVALENT

H1	TJC57
H2	LUS28
H3	LUS48

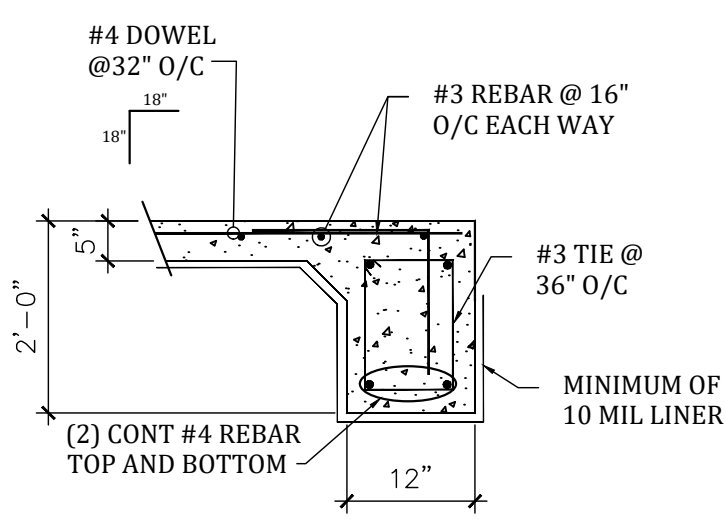
ALL ROOF SHEATHING SHALL BE 15/32" PLYWOOD OF 7/16" O.S.B. W/ 8d RS NAILS AT 6" O.C. ALONG SUPPORTED EDGES AND 12" O.C. IN FIELD



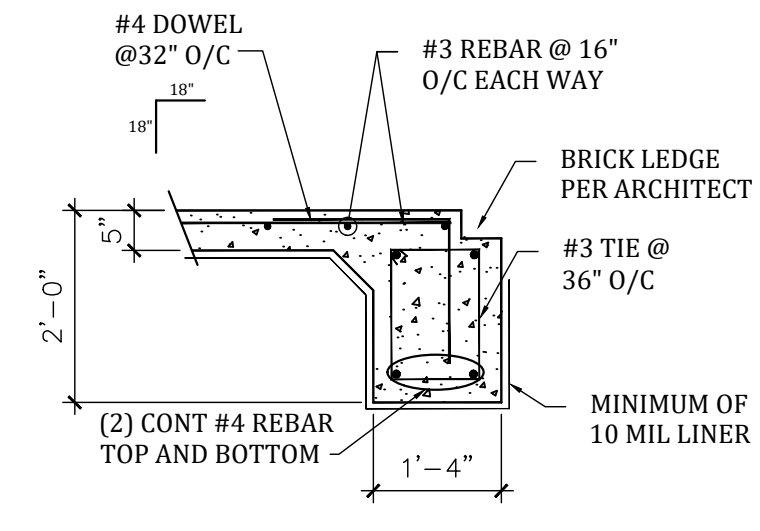
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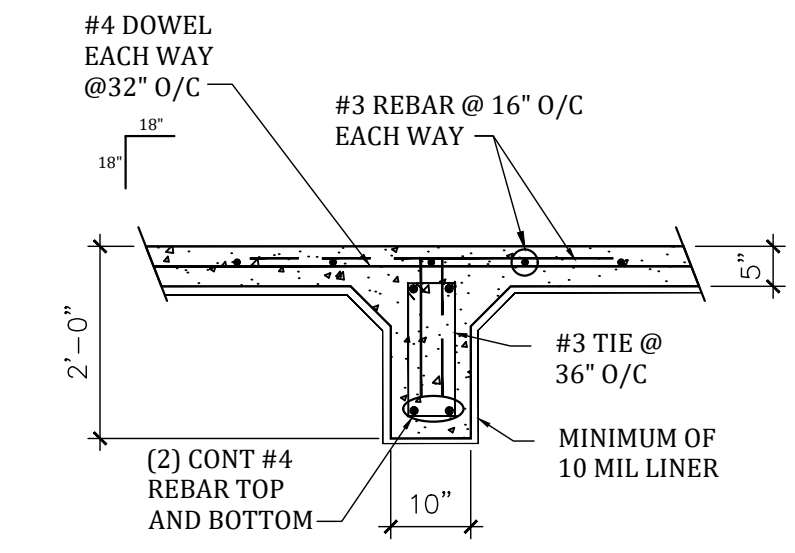
RAFTER FRAMING PLAN
SCALE: 1/4" = 1'-0"



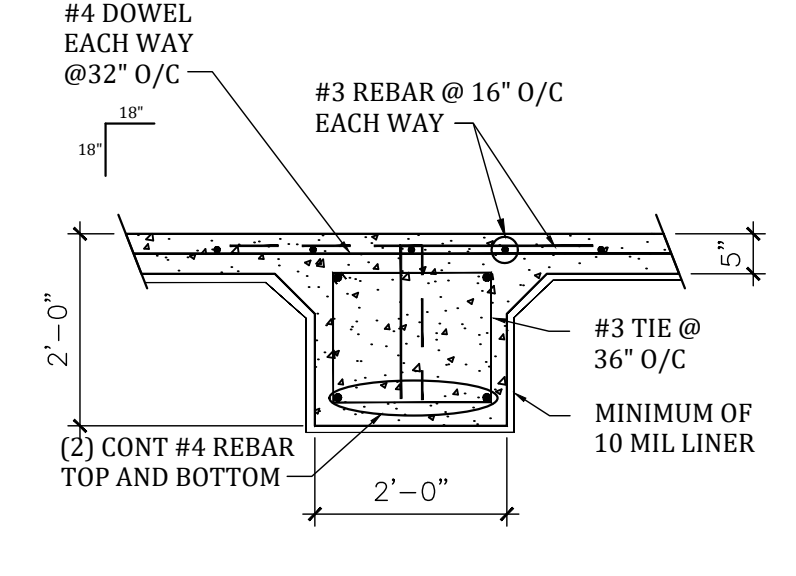
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S4
DETAIL
SCALE: 1/2" = 1'-0"



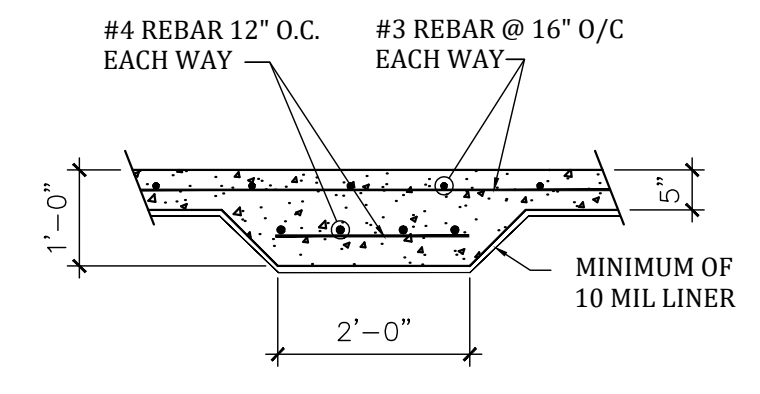
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S4
DETAIL
SCALE: 1/2" = 1'-0"



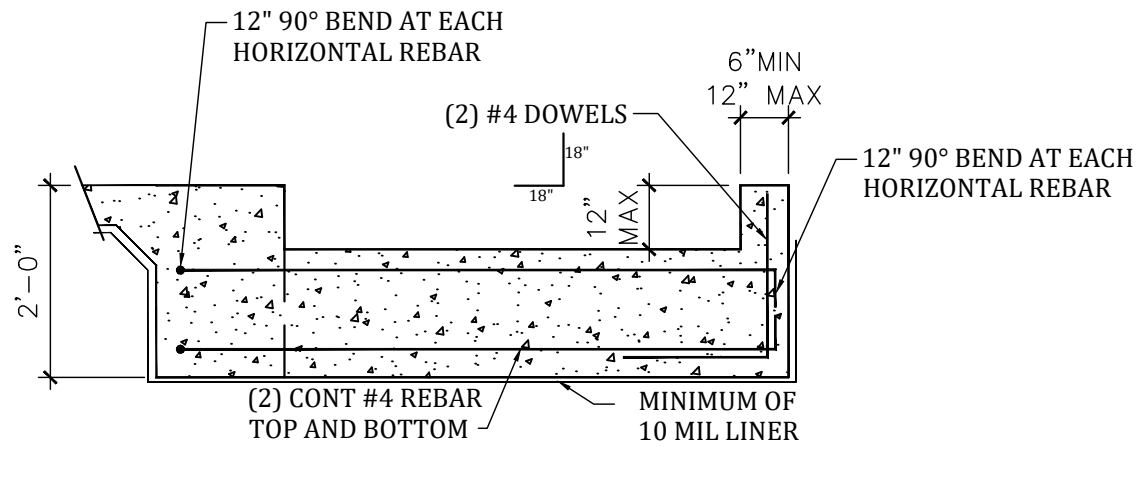
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S4
DETAIL
SCALE: 1/2" = 1'-0"



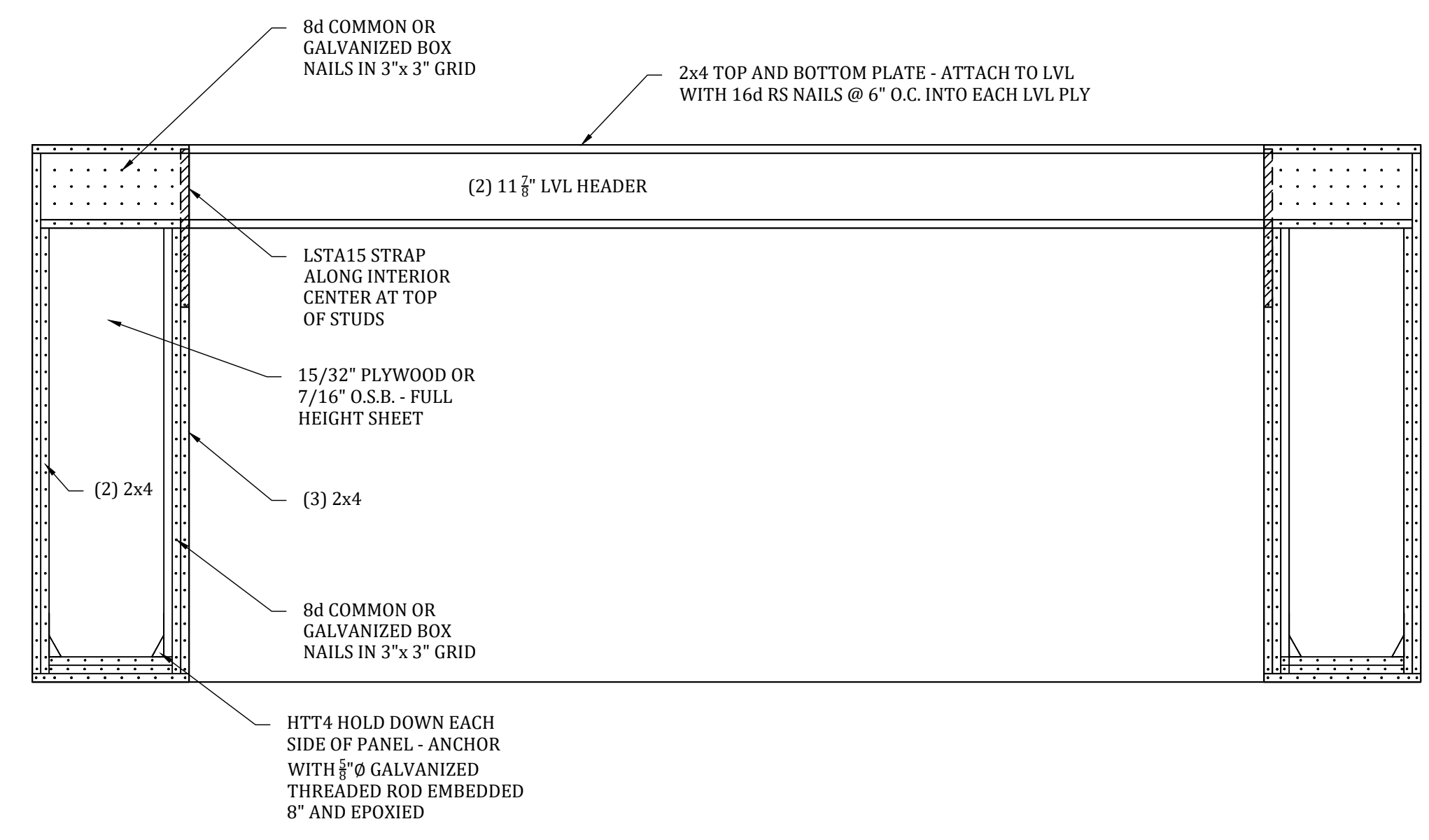
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S4
DETAIL
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5
S4
DETAIL
SCALE: 1/2" = 1'-0"

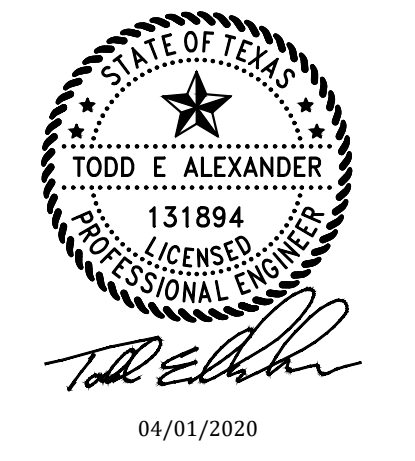


6
S4
DETAIL
SCALE: 1/2" = 1'-0"



7
S4
BRACED GARAGE ENTRY WALL
SCALE: 1/2" = 1'-0"

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