STRUCTURAL REQUIREMENTS

REINFORCED CONCRETE NOTES

1. STRUCTURAL CONCRETE SHALL COMPLY WITH THE MOST RESTRICTIVE REQUIREMENTS ACCORDING TO ACI 318 TABLE 4.3.1 FOR THE EXPOSURE CATEGORIES AND CLASSES LISTED BELOW.

STRUCT. MEMBER	EXPOSURE CATEGORY AND CLASS	
FOOTINGS		
WALLS	F, FREEZING & THAWING:	F0 - NEGLIGIBLE
SLABS	S, SULFATE:	S0 - NEGLIGIBLE
	P, REQUIRING LOW PERMEABILITY:	P0 - NOT APPLICABLE
	C, CORROSION PROT. OF REINF.:	C0 - NOT APPLICABLE

2. MINIMUM CONCRETE MIX REQUIREMENTS:
   CONCRETE COMPRESSIVE STRENGTH, f'c: 2500 PSI.
   MAXIMUM WATER TO CEMENT RATIO: NA
   CEMENTITIOUS MATERIAL: NO TYPE RESTRICTION
3. STRUCTURAL CONCRETE SHALL REACH A MINIMUM 3-DAY COMPRESSIVE STRENGTH OF 1500 PSI AND SHALL REACH THE SPECIFIED COMPRESSIVE STRENGTH IN 28 DAYS. CONCRETE COMPRESSIVE TESTS SHALL CONFORM TO ASTM C 140 "TEST METHOD SAMPLING AND TESTING CONCRETE MASONRY UNITS AND RELATED UNITS". CEMENTITIOUS MATERIAL SHALL CONFORM TO ASTM C 150 "SPECIFICATION FOR PORTLAND CEMENT".
4. THE CONCRETE SHALL BE PROPORTIONED AND PRODUCED TO HAVE A SLUMP OF 4 INCHES OR LESS. A TOLERANCE OF 1 INCH ABOVE THIS AMOUNT SHALL BE PERMITTED FOR INDIVIDUAL BATCHES PROVIDED THE AVERAGE FOR ALL BATCHES DOES NOT EXCEED 4 INCHES. THE SLUMP SHALL BE DETERMINED BY "STANDARD TESTING METHOD FOR SLUMP OF PORTLAND CEMENT CONCRETE" (ASTM C 143). WHERE A SUPERPLASTICIZER ADMIXTURE IS USED, MAXIMUM SLUMP IS ALLOWED TO BE INCREASED 1-1/2" FOR EACH 1% OF SUPERPLASTICIZER UP TO A MAXIMUM INCREASE OF 3".
5. WATER USED IN MIXING CONCRETE SHALL BE CLEAN FROM INJURIOUS AMOUNTS OF OILS, ACIDS, ALKALIS, SALTS, ORGANIC MATERIALS, OR OTHER SUBSTANCES DELETERIOUS TO CONCRETE OR REINFORCEMENT. NONPOTABLE WATER SHALL NOT BE USED.
6. CONCRETE AGGREGATES SHALL CONFORM TO ASTM C 33 "STANDARD SPECIFICATIONS FOR CONCRETE AGGREGATES" OR ASTM C 330 "STANDARD SPECIFICATION FOR LIGHTWEIGHT AGGREGATES". THE NORMAL MAXIMUM SIZE OF COARSE AGGREGATES SHALL NOT BE LARGER THAN: 1/5 THE DISTANCE BETWEEN THE SIDES OF FORMS, 1/3 THE SLAB DEPTH, OR 3/4 THE MINIMUM CLEAR SPACING BETWEEN INDIVIDUAL REINFORCING BARS OR WIRES, BUNDLES OF BARS, INDIVIDUAL TENDONS, OR DUCTS.
7. DEFORMED CONCRETE REINFORCING SHALL BE GRADE 60 REINFORCING STEEL CONFORMING TO ASTM A 615 "STANDARD SPECIFICATION FOR DEFORMED AND PLAIN CARBON-STEEL BARS FOR CONCRETE REINFORCEMENT.
8. BAR MATS FOR CONCRETE REINFORCING SHALL CONFORM TO ASTM A 184 "STANDARD SPECIFICATION FOR WELDED DEFORMED STELL BAR MATS FOR CONCRETE REINFORCEMENT. REINFORCING BARS USED IN BAR MATS SHALL CONFORM TO ASTM A 515 OR ASTM A 706.
9. WELDED PLAIN WIRE FOR CONCRETE REINFORCEMENT SHALL NOT BE SMALLER THAN D4 AND SHALL CONFORM TO ASTM A 496 "STANDARD SPECIFICATION FOR STEEL WIRE, DEFORMED, FOR CONCRETE REINFORCEMENT". WELDED DEFORMED WIRE FOR CONCRETE REINFORCEMENT SHALL CONFORM TO ASTM A 497 "STANDARD SPECIFICATION FOR STEEL WELDED WIRE, DEFORMED, FOR CONCRETE REINFORCEMENT".
10. WELDED WIRE FOR CONCRETE REINFORCEMENT SHALL NOT BE SMALLER THAN D4 AND SHALL CONFORM TO ASTM A 496 "STANDARD SPECIFICATION FOR STEEL WIRE, DEFORMED, FOR CONCRETE REINFORCEMENT".
11. NO ADMIXTURES, OTHER THAN AIR-ENTRAINING ADMIXTURE CONFORMING ASTM C 260 OR SUPERPLASTICIZER ADMIXTURE CONFORMING TO ASTM C 494 MAY BE USED WITHOUT THE WRITTEN APPROVAL FROM THE ENGINEER. CALCIUM CHLORIDE AND CONCRETE ADMIXTURES CONTAINING CHLORIDE SALTS ARE NOT PERMITTED.
12. ALL REINFORCING LAP SPLICES SHALL BE CLASS 'B' SPLICES UNLESS NOTED OTHERWISE. LAP ALL REINFORCING BARS ACCORDING TO THE FOLLOWING LAP SPLICE SCHEDULE. WHERE BEAM REINFORCING IS REQUIRED TO BE SPLICED, SPLICING SHALL ONLY TAKE PLACE IN COMPRESSION REGIONS, I.E. BOTTOM REINFORCING SPLICES ALLOWED OVER SUPPORTS AND TOP REINFORCING SPLICES ALLOWED IN THE BEAM MIDSPANS. WHERE COLUMN VERTICAL REINFORCINGIS REQUIRED TO BE SPLICED, SPLICING WILL BE PERMITTED ONLY AT FLOOR LEVELS OR AREAS OF LATERAL SUPPORT.

REINFORCED CONCRETE LAP SPLICE SCHEDULE

F'c = 2500 PSI AT 28 DAYS		REINFORCMENT LENGTH (INCHES)					
SPLICE CLASS	REINFORCMENT LOCATION	#3 BARS	#4 BARS	#5 BARS	#6 BARS	#7 BARS	#8 BARS
A	TOP*	24	32	39	47	69	78
	BOTTOM	18	24	30	36	53	60
B	TOP*	31	41	51	61	89	102
	BOTTOM	24	32	39	47	69	78

F'c = 3000 PSI AT 28 DAYS		REINFORCMENT LENGTH (INCHES)					
SPLICE CLASS	REINFORCMENT LOCATION	#3 BARS	#4 BARS	#5 BARS	#6 BARS	#7 BARS	#8 BARS
A	TOP*	22	29	36	43	63	72
	BOTTOM	17	22	28	33	43	55
B	TOP*	28	38	47	56	81	93
	BOTTOM	22	29	36	43	63	72

POST INSTALLED ANCHORS

1. POST INSTALLED ANCHORS REQUIRE SPECIAL INSPECTION AS STATED IN THE STATEMENT OF SPECIAL INSPECTIONS SECTION. COPIES OF SPECIAL INSPECTION REPORTS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR APPROVAL.
2. POST INSTALLED ANCHORS SHALL BE AS FOLLOWS:
   A. INSTALLED IN CONCRETE
   - SIMPSON TITEN HD (3/8", 1/2", AND 3/4" DIAMETERS)
   - SIMPSON STRONG-BOLT
   - HILTI KWIK BOLT TZ
   - SIMPSON SET-XP EPOXY
   - HILTI HIT-RE 500-SD EPOXY

   B. INSTALLED IN MASONRY
   - HILTI KWIK BOLT 3
   - SIMPSON TITEN HD
   - SIMPSON WEDGE-ALL
3. INSTALLATION AND MIN. EMBEDMENT SHALL BE IN ACCORDANCE WITH SPECS. OR AS SPECIFIED ON DRAWINGS, WHICH EVER IS GREATER.
4. CONTRACTOR TO FOLLOW MANUFACTURERS REQUIREMENTS FOR INSTALLATION OF EXPANSION ANCHORS INCLUDING DRILL BIT DIAMETER, DRILLED HOLE DEPTH, MINIMUM EDGE DISTANCE AND MINIMUM SPACING REQUIREMENTS.
5. WHERE ANCHOR BOLTS ARE SET IN MASONRY WALLS, FILL BLOCK CELLS WITH CONCRETE FOR BOLTED COURSE AND ONE COURSE BELOW ANCHOR ELEVATION.

FOUNDATION & SLAB ON GRADE NOTES

1. CONTRACTOR SHALL COMPLY WITH RECOMMENDATIONS IN THE PROJECT SOILS REPORT AND ALL ADDENDUMS, LETTERS, AND OTHER ASSOCIATED DOCUMENTS:
   PROJECT SOILS REPORT: DEI No.: 15-0473 (12/14/2015).
2. ALL FOOTINGS SHALL BEAR ON STRUCTURAL FILL WITH AN ALLOWABLE BEARING CAPACITY OF AT LEAST 2000 PSF. STRUCTURAL FILL UNDER FOOTINGS SHALL BE ACCORDING TO THE FOLLOWING:
   CONTINUOUS FOOTINGS..........PER SOILS REPORT
   SPOT FOOTINGS..........PER SOILS REPORT
   SLABS ON GRADE..........PER SOILS REPORT
   UNDER SLAB BASE COURSE..........PER SOILS REPORT
3. STRUCTURAL FILL TO EXTEND BEYOND PERIMETER OF FOOTING A MINIMUM OF 6" PER 12" OF FILL DEPTH.
4. FOOTINGS SHALL BE LOCATED A MINIMUM OF 18" BELOW THE NEAREST ADJACENT FINAL GRADE.
5. CONTRACTOR SHALL ASSURE THAT FOOTINGS ARE PROPERLY DRAINED AND THAT SOIL IS DRY AND THAT BUILDING HORIZONTAL CLEARANCE FROM FOOTINGS TO ASCENDING SLOPES SHALL BE A MINIMUM OF 25 FEET UNLESS APPROVED BY GEOTECHNICAL ENGINEER. FOOTING TRENCHES TO BE CLEARED OF ALL DELETERIOUS MATERIAL BEFORE CONCRETE IS POURED.
6. PROVIDE CRACK CONTROL JOINTS @ 10'-0" O.C. MAX. JOINTS SHOULD BE INSTALLED WITHIN 4 HOURS OF CONCRETE PLACEMENT.
7. CONTRACTOR TO FOLLOW ALL SITE PREPARATION RECOMMENDATIONS FROM SOILS REPORT FOUNDATION STEPS SHALL NOT EXCEED 4 FEET OR ½ THE HORIZONTAL DISTANCE BETWEEN STEPS. HORIZONTAL REBAR SHALL BE 12" O.C. THROUGH STEP DOWNS AND EXTEND 48 INCHES EITHER SIDE OF STEP.
8. ALLOW FOUNDATION 14 DAYS MINIMUM TO CURE PRIOR TO BACKFILL. PROVIDE BRACING AND/ OR FLOOR FRAMING BEFORE BACKFILLING FOUNDATION WALL.
9. CONCRETE SLABS SHALL BE PROTECTED FROM LOSS OF SURFACE MOISTURE FOR NOT LESS THAN 7 DAYS BY USING A CURING COMPOUND CONFORMING TO ASTM C-309 OR BY WET BURLAP OR A PLASTIC MEMBRANE.
10. LAP CONTINUOUS REINFORCING BARS WITH CLASS B LAP SPLICE ACCORDING TO CONCRETE LAP SPLICE SCHEDULE UNDER REINFORCED CONCRETE NOTES. HOOK DISCONTINUOUS ENDS OF ALL TOP BARS WITH ACI STANDARD HOOKS. REINFORCING COVER SHALL BE AS FOLLOWS:
    CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH (EXCEPT SLABS)...3"
    CONCRETE EXPOSED TO EARTH OR WEATHER BUT PLACED IN FORMS.......... 2"
    CONCRETE SLABS.......... IN CENTER OF SLAB
11. WATERPROOFING SHALL BE PLACED BETWEEN SOIL & CONCRETE WHEREVER SOIL IS USED AS A FORM FOR CONCRETE, EXCEPT FOR FOOTINGS.
12. PLUMBING INSTALLED PARALLEL TO FOOTINGS SHALL BE INSTALLED ABOVE A 45 DEGREE LINE EXTENDING FROM THE NEAREST BOTTOM EDGE OF THE FOOTING. INSTALLING PLUMBING LINES UNDERNEATH AND PARALLEL WITH CONTINUOUS FOOTINGS IS PROHIBITED.
13. WHERE PLUMBING RUNS BELOW AND PERPENDICULAR TO CONTINUOUS FOOTINGS, A PIPE SLEEVE SHALL BE PROVIDED THAT IS TWO PIPE SIZES GREATER THAN THE PIPE PASSING BELOW THE FOOTING. THE MINIMUM PIPE SLEEVE LENGTH SHALL BE THE WIDTH OF THE FOOTING PLUS 2 TIMES THE DEPTH OF THE PLUMBING LINE BELOW THE BOTTOM OF THE FOOTING. SPRAYED ON FOAM MAY BE USED IN LIEU OF A PIPE SLEEVE AND SHALL BE AT LEAST AS LARGE AS THE REQUIRED PIPE SLEEVE SIZE AND LENGTH.
14. INSTALLING PLUMBING UNDERNEATH SPOT FOOTINGS IS PROHIBITED. SPOT FOOTINGS ELEVATIONS SHALL BE LOWERED TO KEEP PLUMBING ABOVE TOP OF SPOT FOOTINGS.
15. VERTICAL PLUMBING PENETRATIONS THROUGH CONTINUOUS FOOTINGS AND SLABS SHALL BE PROVIDED WITH A PIPE SLEEVE TWO PIPE SIZES GREATER THAN THE PIPE PASSING THROUGH THE FOOTING. SPRAYED ON FOAM MAY BE USED IN LIEU OF A PIPE SLEEVE AND SHALL BE AT LEAST AS LARGE AS THE REQUIRED PIPE SLEEVE SIZE.
16. HORIZONTAL PLUMBING PENETRATIONS THROUGH SPOT FOOTINGS ARE PROHIBITED. SPOT FOOTING ELEVATIONS MUST BE LOWERED TO KEEP PLUMBING ABOVE FOOTINGS WHERE POSSIBLE. HORIZONTAL PLUMBING PENETRATIONS IN CONTINUOUS FOOTINGS MUST BE APPROVED BY THE ENGINEER OF RECORD.
17. ANY PIPE THAT PASSES THROUGH A FOUNDATION WALL SHALL BE PROVIDED WITH A RELIEVING ARCH, OR A PIPE SLEEVE PIPE SHALL BE BUILT INTO THE FOUNDATION WALL. THE SLEEVE SHALL BE TWO PIPE SIZES GREATER THAN THE PIPE PASSING THROUGH THE WALL. SPRAYED ON FOAM MAY BE MAY BE USED IN LIEU OF A PIPE SLEEVE SO LONG AS THE FOAM IS AT LEAST AS LARGE AS THE REQUIRED PIPE SLEEVE SIZE.
18. ALL REINFORCING SHOWN TO BE HOOKED SHALL HAVE STANDARD ACI HOOKS.
19. PLACE CRACK CONTROL JOINTS BY SAW CUTTING @ 1/4" WIDE x 1 1/4" DEEP WHERE SHOWN. CUTTING TO BE PERFORMED WITHIN 24 HOURS OF CONCRETE PLACEMENT.
20. CONCRETE SLABS SHALL BE PLACED AND FINISHED WITHIN A TOLERANCE OF 1/8 INCH IN EVERY 10 FEET, AS DETERMINED BY PLACING A 10 FOOT STRAIGHT EDGE ON THE SLAB IN ANY DIRECTION. ANY DEVIATION FROM THIS WHICH REQUIRES ADDITIONAL CUTTING OF OTHER BUILDING COMPONENTS SHALL BE THE RESPONSIBILITY OF THE CONCRETE CONTRACTOR.
21. COMPACT CLEAN INTERIOR SAND FILL HAVING LESS THAN 10% FINES TO 95% OF MODIFIED PROCTOR MAXIMUM DRY DENSITY, ASTM D 1557 AT OPTIMUM MOISTURE CONTENT. SOIL COMPACTION SHALL BE FIELD CONTROLLED BY QUALIFIED LABORATORY OR SOILS ENGINEER, APPROVED BY STRUCTURAL ENGINEER.
22. CAST IN ANCHOR BOLTS AND POST INSTALLED THREADED RODS EPOXIED INTO CONCRETE SHALL BE ASTM F1554 GR. 36.
23. ALL LANDSCAPING AROUND THE HOME MUST BE GRADED AWAY FROM THE HOME AT A MINIMUM GRADE OF 5% FOR THE FIRST 10 FEET OR AS FAR AS POSSIBLE TO MINIMIZE WATER INFILTRATION INTO THE SUBGRADE.

DEFERRED SUBMITTALS

1. FOR ALL DEFERRED SUBMITTAL ITEMS, CONTRACTOR SHALL SUBMIT CONSTRUCTION DETAILS AND DRAWINGS PRIOR TO CONSTRUCTION WITH CALCULATIONS STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS BEING CONSTRUCTED.
2. ALL DEFERRED SUBMITTAL ITEMS SHALL BE APPROVED BY THE ENGINEER OF RECORD AND SUBMITTED TO THE CITY BUILDING DEPARTMENT PRIOR TO CONSTRUCTION.
3. THE FOLLOWING ITEMS SHALL BE CONSIDERED AS DEFERRED SUBMITTAL ITEMS:
   A. ENGINEERED WOOD ROOF TRUSSES
   B. ENGINEERED WOOD FLOOR TRUSSES

STATEMENT OF SPECIAL INSPECTIONS

1. ALL SPECIAL INSPECTION REPORTS, TESTS, QUALIFICATIONS, AND CERTIFICATES OF COMPLIANCE SHALL BE APPROVED BY THE ENGINEER OF RECORD AND SUBMITTED TO THE CITY BUILDING DEPARTMENT PRIOR TO CONSTRUCTION.
2. CONTRACTORS MUST SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY PER IBC 2018 SECTION 1704.4. CONTRACTOR IS REQUIRED TO FOLLOW QUALITY ASSURANCE PLAN PER IBC 2018 SECTION 1704.3.1.
3. IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO SEE THAT THE TEST AND INSPECTIONS ARE PERFORMED. JOB SITE VISITS BY THE ENGINEER OF RECORD DO NOT CONSTITUTE AND ARE NOT A SUBSTITUTE FOR SPECIAL INSPECTIONS.
4. CONTRACTOR SHALL PROVIDE NAME OF APPROVED SPECIAL INSPECTION AGENCY AND QUALIFICATION OF INDIVIDUAL TO BUILDING OFFICIAL FOR APPROVAL PRIOR TO CONSTRUCTION.
5. THE FOLLOWING SPECIAL INSPECTIONS ARE REQUIRED BY THE CURRENT EDITION OF THE IBC:

FABRICATORS — IBC 1704.2
- VERIFY FABRICATOR MAINTAINS DETAILED FABRICATION AND QUALITY CONTROL PROCEDURES.
- VERIFY THE FABRICATORS ADHERENCE TO FABRICATION AND QUALITY CONTROL PROCEDURES, THE APPROVED CONSTRUCTION DOCUMENTS, AND THE REFERENCED STANDARDS.

STEEL CONSTRUCTION — IBC 1704.3 & TABLE 1704.3
- MATERIAL VERIFICATION OF HIGH STRENGTH BOLTS, NUTS, AND WASHERS
- MANUFACTURERS CERTIFICATE OF COMPLIANCE
- HIGH STRENGTH BOLTED CONNECTIONS
- PERIODIC INSPECTION IS REQUIRED FOR PUDDLE WELDS AND FILLET WELD LESS THAN 1/4"
- CONTINUOUS INSPECTION REQUIRED FOR ALL WELDS GREATER THAN 1/4"
- STEEL FRAME JOINT DETAILS

CONCRETE CONSTRUCTION — IBC 1704.4 & TABLE 1704.4
SPOT FOOTINGS AND ANCHOR BOLTS FOR MOMENT FRAME.
- REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS, AND PLACEMENT
- REINFORCEING STEEL WELDING IN ACCORDANCE WITH TABLE1704.3, ITEM 5B
- BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE WHERE ALLOWABLE LOADS HAVE BEEN INCREASED
- VERIFYING USE OF REQUIRED DESIGN MIX
- AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE
- CONCRETE AND SHOTCRETE PLACEMENT
- MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES
- FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THECONCRETE MEMBER BEING FORMED

EXPANSION, ADHESIVE, AND POST INSTALLED ANCHORS — PER ICC EVALUATION REPORT

ANCHOR	APPROVED APPLICATION	ICC ES EVALUATION #
- SIMPSON STRONG-BOLT	CONCRETE	#ESR-1771
- SIMPSON TITEN HD (3/8", 1/2" & 3/4" DIA.)	CONCRETE	#ESR-2713
- SIMPSON SET-XP EPOXY	CONCRETE	#ESR-2508
- HILTI KWIK BOLT TZ	CONCRETE	#ESR-1917
- HILTI HIT-RE 500-SD EPOXY	CONCRETE	#ESR-2322
- HILTI KWIK BOLT 3	MASONRY	#ESR-1358
- SIMPSON TITEN HD	MASONRY	#ESR-1056
- SIMPSON WEDGE-ALL	MASONRY	#ESR-1396

SOILS — IBC 1704.7 AND TABLE 1704.7
- SITE PREPARATION - PERIODIC
- SOIL COMPACTION - CONTINUOUS
- STRUCTURAL FILL SUITABILITY AND PLACEMENT - PERIODIC DURING PLACEMENT
- OBSERVATION OF SUB GRADES - PERIODIC
- ANY ADDITIONAL REQUIREMENTS STATED IN SOILS REPORT

SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE — IBC 1707

STRUCTURAL STEEL
1. CONTINUOUS SPECIAL INSPECTION:
   -REQUIRED FOR ALL SINGLE PASS FILLET WELDS EXCEEDING 5/16" IN SIZE.

STRUCTURAL WOOD
1. PERIODIC SPECIAL INSPECTION:
   -REQUIRED FOR ALL NAILING, BOLTING, ANCHORING AND OTHER FASTENING OF SHEAR WALLS, DIAPHRAGMS, DRAG STRUTS, AND HOLD-DOWNS WHERE SHEATHING FASTENER SPACING IS 4" O.C. OR CLOSER (SW-3 AND GREATER).

ARCHITECTURAL COMPONENTS
1. PERIODIC SPECIAL INSPECTION:
   -REQUIRED DURING ERECTION AND FASTENING OF EXTERIOR CLADDING AND VENEER WEIGHING 5 PSF OR MORE.

REQUIRED STRUCTURAL TESTING FOR SEISMIC RESISTANCE — IBC 1708
1. SEISMIC QUALIFICATIONS CERTIFICATES OF COMPLIANCE CONFORMING TO CHAPTER 13 OF ASCE 7-05 ARE REQUIRED FOR THE FOLLOWING ITEMS AND THEIR ANCHORAGE SHALL BE SUBMITTED TO THE ENGINEER OF RECORD AND THE BUILDING OFFICIAL FOR REVIEW:
   - ALL ROOF TOP AND FLOOR MOUNTED MECH. AND ELEC. UNITS AND ANCHORAGE
   - FIRE SPRINKLER SYSTEM COMPONENTS AND ANCHORAGE
   - ELEVATOR COMPONENTS AND ANCHORAGE
   - ALL OTHER MECH. AND ELEC. COMPONENTS REQUIRING SEISMIC RESTRAINT AND THEIR ANCHORAGE
2. MATERIAL CERTIFICATES OF COMPLIANCE ARE REQUIRED FOR THE FOLLOWING ITEMS AND SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW:
   MASONRY - LEVEL 1 QUALITY ASSURANCE
   -CERTIFICATES OF COMPLIANCE USED IN MASONRY CONSTRUCTION
   -VERIFICATION OF F'm PRIOR TO CONSTRUCTION

   REINFORCING AND PRESTRESSING STEEL
   -CERTIFIED MILL TESTS SHALL BE PROVIDED FOR EACH SHIPMENT OF REINFORCEMENT USED TO REINFORCE MASONRY AND CONCRETE SHEAR WALLS. ALL REINFORCEMENT SHALL MEET THE TESTING REQUIREMENTS OF ACI 318.

STRUCTURAL CRITERIA

ANALYSIS ITEMS

GRAVITY LOADS (IBC 2018 TABLE 1607.1 & ASCE 7-10 TABLE C3-1)

ROOF LIVE:	20 PSF
ROOF DEAD:	15 PSF
FLOOR LIVE:	125 PSF (LIGHT STORAGE)
FLOOR DEAD:	15 PSF

DEFLECTION CRITERIA

ROOF MEMBERS	
Δ(LIVE)	L/360
Δ(TOTAL LOAD)	L/240
FLOOR MEMBERS	
Δ(LIVE)	L/360
Δ(TOTAL LOAD)	L/240
WALLS	
Δ(LIVE)	L/240

SEISMIC DESIGN PARAMETERS (ASCE 7-10 12.8)

SEISMIC DESIGN CATEGORY:	C
SITE CLASS:	C
RISK CATAGORY:	II
IMPORTANCE FACTOR, Ic:	1.00
RESPONSE MOD. FACTOR, R:	6.5, 3.5
OVER STRENGTH FACTOR, Ω:	3.0, 3.0
DEFLECTION AMPLIFICATION FACTOR, Cd:	4.0, 3.0
BASIC SIESMIC-FORCE-RESISTING SYSTEM(S):	LIGHT FRAMED WALLS SHEATHED W/ WOOD STRUCTURAL PANELS AND ORDINARY STEEL
DESIGN BASE SHEAR, V:	MOMENT FRAMES
SEISMIC DESIGN COEFFICIENT, Cs:	CsW
ANALYSIS PROCEDURE USED:	0.0599, 0.111
S_S:	EQUIVALENT LATERAL FORCE
S_1:	0.487
S_{D1}:	0.161
S_{DS}:	0.176
	0.390

WIND DESIGN PARAMETERS (ASCE 7-10 6.4)

ULTIMATE WIND SPEED:	115 MPH
EXPOSURE:	'C'
HT. AND EXPOSURE COEFF., λ :	1.38
RISK CATEGORY:	II

COMPONENTS & CLADDING DESIGN WIND LOADS TO BE PER ASCE 7-10

GENERAL NOTES

1. CONTRACTOR TO VERIFY ALL DIMENSIONS, SPANS, AND CONDITIONS WITH ARCHITECTURAL DRAWINGS. IF ANY OMISSIONS, MISTAKES, OR DISCREPANCIES ARE FOUND TO EXIST WITHIN THE CONSTRUCTION DRAWINGS, THE ENGINEER SHALL BE PROMPTLY NOTIFIED SO THAT HE MAY HAVE THE OPPORTUNITY TO TAKE WHATEVER STEPS NECESSARY TO RESOLVE THEM. FAILURE TO PROMPTLY NOTIFY THE ENGINEER OF SUCH CONDITIONS SHALL ABSOLVE THE ENGINEER FROM ANY RESPONSIBILITY FOR THE CONSEQUENCES OF SUCH A FAILURE.
2. IF DISCREPANCIES ARE FOUND, THE MORE STRINGENT SPECIFICATION SHALL BE FOLLOWED. CONTRACTOR RESPONSIBLE FOR ADEQUATE BRACING OF STRUCTURAL MEMBERS, WALLS, AND NON-STRUCTURAL ITEMS DURING CONSTRUCTION.
3. THE ENGINEER AND HIS CONSULTANTS DO NOT WARRENT OR GUARANTEE THE ACCURACY AND COMPLETENESS OF THE WORK HEREIN BEYOND A REASONABLE DILIGENCE. IF ANY OMISSIONS, MISTAKES, OR DISCREPANCIES ARE FOUND TO EXIST WITHIN THE WORK PRODUCT, THE ENGINEER SHALL BE PROMPTLY NOTIFIED SO THAT HE MAY HAVE THE OPPORTUNITY TO TAKE WHATEVER STEPS NECESSARY TO RESOLVE THEM. FAILURE TO PROMPTLY NOTIFY THE ENGINEER OF SUCH CONDITIONS SHALL ABSOLVE THE ENGINEER FROM ANY RESPONSIBILITY FOR THE CONSEQUENCES OF SUCH A FAILURE.
4. MANY PORTIONS OF THESE DRAWINGS, NOTES AND SPECIFICATIONS ARE THE RESULT OF DEMANDS BY VARIOUS APPROVING AGENCIES THAT MUST BE PERFORMED AS PART OF THIS WORK. ANY ACTIONS TAKEN WITHOUT THE KNOWLEDGE AND CONSENT OF THE ENGINEER SHALL BECOME THE RESPONSIBILITY NOT OF THE ENGINEER, BUT OF THE PARTIES RESPONSIBLE FOR MAKING THE CHANGE AND TAKING ACTION TO DO SO. ACTIONS TAKEN WITHOUT THE KNOWLEDGE AND CONSENT OF THE ENGINEER OR THE CONTRADICTION TO THE ENGINEER'S WORK PRODUCT, THE INTENT, AND/OR RECOMMENDATIONS, SHALL BECOME THE RESPONSIBILITY NOT OF THE ENGINEER, BUT OF THE PARTIES RESPONSIBLE FOR TAKING SUCH ACTION. THE ENGINEER SHOULD BE CONTACTED IN MATTERS OF ANY AND ALL CHANGES TO THE DRAWINGS AND SPECIFICATIONS HEREIN WITHOUT EXCEPTION.
5. NON STRUCTURAL FRAMING REQUIREMENTS ARE NOT SPECIFIED ON STRUCTURAL DRAWINGS. SEE ARCHITECTURAL DRAWINGS FOR ANY ADDITIONAL FRAMING REQUIRED.
6. CONTRACTOR SHALL ASSURE THAT ALL PRODUCTS AND HARDWARE ARE USED PER MANUFACTURER'S RECOMMENDATIONS.
7. CONTRACTOR SHALL PROVIDE NAME OF AN APPROVED FABRICATOR OR ICC EVALUATION REPORT FOR STEEL ROOF JOISTS, STEEL FLOOR JOISTS, AND STEEL DECKING TO BUILDING OFFICIAL FOR APPROVAL PRIOR TO CONSTRUCTION.
8. CONTRACTOR SHALL PROVIDE NAME OF AN APPROVED FABRICATOR FOR ALL FABRICATED STRUCTURAL COMPONENTS TO BUILDING OFFICIAL FOR APPROVAL PRIOR TO CONSTRUCTION.
9. CONTRACTOR SHALL PROVIDE NAME OF AN APPROVED SPECIAL INSPECTION AGENCY AND QUALIFICATION OF INDIVIDUAL TO BUILDING OFFICIAL FOR APPROVAL PRIOR TO CONSTRUCTION.
10. ALL LANDSCAPING AROUND THE HOME MUST BE GRADED AWAY FROM THE HOME AT A MINIMUM GRADE OF 5% FOR THE FIRST 10 FEET OR AS FAR AS POSSIBLE TO MINIMIZE WATER INFILTRATION INTO THE SUBGRADE.

ENGINEERED WOOD TRUSSES

1. ENGINEERED WOOD TRUSSES SHALL BE DESIGNED FOR THE FOLLWING MINIMUM LOADS:
   ROOF TRUSS TOP CHORD: 20 PSF DL (INCL. TRUSS WT), LL PER STRUCTURAL CRITERIA.
   ROOF TRUSS BOTTOM CHORD: 5 PSF DL, 10 PSF LL (NOT CONCURRENT W/ TOP CHORD LL)
   FLOOR TRUSS TOP CHORD: 10 PSF DL (INCL. TRUSS WEIGHT), LL PER STRUCTURAL CRITERIA.
   FLOOR TRUSS BOTTOM CHORD: 5 PSD DL, 10 PSF LL (NOT CONCURRENT W/ TOP CHORD LL)
   WIND AND SEISMIC LOADS SHALL CONFORM TO ASCE 7-10.
2. TRUSSES MARKED WITH "E.N." ARE DRAG TRUSSES AND ARE REQUIRED TO BE DESIGNED FOR A DRAG LOAD OF 2000 LBS UNLESS NOTED OTHERWISE.
3. TRUSS MAXIMUM DEFLECTION SHALL NOT EXCEED THE DEFLECTION RATIOS LISTED UNDER THE DESIGN CRITERIA SECTION FOR THE CORRESPONDING FRAMING LEVEL. IN ADDITION, DEAD LOAD DEFLECTION SHALL NOT EXCEED 1" UNLESS APPROVED IN WRITING BY THE ENGINEER OF RECORD.
4. LUMBER GRADE FOR ENGINEERED WOOD TRUSSES SHALL BE DF #2 OR BETTER.
5. TRUSS TOP CHORDS SHALL BE 2X4 MINIMUM. TRUSS WEBS SHALL BE 2X4 MINIMUM.
6. MAXIMUM LOAD DURATION FACTOR SHALL NOT BE GREATER THAN 1.25.
   MAXIMUM PLATE BEARING STRESS Fc' = 625 PSI. IF BEARING STRESS ON THE TOP PLATE EXCEEDS 625 PSI, THE TRUSS DESIGN SHALL INCLUDE ALL OF THE REQUIRED BEARING IMPROVEMENTS.
7. DESIGN AND CONSTRUCTION OF ALL ENGINEERED WOOD TRUSSES SHALL CONFORM TO THE CURRENT EDITION OF THE IBC. THE DESIGN, MANUFACTURE AND QUALITY ASSURANCE SHALL CONFORM TO TPI 1.
8. ALL TRUSSES SHALL BE DESIGNED FOR ALL LOADING FROM MECHANICAL, ELECTRICAL, FIRE SPRINKLER, HVAC AND OTHER SUPERIMPOSED LOADS. TRUSS DESIGNER SHALL CORRELATE LOAD LOCATIONS WITH MECHANICAL, PLUMBING AND ELECTRICAL PLANS.
9. ALL TRUSS SHOP DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION. SHOP DRAWINGS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THIS PROJECT IS BEING CONSTRUCTED.
10. TRUSS ERECTION SHALL BE ACCORDING TO TRUSS MANUFACTURERS RECOMMENDATIONS.
11. TRUSS DESIGNER SHALL DESIGN ENTIRE TRUSS SYSTEM, INCULDING ALL TEMPORARY BRACING, PERMANENT LATERAL BRACING, AND TRUSS TO TRUSS CONNECTIONS THAT ARE REQUIRED. TRUSS MEMBERS AND COMPONENTS SHALL NOT BE CUT, NOTCHED, DRILLED, SPLICED OR OTHERWISE ALTERED IN ANY WAY WITHOUT WRITTEN CONCURRENCE AND APPROVAL OF THE TRUSS MANUFACTURER AND THE ENGINEER OF RECORD.
12. FRAMED AND SHEATHED BLOCKING MAY BE REPLACED W/ ENGINEERING TRUSS BLOCKS. ENG. TRUSS BLOCKS AT ROOF DIAPHAGM LEVEL SHALL BE DESIGNED FOR 230 PLF. ENGINEERING TRUSS BLOCKS AT FLOOR LEVEL SHALL BE DESINED FOR 285 PLF.

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PROJECT NOTES & SPECIFICATIONS

STATE OF NEVADA
6008
LLOYD REED
POPE
EXP: 12-31-19
CIVIL
PROFESSIONAL ENGINEER
11/20/19

DATE: 6/11/19
DRAWN BY: WCB
PROJECT NO: 1150374
SHEET S0.10

STRUCTURAL REQUIREMENTS

WOOD FRAMING NOTES

1. ALL DIMENSIONAL LUMBER SHALL BE DF#2 GRADE OR BETTER. SAWN LUMBER SHALL BE IDENTIFIED BY THE GRADE MARK OF A LUMBER GRADING OR INSPECTION AGENCY THAT HAS BEEN APPROVED BY AN ACCREDITATION BODY THAT COMPLIES WITH DOC PS 20 OR EQUIVALENT.
2. ALL SHEATHING TO BE APA RATED SHEATHING EXPOSURE 1 AND SHALL CONFORM TO THE REQUIREMENTS FOR THEIR TYPE IN DOC PS 1 OR PS 2. ALL EXTERIOR WALL ARE REQUIRED TO BE SHEATHED. ALL SHEATHING SHALL HAVE SPAN RATINGS ACCORDING TO THE FOLLOWING:
   - FLOOR W/ 12" JOIST/TRUSS SPACING..........24/12
   - FLOOR W/ 16" JOIST/TRUSS SPACING..........32/16
   - FLOOR W/ 24" JOIST/TRUSS SPACING..........48/24
   - ROOF W/ 12" JOIST/TRUSS SPACING..........12/0
   - ROOF W/ 24" JOIST/TRUSS SPACING..........24/0
   - ROOF W/ 48" JOIST/TRUSS SPACING..........48/24
   - WALL W/ 12" STUD SPACING..........16/0
   - WALL W/ 16" STUD SPACING..........24/0
3. ALL LUMBER, TIMBER, PLYWOOD, REQUIRED TO BE TREATED SHALL CONFORM TO THE REQUIREMENTS OF THE APPLICABLE AWPA STANDARD U1 AND M4 FOR THE SPECIES, PRODUCT, PRESERVATIVE AND END USE. PRESERVATIVE TREATED WOOD SHALL BEAR THE QUALITY MARK OF AN INSPECTION AGENCY THAT MAINTAINS CONTINUING SUPERVISION, TESTING, AND INSPECTION OVER THE QUALITY OF THE PRESERVATIVE TREATED WOOD.
4. THE FOLLOWING SHALL BE PRESERVATIVE TREATED LUMBER OR REDWOOD:
   - A. ALL WALL SILL PLATES ON A CONCRETE SLAB THAT ARE IN DIRECT CONTACT WITH EARTH.
   - B. WOOD FRAMING MEMBERS THAT REST ON EXTERIOR FOUNDATION WALLS AND ARE LESS THAN 8" FROM EXPOSED EARTH.
   - C. WOOD FRAMING MEMBERS AND FURRING STRIPS ATTACHED DIRECTLY TO THE INTERIOR OF EXTERIOR MASONRY OR CONCRETE WALLS BELOW GRADE.
   - D. WOOD JOISTS THAT ARE CLOSER THAN 18", OR WOOD GIRDERS THAT ARE CLOSER THAN 12" FROM EXPOSED EARTH IN CRAWL SPACES OR UNEXCAVATED AREA'S LOCATED WITHIN THE PERIMETER OF THE BUILDING FOUNDATION.
5. PREFABRICATED I-JOISTS SHALL CONFORM TO ASTM D 5055.
6. LAMINATED VENEER LUMBER (LVL) SHALL BE 1-3/4" WIDE 1.9E WITH AN ALLOWABLE BENDING STRESS OF 2,600 PSI AND AN ALLOWABLE SHEAR STRESS OF 285 PSI. LAMINATED STRAND LUMBER (LSL) SHALL BE 1-3/4" WIDE 1.55E WITH AN ALLOWABLE BENDING STRESS OF 2,325 PSI AND AN ALLOWABLE SHEAR STRESS OF 310 PSI.
7. STRUCTURAL GLUE LAMINATED TIMBER SHALL BE 24F-V4 UNLESS NOTED OTHERWISE AND MANUFACTURED AND IDENTIFIED AS REQUIRED IN AITC A190.1 AND ASTM D 3737.
8. PROVIDE SOLID BLOCKING FOR ALL VERTICAL LOAD PATHS TO FOUNDATION.
9. PROVIDE 1 TRIMMER ON EACH SIDE OF ALL OPENINGS LESS THAN 4'-0" WIDE. PROVIDE 2 TRIMMERS MIN. ON EACH SIDE OF ALL OPENINGS 4'-0" WIDE AND GREATER. A MINIMUM 2 STUDS SHALL BE PROVIDED AT ALL VERTICAL EDGES OF SHEAR WALLS, GIRDER TRUSSES, AND BEAMS UNLESS NOTED OTHERWISE.
10. OPENINGS SHALL BE FRAMED WITH THE MINIMUM KING STUDS UNLESS NOTED OTHERWISE:
    - OPENINGS UP TO 2'-0": (1) 2X4 OR (1) 2X6 KING STUD AT EACH SIDE OF OPENING
    - OPENINGS UP TO 6'-0": (2) 2X4 OR (1) 2X6 KING STUDS AT EACH SIDE OF OPENING
    - OPENINGS UP TO 10'-0": (3) 2X4 OR (2) 2X6 KING STUDS AT EACH SIDE OF OPENING
    - OPENINGS UP TO 14'-0": (4) 2X4 OR (2) 2X6 KING STUDS AT EACH SIDE OF OPENING
    - OPENINGS UP TO 18'-0": (5) 2X4 OR (2) 2X6 KING STUDS AT EACH SIDE OF OPENING
11. BUILT UP BEAMS SHALL BE FASTENED ACCORDING TO THE FOLLOWING:
    (2) & (3) PLY MEMBERS WITH PLIES UP TO 1-3/4" THICK:
    - 12" DEEP BEAMS: (2) ROWS OF 16d COMMON NAILS AT 12" O.C.
    - 14" AND DEEPER: (3) ROWS OF 16d COMMON NAILSAT 12" O.C.
    - *NAILED CONNECTIONS REQUIRE AN ADDITIONAL ROW OF NAILS WHEN NAIL SIZE IS SMALLER THAN SPECIFIED ABOVE.

    (4) PLY MEMBERS WITH PLIES UP TO 1-3/4" THICK AND (2) PLY MEMBERS WITH PLIES 3-1/2" THICK:
    - 12" DEEP BEAMS: (2) STAGGERED ROWS OF 1/2"Ø A307 BOLTS W/ WASHERS @ 16" O.C.
    - 14" AND DEEPER: (3) STAGGERED ROWS OF 1/2"Ø A307 BOLTS W/ WASHERS @ 16" O.C.
12. STUDS OF BUILT UP COLUMNS SHALL BE NAILED TO ADJACENT STUDS W/ (2) ROWS OF 16d COMMON NAILS @ 12" O.C. UNLESS NOTED OTHERWISE.
13. SIMPSON H1 IS REQUIRED AT EACH END EACH ROOF TRUSS UNLESS NOTED OTHERWISE. NAIL TJI'S TO TOP PLATE W/ (1) 8d BOX NAIL EACH SIDE. DRIVE NAILS AT AN ANGLE AT LEAST 1-1/2" FROM END OF EACH FLOOR JOIST.
14. PROVIDE 1 1/8" WIDE TIMBER STRAND OR EQUIVALENT FOR ALL RIM JOISTS.
15. BEARING, SHEAR AND EXTERIOR WALL STUDS SHALL BE CAPPED WITH DOUBLE TOP PLATES INSTALLED TO PROVIDE OVERLAPPING AT CORNERS AND AT INTERSECTIONS WITH OTHER PARTITIONS. END JOINTS IN DOUBLE TOP PLATES SHALL BE OFFSET AT LEAST 48".
16. DOUBLE TOP PLATES SHALL BE NAILED WITH 16d NAILS @ 16" O.C. A MINIMUM OF 8-16d NAILS SHALL BE PLACED EACH SIDE OF TOP PLATE SPLICES UNLESS NOTED OTHERWISE.
17. NON BEARING INTERIOR PARTITION WALLS SHALL BE FRAMED A MINIMUM OF 1/2" SHORTER THAN BEARING WALLS TO ACCOMODATE TRUSS DEFLECTION AND PRESERVE THE INTENDED LOAD PATH.
18. PROVIDE BLOCKING BETWEEN ENGINEERED TRUSSES AND JOISTS AS SPECIFIED BY THE MANUFACTURER.
19. JOISTS WITH CANTILEVERS LARGER THAN 1'-6" AND WITHOUT A DIRECT APPLIED CEILING SHALL HAVE CONTINUOUS BLOCKING INSTALLED AT THE 1/3 POINTS OF THE BACK SPAN UNLESS NOTED OTHERWISE.
20. FLOOR JOISTS SPANNING 16'-0" OR MORE WITHOUT A DIRECT APPLIED CEILING SHALL HAVE ROWS OF CONTINUOUS BLOCKING INSTALLED AT A MAXIMUM SPACING OF 8'-0" O.C.
21. PARTITION WALLS THAT ARE PARALLEL WITH FLOOR JOISTS SHALL BE SUPPORTED WITH DOUBLE JOISTS OR CROSS BLOCKING BETWEEN THE TWO CLOSEST ADJACENT JOISTS UNLESS NOTED OTHERWISE ON THE CONSTRUCTION DRAWINGS.
22. ALL METAL HARDWARE TO BE SIMPSON STRONG TIE OR EQUAL AND INSTALLED ACCORDING TO MANUFACTURERS REQUIREMENTS.
23. HOLES FOR BOLTS SHALL BE DRILLED AT THE SAME NOMINAL DIAMETER OF THE BOLT +1/16".
24. HOLES FOR LAG SCREWS AND WOOD SCREWS SHALL BE DRILLED THE SAME NOMINAL LENGTH AND DIAMETER OF THE SHANK. LAG SCREWS AND WOOD SCREWS SHALL NOT BE DRIVEN INTO PLACE.
25. NAIL SHANK DIAMETER AND LENGTHS SHALL CONFORM TO THE FOLLOWING:
    - 8d.......... 0.131"ØX2.50"
    - 10d.......... 0.148"ØX3.00"
    - 12d.......... 0.148"ØX3.25"
    - 16d.......... 0.162"ØX3.50"
    - 20d.......... 0.192"ØX4.00"
    - 30d.......... 0.207"ØX4.50"
    - 40d.......... 0.225"ØX5.00"
26. STAPLES MAY BE SUBSTITUTED FOR NAILS TO FASTEN STRUCTURAL SHEATHING TO SUPPORTING MEMBERS PROVIDED THAT THE STAPLES HAVE A CROWN WIDTH OF 7/16" AND SHALL BE INSTALLED WITH THEIR CROWNS PARALLEL TO THE LONG DIMENSION OF THE FRAMING MEMBERS. SUBSTITUTE STAPLES FOR NAILS ACCORDING TO THE FOLLOWING:
    - 8d COMMON NAILS..........14 GAUGE 1 1/2" STAPLES
    - 10d COMMON NAILS..........13 GAUGE 11/2" STAPLES
    - 8d COMMON NAILS AT 6" O.C..........16 GAUGE 16 GAUGE STAPLES AT 4" O.C.
    - 8d COMMON NAILS AT 4" O.C..........16 GAUGE STAPLES AT 2 1/2" O.C.
    - 8d COMMON NAILS AT 12" O.C..........16 GAUGE STAPLES AT 7 3/4" O.C.
27. FASTENERS INSTALLED INTO PRESERVATIVE TREATED WOOD AND FIRE RETARDANT TREATED WOOD SHALL BE OF HOT DIPPED ZINC-COATED GALVANIZED STEEL, STAINLESS STEEL, SILICON BRONZE OR COPPER. THE COATING WEIGHTS FOR ZINC-COATEDFASTENERS SHALL BE IN ACCORDANCE WITH ASTM A153. CAST IN AND POST INSTALLED BOLTS SHALL BE PERMITTED TO BE OF MECHANICALLY DEPOSITED ZINC-COATED STEEL WITH COATING WEIGHTS IN ACCORDANCE WITH ASTM B695, CLASS 55 MINIMUM. WASHERS AND OTHER HARDWARE IN CONTACT WITH FASTENERS SHALL BE OF THE SAME ANTI-CORROSIVE TREATMENT AS THE FASTENERS THEY ARE IN CONTACT WITH.
28. SHEATHING FASTENERS SHALL BE DRIVEN FLUSH BUT SHALL NOT FRACTURE THE SHEATHING SURFACE.
29. SILL PLATES OF EXTERIOR WALLS AND INTERIOR BEARING WALLS MUST BE ANCHORED TO THE FOUNDATION WITH A MINIMUM OF 1/2"X10" ANCHOR BOLTS @ 72" O.C. THERE SHALL BE A MINIMUM OF TWO BOLTS PER PIECE WITH ONE BOLT LOCATED NOT MORE THAN 12" OR LESS THAN 4" FROM EACH END OF EACH PIECE. A PROPERLY SIZED NUT AND STANDARD CUT WASHER SHALL BE TIGHTENED ON EACH BOLT TO THE PLATE.
30. SHEAR WALL SILL PLATE ANCHOR BOLTS SHALL INCLUDE 0.229"X3"X3" STEEL PLATE WASHERS BETWEEN THE SILL PLATE AND NUT. 0.229"X3"X3" STEEL PLATE WASHERS ARE PERMITTED TO HAVE A DIAGONALLY SLOTTED HOLE WITH A WIDTH OF UP TO 3/16" LARGER THAN THE BOLT DIAMETER AND A SLOT LENGTH NOT TO EXCEED 1-3/4" IF A STANDARD CUT WASHER IS PLACED BETWEEN THE PLATE WASHER AND THE NUT. PLATE WASHERS SHALL EXTEND TO WITHIN 1/2" OF THE EDGE OF THE BOTTOM PLATE ON THE SHEATHED SIDE OF THE SHEAR WALL. SHEAR WALL SILL PLATES SHALL BE ANCHORED TO THE FOUNDATION WITH A MINIMUM OF 2 ANCHOR BOLTS PER PIECE WITH ONE BOLT LOCATED NOT MORE THAN 12" OR LESS THAN 4" FROM EACH END OF EACH PIECE.
31. ANCHOR BOLTS FOR INTERIOR SHEAR WALLS SHALL BE SIMPSON STRONG-BOLTS, SIMPSON TITEN HD, OR HILTI KWIK BOLT TZ ANCHORS OF THE SAME DIAMETER AND SPACING AS SPECIFIED IN THE ANCHOR BOLT SCHEDULE W/ 4-1/2" MINIMUM EMBEDMENT. INTERIOR SHEAR WALL ANCHOR BOLTS MAY ALSO BE EPOXIED INTO CONCRETE WITH SIMPSON SET-XP OR HILTI HIT-RE 500-SD EPOXY AND A MINIMUM 4-1/2" EMBEDMENT.

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PROJECT NOTES & SPECIFICATIONS

STATE OF NEVADA #6008 LLOYD REID POPE EXP: 12-31-19 CIVIL PROFESSIONAL ENGINEER
11/20/19

DATE: 6/11/19
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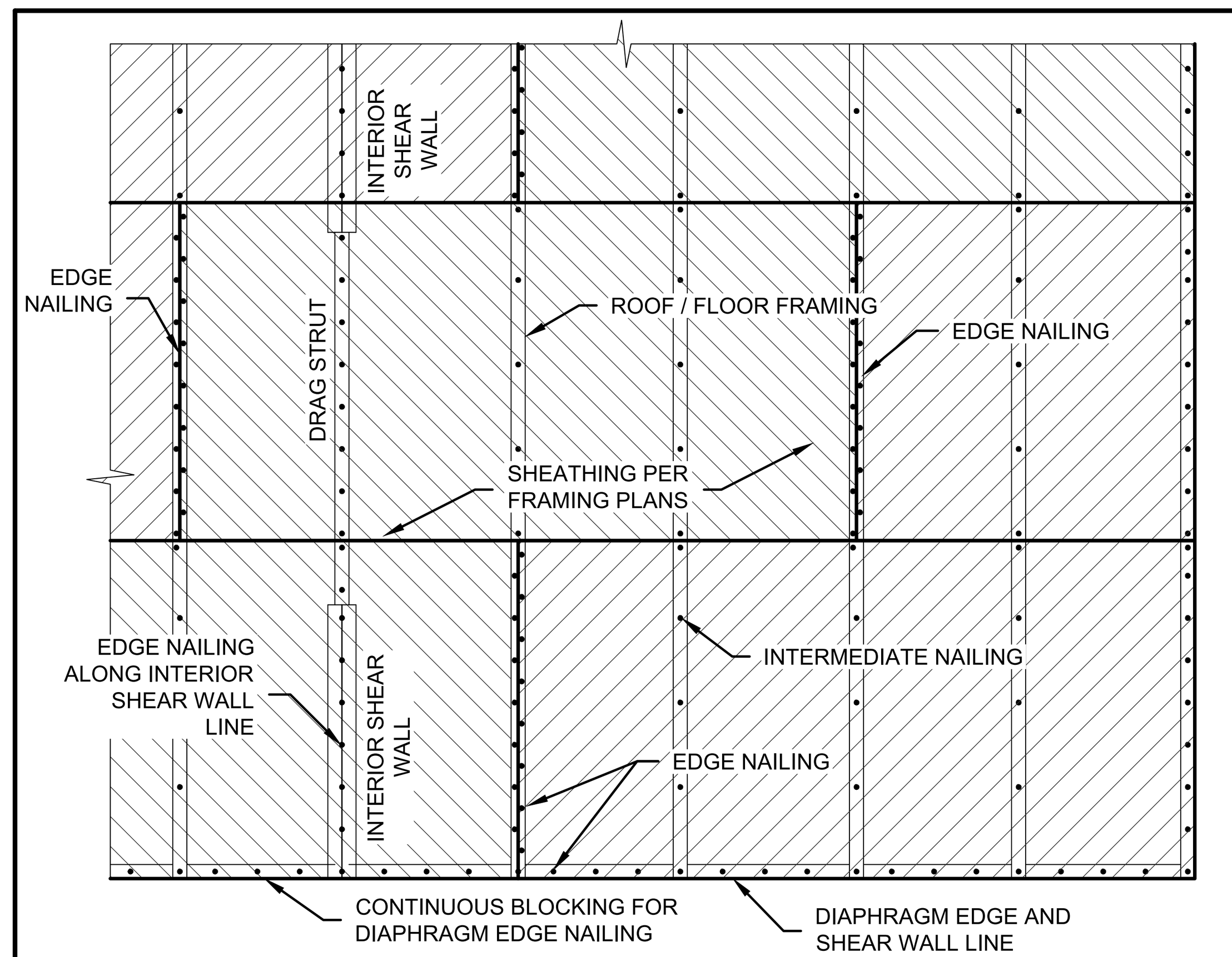
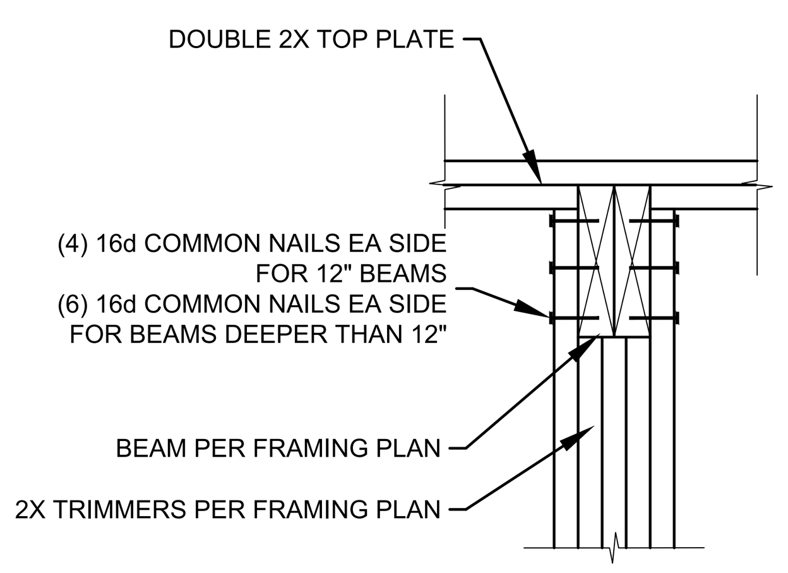
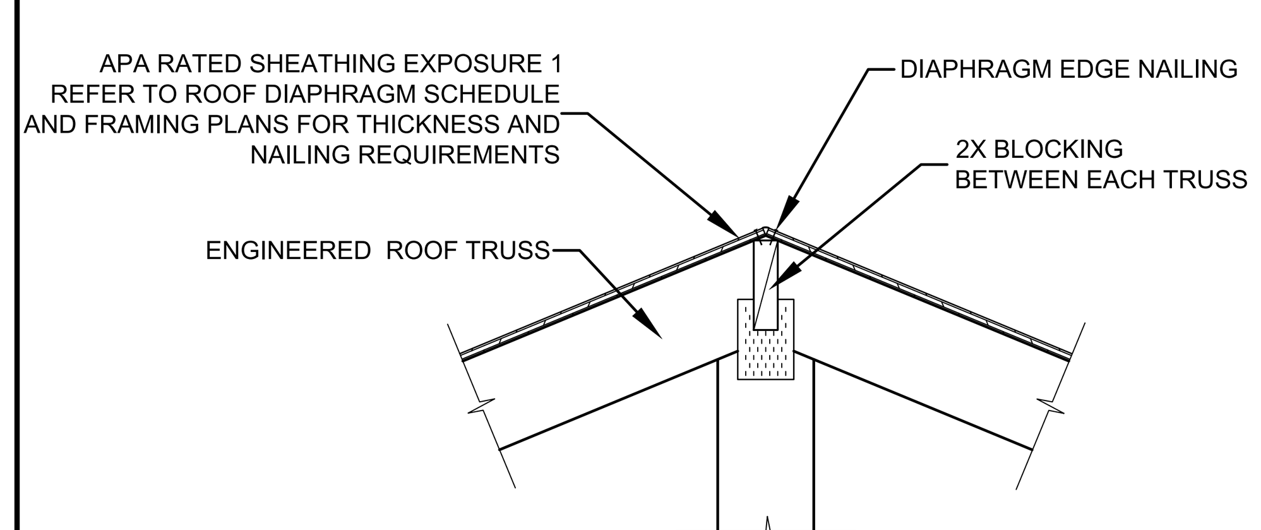
PROJECT NO: 1150374
SHEET S0.11



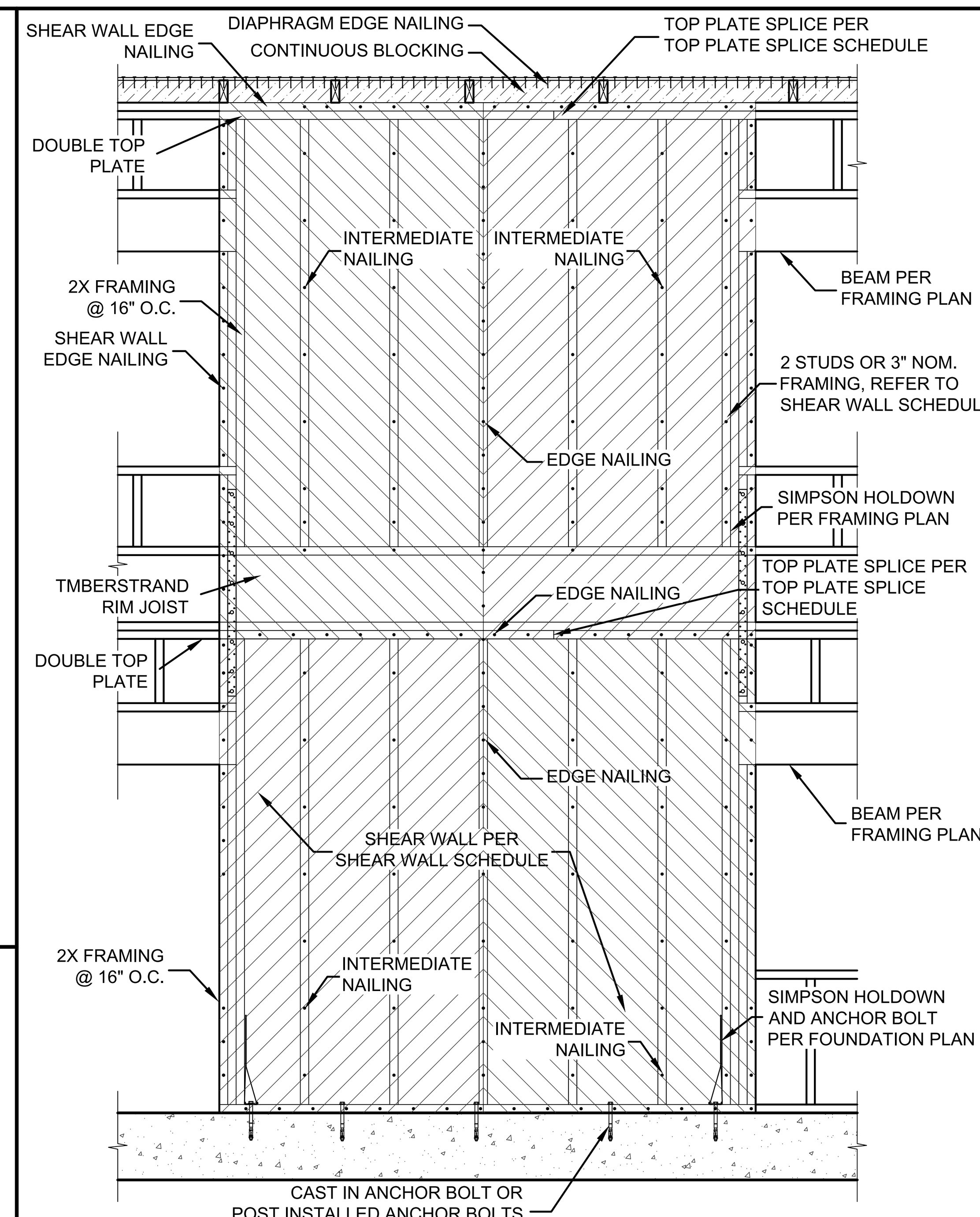
12 UNBLOCKED WOOD DIAPHRAGM
S1.10 SCALE:NTS



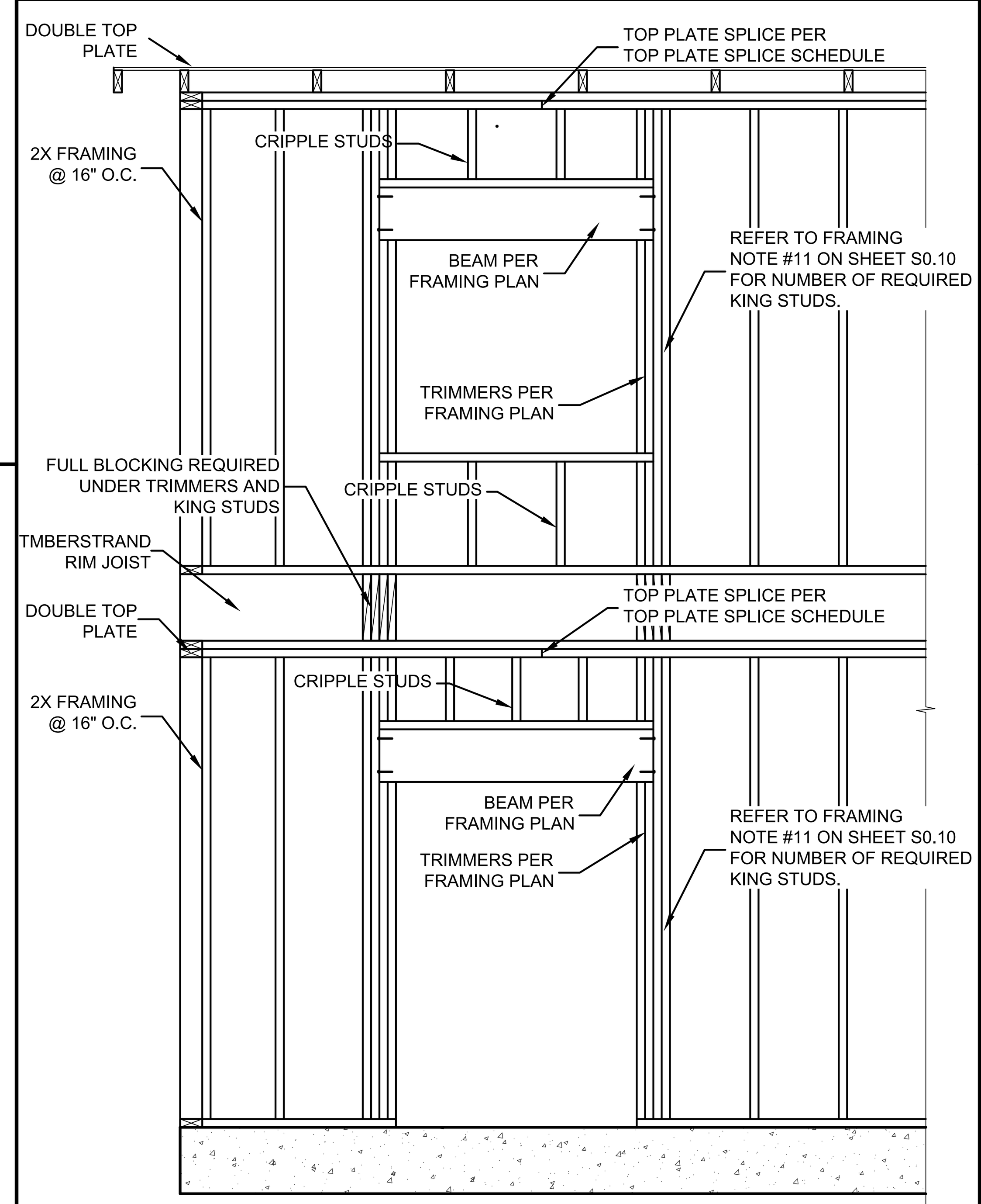
11 BEAM POCKET
S1.10 SCALE:NTS



10 RIDGE BLOCKING W/O VENTING
S1.10 SCALE:NTS



9 2 STORY SHEAR WALL
S1.10 SCALE: NTS



7 OPENING IN MULTIPLE STORY WOOD STUD FRAMED WALL
S1.10 SCALE:NTS

CONNECTION OF TOP LOADED AND SIDE LOADED MULITPLE PLY BEAMS

1¾" WIDTH PIECES:

(2) PLIES:
UP TO 12" DEEP BEAMS: 3 ROWS 10d COMMON NAILS @ 12" O.C. ONE SIDE
14" AND DEEPER BEAMS: 3 ROWS OF 10d COMMON NAILS @ 6" O.C. ONE SIDE

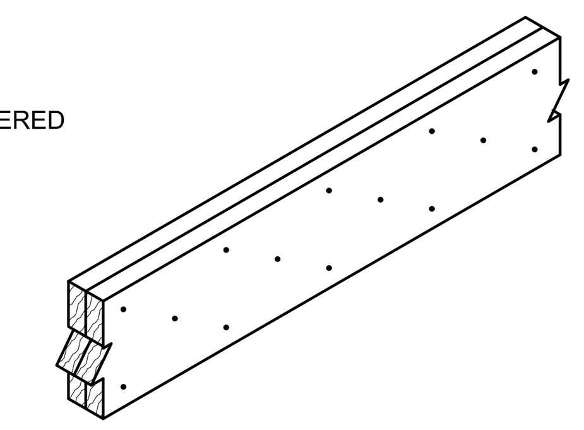
(3) PLIES:
UP TO 12" DEEP BEAMS: 3 ROWS 10d COMMON NAILS @ 12" O.C. EA. SIDE STAGGERED
14" AND DEEPER BEAMS: 3 ROWS OF 10d COMMON NAILS @ 6" O.C. EA. SIDE STAGGERED

(4) PLIES:
UP TO 12" DEEP BEAMS: 2 ROWS OF 1/2"Ø A307 BOLTS W/ WASHERS @ 16" O.C.
OR (2) ROWS OF SIMPSON SDS 1/4"X6" SCREWS @ 16" O.C.
14" AND DEEPER BEAMS: 3 ROWS OF 1/2Ø A307 BOLTS W/ WASHERS @ 16" O.C.
OR (3) ROWS OF SIMPSON SDS 1/4"X6" SCREWS @ 16" O.C.

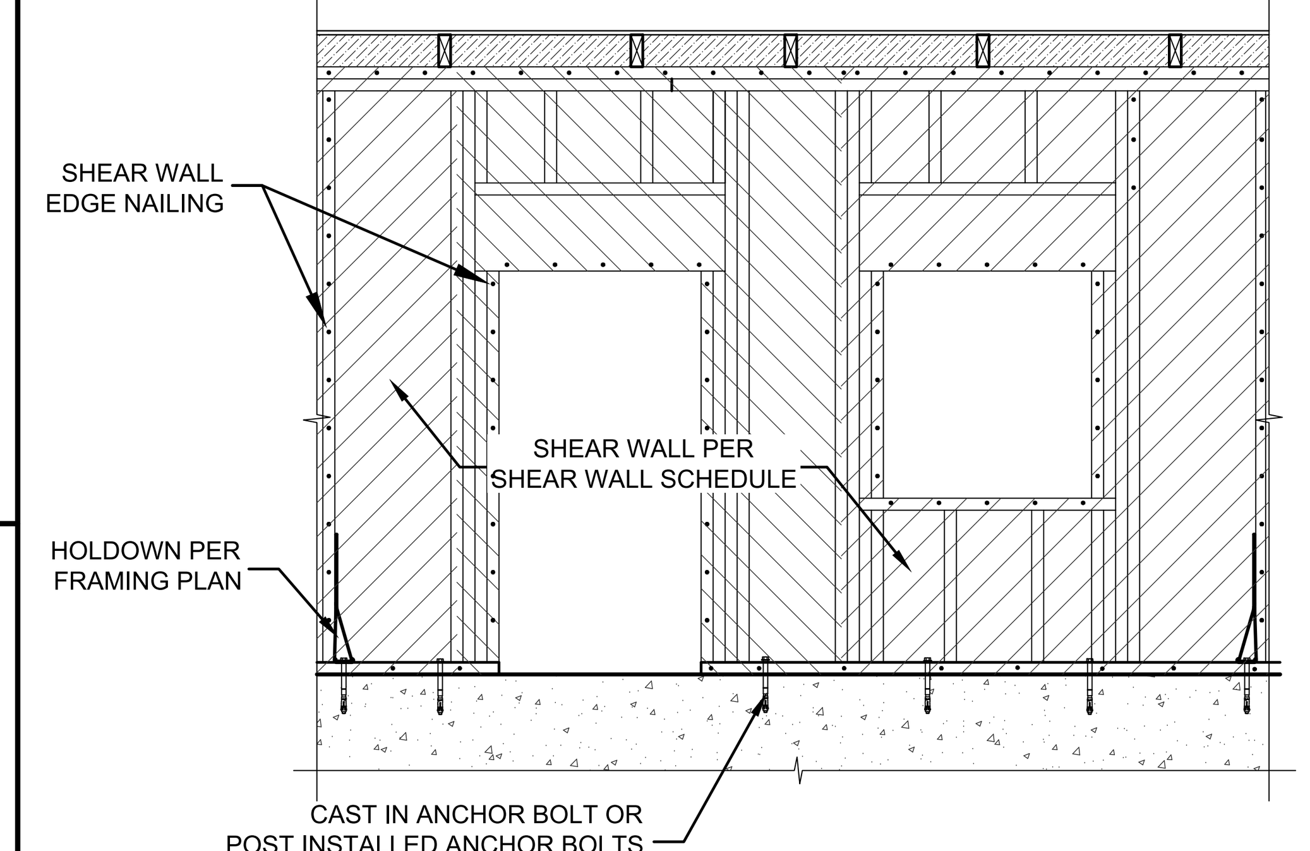
NOTE: NAILED CONNECTIONS REQUIRE AN ADDITIONAL ROW OF NAILS WHEN NAIL SIZE IS SMALLER THAN SPECIFIED ABOVE

3½" WIDTH PIECES:

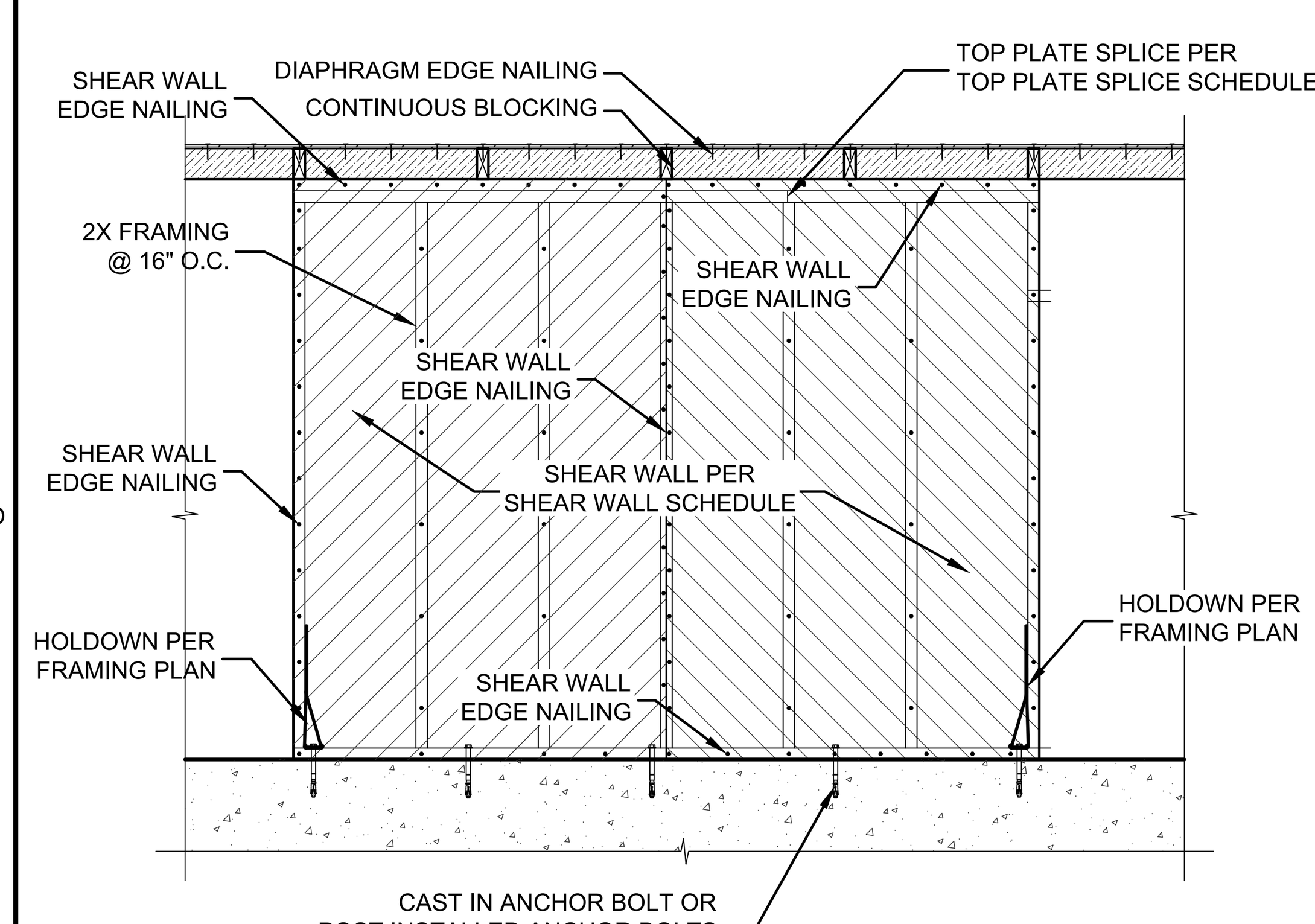
MINIMUM OF 2 ROWS ½" BOLTS AT 24" O.C. STAGGERED



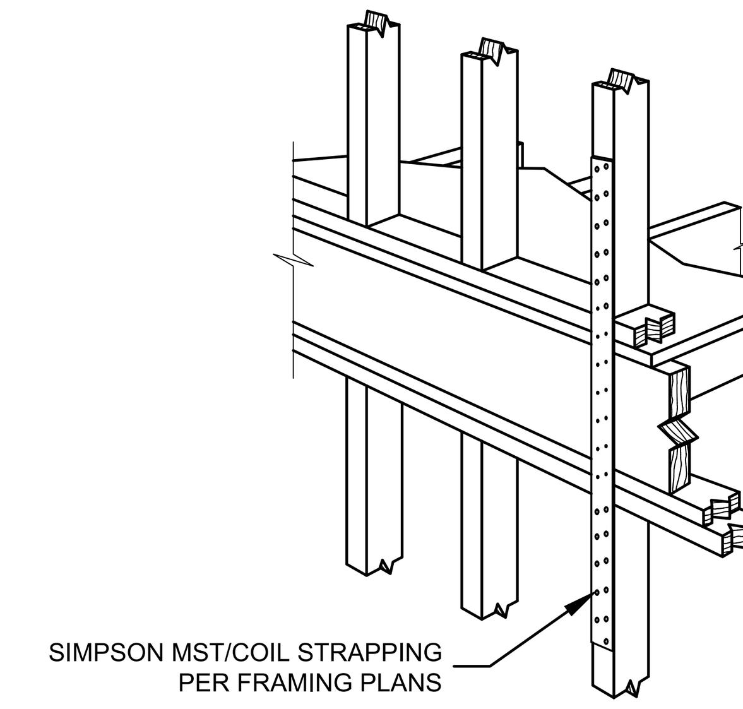
6 MULTIPLE PLY BEAM FASTENING
S1.10 SCALE:NTS



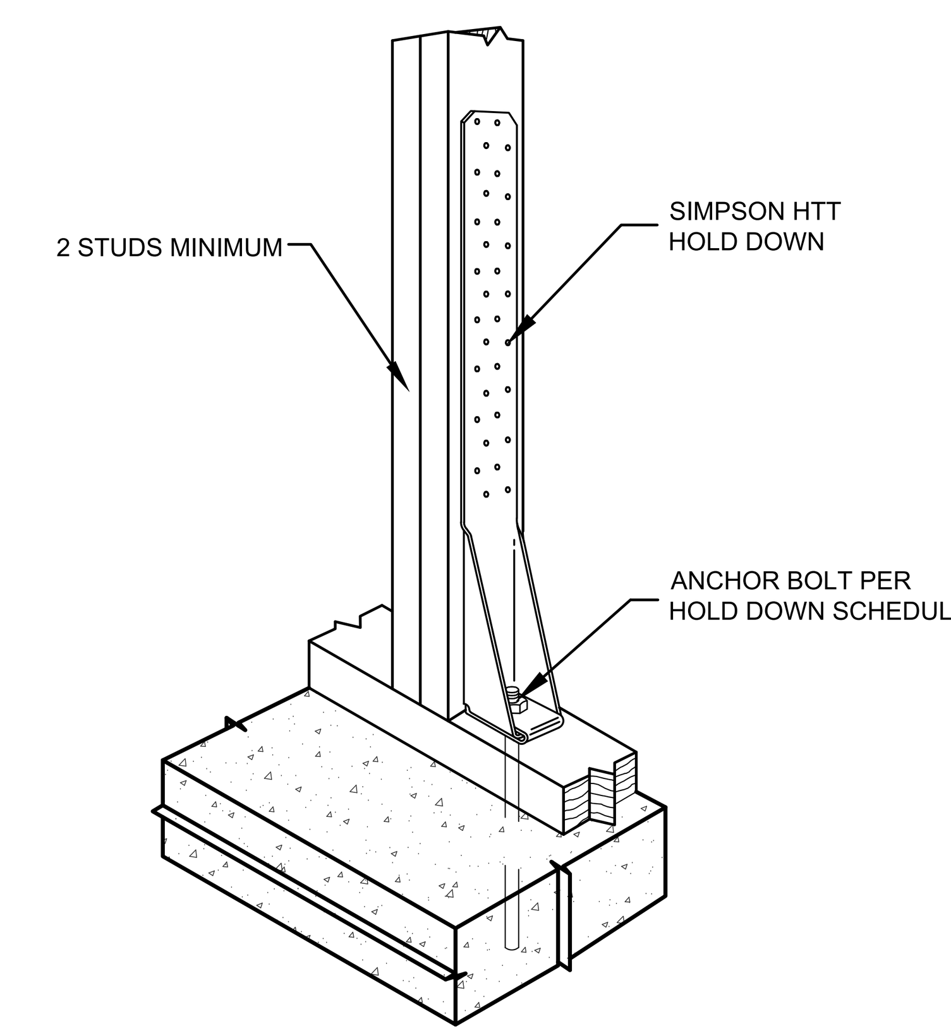
5 PERFORATED SHEAR WALL
S1.10 SCALE:NTS



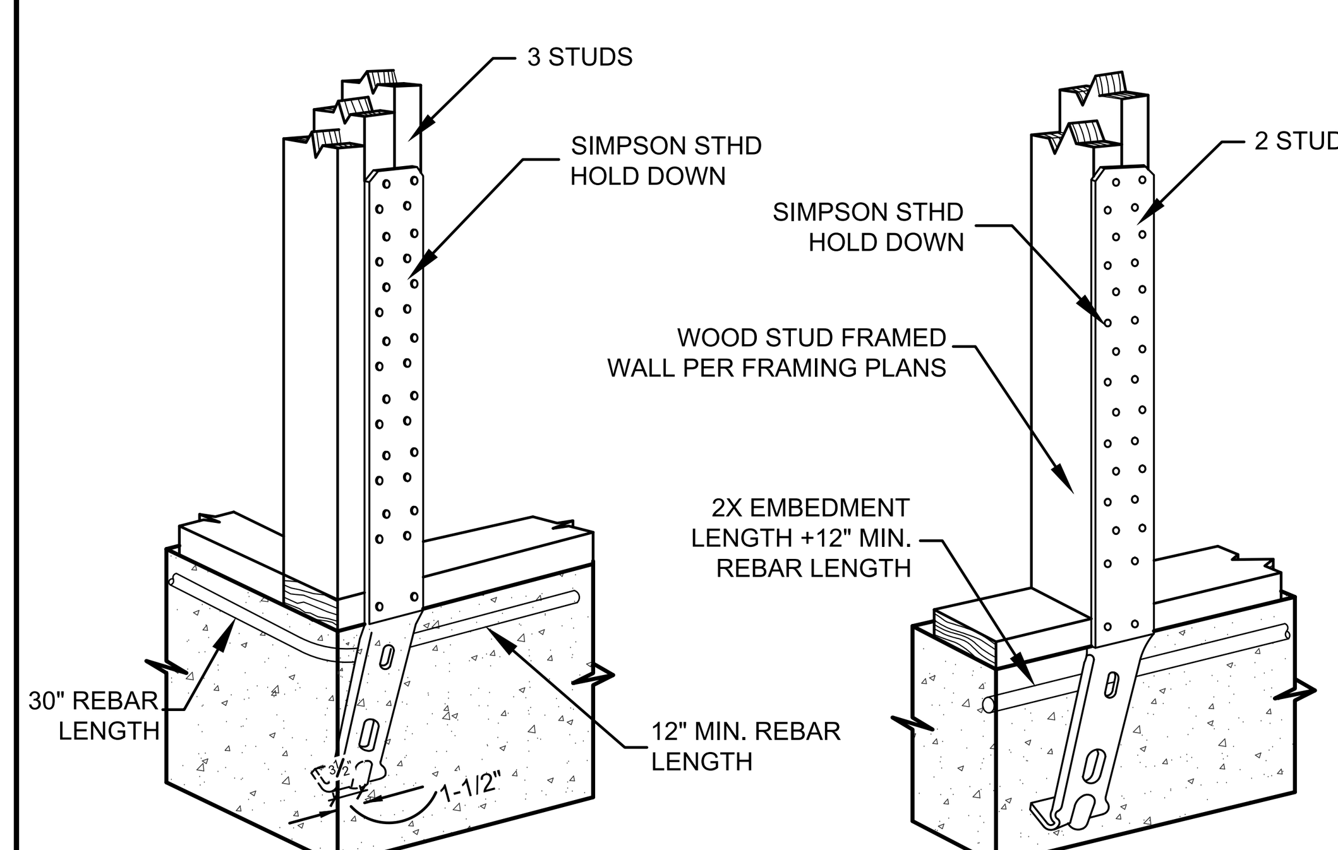
4 SHEAR WALL ON SLAB OR STEM WALL
S1.10 SCALE: NTS



3 SIMPSON MST/COIL STRAP
S1.10 SCALE:NTS



2 SIMPSON HTT
S1.10 SCALE:NTS



1 SIMPSON STHD
S1.10 SCALE:NTS

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TYPICAL STRUCTURAL DETAILS

STATE OF NEVADA
LLOYD REED POPE
EXP: 12-31-19
CIVIL
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11/20/19

DATE: 6/11/19
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PROJECT NO: 1150374

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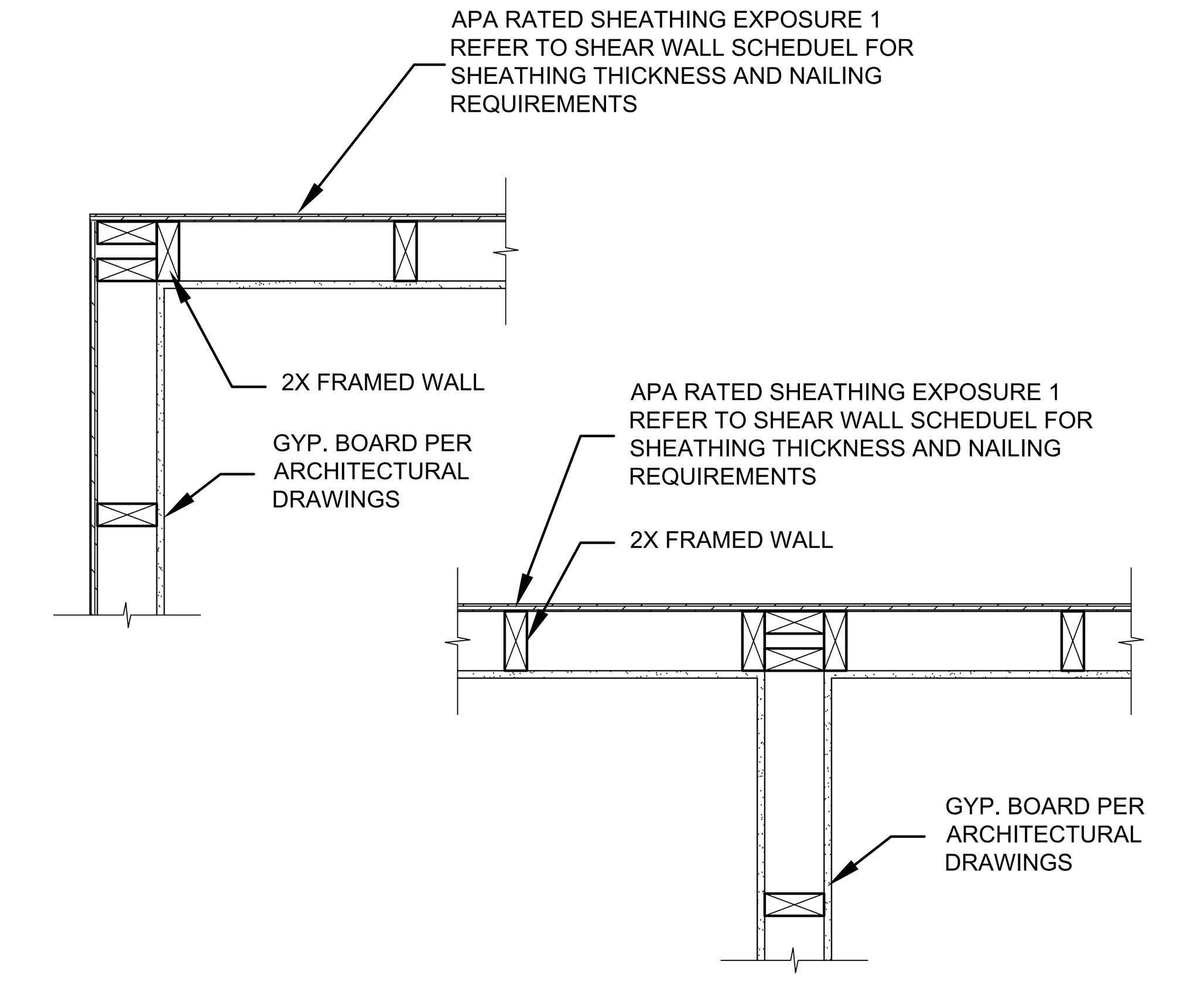
S1.10

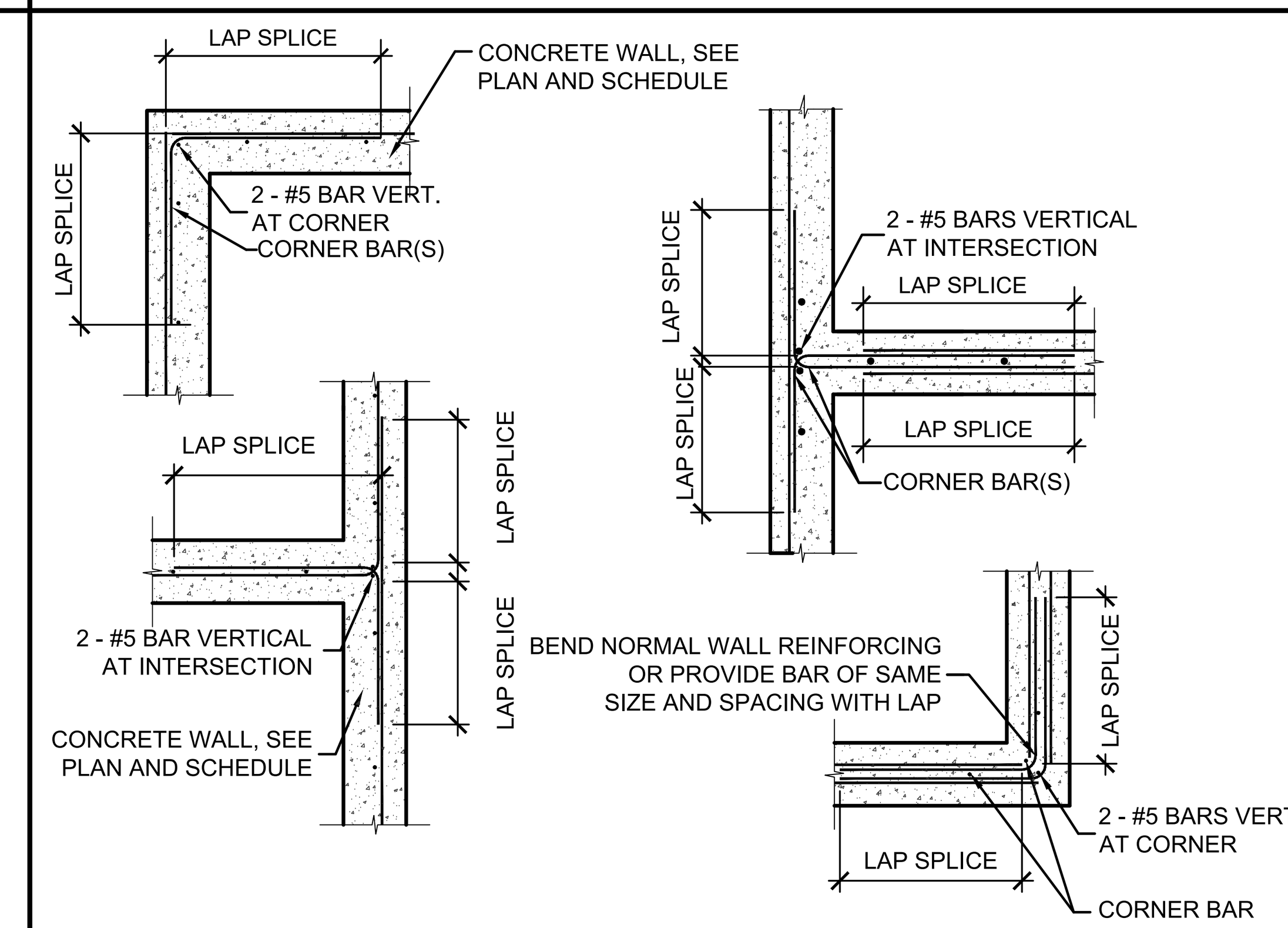


3 WOOD STUD FRAMED CORNERS & INTERSECTIONS
S1.20 SCALE:NTS

12 S1.20

9 S1.20

6 S1.20



NOTE
REFER TO CONCRETE SECTION OF S0.10 FOR LAP SPLICE SCHEDULE

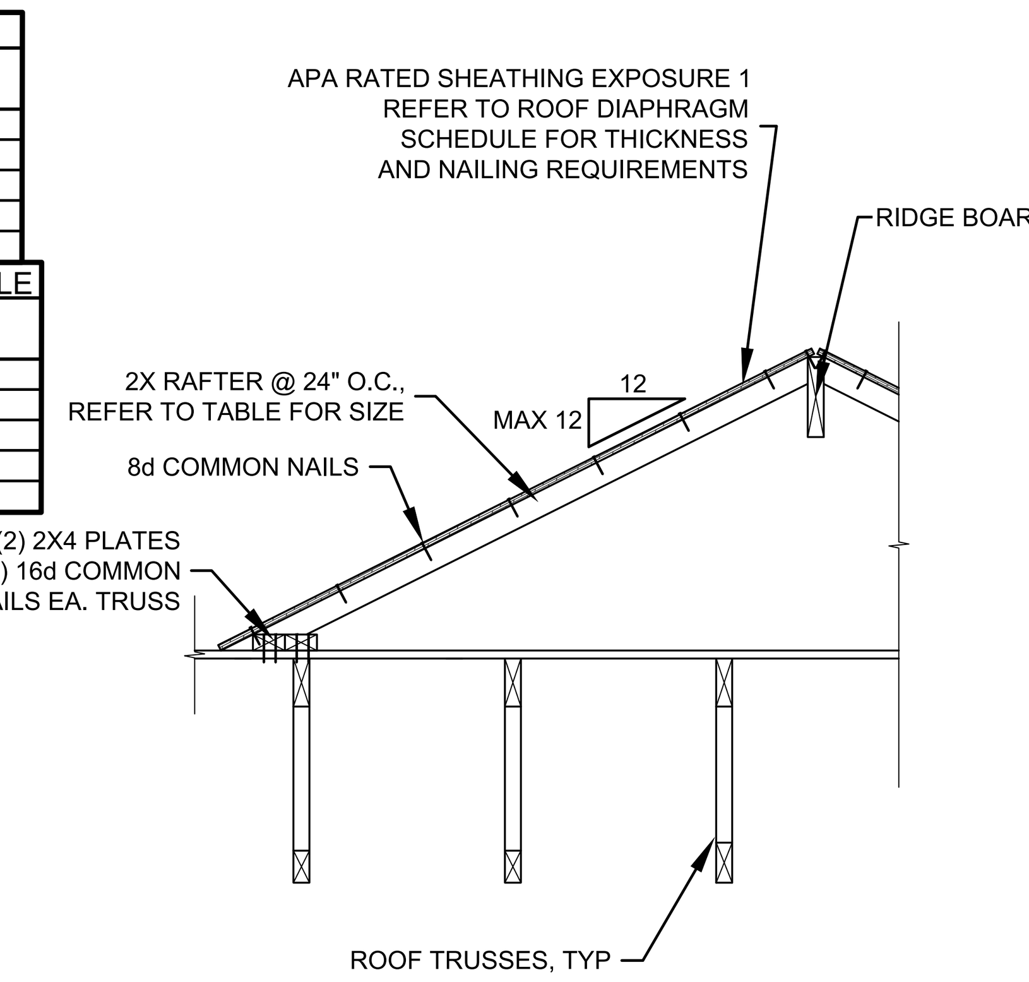
5 CONCRETE CORNERS & INTERSECTIONS
S1.20 SCALE: NTS

RAFTER TABLE

HORZ. SPAN	RAFTER SIZE
5'-0"	2X4
8'-0"	2X6
10'-0"	2X8
13'-0"	2X10
15'-0"	2X12

SNOW RAFTER TABLE

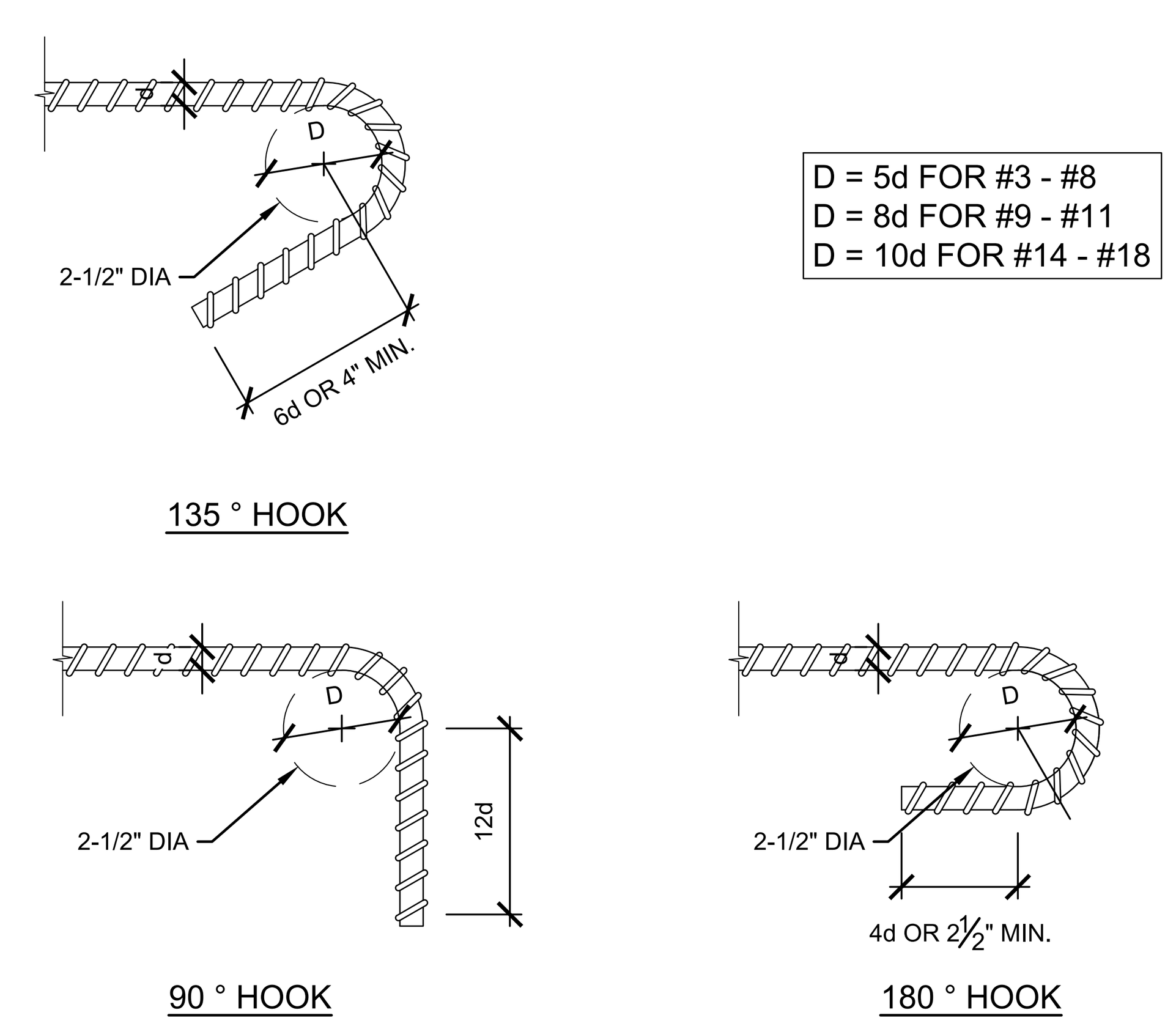
HORZ. SPAN	RAFTER SIZE
2'-0"	2X4
4'-0"	2X6
6'-0"	2X8
8'-0"	2X10
10'-0"	2X12



2 ROOF OVERBUILD RAFTERS
S1.20 SCALE:NTS

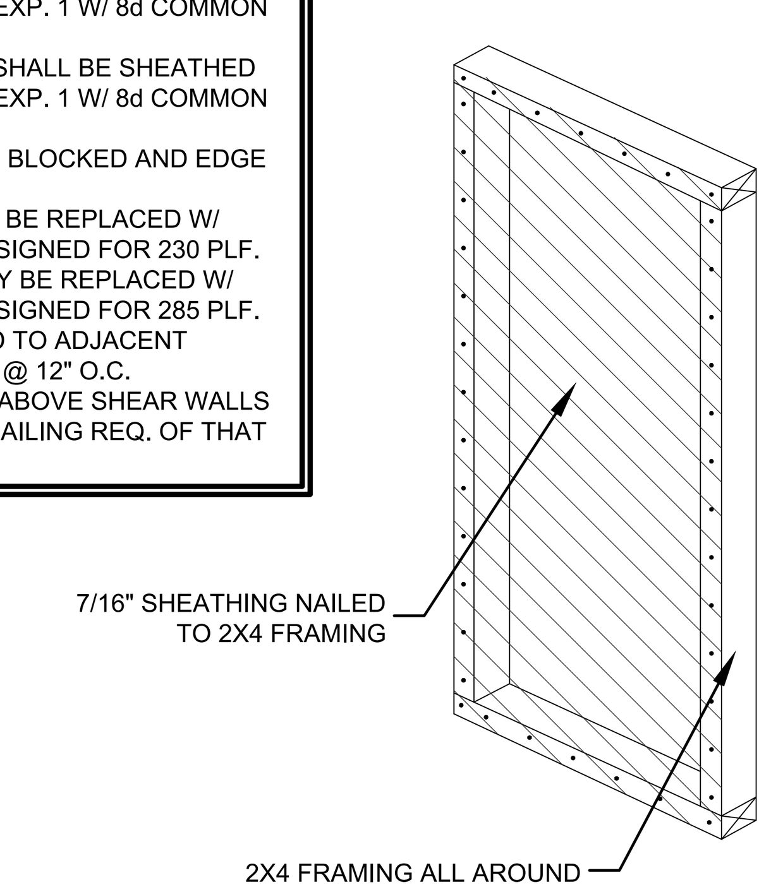
11 S1.20

8 S1.20



4 STANDARD ACI HOOKS
S1.20 SCALE:NTS

1. SHEAR TRANSFER BLOCKING SHALL BE FRAMED W/ 2X4 FRAMING ALL AROUND PERIMETER OF THE BLOCK.
2. TRANSFER BLOCKING IN ROOF SHALL BE SHEATHED W/ 7/16" APA RATED SHEATHING EXP. 1 W/ 8d COMMON NAILS @ 6" O.C. AT EDGES.
3. TRANSFER BLOCKING IN FLOOR SHALL BE SHEATHED W/ 7/16" APA RATED SHEATHING EXP. 1 W/ 8d COMMON NAILS 4" O.C. AT EDGES.
4. ALL SHEATHING JOINTS MUST BE BLOCKED AND EDGE NAILED.
5. ROOF TRANSFER BLOCKING MAY BE REPLACED W/ ENGINEERED TRUSS BLOCKS DESIGNED FOR 230 PLF.
6. FLOOR TRANSFER BLOCKING MAY BE REPLACED W/ ENGINEERED TRUSS BLOCKS DESIGNED FOR 285 PLF.
7. TRUSS BLOCKS SHALL BE NAILED TO ADJACENT TRUSSES W/ 16d COMMON NAILS @ 12" O.C.
8. TRANSFER BLOCKING DIRECTLY ABOVE SHEAR WALLS SHALL MATCH SHEATHING AND NAILING REQ. OF THAT SHEAR WALL.



1 SHEAR TRANSFER BLOCKING PANELS
S1.20 SCALE:NTS

10 S1.20

7 S1.20

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TYPICAL STRUCTURAL DETAILS

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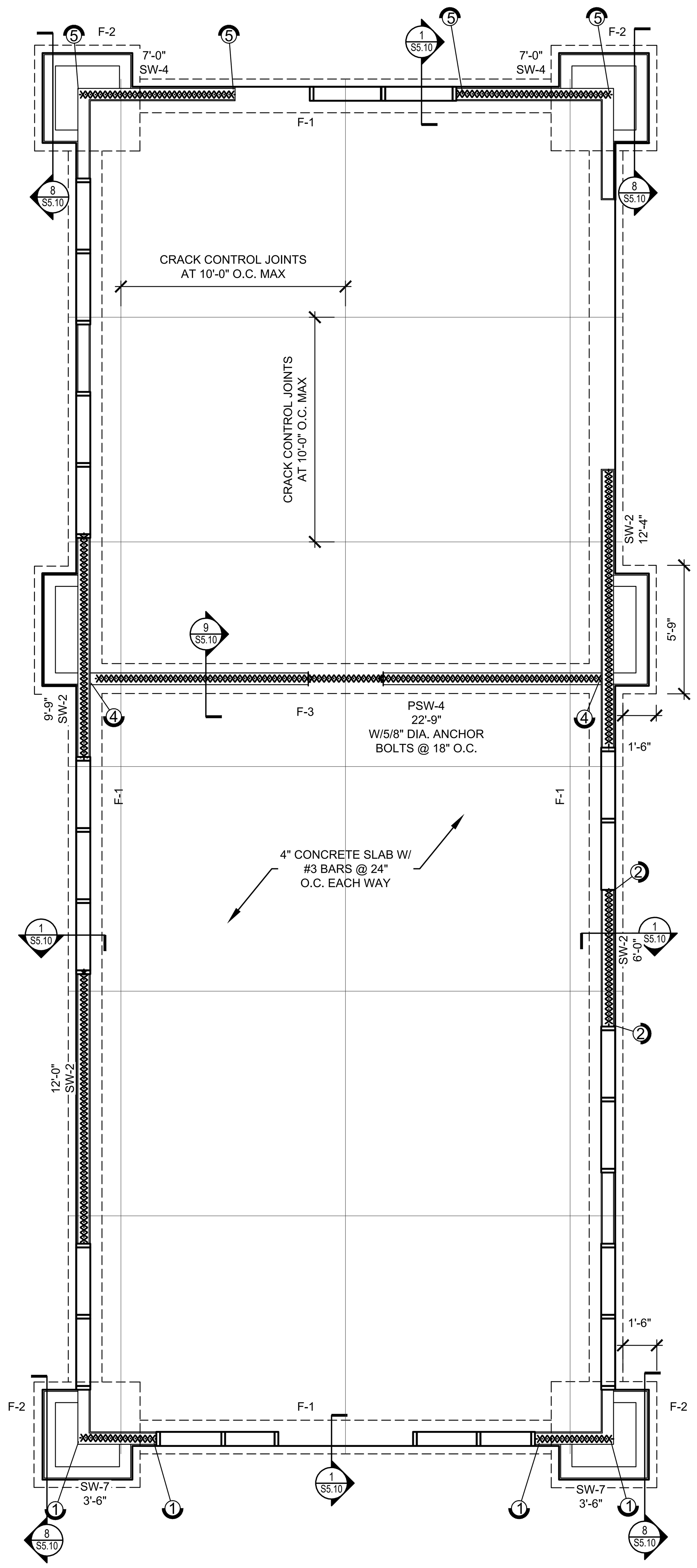
SHEET
S1.20



FOUNDATION PLAN

1 / S2.10 — SCALE: 1/4"=1'-0"

SYMBOL LEGEND

1'-0" SW-1	WOOD FRAMED BEARING/SHEAR WALL
– – – – – –	FOOTING
⊠ COLUMN SIZE / COLUMN BASE	WOOD COLUMN

GENERAL NOTES

1. CONTRACTOR TO VERIFY ALL DIMENSIONS WITH ARCHITECTURAL PLANS AND NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES, OMISSIONS , OR ERRORS BEFORE COMMENCING CONSTRUCTION.
2. REFER TO SHEET S0.10 FOR ALL CONCRETE, FOUNDATION, AND SUBGRADE SPECIFICATIONS
3. CONTRACTOR TO FOLLOW ALL SITE PREPERATIONS FROM SOILS REPORT
4. ALL LANDSCAPING AROUND THE HOME MUST BE GRADED AWAY FROM THE HOME AT A MINIMUM GRADE OF 5% FOR THE FIRST 10 FEET OR AS FAR AS POSSIBLE TO MINIMIZE WATER INFILTRATION INTO THE SUBGRADE

WOOD WALL ANCHOR BOLT SCHEDULE

MARK	SILL PLATE	ANCHOR BOLTS AND SPACING
SW-1	2" NOMINAL	1/2" Ø X 10" ANCHOR BOLTS @ 48" O.C.
SW-2	2" NOMINAL	1/2" Ø X 10" ANCHOR BOLTS @ 32" O.C.
SW-3	2" NOMINAL	1/2" Ø X 10" ANCHOR BOLTS @ 23" O.C.
SW-4	2" NOMINAL	1/2" Ø X 10" ANCHOR BOLTS @ 17" O.C.
SW-5	2" NOMINAL	5/8" Ø X 10" ANCHOR BOLTS @ 24" O.C.
SW-6	2" NOMINAL	5/8" Ø X 10" ANCHOR BOLTS @ 20" O.C.
SW-7	2" NOMINAL	3/4" Ø X 10" ANCHOR BOLTS @ 19" O.C.
SW-PF	(3) 2" NOMINAL	5/8"ØX14" BOLT @ CENTER OF SILL PLATE

NOTES:
1. ANCHOR BOLTS FOR INTERIOR SHEAR WALLS SHALL BE SIMPSON STRONG-BOLTS, SIMPSON TITEN HD, OR HILTI KWIK BOLT TZ ANCHORS OF THE SAME DIAMETER AND SPACING W/ 4-1/2" MINIMUM EMBEDMENT. INTERIOR SHEAR WALL ANCHOR BOLTS MAY ALSO BE EPOXIED INTO CONCRETE WITH SIMPSON SET-XP OR HILTI HIT-RE 500-SD EPOXY AND A MINIMUM 4-1/2" EMBEDMENT.
2. 'PSW' INDICATES A PERFORATED SHEAR WALL REQUIRING ANCHOR BOLTS THE FULL LENGTH OF THE SILL PLATE

FOOTING SCHEDULE

MARK	FOOTING SIZE	REINFORCEMENT	FOOTING TYPE
F-1	24" X 10" X CONT.	(3) #4 BARS CONT.	CONTINUOUS
F-2	56" SQ. X 10"	(6) #4 BARS EA. WAY	SPOT
F-3	18" X 10" X CONT.	(2) #4 BARS CONT.	CONTINUOUS

MINIMUM FOOTING EMBEDMENT 18"

SIMPSON HOLDOWN SCHEDULE

MARK	TYPE	ANCHORAGE AND NOTES	FASTENERS
1	HHDQ11-SDS2.5	1"Ø THREADED ROD W/ SIMPSON BP1 BEARING PLATE AND (2) HEX NUTS EMBEDDED 9" INTO FOOTING	(20) SDS1/4"X2-1/2"
2	LSTHD8/RJ	NO ANCHOR BOLT REQUIRED	(20) 16d
3	CS16	CUT LENGTH = JOIST DEPTH + 22"	(20) 10d
4	HTT5	5/8"Ø THREADED ROD EMBEDDED 7" INTO FOOTING	(26) 10d
5	HDQ8-SDS3	7/8"Ø THREADED ROD WITH 2X2X3/16" PLATE WASHER AND NUTS EMBEDDED 7" INTO FOOTING	(20) SDS1/4"X3"
6	CS16	CUT LENGTH = JOIST DEPTH + 22"	(20) 10d

NO.	DATE	BY	REVISION

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STRUCTURAL ENGINEERS, CIVIL ENGINEERS & SURVEYORS

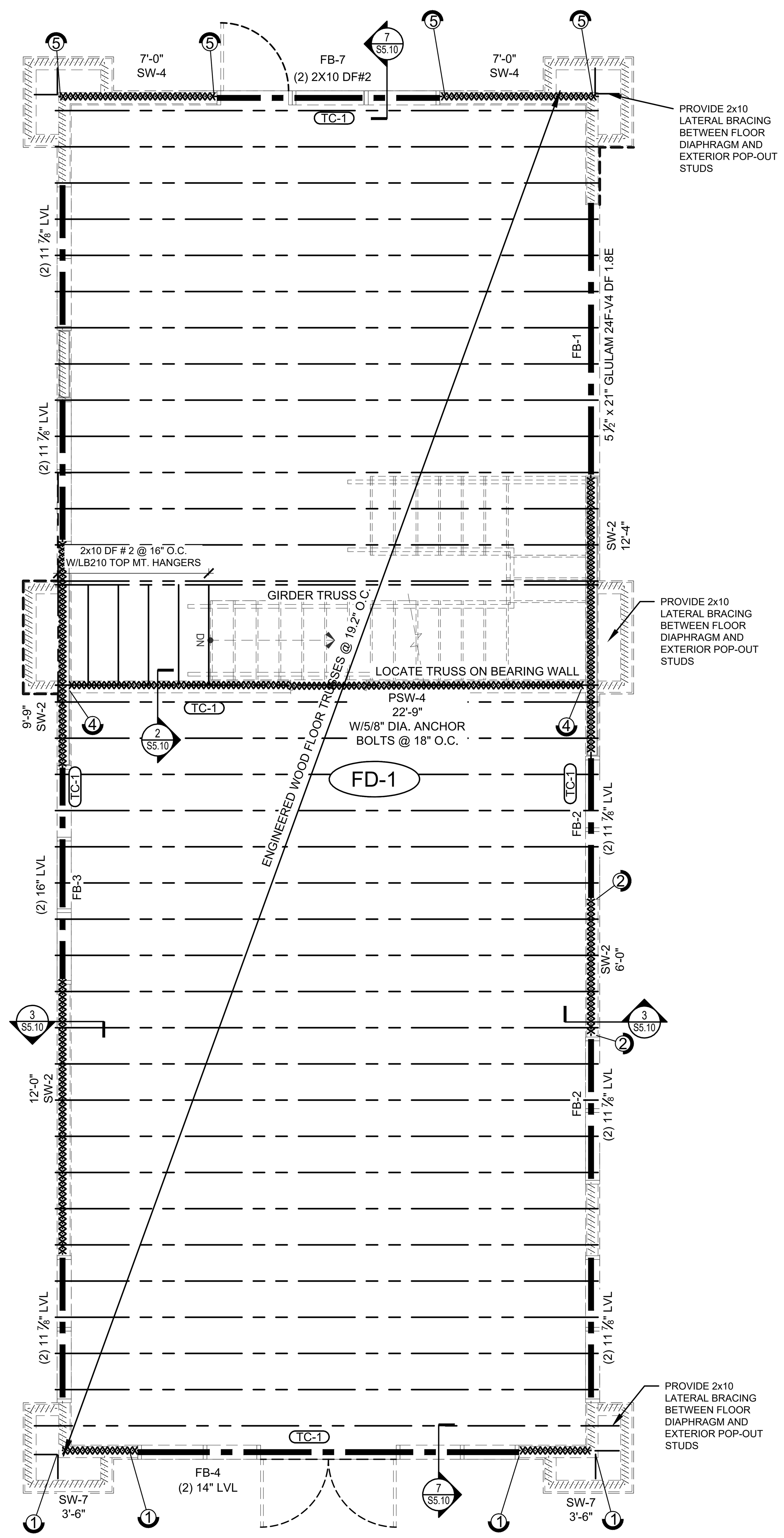
LAKE MEAD TITLE LOAN
615 W. LAKE MEAD PARKWAY
HENDERSON, NV. 84015

FOUNDATION PLAN

STATE OF NEVADA — # 6008 — LLOYD REED POPE — EXP: 12-31-19 — CIVIL — PROFESSIONAL ENGINEER
11/20/19

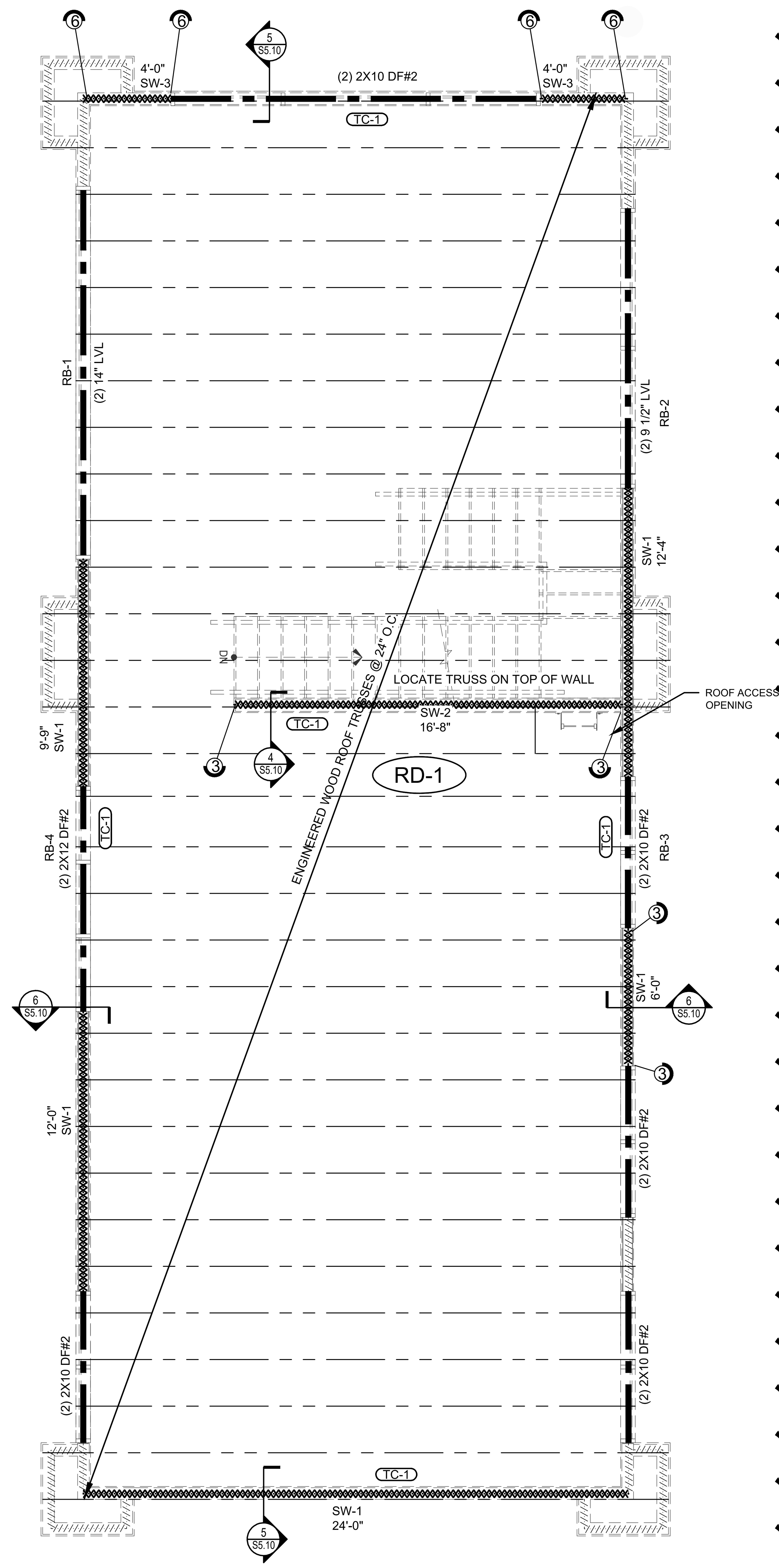
DATE: 6/11/19
DRAWN BY: WCB
PROJECT NO: 1150374

SHEET
S2.10



1 FLOOR FRAMING PLAN

S4.10 SCALE: 1/4"=1'-0"



2 ROOF FRAMING PLAN

S4.10 SCALE: 1/4"=1'-0"

SYMBOL LEGEND

(hatched wall symbol)	WOOD FRAMED BEARING WALL
1'-0" SW-1	WOOD FRAMED BEARING/SHEAR WALL
—— — — ——	ROOF TRUSS / JOIST
RB-1	BEAM
COL. SIZE & TYPE / COLUMN CAP	COLUMN SYMBOL
E.N. TRUSS	EDGE NAILING FULL LENGTH OF TRUSS

GENERAL NOTES

1. CONTRACTOR TO VERIFY ALL DIMENSIONS WITH ARCHITECTURAL PLANS AND NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES, OMISSIONS , OR ERRORS BEFORE CONSTRUCTION.
2. REFER TO SHEET S0.10 FOR ALL GENERAL FRAMING AND MATERIAL SPECIFICATIONS.
3. SEE ARCHITECTURAL PLANS FOR ANY ADDITIONAL DIMENSIONS
4. CONTRACTOR TO FOLLOW ALL SITE PREPARATIONS FROM SOILS REPORT.
5. ENGINEERED TRUSS MANUFACTURER TO COORDINATE MECHANICAL EQUIPMENT LOCATIONS WITH MECHANICAL DRAWINGS
6. ALL SHOP DRAWINGS TO BE REVIEWED AND APPROVED BY L.R. POPE ENGINEERING INC.
7. CONTRACTOR TO FOLLOW ALL SIMPSON INSTALLATION REQUIREMENTS.
8. REFER TO FRAMING NOTES FOR ADDITIONAL REQUIREMENTS

WOOD FRAMED WALLS

1. ALL EXTERIOR WALLS TO BE FRAMED ACCORDING TO THE FOLLOWING MINIMUM REQUIREMENTS:
   - UP TO 10'-0" WALL - 2X4 DF #2 STUDS @ 16" O.C.
   - UP TO 16'-0" WALL - 2X6 DF #2 STUDS @ 16" O.C.
2. ALL INTERIOR WALLS TO BE FRAMED WITH 2X4 NOM. DF#2 STUDS @ 16" O.C.

MARK	WOOD ROOF DIAPHRAGM
RD-1	7/16" (24/16 SPAN RATING) APA RATED SHEATHING EXPOSURE 1 UNBLOCKED WITH 8d COMMON NAILS @ 6" O.C. ALONG DIAPHRAGM PERIMETER, SHEAR WALL LINES, AND SUPPORTED PANEL EDGES AND 8d COMMON NAILS @ 12" O.C. IN THE FIELD. ALLOWABLE SHEAR = 230 PLF (CASE 1), 170 PLF (OTHER CASES)

TOP PLATE SPLICE SCHEDULE

TC-1: 8-16d NAILS= 8 X 93 X 1.6 = 1,190 LBS (MINIMUM)
TC-2: 10-16d NAILS= 1,488 LBS
TC-3: 15-16d NAILS= 2,230 LBS
TC-4: 20-16d NAILS= 2,976 LBS
TC-5: 24-16d NAILS= 3,570 LBS
TC-6: SIMPSON MST 48 STRAP= 4,845 LBS
TC-7: SIMPSON MST 60 STRAP= 6,400 LBS

WOOD FRAMED SHEAR WALL SCHEDULE

MARK	SHEARWALL REQUIREMENTS
SW-1	7/16" APA RATED SHEATHING EXPOSURE 1 W/ 8d COMMON NAILS @ 6" O.C. ALONG PANEL EDGES & 12" O.C. @ INTERMEDIATE SUPPORTS. BOLT 2X SILL PLATE TO FOUNDATION WITH 1/2"Ø X10" ANCHOR BOLTS & 0.229"X3"X3" PLATE WASHERS @ 48" O.C.. NAIL 2X SILL PLATE TO WOOD FLOOR WITH 16d COMMON NAILS @ 12" O.C. ALLOWABLE SHEAR = 140 PLF
SW-2	7/16" APA RATED SHEATHING EXPOSURE 1 W/ 8d COMMON NAILS @ 6" O.C. ALONG PANEL EDGES & 12" O.C. @ INTERMEDIATE SUPPORTS. BOLT 2X SILL PLATE TO FOUNDATION WITH 1/2"ØX10" ANCHOR BOLTS & 0.229"X3"X3" PLATE WASHERS @ 32" O.C. NAIL 2X SILL PLATE TO WOOD FLOOR WITH 16d COMMON NAILS @ 6" O.C. ALLOWABLE SHEAR = 260 PLF

NOTE: 'PSW' INDICATES A PERFORATED SHEAR WALL. SHEAR WALL EDGE NAILING IS REQUIRED AROUND ALL WINDOW AND DOOR OPENINGS. SEE DETAIL 5/S1.10

MARK	WOOD FLOOR DIAPHRAGM
FD-1	3/4" TONGUE AND GROOVE APA RATED SHEATHING EXPOSURE 1 UNBLOCKED WITH 10d COMMON NAILS @ 6" O.C. ALONG DIAPHRAGM PERIMETER, SHEAR WALL LINES, AND SUPPORTED PANEL EDGES AND 10d COMMON NAILS @ 12" O.C. IN THE FIELD. FLOOR SHEATHING SHALL BE GLUED TO ALL SUPPORTS IN ADDITION TO REQUIRED DIAPHRAGM NAILING. ALLOWABLE SHEAR = 285 PLF (CASE 1), 215 PLF (OTHER CASES)

SIMPSON HOLDOWN SCHEDULE

MARK	TYPE	ANCHORAGE AND NOTES	FASTENERS
1	HHDQ11-SDS2.5	1"Ø THREADED ROD W/ SIMPSON BP1 BEARING PLATE AND (2) HEX NUTS EMBEDDED 9" INTO FOOTING	(20) SDS1/4"X2-1/2"
2	LSTHD8/RJ	NO ANCHOR BOLT REQUIRED	(20) 16d
3	CS16	CUT LENGTH = JOIST DEPTH + 22"	(20) 10d
4	HTT5	5/8"Ø THREADED ROD EMBEDDED 7" INTO FOOTING	(26) 10d
5	HDQ8-SDS3	7/8"Ø THREADED ROD WITH 2X2X3/16" PLATE WASHER AND NUTS EMBEDDED 7" INTO FOOTING	(20) SDS1/4"X3"
6	CS16	CUT LENGTH = JOIST DEPTH + 22"	(20) 10d

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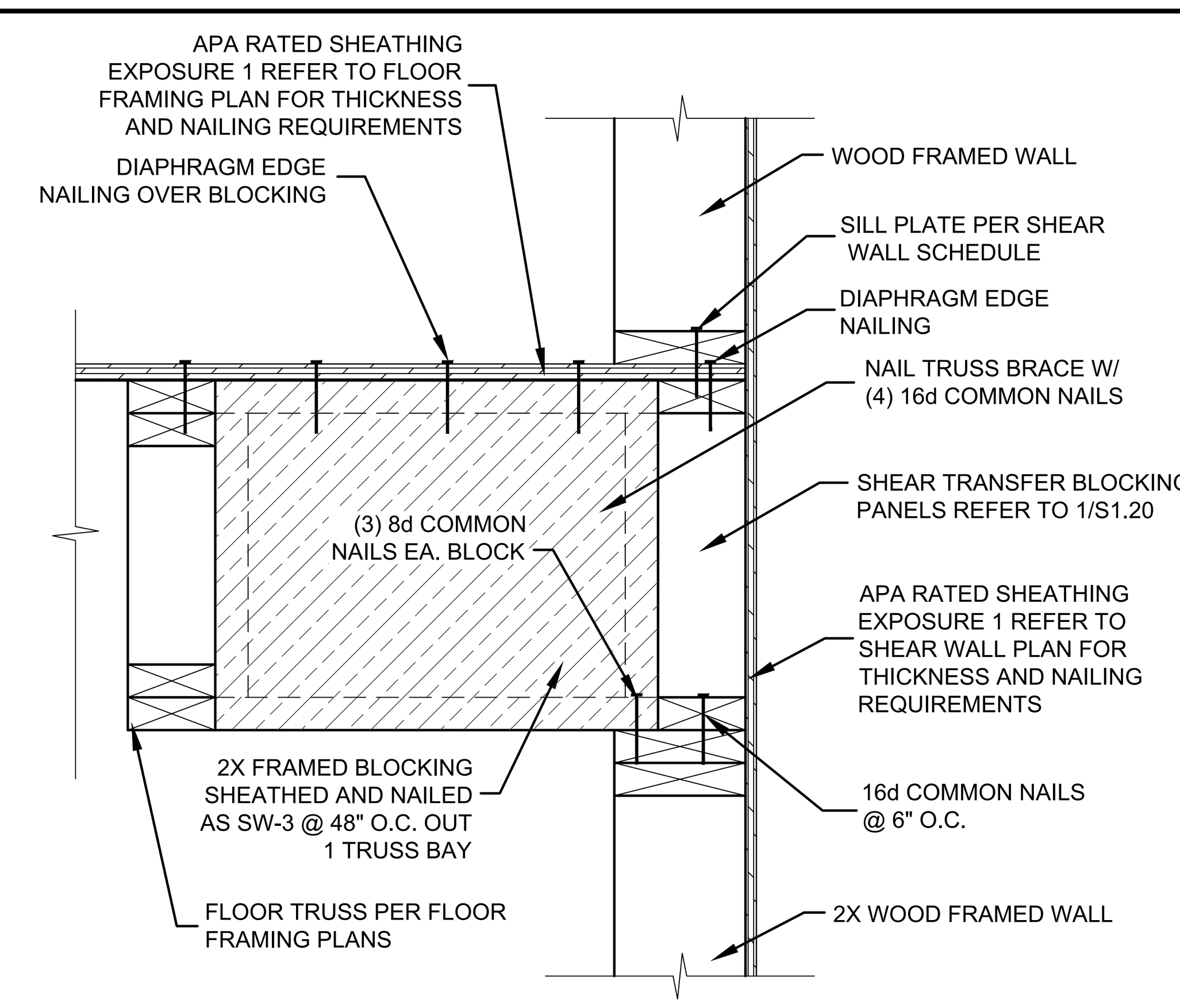
FLOOR & ROOF FRAMING PLAN

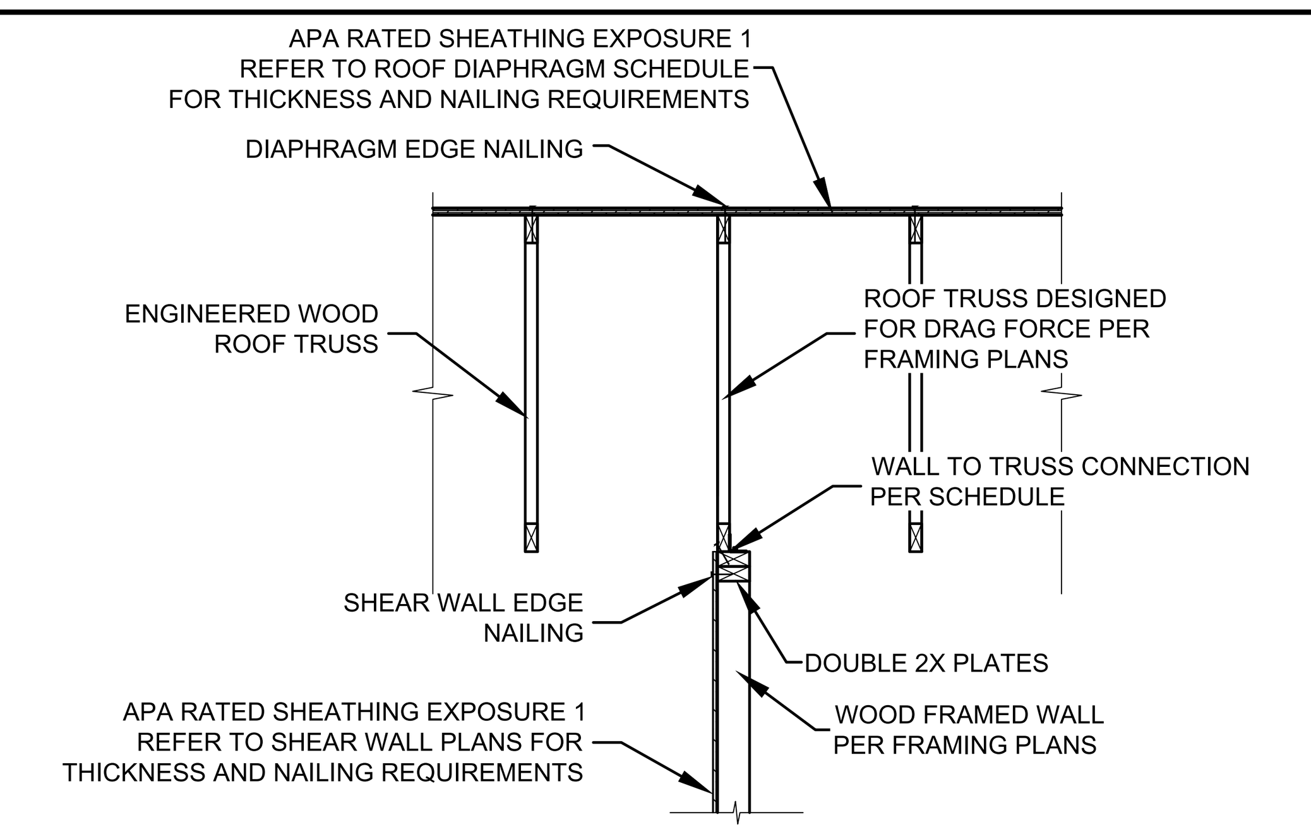
STATE OF NEVADA · LLOYD REED POPE · CIVIL · EXP: 12-31-19 · PROFESSIONAL ENGINEER
11/20/19

DATE: 6/11/19
DRAWN BY: WCB
PROJECT NO: 1150374

SHEET
S4.10

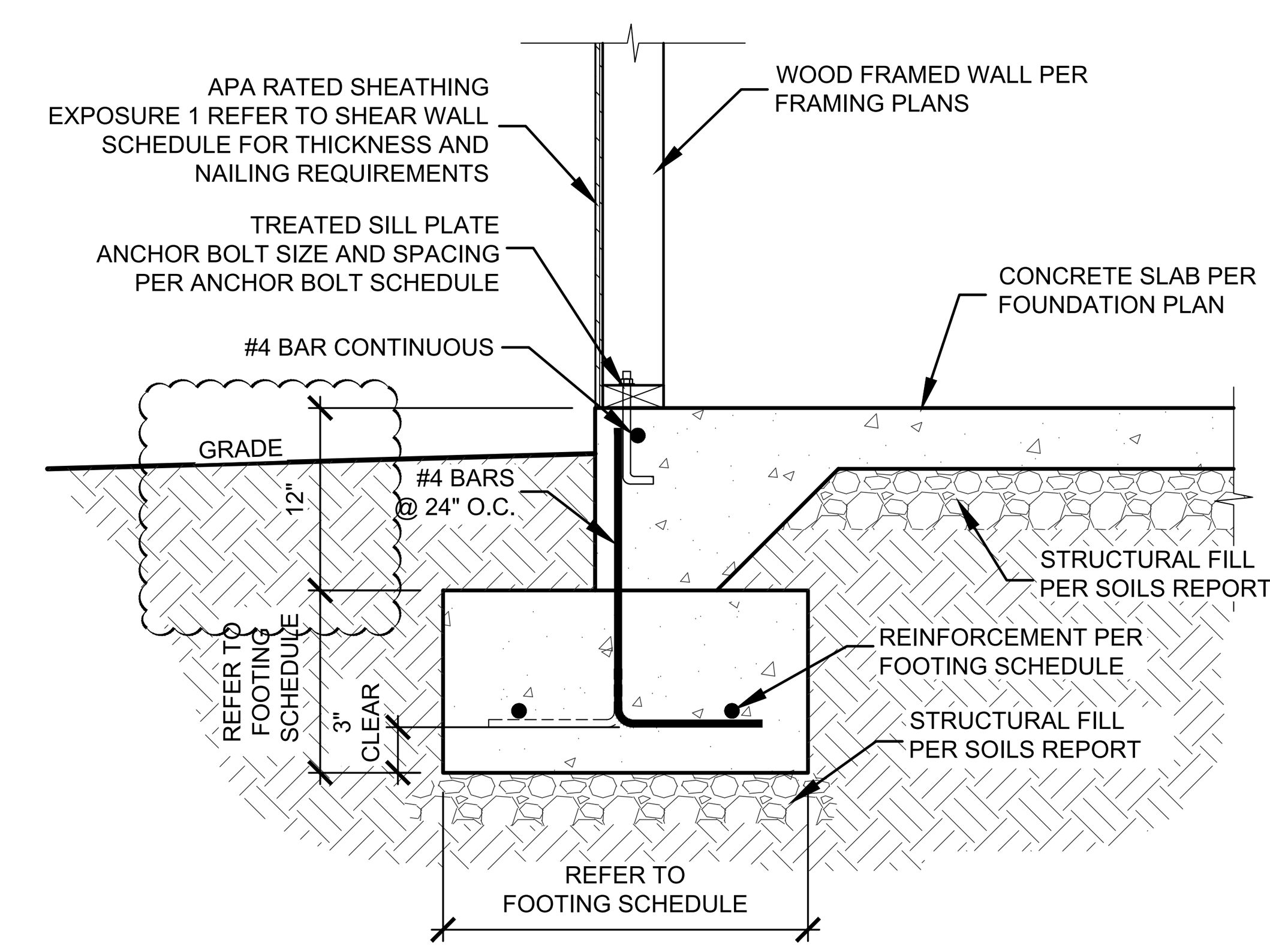


7 S5.10 FLOOR TRUSSES ON BEARING/SHEAR WALL
SCALE:NTS



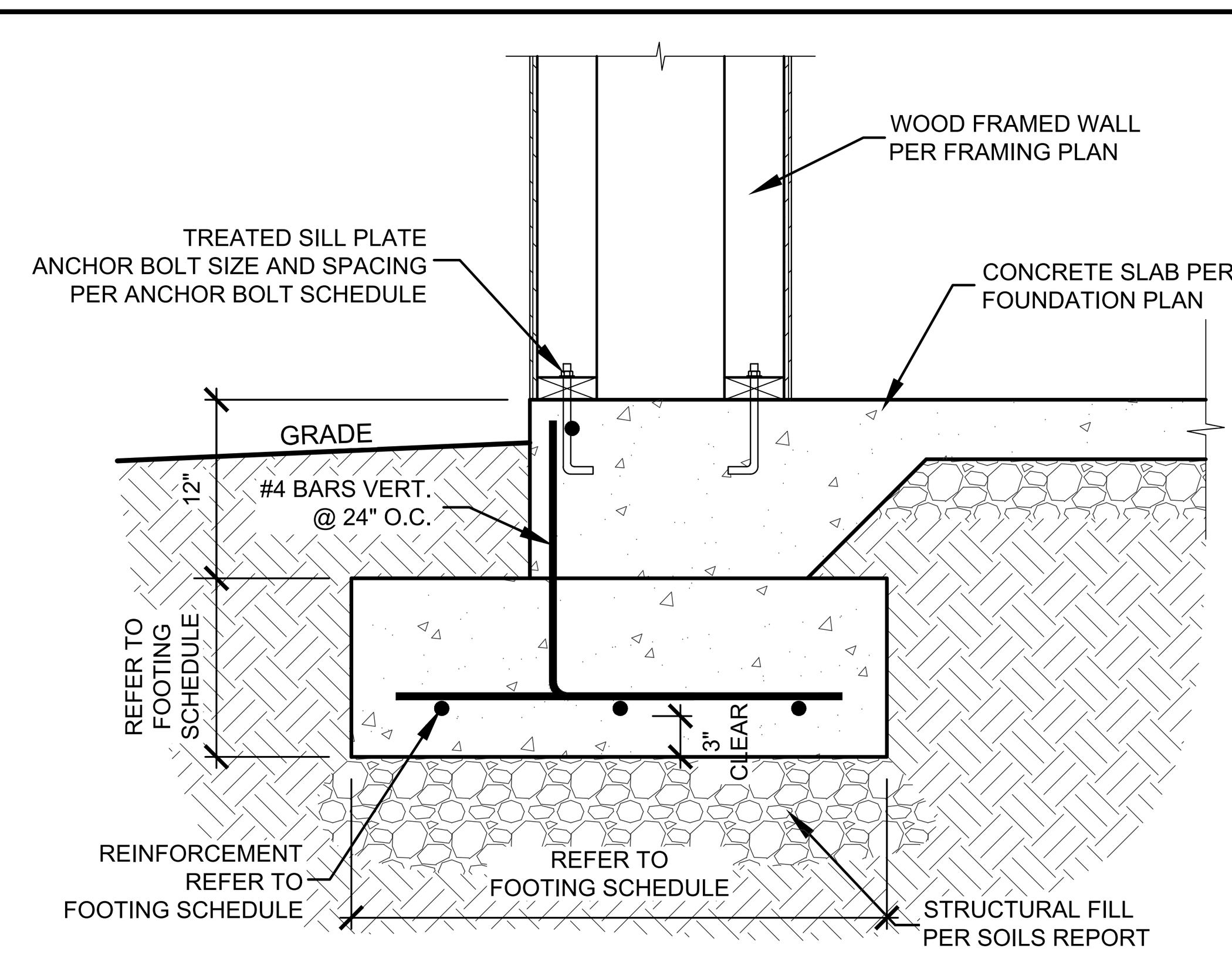
TRUSS TO SHEAR WALL CONNECTION SCHEDULE	
SW-1	16d COMMON NAILS TOE NAILED @ 11" O.C.
SW-2	16d COMMON NAILS TOE NAILED @ 5" O.C.
SW-3	SIMPSON A35 @ 24" O.C.
SW-4	SIMPSON A35 @ 17" O.C.
SW-5	SIMPSON A35 @ 13" O.C.
SW-6	SIMPSON A35 @ 10" O.C.
SW-7	SIMPSON A35 @ 9" O.C.

4 S5.10 INTERIOR SHEAR WALL PARALLEL TO ROOF TRUSSES
SCALE: NTS

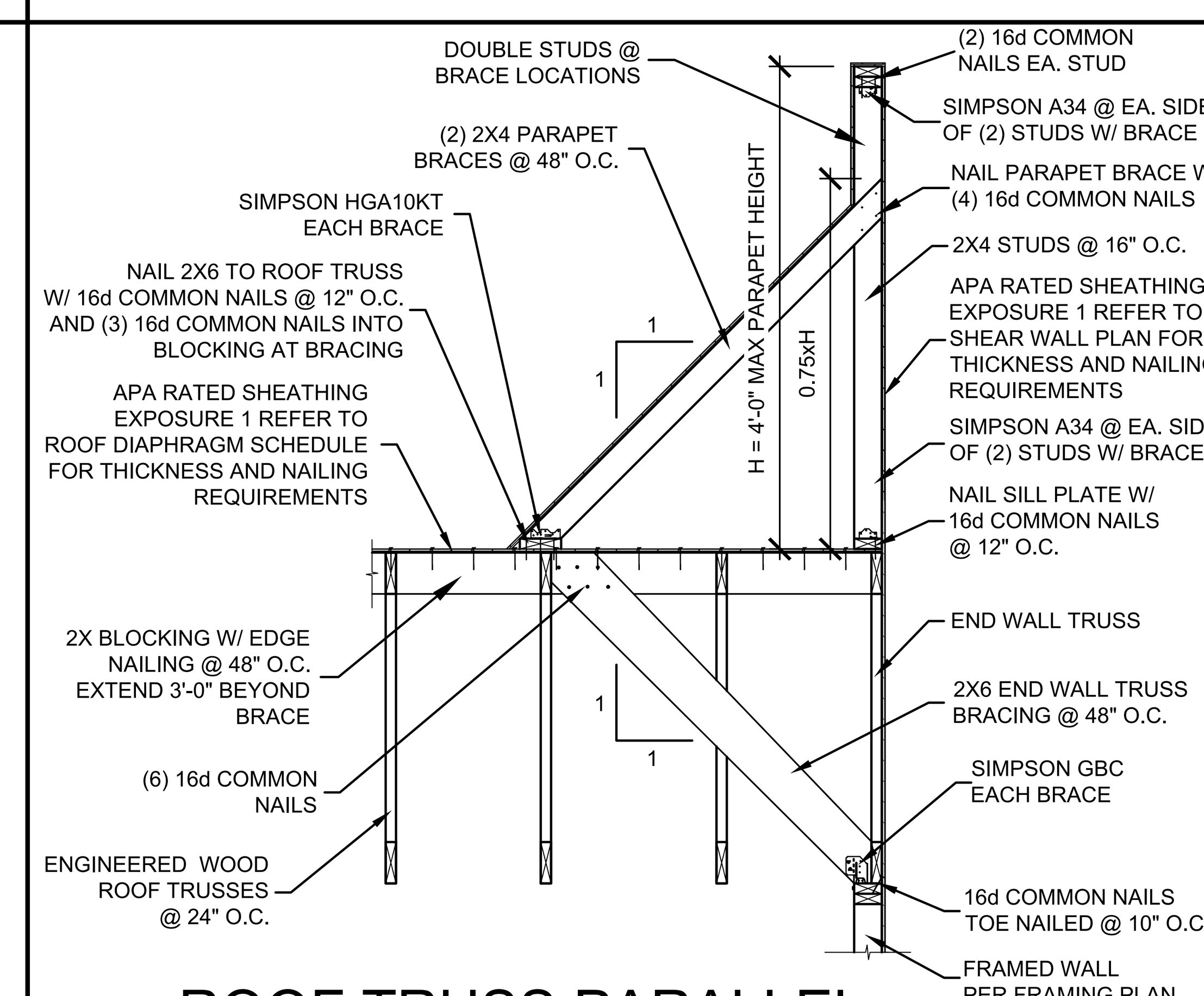


1 S5.10 CONTINUOUS EXTERIOR FOOTING
SCALE:NTS

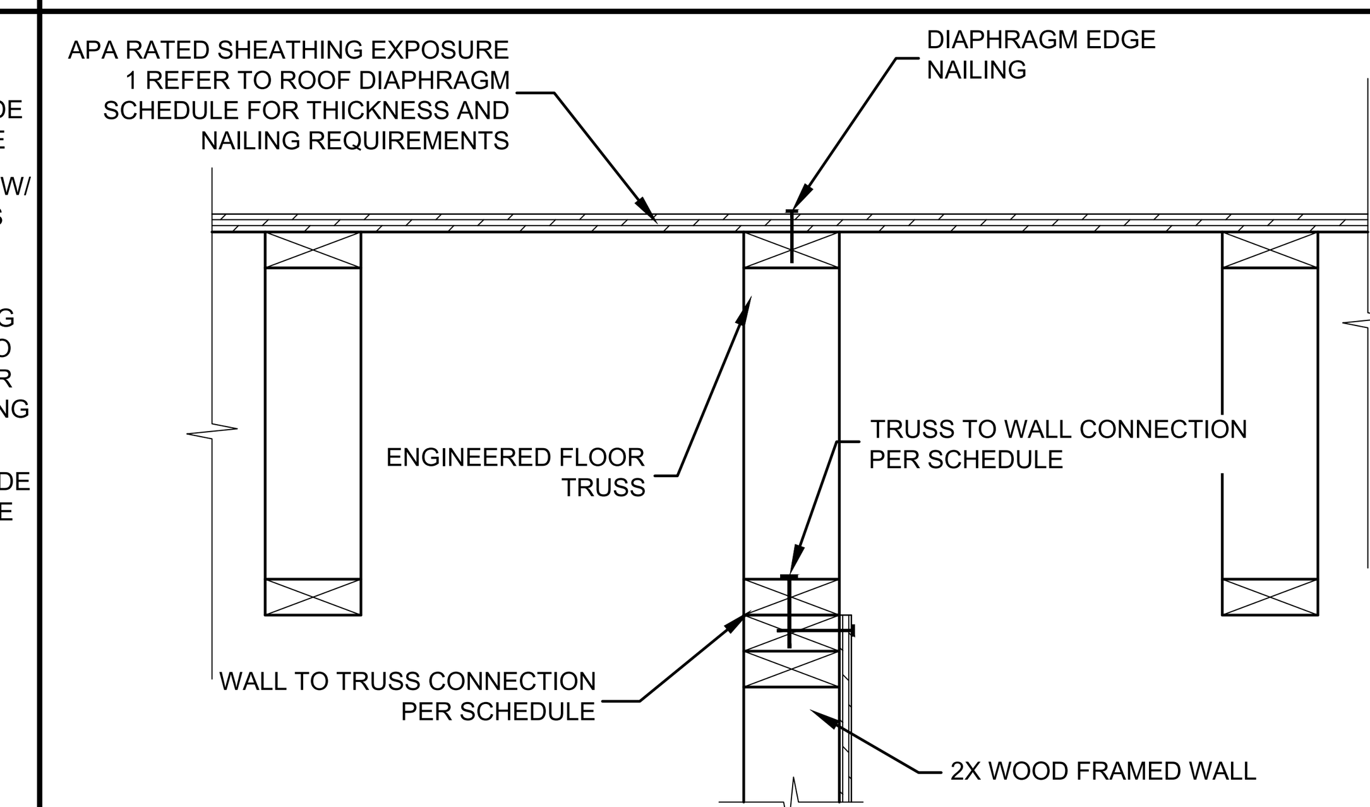
10 S5.10



8 S5.10 FRAMED BOX COLUMN SPOT FOOTING @ EDGE OF SLAB
SCALE:NTS



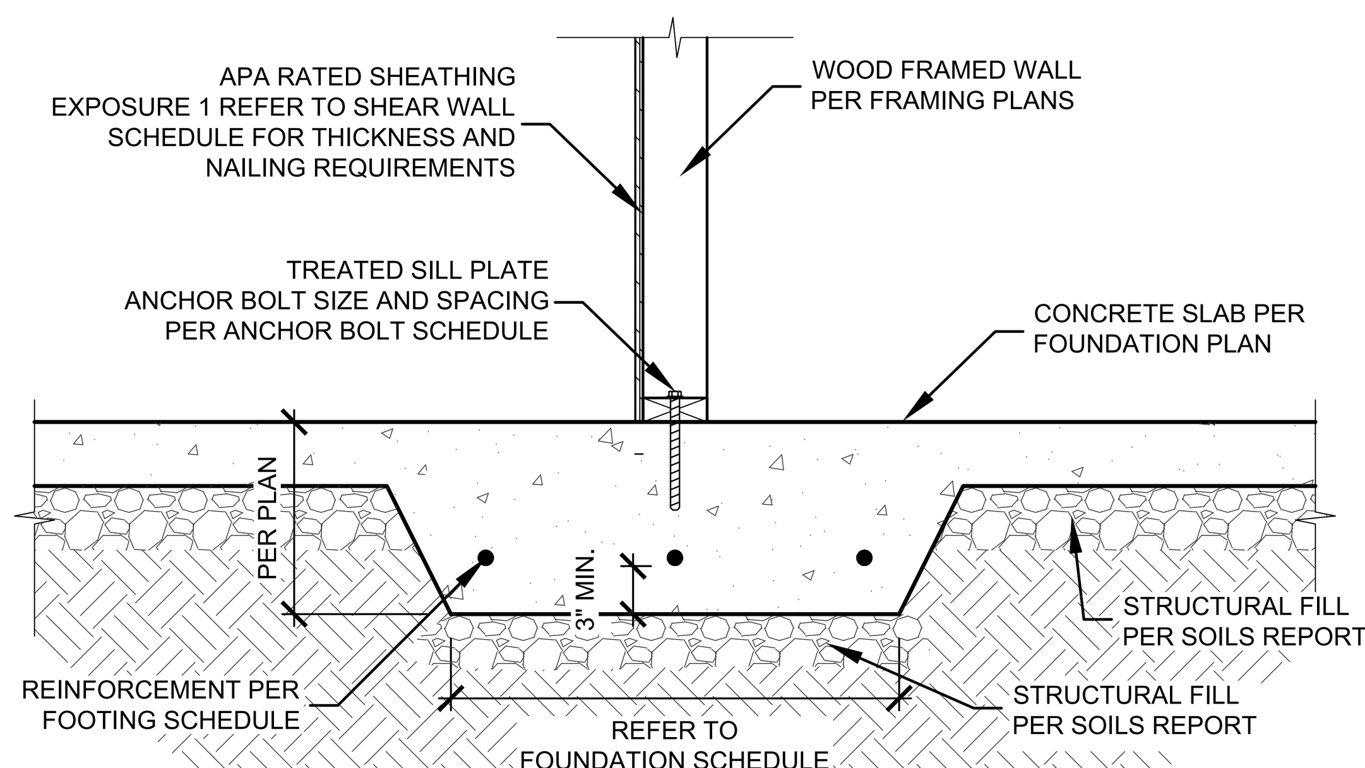
5 S5.10 ROOF TRUSS PARALLEL TO EXTERIOR BEARING WALL
SCALE: NTS



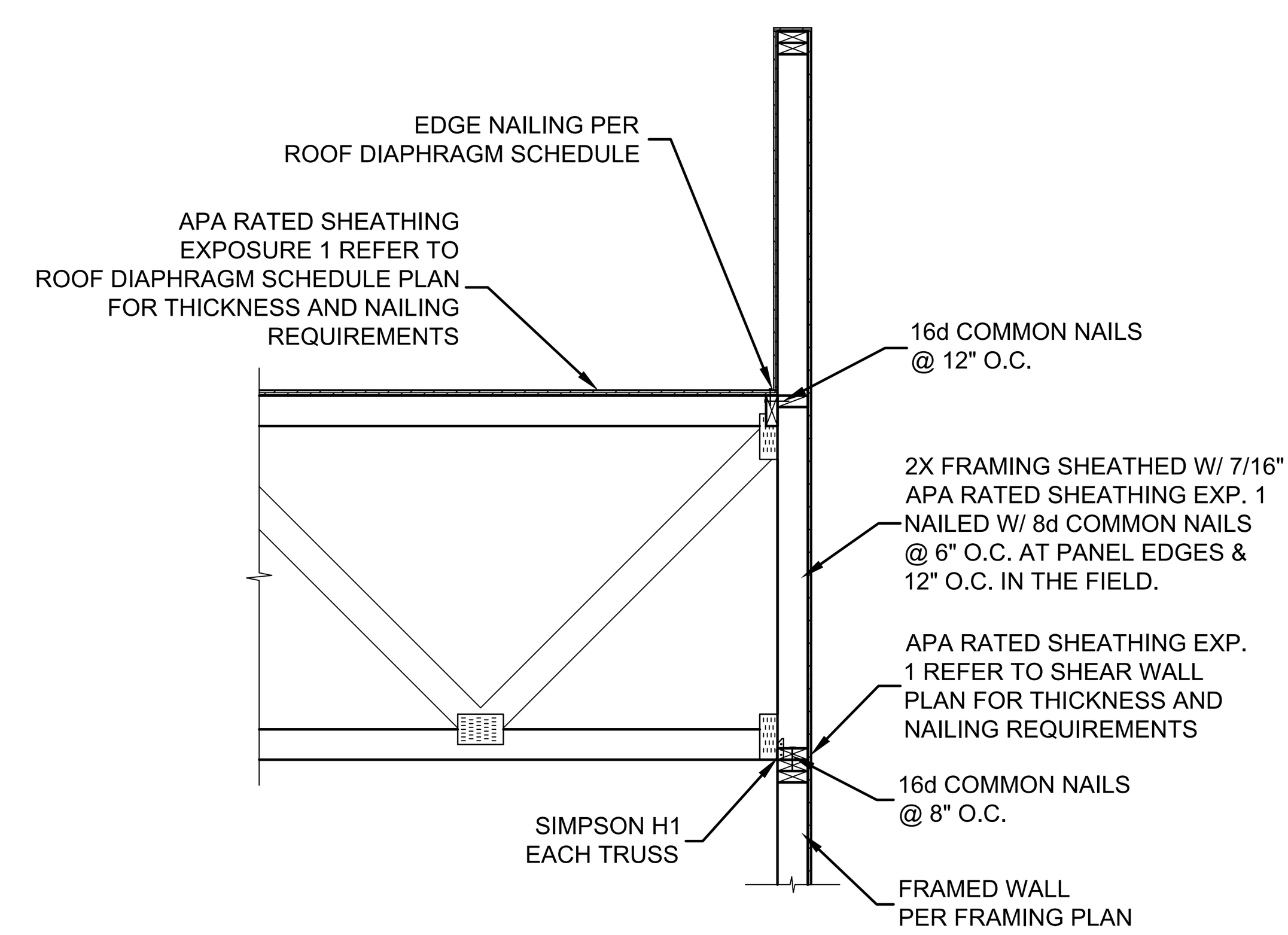
TRUSS TO SHEAR WALL CONNECTION SCHEDULE	
SW-1	16d COMMON NAILS @ 13" O.C.
SW-2	16d COMMON NAILS @ 7" O.C.
SW-3	16d COMMON NAILS @ 5" O.C.
SW-4	16d COMMON NAILS @ 3" O.C. STAGGERED
SW-5	(2) 16d COMMON NAILS @ 6" O.C. STAGGERED
SW-6	(2) 16d COMMON NAILS @ 4-1/2" O.C. STAGGERED
SW-7	(2) 16d COMMON NAILS @ 4" O.C. STAGGERED

2 S5.10 FLOOR TRUSSES PARALLEL TO SHEAR WALL
SCALE:NTS

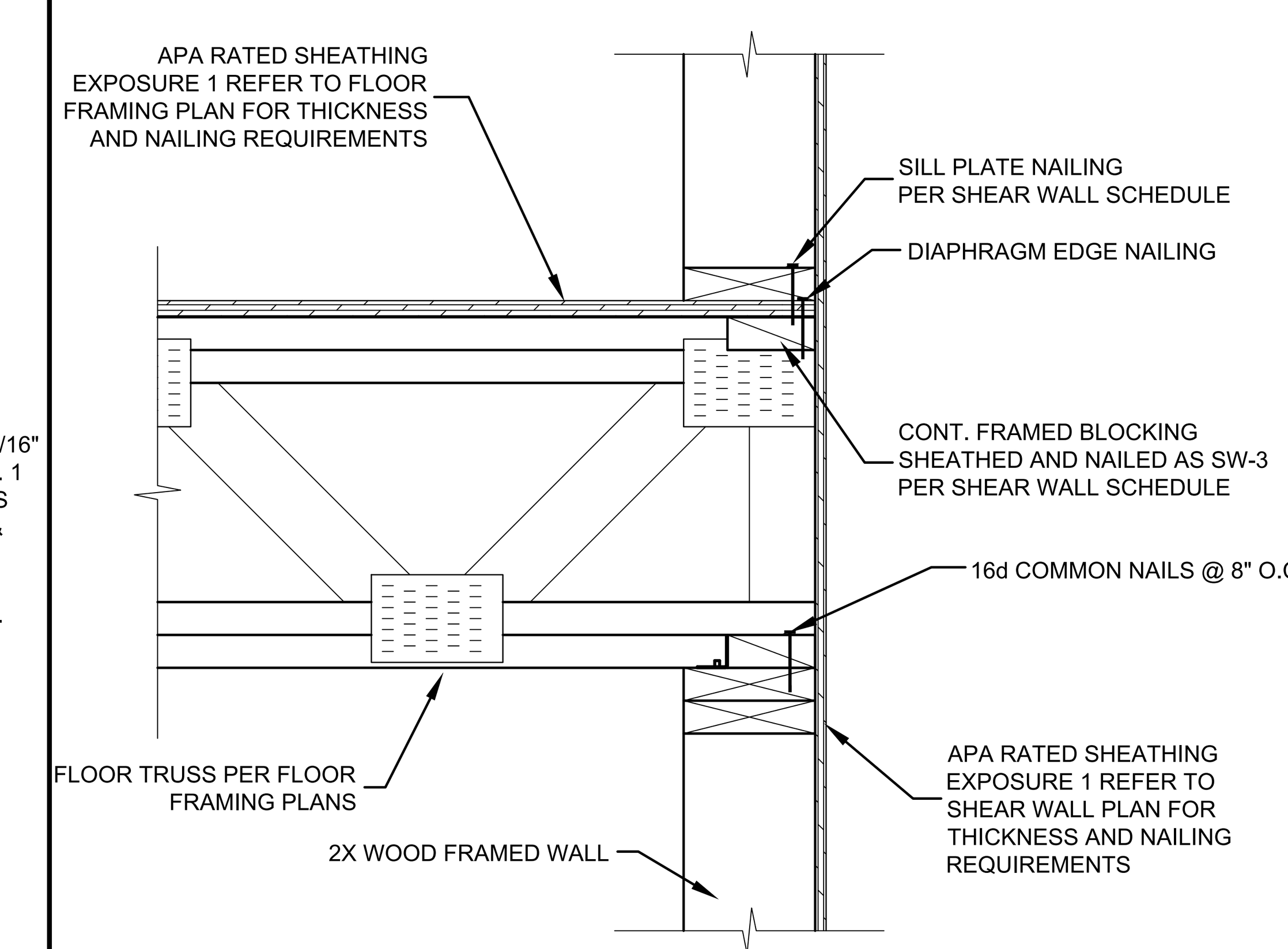
11 S5.10



9 S5.10 INTERIOR CONTINUOUS FOOTING
SCALE:NTS



6 S5.10 ROOF TRUSS ON EXTERIOR BEARING WALL
SCALE: NTS



3 S5.10 FLOOR TRUSSES ON EXTERIOR BEARING/SHEAR WALL
SCALE:NTS

12 S5.10

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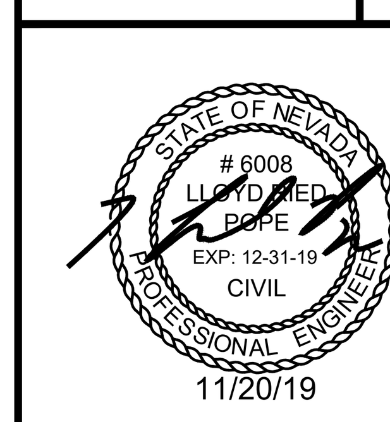
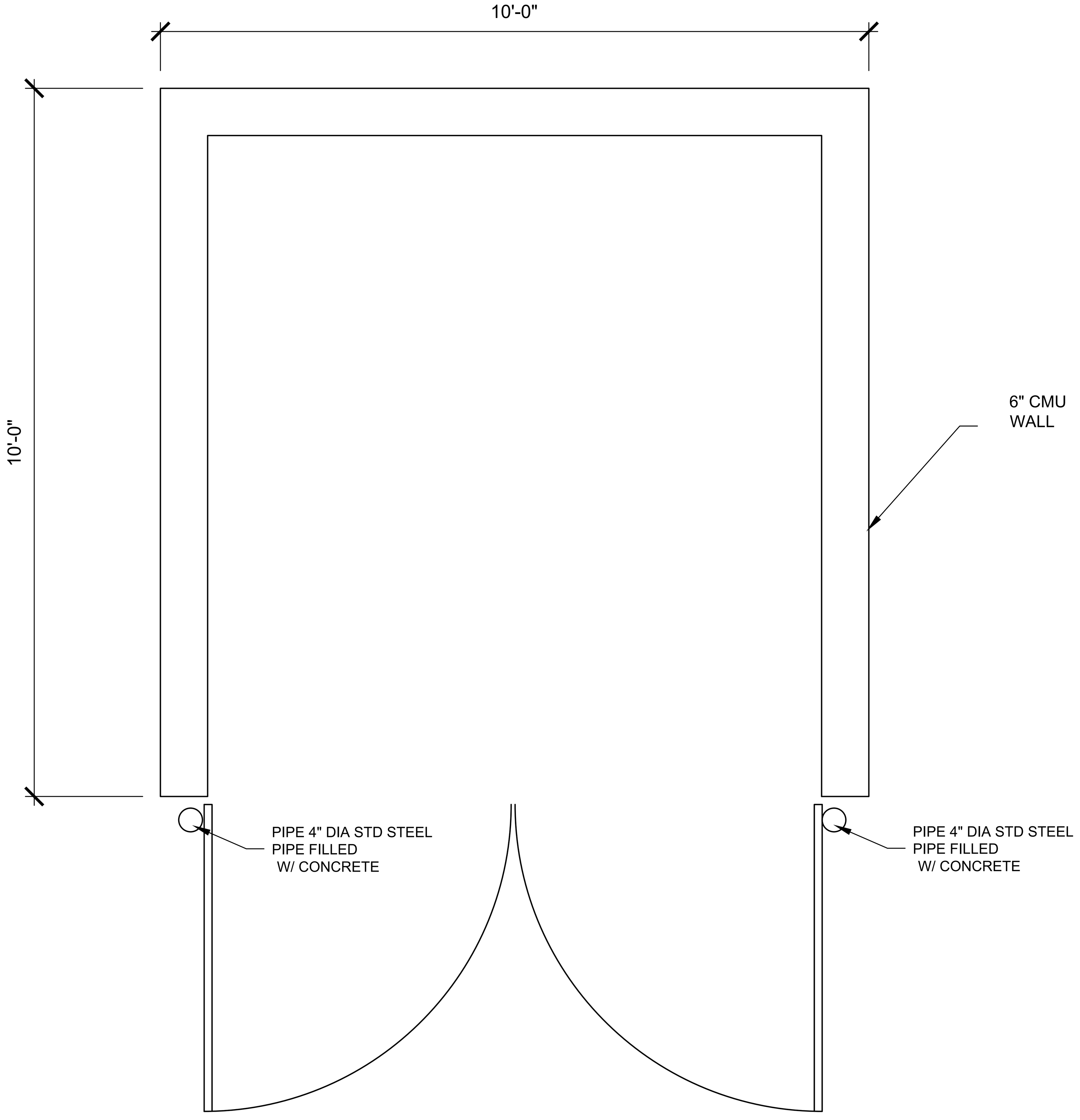
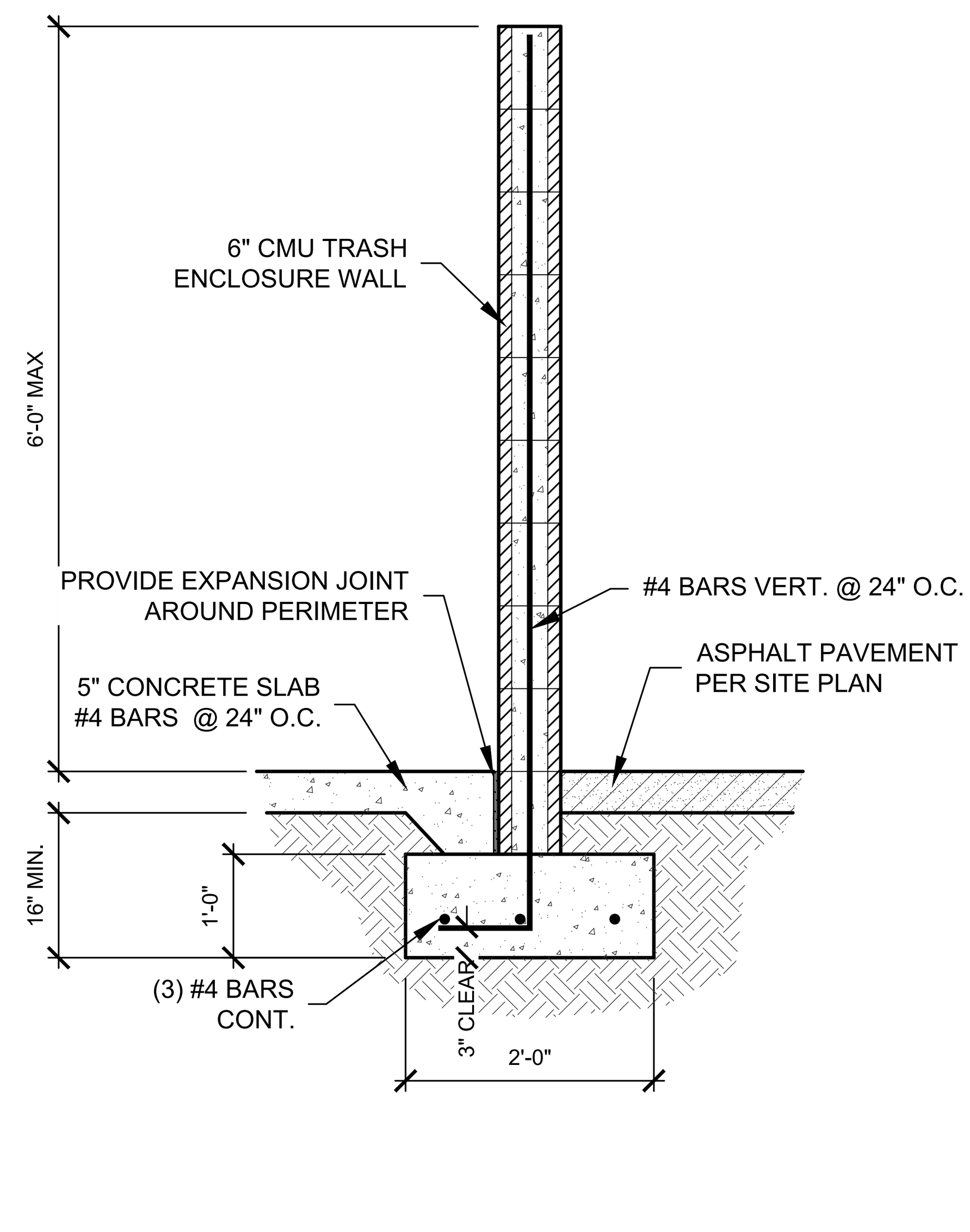
STRUCTURAL DETAILS



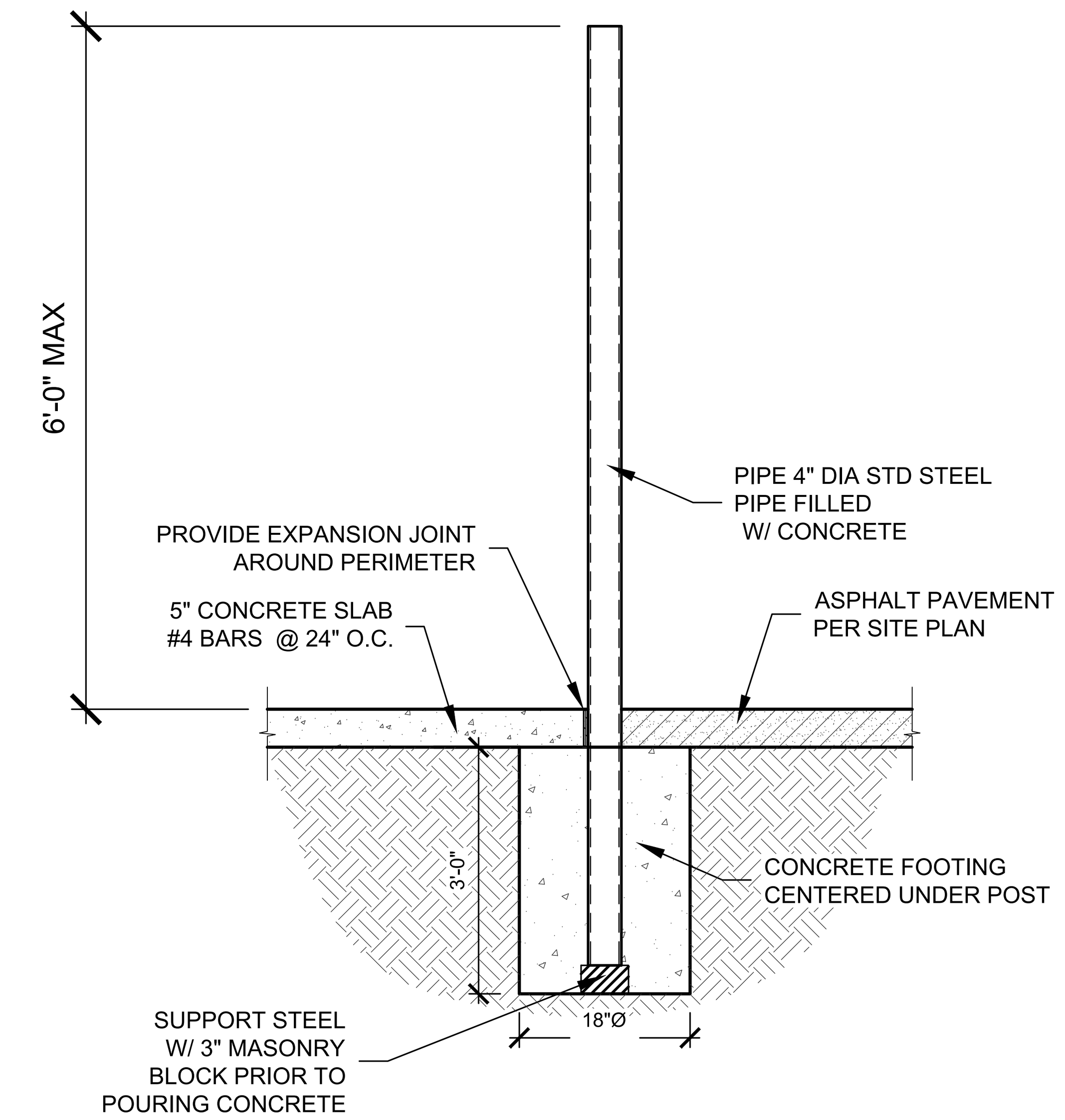
DATE: 6/11/19
DRAWN BY: WCB
PROJECT NO: 1150374
SHEET
S5.10



TOP VIEW



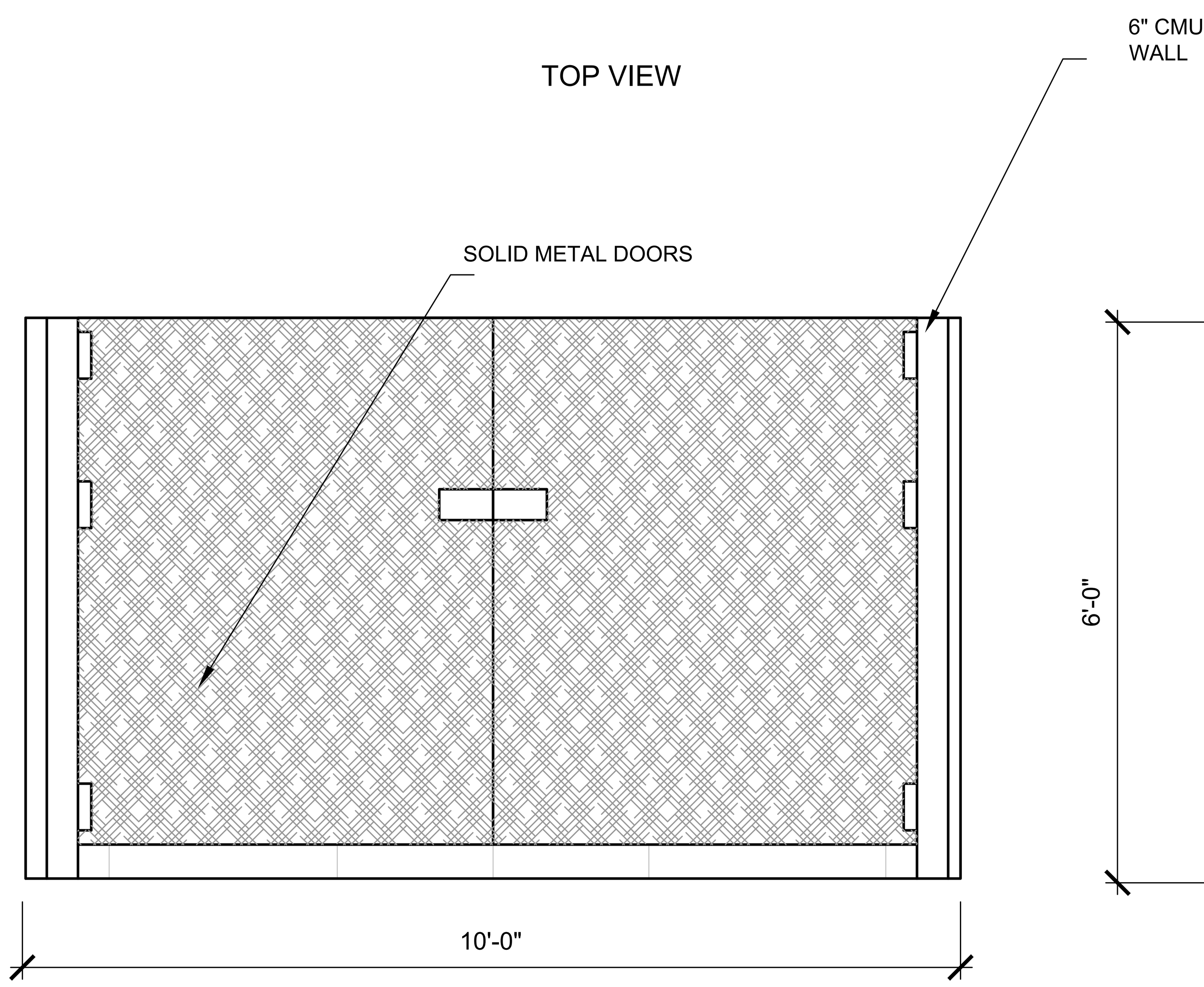
2 S6.10 WALL SECTION



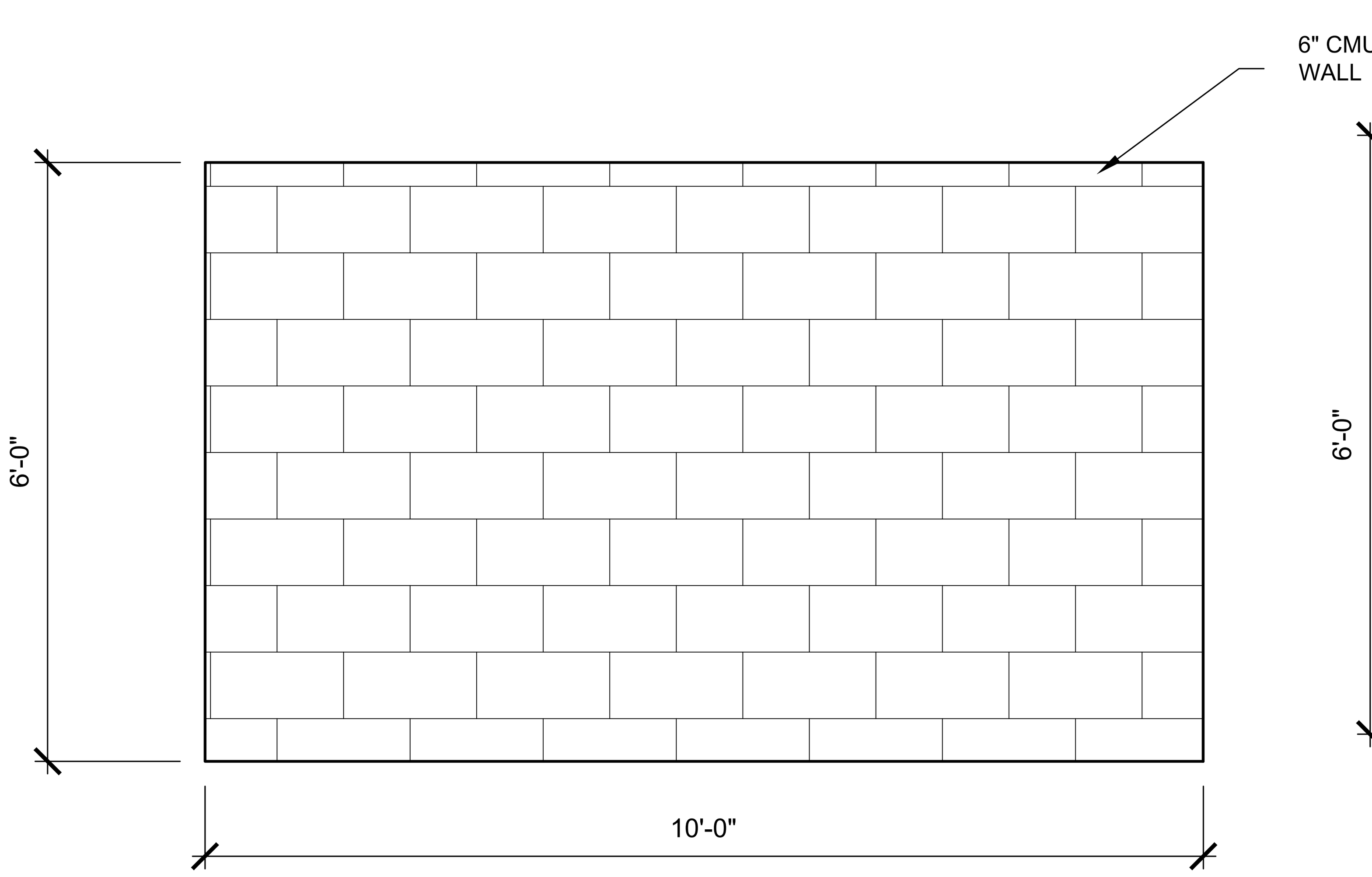
1 S6.10 FOOTING DETAIL

MATERIAL PROPERTIES AND ASSUMPTIONS

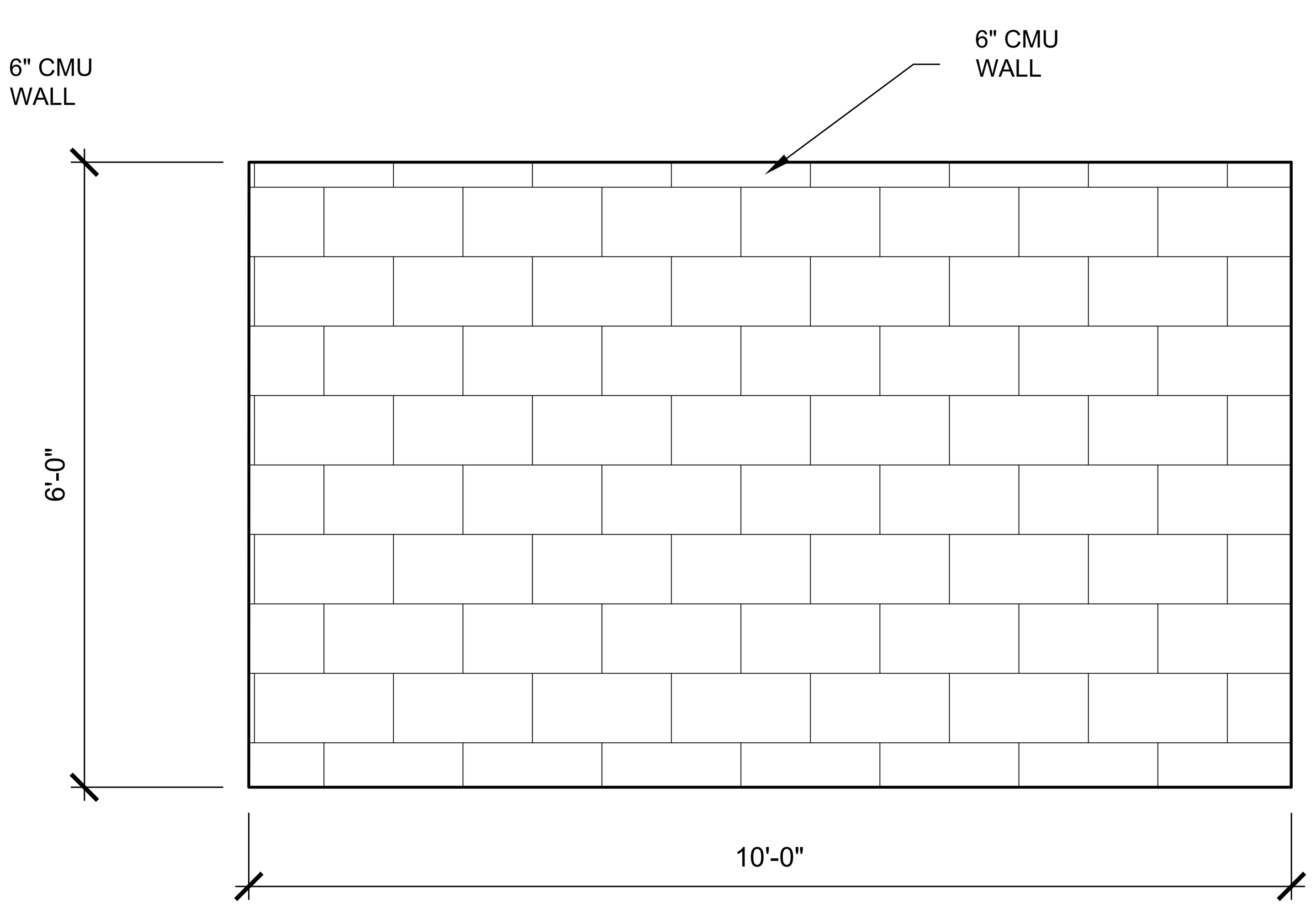
MASONRY: F'm = 1500 PSI AT 28 DAYS WITH TYPE M OR S MORTAR
GROUT: F'c EQUAL TO OR GREATER THAN F'm
CONCRETE: TYPE V CEMENT, F'c = 4000 PSI AT 28 DAYS
STEEL: Fy= 60,000 PSI GRADE 60 REBAR
ASSUMED BEARING CAPACITY = 1500 PSF



FRONT VIEW



SIDE VIEW



REAR VIEW

TRASH ENCLOSURE DETAILS

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TRASH ENCLOSURE DETAILS

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11/20/19

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SHEET
S6.10