GENERAL STRUCTURAL NOTES

1. BUILDING CODES USED FOR DESIGN:

   a. MINNESOTA BUILDING CODE, 2020 EDITION. (IBC 2018)

2. FOUNDATIONS:

   a. ALL FOOTINGS SHALL BEAR ON NATURAL UNDISTURBED SOIL OR ON COMPACTED GRANULAR FILL.
   b. ALL FOOTINGS ARE DESIGNED USING AN ALLOWABLE SOIL BEARING PRESSURE OF 3000 PSF. (SEE GEOTECH REPORT #SP-05-03253 BY BRAUN INTERTEC CORPORATION DATED AUGUST 23, 2005. THIS REPORT WAS PREPARED FOR A PREVIOUSLY PROPOSED PROJECT ON THE SAME SITE). THE GEOTECH ENGINEER SHALL CONFIRM THESE BEARING VALUES AT THE TIME OF EXCAVATION.
   c. GRANULAR FILL SHALL BE COMPACTED TO 98% STANDARD DENSITY (ASTM: D698) UNLESS NOTED OTHERWISE IN GEOTECH REPORT.
   d. IF SOIL AT BOTTOM OF FOOTINGS AS DETAILED IS OF QUESTIONABLE BEARING VALUE, THE ARCHITECT'S OFFICE SHALL BE NOTIFIED AT ONCE.
   e. FOUNDATIONS SHALL NOT BE PLACED ON FROZEN SUBGRADE. THE CONTRACTOR SHALL PROTECT IN-PLACE FOUNDATIONS AND SLABS ON-GRADE FROM FROST PENETRATION UNTIL THE PROJECT IS COMPLETE.
   f. WALL FOOTING ELEVATION CHANGES SHALL BE STEPPED AT A RATIO OF 1 (VERTICAL) TO 2 (HORIZONTAL). MAXIMUM VERTICAL STEP SHALL BE 1'-4" UNLESS NOTED OTHERWISE.
   g. ALL EXTERIOR WALL FOOTINGS SHALL HAVE A MINIMUM SOIL COVER OF 3'-6" MEASURED FROM BOTTOM OF FOOTING UNLESS NOTED OTHERWISE.
   h. SEE GEOTECH REPORT FOR ANTICIPATED SETTLEMENT VALUES. THE OWNER SHOULD VERIFY THAT THIS SETTLEMENT CRITERIA WILL NOT BE DETRIMENTAL TO THE BUILDING OR ITS OPERATION.
   i. PROVIDE A 6" SUB-BASE OF COMPACTIBLE GRANULAR FILL AND A POLY VAPOR BARRIER BENEATH ALL SLABS ON GRADE. COMPACT SAND WITH MECHANICAL EQUIPMENT TO +0" TO -¾" OF CORRECT ELEVATIONS. THE VAPOR BARRIER SHALL BE PLACED DIRECTLY BENEATH THE SLAB. THE SLAB SHALL BE MOIST CURED TO MINIMIZE THE POTENTIAL FOR CURLING.
   j. SUB-BASE FOR SLABS ON GRADE SHALL BE REASONABLY WELL GRADED SAND (SW OR SP) CLEAN AND FREE OF ORGANIC MATERIAL WITH NOT MORE THAN 5%, BY WEIGHT, PASSING A NO. 200 SIEVE AND LESS THAN 40%, BY WEIGHT, PASSING THE #40 SIEVE. COARSE AGGREGATE SHALL NOT EXCEED ¾".
   k. FOUNDATION WALLS ARE DESIGNED FOR LATERAL PRESSURES DUE TO THE FOLLOWING EQUIVALENT FLUID DENSITIES. SUPPLY ADEQUATE DRAINAGE AT ALL BASEMENT AND/OR RETAINING WALLS. WALLS SUPPORTED AT TOP (AT REST CONDITION): 77 PCF. WALLS FREE TO DISPLACE AT TOP (ACTIVE CONDITION): 60 PCF.

3. DESIGN LOADS:

a. WIND LOADS:	
ULTIMATE DESIGN WIND SPEED, V_{ult} (3-SECOND GUST)	= 110 MPH
RISK CATEGORY	= II
EXPOSURE CATEGORY	= C
INTERNAL PRESSURE COEFFICIENT, GC_{pi}	= +/- 0.18 (ENCLOSED)
ADJUSTMENT FACTOR, λ	= 1.49
b. SNOW LOADS:	
GROUND SNOW LOAD, P_g	= 50 PSF
SNOW LOAD IMPORTANCE FACTOR, I_s	= 1.0
SNOW LOAD EXPOSURE FACTOR, C_e	= 1.0
SLOPED ROOF/FLAT ROOF FACTOR, C_s	= 1.0
ROOF THERMAL FACTOR, C_t	= 1.1
ROOF SNOW LOAD, $P_s = P_g (.7)(I_s)(C_e)(C_s)(C_t)$	= 38.5 PSF
SEE PLANS FOR SNOW DRIFT DIAGRAMS	
c. FLOOR LIVE LOADS:	= 40 PSF
d. DEAD LOADS:	
TOTAL ROOF DEAD LOAD	= 20 PSF
TOTAL FLOOR DEAD LOAD	= 15 PSF

4. DESIGN STRESSES:

   a. CONCRETE:

STRENGTH AT 28 DAYS (PSI)	TYPE MIX	LOCATION
3,000	STANDARD WEIGHT	INTERIOR SLABS
4,000	STANDARD WEIGHT	INTERIOR WALLS
4,000	STD WT AIR-ENTRAINED	EXTERIOR SLABS & WALLS
3,000	STANDARD WEIGHT	FOOTINGS

b. NON-SHRINK GROUT	f'_c = 8,000 PSI (AT 28 DAYS)
c. REINFORCEMENT	F_y = 60,000 PSI ASTM A615 (DEFORMED BARS)
d. STRUCTURAL STEEL	
(i) WIDE FLANGE SHAPES	F_y = 50,000 PSI ASTM A992
(ii) ALL OTHER SHAPES	F_y = 36,000 PSI ASTM A36
e. RECTANGULAR HSS	F_y = 46,000 PSI ASTM A500 GRADE B
f. ROUND HSS	F_y = 42,000 PSI ASTM A500 GRADE B
g. STANDARD STEEL PIPE	F_y = 35,000 PSI ASTM A53 GRADE B
h. PLATES	F_y = 36,000 PSI ASTM A36
i. BOLTS	F_u = 120,000 PSI ASTM A325
j. ANCHOR RODS	F_u = 58,000 PSI ASTM F1554 GRADE 36
k. HEADED STUD ANCHORS	F_u = 60,000 PSI ASTM A108
l. WELD ELECTRODE	F_u = 70,000 PSI
m. WELDED WIRE FABRIC	ASTM A185

5. CONCRETE COVERAGE FOR REINFORCEMENT:

a. FOOTINGS	3" FROM BOTTOM
b. FOUNDATION WALLS	EXTERIOR FACE 2" INTERIOR FACE 1"
c. STRUCTURAL SLAB	1" TOP AND BOTTOM
d. EXPOSED EXTERIOR CONCRETE	2"
e. SLAB ON GRADE	1" FROM TOP

6. REINFORCING STEEL:

   a. THE REINFORCING STEEL CONTRACTOR SHALL FABRICATE ALL REINFORCEMENT AND FURNISH ALL ACCESSORIES, CHAIRS, SPACER BARS AND SUPPORTS NECESSARY TO SECURE THE REINFORCEMENT UNLESS SHOWN OTHERWISE ON THE PLANS AND/OR DETAILS.
   b. CONCRETE REINFORCEMENT SHALL BE PLACED ACCORDING TO THE CRSI "RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS".
   c. COMPRESSION AND TENSION LAP SPLICES FOR CAST-IN-PLACE CONCRETE SHALL BE AS INDICATED IN THE "LAP SPLICE LENGTH SCHEDULE FOR CLASS B LAP SPLICES", UNLESS NOTED OTHERWISE.
   d. HORIZONTAL REINFORCING STEEL IN FOOTINGS AND CONCRETE WALLS SHALL BE CONTINUOUS AROUND CORNERS.
   e. ALL LAPS IN WWF SHOULD BE ONE MESH PLUS TWO INCHES AT SPLICES.
   f. TOP BARS SHALL BE HOOKED AT END SPANS.
   g. REINFORCING BARS MAY NOT BE WELDED WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER.

7. CONCRETE:

   a. CONCRETE WORK SHALL CONFORM TO ALL REQUIREMENTS OF ACI 301.
   b. EACH CONCRETE MIX SHALL BE DESIGNED BY A REGISTERED ENGINEER. A STAMPED COPY OF EACH MIX DESIGN SHALL BE SUBMITTED TO THE ENGINEER OF RECORD PRIOR TO CONSTRUCTION.
   c. COMPLY WITH ACI 304 FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE.
   d. COMPLY WITH ACI 305 FOR HOT WEATHER CONCRETING.
   e. COMPLY WITH ACI 306 FOR COLD WEATHER CONCRETING.
   f. UNLESS SPECIFIED OTHERWISE, CONCRETE MUST REACH THE FOLLOWING PERCENTAGES OF ITS 28 DAY COMPRESSIVE STRENGTH (F'_c) BEFORE FORMS MAY BE REMOVED:
      WALLS — 40 PERCENT

8. DIMENSION LUMBER:

   a. DIMENSION LUMBER TO BE SPF NO 2 (OR BETTER).
      ALL SPF MEMBERS SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES:

BENDING STRESS	Fb = 875 PSI
SHEAR STRESS PARALLEL TO GRAIN	Fv = 135 PSI
TENSION PARALLEL TO GRAIN	Ft = 450 PSI
MODULUS OF ELASTICITY	E = 1,400,000 PSI
COMPRESSION PARALLEL TO GRAIN	$F_{c\parallel}$ = 1,150 PSI
COMPRESSION PERPENDICULAR TO GRAIN	$F_{c\perp}$ = 425 PSI

   b. ALL MEMBER SIZES GIVEN ON PLAN ARE NOMINAL DIMENSIONS.
   c. WOOD LINTELS SHALL HAVE A FULL 3" LENGTH OF BEARING AT EACH END UNLESS OTHERWISE NOTED.
   d. ALL NAILING SHALL CONFORM TO IBC TABLE 2304.9.1 "FASTENING SCHEDULE" UNLESS NOTED ON THE PLANS.
   e. SPACING OF BRIDGING FOR FLOOR AND ROOF JOISTS SHALL NOT EXCEED 8' OR 6 TIMES THE NOMINAL JOIST DEPTH (WHICHEVER IS GREATER).
   f. DOUBLE ALL JOISTS UNDER PARALLEL PARTITIONS.
   g. ALL WOOD CONNECTORS SHALL BE BY "USP LUMBER CONNECTORS" OR "SIMPSON STRONG-TIE". ALL JOISTS AND BEAMS NOT BEARING ON A SUPPORTING MEMBER SHALL BE FRAMED WITH AN APPROPRIATE WOOD CONNECTOR.
   h. WOOD STUD BEARING WALLS SHALL HAVE AT LEAST 8" OF CONCRETE BETWEEN THE BOTTOM OF THE SILL PLATE AND THE TOP OF THE FOOTING.
   i. WOOD JOISTS SHALL BEAR ON THE FULL WIDTH OF SUPPORTING MEMBERS (STUD WALLS, BEAMS, ETC), UNLESS NOTED OTHERWISE.
   j. PROVIDE SOLID BLOCKING BELOW ALL JAMB/TRIMMER/CRIPPLE/BEARING STUDS (TYPICAL AT ALL FLOORS).
   k. ALL FOUNDATION PLATES, SILLS AND SLEEPERS WHICH REST ON CONCRETE SLAB, ARE IN DIRECT CONTACT WITH EARTH, AND SILLS WHICH REST ON CONCRETE FOUNDATION WALLS, SHALL BE TREATED WOOD.
   l. FOUNDATION PLATES SHALL BE ANCHORED TO THE FOUNDATION WITHIN 12", BUT NOT LESS THAN 4", FROM EACH END OF THE PLATE. PROVIDE TWO ANCHORS MINIMUM PER PLATE.
   m. FOR ALL WOOD TREATED WITH ACQ (AMMONIA BASED) PRESERVATIVES, CONNECTORS AND FASTENERS MUST BE COATED WITH ONE OF THE FOLLOWING:
      1. HOT DIPPED GALVANIZED PER ASTM A123 FOR CONNECTORS AND ASTM 153 FOR FASTENERS.
      2. MECHANICALLY GALVANIZED PER ASTM 695, CLASS 55 OR GREATER.
      3. TRIPLE ZINC G185 HDG PER ASTM A653 OR EQUAL.

9. ENGINEERED LUMBER

   a. LAMINATED VENEER LUMBER (LVL)
      ALL LVL MEMBERS SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES:

ALLOWABLE BENDING STRESS,	F_b = 2,600 PSI
ALLOWABLE SHEAR STRESS,	F_v = 285 PSI
MODULUS OF ELASTICITY,	E = 1,900,000 PSI

   b. LAMINATED STRAND LUMBER (LSL)
      ALL LSL STUDS AND COLUMNS SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES:

	(2x6 OR SMALLER)	(2x8 OR LARGER)
ALLOWABLE BENDING STRESS	F_b = 1,700 PSI	F_b = 2,250 PSI
ALLOWABLE SHEAR STRESS	F_v = 400 PSI	F_v = 400 PSI
MODULUS OF ELASTICITY	E = 1,300,000 PSI	E = 1,500,000 PSI
COMPRESSION PARALLEL TO GRAIN	$F_{c\parallel}$ = 1,400 PSI	$F_{c\parallel}$ = 1,950 PSI

   c. PARALLEL STAND LUMBER (PSL)
      ALL PSL BEAMS AND COLUMNS SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES:

	(BEAMS)	(COLUMNS)
ALLOWABLE BENDING STRESS	F_b = 2,900 PSI	F_b = 2,400 PSI
ALLOWABLE SHEAR STRESS	F_v = 290 PSI	NA
MODULUS OF ELASTICITY	E = 2,000,000 PSI	E = 1,800,000 PSI
COMPRESSION PARALLEL TO GRAIN	$F_{c\parallel}$ = 2,900 PSI	$F_{c\parallel}$ = 2,500 PSI

   d. MULTI-PLY MEMBERS SHALL BE FASTENED TOGETHER ACCORDING TO MANUFACTURER'S RECOMMENDATIONS, UNLESS NOTED OTHERWISE ON PLANS.

10. SHOP-FABRICATED WOOD TRUSSES:

   a. TRUSSES SHALL BE DESIGNED TO MEET ALL LOADING AND SPANS AS INDICATED ON THE PLANS.
   b. TRUSSES SHALL BE DESIGNED AND CERTIFIED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE PROJECT STATE.
   c. ALL PERMANENT BRACING FOR INDIVIDUAL TRUSS COMPRESSION ELEMENTS SHALL BE PROVIDED AS INDICATED ON THE TRUSS SHOP DRAWINGS. THE DESIGN OF THIS BRACING IS THE RESPONSIBILITY OF THE TRUSS SUPPLIER.
   d. THE CONTRACTOR SHALL INSTALL ALL NECESSARY TEMPORARY BRACING AS REQUIRED BY BCSI (BY TPI – LATEST EDITION) AND BE FULLY RESPONSIBLE FOR THE STABILITY OF THE TRUSSES DURING ERECTION.
   e. CONNECTOR PLATES SHALL BE MADE OF GRADE 'A' GALVANIZED STEEL, MINIMUM 20 GAGE PER LATEST TPI SPECIFICATIONS.
   f. ALL CONNECTION HARDWARE SHALL BE DESIGNED AND FURNISHED BY THE TRUSS SUPPLIER UNLESS NOTED OTHERWISE ON THE PLANS.
   g. SCISSOR TRUSSES SHALL BE DESIGNED SUCH THAT HORIZONTAL LIVE LOAD DEFLECTIONS DO NOT EXCEED ¾". WALLS ARE NOT DESIGNED TO RESIST A HORIZONTAL TRUSS REACTION.
   h. THE STRUCTURE IS DESIGNED ACCORDING TO THE TRUSS LAYOUT INDICATED ON THE PLANS. THE TRUSS SUPPLIER SHALL NOT DEVIATE FROM THIS LAYOUT WITHOUT PERMISSION FROM THE ENGINEER OF RECORD.
   i. ROOF TRUSSES SHALL BE DESIGNED FOR UNBALANCED SNOW LOADS IN ACCORDANCE WITH ASCE 7.
   j. TRUSSES SHALL BE DESIGNED FOR A TOP CHORD DEAD LOAD OF 10 PSF AND A BOTTOM CHORD DEAD LOAD OF 10 PSF UNLESS NOTED OTHERWISE ON THE PLANS.
   k. DESIGN FLOOR TRUSSES FOR A MAXIMUM LIVE LOAD DEFLECTION OF L/480, UNLESS NOTED OTHERWISE ON PLANS.

11. BACKFILLING:

   a. NO BACKFILLING AND COMPACTING OF EARTH SHALL BE PERMITTED AGAINST FOUNDATION WALLS UNTIL SUPPORTING FLOOR SYSTEMS HAVE BEEN PLACED AND HAVE REACHED 75% OF THEIR DESIGN STRENGTH OR UNLESS ADEQUATE BRACING SUBMITTED FOR REVIEW IS PROVIDED.
   b. BOTH SIDES OF FOUNDATION WALLS SHALL BE BACKFILLED SIMULTANEOUSLY SO AS TO PREVENT OVERTURNING OR LATERAL MOVEMENT OF WALLS.

12. CONSTRUCTION AND CONTRACTION JOINTS IN CONCRETE:

   a. CONSTRUCTION JOINTS SHALL BE MADE AS DETAILED ON THE DRAWINGS.
   b. CONSTRUCTION AND/OR CONTRACTION JOINTS FOR SLAB ON GRADE CONSTRUCTION SHALL BE LOCATED ON COLUMN LINES.
   c. MAXIMUM SPACING FOR CONTRACTION JOINTS IN SLABS ON GRADE SHALL BE 36 TIMES (36T) THE SLAB THICKNESS, BUT NOT TO EXCEED 15'-0" FOR ANY SLAB THICKNESS. JOINTS SHALL BE PLACED TO PRODUCE PANELS THAT ARE AS SQUARE AS POSSIBLE AND NEVER EXCEEDING A LENGTH TO WIDTH RATIO OF 1.5 TO 1.
   d. CONCRETE CONTRACTOR SHALL SUBMIT A DETAILED JOINT LAYOUT AND PLACING SEQUENCE PLAN FOR APPROVAL BY THE ENGINEER OF RECORD PRIOR TO SLAB CONSTRUCTION.
   e. A 36T MAXIMUM SPACING OF CONTRACTION JOINTS MAY NOT ENSURE COMPLETE CONTROL OF SHRINKAGE CRACKS. A CLOSER SPACING MAY BE USED BY REQUEST OF OWNER IF MORE COMPLETE SHRINKAGE CRACK CONTROL IS DESIRED. CONTRACTOR TO VERIFY WITH OWNER.

13. POST-INSTALLED ANCHORS:

   a. ALL POST-INSTALLED ANCHORS SHALL BE AS NOTED ON DRAWINGS AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS AND ICC EVALUATION REPORTS CORRESPONDING TO THAT ANCHOR.
   b. SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE PRODUCT/TECHNICAL INFORMATION DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERFORMANCE VALUES OF THE SPECIFIED PRODUCT INCLUDING AN ICC-ES REPORT SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE, SEISMIC USE, LOAD RESISTANCE, INSTALLATION CATEGORY, IN-SERVICE TEMPERATURE, INSTALLATION TEMPERATURE, ETC.
   c. ANCHOR TYPE, SIZE AND EMBEDMENT SHALL BE AS INDICATED IN DRAWINGS.
   d. POST-INSTALLED ANCHORS SHALL NOT BE INSTALLED UNTIL CONCRETE OR GROUT HAS REACHED ITS DESIGN STRENGTH. IN ADDITION, ADHESIVE ANCHORS SHALL BE INSTALLED IN CONCRETE OR GROUT HAVING A MINIMUM AGE OF 21 DAYS AT THE TIME OF ANCHOR INSTALLATION PER ACI 318.
   e. ADHESIVE ANCHORS IN HOLLOW CMU OR BRICK SHALL BE INSTALLED WITH MANUFACTURER APPROVED SCREEN TUBE.
   f. REINFORCING STEEL DOWELS, THREADED RODS AND ANCHORS SHALL BE FREE OF DUST, GREASE, RUST AND OTHER MATERIALS THAT WILL IMPAIR BOND WITH CONCRETE OR GROUT.
   g. DO NOT CUT OR DAMAGE EXISTING REINFORCING STEEL UNLESS APPROVED BY THE STRUCTURAL ENGINEER. MAINTAIN A MINIMUM CLEARANCE OF ONE-INCH BETWEEN EXISTING REINFORCEMENT AND NEW ANCHORS. IF REQUIRED, EXISTING REINFORCING STEEL SHALL BE POSITIVELY LOCATED BY NON-DESTRUCTIVE MEANS PRIOR TO DRILLING HOLES.
   h. WHERE EXISTING CONCRETE IS DAMAGED AND/OR DRILLED HOLES ABANDONED, THE DAMAGED CONCRETE OR ABANDONED HOLES SHALL BE REPAIRED OR FILLED WITH NON-SHRINK GROUT, RESPECTIVELY. BRING EACH CONDITION TO THE ATTENTION OF THE STRUCTURAL ENGINEER PRIOR TO IMPLEMENTING REPAIRS.
   i. DO NOT INSTALL ANCHORS IN PRESTRESSED CONCRETE ELEMENTS UNLESS APPROVED BY THE ENGINEER OF RECORD.
   j. ADHESIVE ANCHORS INSTALLED IN A HORIZONTALLY OR UPWARDLY INCLINED ORIENTATION INTO CONCRETE AND SUPPORTING A SUSTAINED TENSION LOAD MUST PASS ACI 355.4 OPTIONAL TESTS AND INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318. INSTALLER SHALL BE CERTIFIED THROUGH THE ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM OR APPROVED EQUAL. CONTINUOUS SPECIAL INSPECTION IS REQUIRED.
   k. ALL ADHESIVE FOR REBAR AND ANCHORS HAS BEEN DESIGNED BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE DRILL BIT INTO CRACKED CONCRETE.

14. CONSTRUCTION PROCEDURE:

   a. THE STRUCTURE SHALL BE ADEQUATELY BRACED AND SHORED DURING ERECTION AGAINST WIND AND ERECTION LOADS. STRUCTURAL MEMBERS ARE DESIGNED FOR "INPLACE" LOADS.
   b. COMPLY WITH ALL APPLICABLE CITY, COUNTY, STATE AND FEDERAL LAWS, INCLUDING THE OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) AND REGULATIONS ADOPTED PURSUANT THERETO.
   c. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. UNLESS OTHERWISE NOTED, THEY DO NOT INDICATE THE MEANS OR METHOD OF CONSTRUCTION. PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE, WORKMEN OR OTHER PERSONS DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT ARE NOT LIMITED TO BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR THE BUILDING, SHORING FOR EARTH BANKS, FORMS, SCAFFOLDING, PLANKING, SAFETY NETS, SUPPORT AND BRACING FOR CRANES AND GIN POLES, ETC.
   d. ENGAGE PROPERLY QUALIFIED PERSONS TO DETERMINE WHERE AND HOW TEMPORARY PRECAUTIONARY MEASURES SHALL BE USED AND INSPECT SAME IN THE FIELD. OBSERVATION VISITS TO THE SITE BY ENGINEER'S FIELD REPRESENTATIVE SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.
   e. SUPERVISE AND DIRECT THE WORK SO AS TO MAINTAIN SOLE RESPONSIBILITY FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES. AS A PART OF THIS RESPONSIBILITY, RETAIN THE SERVICES OF A LICENSED STRUCTURAL ENGINEER TO DESIGN AND SUPERVISE ANY SCAFFOLDING FOR WORKMEN, AND ALL SHORING OF FORMS AND ELEMENTS OF THE CONSTRUCTION.

15. MISCELLANEOUS

   a. PLACEMENT OF ANCHOR BOLT, PIPE SLEEVES, PADS AND OPENINGS FOR EQUIPMENT SHALL BE COORDINATED BETWEEN THE GENERAL CONTRACTOR AND THE OTHER SUBCONTRACTORS.
   b. ALL CORE DRILLING SHALL BE DONE UNDER THE SUPERVISION OF THE GENERAL CONTRACTOR. NO REINFORCING SHALL BE CUT. VERIFY LOCATION OF REINFORCING BEFORE CORE DRILLING. THERE SHALL NOT BE ANY CORE DRILLING THROUGH BEAMS OR COLUMNS. MAXIMUM CORE HOLE THROUGH SLABS SHALL BE PIPE DIAMETER PLUS 1".

16. COORDINATION WITH ARCHITECTURAL DRAWINGS:

   a. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS WITH THE ARCHITECTURAL DRAWINGS. WHERE DISCREPANCIES OCCUR, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ARCHITECT PRIOR TO CONSTRUCTION.

17. SHOP DRAWINGS:

   a. SHOP DRAWINGS, UNLESS OTHERWISE NOTED, SHALL BE SUBMITTED FOR REVIEW PRIOR TO FABRICATION.
   b. SHOP DRAWINGS SHALL BE PREPARED UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER, AND INCLUDE COMPLETE DETAILS SCHEDULES, PROCEDURES AND DIAGRAMS FOR FABRICATION AND ASSEMBLY OF STRUCTURAL MEMBERS.
   c. FABRICATORS SHALL DRAW THEIR OWN ERECTION PLANS. COPYING STRUCTURAL PLANS AND USING THEM AS ERECTION DRAWINGS IS NOT ACCEPTABLE.
   d. PRIOR TO SUBMITTAL, THE CONTRACTOR SHALL REVIEW THE SHOP DRAWINGS AND MAKE ANY CORRECTIONS REQUIRED. THE CONTRACTOR SHALL STAMP AND SIGN THE DRAWINGS AS EVIDENCE THAT HE HAS REVIEWED THEM.
   e. SHOP DRAWINGS SHALL BE FURNISHED FOR ALL STRUCTURAL COMPONENTS.
   f. TURN AROUND TIME FOR SHOP DRAWINGS SHALL BE TWO WEEKS FROM DATE RECEIVED IN THE ENGINEER'S OFFICE.

18. IBC SPECIAL INSPECTION REQUIREMENTS

   SPECIAL INSPECTIONS SHALL BE PROVIDED IN ACCORDANCE WITH IBC SECTION 1705, AS OUTLINED BELOW. THE SPECIAL INSPECTOR SHALL BE EMPLOYED BY THE OWNER, SHALL BE THOROUGHLY KNOWLEDGEABLE OF IBC SPECIAL INSPECTION REQUIREMENTS AND SHALL DEMONSTRATE COMPETENCE TO THE SATISFACTION OF THE BUILDING OFFICIAL (IBC 1704.2.1). THE CONTRACTOR SHALL CONTACT THE SPECIAL INSPECTOR DURING APPROPRIATE PHASES OF CONSTRUCTION SO THAT INSPECTIONS CAN BE MADE IN A TIMELY MANNER. THE SPECIAL INSPECTOR SHALL SUBMIT WRITTEN INSPECTION REPORTS TO THE ENGINEER OF RECORD'S OFFICE, WITHIN 3 WORKING DAYS OF EACH INSPECTION. ANY PROBLEMS SHOULD BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR. THE FOLLOWING ITEMS WILL REQUIRE SPECIAL INSPECTION:

   a. CONCRETE
      - REINFORCEMENT: REINFORCING STEEL SHALL BE INSPECTED ON A PERIODIC BASIS. WELDING OF REINFORCEMENT SHALL BE CONTINUOUSLY INSPECTED. ONLY ASTM A706 REINFORCEMENT MAY BE WELDED.
      - ANCHOR BOLTS: ANCHOR BOLTS PLACEMENT SHALL BE PERIODICALLY INSPECTED.
      - SAMPLING AND TESTING: CONTINUOUS INSPECTIONS SHALL BE PROVIDED DURING SLUMP TESTS, AIR CONTENT TESTS AND WHEN DETERMINING THE TEMPERATURE OF FRESH CONCRETE AT THE TIME OF MAKING SPECIMENS FOR STRENGTH TESTS.
      - CONCRETE PLACEMENT: PERIODIC INSPECTION REQUIRED.
      - COLD AND HOT WEATHER CONCRETING. PERIODIC INSPECTION OF COMPLIANCE IS REQUIRED.
   b. SOILS
      - THE SPECIAL INSPECTOR SHALL DETERMINE COMPLIANCE WITH THE SOIL REPORT FOR SITE PREPARATION, FILL PLACEMENT AND DENSITY TESTS.

19. IBC SPECIAL INSPECTION TESTING REQUIREMENTS

   a. CONCRETE
      - SAMPLE FOR STRENGTH TESTS OF EACH CLASS OF CONCRETE PLACED EACH DAY SHALL BE TAKEN NOT LESS THAN ONCE A DAY, NOR LESS THAN ONCE FOR EACH 150 CUBIC YARDS OF CONCRETE, NOR LESS THAN ONCE FOR EACH 5,000 SQUARE FEET OF SURFACE AREA FOR SLABS OR WALLS. A MINIMUM OF FIVE STRENGTH TESTS SHOULD BE MADE FOR A GIVEN PROJECT.

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I hereby certify that this plan, specifications, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Catherine A. Kray

Date: 09/30/2020 Reg No: 25407

RED WING TOWN HOMES BLDG 2-2
RED WING, MN

PERMIT SET 09-30-2020

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Revisions: No:	Date:	Description:

Sheet Title: GENERAL STRUCTURAL NOTES

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Drawn by: AJM
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Date: 09-30-2020

Sheet No: S000

FASTENING SCHEDULE (IBC TABLE 2304.10.1)

DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND YPE OF FASTENER	SPACING AND LOCATION
ROOF		
1. BLOCKING BETWEEN CEILING JOISTS, RAFTERS, OR TRUSSES TO TOP PLATE OR OTHER FRAING BELOW	(3) 8d COMMON (2 1/2" X 0.131"); OR (3) 10d BOX (3" X 0.128"); OR (3) 3" X 0.131" NAILS; OR (3) 3" 14 GAGE STAPLES, 7/16" CROWN	EACH END, TOENAIL
BLOCKING BETWEEN RAFTER OR TRUSS NOT AT THE WALL TOP PLATE, TO RAFTER OR TRUSS	(2) 8d COMMON (2 1/2" X 0.131") (2) 3" x 0.131" NAILS (2) 3" 14 GAGE STAPLES	EACH END, TOENAIL
	(2) 16d COMMON (3 1/2" X 0.162") (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	END NAIL
FLAT BLOCKING TO TRUSS AND WEB FILLER	16d COMMON (3 1/2" X 0.162") AT 6" OC 3" X 0.131" NAILS AT 6" OC 3" X 14 GAGE STAPLES AT 6" OC	FACE NAIL
2. CEILING JOISTS TO TOP PLATE	(3) 8d COMMON (2 1/2" X 0.131"); OR (3) 10d BOX (3" X 0.128"); OR (3) 3" X 0.131" NAILS; OR (3) 3" 14 GAGE STAPLES, 7/16" CROWN	EACH JOIST, TOENAIL
3. CEILING JOIST NOT ATTACHED TO PARALLEL RAFTER, LAPS OVER PARTITIONS (NO THRUST) (SEE SECTION 2308.7.3.1, TABLE 2308.7.3.1	(3) 16d COMMON (3 1/2" X 0.162"); OR (4) 10d BOX (3" X 0.128"); OR (4) 3" X 0.131" NAILS ; OR (4) 3" X 14 GAGE STAPLES, 7/16" CROWN	FACE NAIL
4. CEILING JOIST ATTACHED TO PARALLEL RAFTER (HEEL JOINT) (SEE SECTION 2308.7.3.1, TABLE 2308.7.3.1)	PER TABLE 2308.7.3.1	FACE NAIL
5. COLLAR TIE TO RAFTER	(3) 10d COMMON (3" X 0.148"); OR (4) 10d BOX (3" X 0.128"); OR (4) 3" X 0.131" NAILS; OR (4) 3" 14 GAGE STAPLES, 7/16" CROWN	FACE NAIL
6. RAFTER OR ROOF TRUSS TO TOP PLATE (SEE SECTION 2308.7.5, TABLE 2308.7.5)	(3) 10d COMMON (3" X 0.148"); OR (3) 16d BOX (3 1/2" X 0.135"); OR (4) 10d BOX (3" X 0.128"; OR (4) 3" X 0.131" NAILS; OR (4) 3" 14 GAGE STAPLES, 7/16" CROWN	TOENAIL
7. ROOF RAFTERS TO RIDGE VALLEY OR HIP RAFTERS; OR ROOF RAFTER TO 2 INCH RIDGE BEAM	(2) 16d COMMON (3 1/2" X 0.162"); OR (3) 10d BOX (3" X 0.128"); OR (3) 3" X 0.131" NAILS; OR (3) 3" 14 GAGE STAPLES, 7/16" CROWN	END NAIL
	(3) 10d COMMON (3 1/2" X 0.148"); OR (3) 16d BOX (3 1/2" X 0.135"); OR (4) 10d BOX (3" X 0.128"); OR (4) 3" X 0.131" NAILS; OR (4) 3" 14 GAGE STAPLES, 7/16" CROWN	TOENAIL
WALL		
8. STUD TO STUD (NO AT BRACED WALL PANELS)	16d COMMON (3 1/2" X 0.162");	24" OC FACE NAIL
	10d BOX (3" X 0.128"); OR 3" X 0.131" NAILS: OR (3) 3" 14 GAGE STAPLES, 7/16" CROWN	16" OC FACE NAIL
9. STUD TO SUD AND ABUTTING STUDS AT INTERSECTING WALL CORNERS (AT BRACED WALL PANELS)	16d COMMON (3 1/2" X 0.162"); OR	16" OC FACE NAIL
	16d BOX (3 1/2" X 0.135"); OR	12" OC FACE NAIL
	3" X 0.131" NAILS; OR (3) 3" 14 GAGE STAPLES, 7/16" CROWN	12" OC FACE NAIL
10. BUILT-UP HEADER (2" TO 2" HEADER)	16d COMMON (3 1/2" X 0.162"); OR	16" OC EACH EDGE, FACE NAIL
	16d BOX (3 1/2" X 0.135")	12" OC EACH EDGE, FACE NAIL
11. CONTINUOUS HEADER TO STUD	(4) 8d COMMON (2 1/2" X 0.131"); OR (4) 10d BOX (3" X 0.128")	TOENAIL
12. TOP PLATE TO TOP PLATE	(2) 16d COMMON (3 1/2" X 0.162"); OR	16" OC FACE NAIL
	10d BOX (3" X 0.128"); OR 3" X 0.131" NAILS; OR 3" 14 GAGE STAPLES, 7/16" CROWN	12" OC FACE NAIL
13. TOP PLATE TO TOP PLATE, AT END JOINTS	(8) 16d COMMON (3 1/2" X 1.0162"); OR (12) 10d BOX (3" X 0.128"); OR (12) 3" X 0.131" NAILS; OR (12) 3" 14 GAGE STAPLES, 7/16" CROWN	EACH SIDE OF END JOINT, FACE NAIL (MINIMUM 24" LAP SPLICE LENGTH EACH SIDE OF END JOINT)
14. BOTTOM PLATE TO JOIST, RIM JOIST, BAND JOIST OR BLOCKING (NOT AT BRACED WALL PANELS)	16d COMMON (3 1/2" X 0.162"); OR	16" OC FACE NAIL
	16d BOX (3 1/2" X 0.135"); OR 3" X 0.131" NAILS; OR 3" 14 GAGE STAPLES, 7/16" CROWN	12" OC FACE NAIL
15. BOTTOM PLATE TO JOIST, RIM JOIST, BAND JOIST OR BLOCKING AT BRACED WALL PANELS)	(2) 16d COMMON (3 1/2" X 0.162"); OR (3) 16d BOX (3 1/2" X 0.135"); OR (4) 3" X 0.131" NAILS: OR (4) 3" 14 GAGE STAPLES, 7/16 CROWN	16" OC FACE NAIL
16. STUD TO TOP OR BOTTOM PLATE	(4) 8d COMMON (2 1/2" X 0.131"); OR (4) 10d BOX (3" X 0.128"); OR (4) 3" X 0.131" NAILS; OR (4) 3" 14 GAGE STAPLES, 7/16 CROWN	TOENAIL
	(2) 16d COMMON (3 1/2" X 0.162"); OR (3) 10d BOX (3" X 0.128"); OR (3) 3" X 0.131" NAILS; OR (3) 3" 14 GAGE STAPLES, 7/16 CROWN	END NAIL
17. TOP OR BOTTOM PLATE TO STUD	(2) 16d COMMON (3 1/2" X 0.162"); OR (3) 10d BOX (3" X 0.128"); OR (3) 3" X 0.131" NAILS; OR (3) 3" 14 GAGE STAPLES, 7/16 CROWN	END NAIL
18. TOP PLATES, LAPS AT CORNERS AND INTERSECTIONS	(2) 16d COMMON (3 1/2" X 0.162"); OR (3) 10d BOX (3" X 0.128"); OR (3) 3" X 0.131" NAILS; OR (3) 3" 14 GAGE STAPLES, 7/16 CROWN	FACE NAIL
19. 1" BRACE TO EACH STUD AND PLATE	(2) 8d COMMON (2 1/2" X 0.131"); OR (2) 10d BOX (3" X 0.128"); OR (2) 3" X 0.131" NAILS; OR (2) 3" 14 GAGE STAPLES, 7/16 CROWN	FACE NAIL
20. 1" X 6" SHEATHING TO EACH BEARING	(2) 8d COMMON (2 1/2" X 0.131"); OR (2) 10d BOX (3" X 0.128")	FACE NAIL
21. 1" x 8" AND WIDER SHEATHIG TO EACH BEARING	(3) 8d COMMON (2 1/2" X 0.131"); OR (3) 10d BOX (3" X 0.128")	FACE NAIL

FASTENING SCHEDULE (IBC TABLE 2304.10.1)

DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND YPE OF FASTENER	SPACING AND LOCATION
FLOOR		
22. JOIST TO SILL, TOP PLATE, OR GIRDER	(3) 8d COMMON (2 1/2" X 0.131"); OR (3) 10d BOX (3" X 0.128"); OR (3) 3" X 0.131" NAILS; OR (3) 3" 14 GAGE STAPLES, 7/16 CROWN	TOENAIL
23. RIM JOIST, BAND JOIST, OR BLOCKING TO TOP PLATE, SILL OR OTHER FRAMING BELOW	8d COMMON (2 1/2" X 0.131"); OR 10d BOX (3" X 0.128"); OR 3" X 0.131" NAILS; OR 3" 14 GAGE STAPLES, 7/16 CROWN	6" OC, TOENAIL
24. 1" X 6" SUBFLOOR OR LESS TO EACH JOIST	(2) 8d COMMON (2 1/2" X 0.131"); OR (2) 10d BOX (3" X 0.128")	FACE NAIL
25. 2" SUBFLOOR TO JOIST OR GIRDER	(2) 16d COMMON (3 1/2" X 0.162")	FACE NAIL
26. 2" PLANKS (PLANK AND BEAM - FLOOR AND ROOF)	(2) 16d COMMON (3 1/2" X 0.162")	EACH BEARING, FACE NAIL
27. BUILT-UP GIRDERS AND BEAMS, 2" LUMBER LAYERS	20d COMMON (4" X 0.192")	32" OC, FACE NAIL AT TOP AND BOTTOM STAGGERED ON OPPOSITE SIDES
	10d BOX (3" X 0.128"); OR 3" x 0.131" NAILS 3" 14 GAGE STAPLES, 7/16" CROWN	24" OC, FACE NAIL AT TOP AND BOTTOM STAGGERED ON OPPOSITE SIDES
	AND: (2) 20d COMMON (4" X 0.192"); OR (3) 10d BOX (3" X 0.128"); OR (3) 3" X 0.131" NAILS; OR (3) 3" 14 GAGE STAPLES, 7/16" CROWN	ENDS AND AT EACH SPLICE, FACE NAIL
28. LEDGER STRIP SUPPORTING JOISTS OR RAFTERS	(3) 16d COMMON (3 1/2" X 0.162"); OR (4) 10d BOX (3" X 0.128"); OR (4) 3" X 0.131" NAILS; OR (4) 3" 14 GAGE STAPLES, 7/16 CROWN	EACH JOIST OR RAFTER, FACE NAIL
29. JOIST TO BAND JOIST OR RIM JOIST	(3) 16d COMMON (3 1/2" X 0.162"); OR (4) 10d BOX (3" X 0.128"); OR (4) 3" X 0.131" NAILS; OR (4) 3" 14 GAGE STAPLES, 7/16 CROWN	END NAIL
30. BRIDGING OR BLOCKING TO JOIST, RAFTER OR TRUSS	(2) 8d COMMON (2 1/2" X 0.131"); OR (2) 10d BOX (3" X 0.128"); OR (2) 3" X 0.131" NAILS; OR (2) 3" 14 GAGE STAPLES, 7/16 CROWN	EACH END, TOENAIL

WOOD STRUCTURAL PANELS (WSP), SUBFLOOR, ROOF AND INTERIOR WALL SHEATHING TO FRAMING AND PARTICLEBOARD WALL SHEATHING TO FRAMING[a]		EDGES (INCHES)	INTERMEDIATE SUPORTS (INCHES)
31. 3/8" - 1/2"	6d COMMON OR DEFORMED (2" X 0.113") (SUBFLOOR AND WALL)	6	12
	8d BOX OR DEFORMED (2 1/2" X 0.113") (ROOF)	6	12
	2 3/8" X 0.113" NAIL (SUBFLOOR AND WALL)	6	12
	1 3/4" 16 GAGE STAPLE, 7/16" CROWN (SUBFLOOR AND WALL)	4	8
	2 3/8" X 0.113" NAIL (ROOF)	4	8
	1 3/4" 16 GAGE STAPLE, 7/16" CROWN (ROOF)	3	6
32. 19/32" - 3/4"	8d COMMON (2 1/2" X 0.131"); OR 6d DEFORMED (2" X 0.113")	6	12
	2 3/8" X 0.113" NAIL; OR 2" 16 GAGE STAPLE, 7/16" CROWN	4	8
33. 7/8" - 1 1/4"	10d COMMON (3" X 0.148"); OR 8d DEFORMED (2 1/2" X 0.131")	6	12
OTHER EXTERIOR WALL SHEATHING			
34. 1/2" FIBERBOARD SHEATHING[b]	1 1/2" GALVANIZED ROOFING NAIL (7/16" HEAD DIAMETER); OR 1 1/4" 16 GAGE STAPLE WITH 7/16" OR 1" CROWN	3	6
35. 25/32" FIBERBOARD SHEATHING[b]	1 3/4" GALVANIZED ROOFING NAIL (7/16" HEAD DIAMETER); OR 1 1/4" 16 GAGE STAPLE WITH 7/16" OR 1" CROWN	3	6
WOOD STRUCTURAL PANELS, COMBINATION SUBFLOOR UNDERLAYMENT TO FRAMING			
36. 3/4" AND LESS	8d COMMON (2 1/2" X 0.131"); OR 6d DEFORMED (2" X 0.113")	6	12
37. 7/8" - 1"	8d COMMON (2 1/2" X 0.131"); OR 8d DEFORMED (2 1/2" X 0.131")	6	12
38. 1 1/8" - 1 1/4"	10d COMMON (3" X 0.148"); OR 8d DEFORMED (2 1/2" X 0.131")	6	12
PANEL SIDING TO FRAMING			
39. 1/2" OR LESS	6d CORROSION-RESISTANT SIDING (1 7/8" X 0.106"); OR 6d CORROSION-RESISTANT CASING (2" X 0.099")	6	12
40. 5/8"	8d CORROSION-RESISTANT SIDING (2 3/8" X 0.128"); OR 8d CORROSION-RESISTANT CASING (2 1/2" X 0.113")	6	12
INTERIOR PANELING			
41. 1/4"	4d CASING (1 1/2" X 0.080"); OR 4d FINISH (1 1/2" X 0.072")	6	12
42. 3/8"	6d CASING (2" X 0.099"); OR 6d FINISH (PANEL SUPPORTS AT 24 INCHES)	6	12

a. NAILS SPACED AT 6" AT INTERMEDIATE SUPPORTS WHERE SPANS ARE 48" OR MORE. FOR NAILING OF WOOD STRUCTURAL PANEL AND PARTICLEBOARD DIAPHRAGMS AND SHEAR WALLS, REFER TO SECTION 2305. NAILS FOR WALL SHEATHING ARE PERMITTED TO BE COMMON, BOX OR CASING.
b. SPACING SHALL BE 6" ON CENTER ON THE EDGES AND 12" ON CENTER AT INTERMEDIATE SUPORTS FOR NONSTRUCTURAL APPLICATIONS. PANEL SUPPORTS AT 16" (20" IF STRENGHT AXIS IN THE LONG DIRECTION OF THE PANEL, UNLESS OTHERWISE MARKED).
c. WHERE A RAFTER IS FASTENED TO AN ADJACENT PARALLEL CEILING JOIST IN ACCORDANCE WITH THIS SCHEDULE AND THE CEILING JOIST IS FASTENED TO THE TOP PLATE IN ACCORDANCE WITH THIS SCHEDULE, THE NUMBER OF TOENAILS IN THE RAFTER SHALL BE PERMITTED TO BE REDUCED BY ON NAIL.

CONCRETE LAP SPLICE LENGTH (IN INCHES) FOR CLASS B LAP SPLICES

(BASED ON ACI 318-11 SECTION 12.2/ACI 318-14 SECTION 25.4)
MODIFY THE LAP SPLICE LENGTHS AS REQUIRED BY NOTES BELOW

BAR LOCATION	BAR SIZE	CONCRETE STRENGTH	
		3000 PSI	4000 PSI
TOP	#3	28	25
	#4	38	33
	#5	47	41
	#6	56	49
	#7	81	71
	#8	93	81
	#9	105	91
	#10	118	102
	#11	131	114
OTHER	#3	22	19
	#4	29	25
	#5	36	31
	#6	43	37
	#7	63	54
	#8	72	62
	#9	81	70
	#10	91	79
	#11	101	87

LAP SPLICE LENGTH NOTES:

1. TOP INDICATES HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW BARS.
2. MUTIPLY THE LENGTHS IN THE SCHEDULE BY THE APPROPRIATE MODIFIERS WHEN REQUIRED:
   - 1.3 FOR LIGHTWEIGHT CONCRETE
   - 1.5 FOR BAR COVERS LESS THAN THE BAR DIAMETER
   - 1.5 FOR BAR SPACING LESS THAN TWO BAR DIAMETERS

NOTE TO TRUSS SUPPLIER

THE TRUSS SUPPLIER SHALL BE RESPONSIBLE FOR DESIGNING ALL PERMANENT BRACING AS REQUIRED FOR THE STABILITY OF THE INDIVIDUAL TRUSS COMPRESSION MEMBERS. THE BRACING DESIGN MUST BE INCLUDED IN THE SHOP DRAWINGS AND CERTIFIED BY A REGISTERED ENGINEER. THE TRUSS SHOP DRAWINGS SHALL INCLUDE SIZE AND LOCATION OF BRACES AS WELL AS THE ATTACHMENT OF THE BRACES TO THE TRUSS MEMBERS. THIS BRACING IS NOT REQUIRED TO RESIST WIND LOADS AND IS INDEPENDENT OF THE OVERALL LATERAL FORCE RESISTING SYSTEM.

ALL TRUSS TO TRUSS CONNECTIONS AND TRUSS TO TOP PLATE CONNECTIONS SHALL BE DESIGNED AND SUPPLIED BY THE TRUSS SUPPLIER. THIS DESIGN SHALL BE CERTIFIED BY A REGISTERED ENGINEER. ALL TRUSSES SHALL BE DESIGNED SUCH THAT THE BEARING STRESS ON THE TOP PLATE DOES NOT EXCEED 425 PSI.

ALL STEEL IN CONTACT WITH TREATED WOOD (CONNECTORS, JOIST HANGERS, NAILS, SCREWS, ANCHOR BOLTS, ETC) SHALL BE STAINLESS STEEL OR GALVANIZED TO THE REQUIREMENTS LISTED IN THE WOOD SECTION OF THE STRUCTURAL NOTES.

STRUCTURAL ABBREVIATIONS

AB ANCHOR BOLT
ADDL ADDITIONAL
ADJ ADJACENT
AFF ABOVE FINISHED FLOOR
AHU AIR HANDLING UNIT
ALT ALTERNATE
ALUM ALUMINUM
APPROX APPROXIMATE(LY)
ARCH ARCHITECT / ARCHITECTURAL

BC BOTTOM CHORD
BP BASE PLATE / BEARING PLATE
B/ BOTTOM OF
BLDG BUILDING
BLK BLOCK
BLKG BLOCKING
BM BEAM
BOTT BOTTOM
BRG BEARING
BTWN BETWEEN

C COMPRESSION
CANT CANTILEVER
CIP CAST-IN-PLACE CONCRETE
CJ CONTROL JOINT / CONSTRUCTION JOINT
CJP COMPLETE JOINT PENETRATION WELD
CL CENTER LINE
℄ CENTER LINE
CLR CLEAR
CMU CONCRETE MASONRY UNIT
COL COLUMN
CONC CONCRETE
CONN CONNECT / CONNECTION
CONT CONTINUE(D)(OUS)
COORD COORDINATE

DBL DOUBLE
DEMO DEMOLITION
DTL DETAIL
DIA DIAMETER
DIAG DIAGONAL
DIM DIMENSION(S)
DL DEADLOAD
DN DOWN
DP DEEP
DWG DRAWING
DWL DOWEL

EA EACH
EF EACH FACE
EL ELEVATION
ELEV ELEVATOR
EMBED EMBEDDED / EMBEDMENT
ENGR ENGINEER
EOR ENGINEER OF RECORD
EQ EQUAL
EQUIP EQUIPMENT
EW EACH WAY
EXIST EXISTING
(E) EXISTING
EXP EXPANSION
EXT EXTERIOR

FAB FABRICATOR / FABRICATION
FD FLOOR DRAIN
FDN FOUNDATION
FFE FINISHED FLOOR ELEVATION
FLR FLOOR
FLRT FLOOR TRUSS
FS FAR SIDE
FT FEET / FOOT
FTG FOOTING

GA GAUGE
GALV GALVANIZED
GC GENERAL CONTRACTOR
GLULAM GLUE LAMINATED WOOD
GB GRADE BEAM
GT GIRDER TRUSS
GYP GYPSUM

HORIZ HORIZONTAL
HJ HIP JACK
HT HEIGHT

ID INSIDE DIAMETER
IF INSIDE FACE
INFO INFORMATION
INSUL INSULATION
INT INTERIOR

JBE JOIST BEARING ELEVATION
JST JOIST
JT JOINT

K KILO-POUND / 1000 POUNDS
KLF KIPS PER LINEAR FOOT
KSF KIPS PER SQUARE FOOT
KSI KIPS PER SQUARE INCH

LB/# POUND(S)
LG LONG
LL LIVE LOAD
LLH LONG LEG HORIZONTAL
LLV LONG LEG VERTICAL
LONG LONGITUDINAL
LT LIGHT
LVL LAMINATED VENEER LUMBER

MATL MATERIAL
MAU MAKE-UP AIR UNIT
MAX MAXIMUM
MECH MECHANICAL
MEZZ MEZZANINE
MFR MANUFACTURER
MID MIDDLE
MIN MINIMUM
MISC MISCELLANEOUS
MO MASONRY OPENING
MTL METAL

NA NOT APPLICABLE
NLB NON-LOAD BEARING
NO NUMBER
NUMBER
NS NEAR SIDE
NTS NOT TO SCALE

OC ON CENTER
OD OUTSIDE DIAMETER
OF OUTSIDE FACE
OH OVERHANG/OPPOSITE HAND
OPNG OPENING
OPP OPPOSITE
OSB ORIENTED STRAND BOARD

PAF POWDER ACTUATED FASTENER
PC PRECAST
PCF POUNDS PER CUBIC FOOT
PIL PILASTER
PJP PARTIAL JOINT PENETRATION WELD
PL PLATE
PLF POUNDS PER LINEAR FOOT
PLYWD PLYWOOD
PNA PLASTIC NEUTRAL AXIS
PREFAB PREFABRICATED
PROJ PROJECTION
PSF POUNDS PER SQUARE FOOT
PSI POUNDS PER SQUARE INCH
PSL PARALLEL STRAND LUMBER
PT POST TENSIONED

QTY QUANTITY

R RADIUS
RD ROOF DRAIN
REF REFERENCE
REINF REINFORCE(D)(MENT)
REQD REQUIRED
REV REVISED / REVISION
RO ROUGH OPENING
RT ROOF TRUSS
RTU ROOF TOP UNIT
RXN REACTION

SCHED SCHEDULE
SECT SECTION
SEI SEISMIC
SF SQUARE FOOT
SHT SHEET
SHTHG SHEATHING
SI SUPERIMPOSED
SIM SIMILAR
SL SNOW LOAD
SOG SLAB ON GRADE
SP SPACE
SPEC SPECIFICATION(S)
SQ SQUARE
SS STAINLESS STEEL
STD STANDARD
STIFF STIFFENER
STL STEEL
STRUCT STRUCTURAL
SUPLR SUPPLIER
SYM SYMMETRICAL

T TENSION
T/ TOP OF
TC TOP CHORD
TBE TRUSS BEARING ELEVATION
T&B TOP AND BOTTOM
T&G TONGUE AND GROOVE
TEMP TEMPORARY
THK THICK(NESS)
TL TOTAL LOAD
TOS TOP OF STEEL
TRANS TRANSVERSE
TYP TYPICAL

UNO UNLESS NOTED OTHERWISE

VERT VERTICAL
VIF VERIFY IN FIELD

W/ WITH
W/O WITHOUT
WL WIND LOAD
WP WORKING POINT
WT WEIGHT
WWF WELDED WIRE FABRIC

X BRACE CROSS BRACE

YD YARD

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I hereby certify that this plan, specifications, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.
Catherine A. Kray
Date: 09/30/2020 Reg No: 25407

RED WING TOWN HOMES BLDG
RED WING, MN

PERMIT SET 09-30-2020

Revisions:
No: Date: Description:

Sheet Title: STRUCTURAL ABBREVIATIONS

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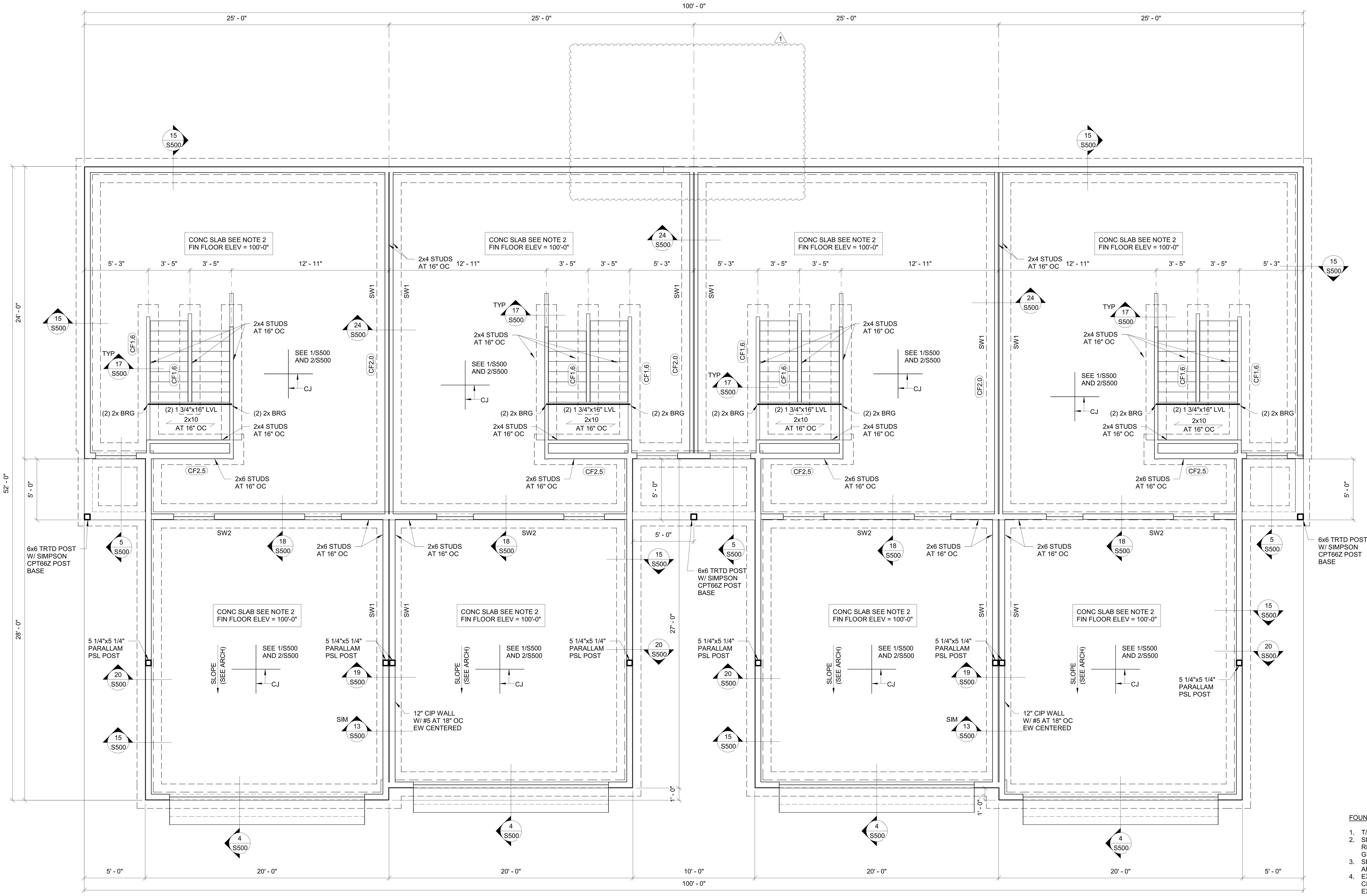

1 S110 4 - Plex Bldg A - Foundation Plan

1/4" = 1'-0"

SHEAR WALL SCHEDULE

MARK	DESCRIPTION
SW1	(1) PLY 5/8" GYP BOARD, (1) SIDE W/ 6d COOLER NAILS (0.092" x 1 7/8" LONG, 1/4" HEAD) AT 6" OC AT EDGES AND FIELD
SW2	(1) PLY 7/16" APA RATED PLYWOOD OR OSB, (1) SIDE W/ 8d COMMON NAILS AT 6" OC AT EDGES, 12" OC IN FIELD
SW3	(1) PLY 15/32" APA RATED PLYWOOD OR OSB, (1) SIDE W/ 10d COMMON NAILS AT 4" OC AT EGES, 12" OC IN FIELD

SHEAR WALL NOTES:

1. EXTERIOR WALLS TO BE SHEATHED AS SW2, UNO.
2. NOTE: SW3 REQUIRES DIFFERENT SHEATHING THICKNESS AND NAIL SIZE
3. SW NAILING TO CONTINUE AROUND ALL OPENINGS IN WALLS.
4. ALL SHEAR WALLS TO BE BLOCKED.

ISOLATED FOOTING SCHEDULE

MARK	DESCRIPTION	REINFORCING
F4.0	4'-0" x 4'-0" x 1'-2" DP	(4) #5 EA WAY, TOP AND BOTT
F5.0	5'-0" x 5'-0" x 1'-2" DP	(5) #5 EA WAY, TOP AND BOTT
F7x4	7'-0" x 4'-0" x 1'-2" DP	(5) #5 LONG TOP AND BOTT (7) #5 TRANS TOP AND BOTT

CONTINUOUS FOOTING SCHEDULE

MARK	DESCRIPTION	REINFORCING
CF1.6	1'-8" W x 1'-0" DP	(2) #5 CONT, BOTT
CF2.0	2'-0" W x 1'-0" DP	(2) #5 CONT, BOTT
CF2.5	2'-6" W x 1'-0" DP	(2) #5 CONT, BOTT
CF4.5	4'-6" W x 1'-0" DP	(3) #5 LONG TOP, (2) #5 LONG BOTT, #4 AT 18" OC TRANS

FOUNDATION PLAN NOTES:

1. T/FTG = 97'-0".
2. SLAB ON GRADE: 4" CONC SLAB W/ 1.5 LB/CU YD FIBER MESH REINFORCING OVER 10-MIL POLY VAPOR BARRIER ON 6" COMPACTED GRANULAR FILL.
3. SEE DETAILS 1/S500 AND 2/S500 FOR CONSTRUCTION AND CONTRACTION JOINTS FOR SLAB ON GRADE.
4. EXTERIOR WALLS BELOW GRADE: 8" CIP WITH #5 AT 18" OC EW, CENTERED, UNO.
   EXTERIOR WALLS ABOVE GRADE: 2x6 STUDS AT 16" OC, UNO.
5. EXTERIOR WALL FOOTINGS SHALL BE CF2.0, UNO.
6. STOOP WALL FOOTINGS SHALL BE CF1.8, UNO.
7. SEE DETAIL 3/S500 FOR STEP FOOTING DETAIL.
8. SEE ARCHITECTURAL DRAWINGS FOR ALL SLAB SLOPES AND FLOOR DRAINS.
9. SEE DETAIL 10/S500 FOR REINFORCING AT WALL CORNERS AND INTERSECTIONS.
10. SEE 11/S500 FOR CIP WALL OPENING REINFORCEMENT.
11. COORDINATE ALL OPENINGS W/ ARCH, MEP AND STRUCT.
12. SEE ARCH FOR DRAIN TILE AND RADON DETAILING.
13. SEE DETAIL 2/S502 FOR EXTERIOR SHEATHING FASTENING AND DETAIL 1/S502 FOR INTERIOR SHEATHING FASTENING.
14. FOUNDATION WALLS TO BE BACKFILLED WITH FREE-DRAINING MATERIAL.
15. CONCRETE WALLS MUST BE BRACED AT TOP PRIOR TO BACKFILLING.
16. SEE SHEET S000 FOR GENERAL STRUCTURAL NOTES.
17. SEE SHEET S001 FOR ADDITIONAL SCHEDULES AND ABREVIATIONS.

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RED WING TOWN HOMES BLDG
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Sheet Title: 4 PLEX BLDG A FOUNDATION PLAN

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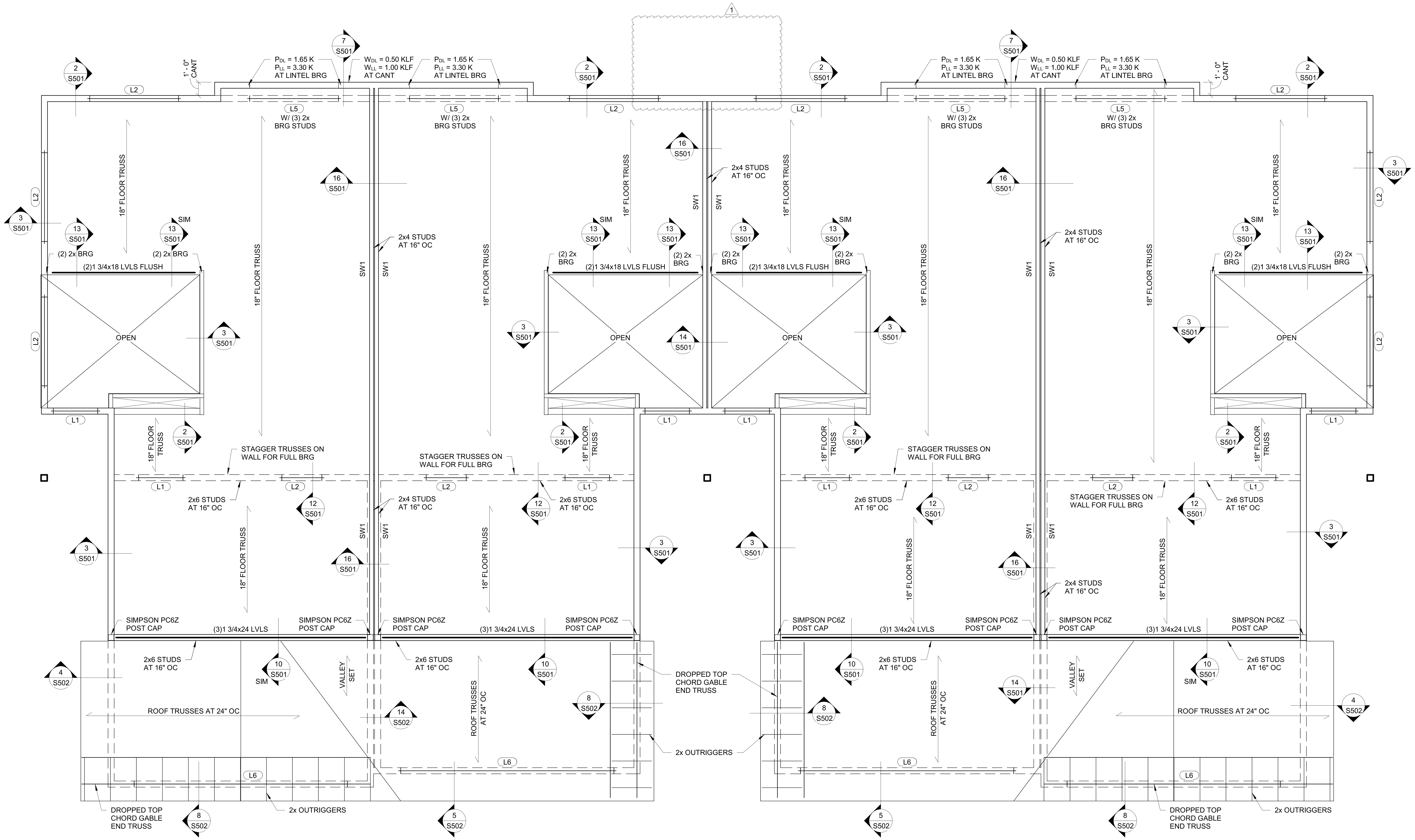
Date: 09-30-2020

Sheet No: S110



4 - Plex Bldg A - First Floor Framing Plan

1
S111

1/4" = 1'-0"

FLOOR FRAMING PLAN NOTES:

1. TBE = 109'-1 1/8".
2. ALL EXTERIOR WALL STUDS TO BE 2x6 AT 16" OC, UNO.
3. VERIFY ALL DIMENSIONS WITH ARCH DRAWINGS.
4. FLOOR SHEATHING TO BE 3/4" TONGUE AND GROOVE PLYWOOD GLUED AND NAILED W/10d COMMON NAILS AT 6" OC AT EDGES, 12" OC IN FIELD.
5. SEE ARCH FOR ALL OPENING SIZES AND LOCATIONS.
6. ALL TRUSSES AND/ OR ENGINEERED FLOORS TO BE DESIGNED FOR LIVE LOAD DEFLECTION OF L/480.
7. ADJUST TRUSS SPACING AS NECESSARY FOR LOAD AND DEFLECTION REQUIREMENTS. (MAX 24" OC).
8. PROVIDE BRIDGING FOR FLOOR TRUSSES ACCORDING TO MANUFACTURER'S RECOMMENDATION.
9. DIMENSIONAL LUMBER FLOOR JOISTS TO HAVE BRIDGING AT INTERVALS NOT TO EXCEED 8'-0".
10. COORDINATE ALL TRUSSES WITH PLUMBING LOCATIONS.
11. COORDINATE ALL OPENINGS W/ ARCH, MEP AND STRUCT
12. SEE SHEET S001 FOR IBC FASTENING SCHEDULE.
13. SEE SHEET S001 FOR STRUCTURAL ABBREVIATIONS.
14. SEE SHEET S000 FOR GENERAL STRUCTURAL NOTES.
15. SEE 1/S501 FOR LINTEL DETAIL.

LINTEL SCHEDULE

MARK	DESCRIPTION	COMMENTS
L1	(2) 2x8	(1) 2x6 BRG, (1) 2x6 KING, TYP UNO
L2	(2) 2x10	(2) 2x6 BRG, (2) 2x6 KING, TYP UNO
L3	(2) 2x12	(2) 2x6 BRG, (2) 2x6 KING, TYP UNO
L4	(2) 1 3/4"x9 1/4" LVL'S	(2) 2x6 BRG, (2) 2x6 KING BETWEEN 2ND FLOOR AND ROOF (3) 2x6 BRG, (2) 2x6 KING, BETWEEN 1ST AND 2ND FLOOR
L5	(2) 1 3/4"x11 7/8" LVL'S	(3) 2x6 BRG, (2) 2x6 KING, TYP UNO
L6	(3) 1 3/4"x11 7/8" LVL'S	(4) 2x6 BRG, (3) 2x6 KING
L7	(3) 1 3/4"x9 1/4" LVL'S	(3) 2x6 BRG, (2) 2x6 KING, TYP UNO

STAIR STRINGER SCHEDULE

SPAN	TYPE	SPACING	COMMENTS
4' - 0" - 12' - 5"	1 3/4" X 14" 1.55E LSL	12" OC	USE STRAP HANGERS
12' - 6" - 15' - 6"	1 3/4" X 16" 1.55E LSL	12" OC	USE STRAP HANGERS

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Catherine A. Kray
Date: 09/30/2020 Reg No: 25407

RED WING
TOWN HOMES BLDG
RED WING, MN

PERMIT SET 09-30-2020

Revisions: No:	Date:	Description:
1	10/2/2020	Revision A

Sheet Title:
4 PLEX BLDG A
FLOOR FRAMING
PLAN

Project No:
11200105
Drawn by: AJM
Checked by: CAK
Date: 09-30-2020

Sheet No:
S111

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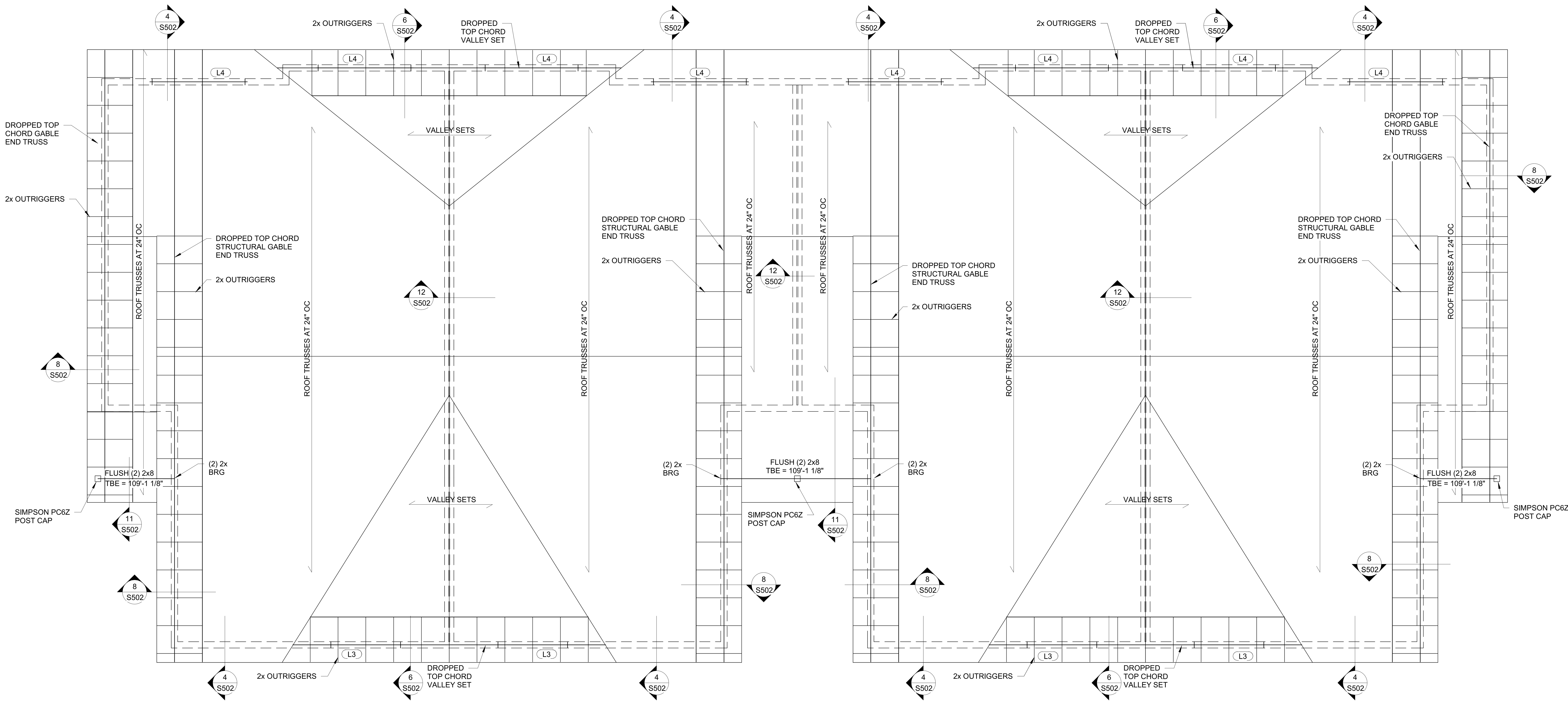

4 - Plex Bldg A - Roof Framing Plan

1
S112

1/4" = 1'-0"

ROOF FRAMING PLAN NOTES:

1. TBE = 119'-9", UNO.
2. SEE ARCHITECTURAL DRAWINGS FOR ROOF SLOPES.
3. PROVIDE BRIDGING FOR ROOF TRUSSES ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
4. VERIFY ALL OVERHANG AND EAVE CONDITIONS W/ ARCH PLANS.
5. DIMENSIONAL LUMBER ROOF JOISTS TO HAVE BRIDGING AT INTERVALS NOT TO EXCEED 8'-0".
6. TIE NON-BEARING WALLS TO BOTTOM CHORD OF ROOF TRUSS AT 3'-0" OC.
7. ALL BEARING STUDS AT GIRDERS AND OPENINGS CONTINUOUS DOWN TO THE FOUNDATION.
8. ROOF SHEATHING TO BE 1/2" APA RATED SHEATHING. SEE DETAIL 3/S502 FOR NAILING PATTERN.
9. END JOINT OF SHEATHING SHALL BE STAGGERED
10. ROOF SHEATHING CONTINUOUS UNDER ALL VALLEY SETS.
11. PLYWOOD CLIPS SHALL BE USED WHEN SUPPORTING MEMBERS ARE SPACED GREATER THAN 16" OC.
12. SEE ARCH DRAWINGS FOR ATTIC ACCESS OPENING
13. COORDINATE ALL OPENINGS W/ ARCH, MEP AND STRUCT.
14. SEE SHEET S001 FOR IBC FASTENING SCHEDULE.
15. SEE SHEET S001 FOR STRUCTURAL ABBREVIATIONS.
16. SEE SHEET S000 FOR GENERAL STRUCTURAL NOTES.
17. SEE 1/S501 FOR LINTEL DETAIL

LINTEL SCHEDULE

MARK	DESCRIPTION	COMMENTS
L1	(2) 2x8	(1) 2x6 BRG, (1) 2x6 KING, TYP UNO
L2	(2) 2x10	(2) 2x6 BRG, (2) 2x6 KING, TYP UNO
L3	(2) 2x12	(2) 2x6 BRG, (2) 2x6 KING, TYP UNO
L4	(2) 1 3/4"x9 1/4" LVL'S	(2) 2x6 BRG, (2) 2x6 KING BETWEEN 2ND FLOOR AND ROOF (3) 2x6 BRG, (2) 2x6 KING, BETWEEN 1ST AND 2ND FLOOR
L5	(2) 1 3/4"x11 7/8" LVL'S	(3) 2x6 BRG, (2) 2x6 KING, TYP UNO
L6	(3) 1 3/4"x11 7/8" LVL'S	(4) 2x6 BRG, (3) 2x6 KING
L7	(3) 1 3/4"x9 1/4" LVL'S	(3) 2x6 BRG, (2) 2x6 KING, TYP UNO

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RED WING, MN

PERMIT SET 09-30-2020

Revisions:
No: Date: Description:

Sheet Title:
4 PLEX BLDG A
ROOF FRAMING
PLAN

Project No:
11200109
Drawn by: AJM
Checked by: CAK
Date: 09-30-2020

Sheet No:
S112

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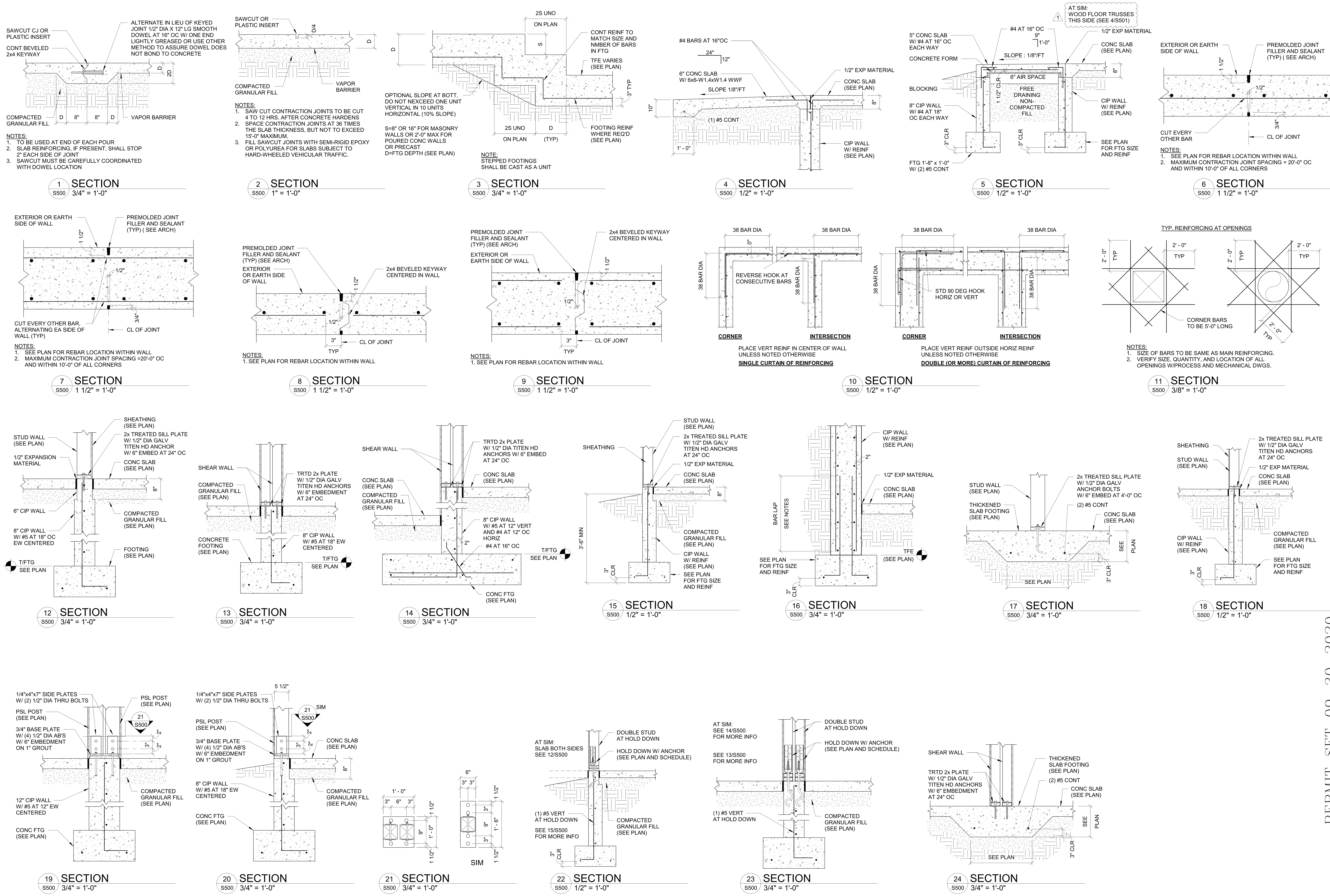

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RED WING, MN

PERMIT SET 09-30-2020

Revisions:
No. Date: Description:
1 10/2/2020 Revision A

Sheet Title: DETAILS

Project No: 11200105
Drawn by: AJM
Checked by: CAR
Date: 09-30-2020

Sheet No: S500

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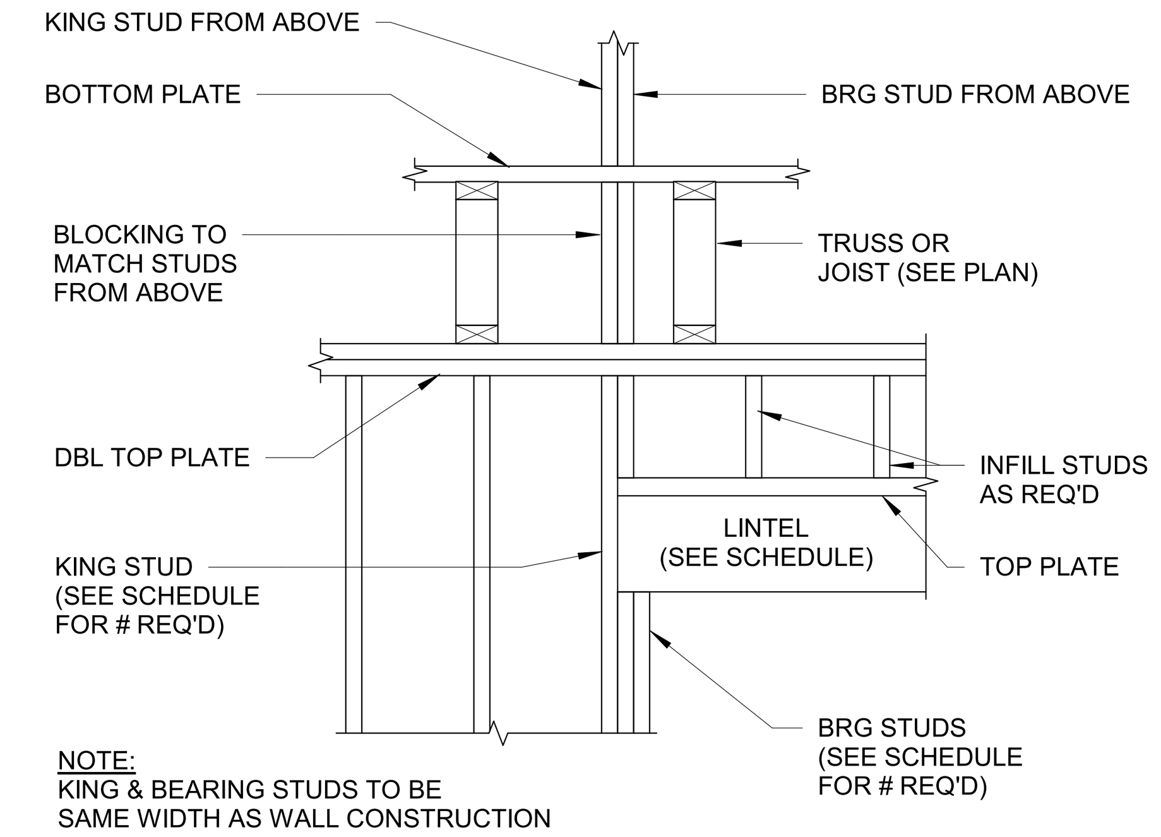

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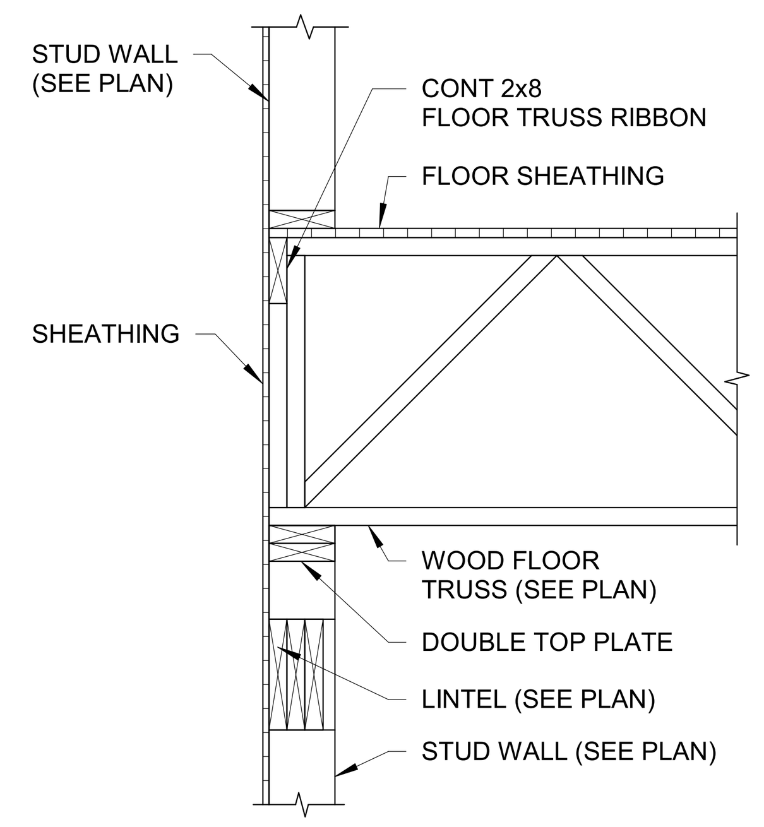

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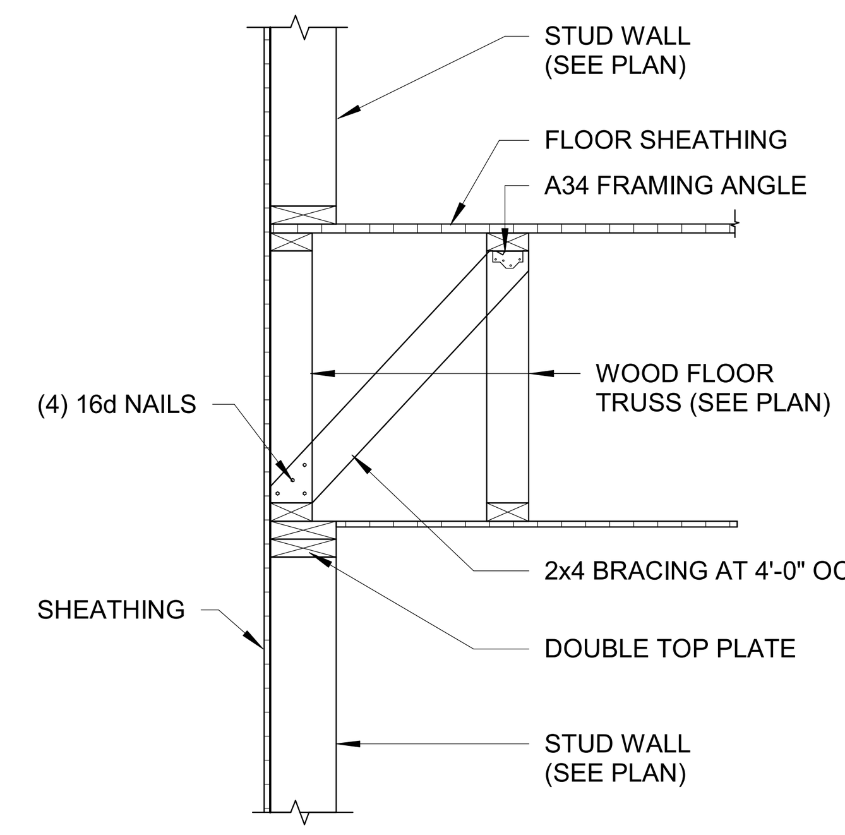

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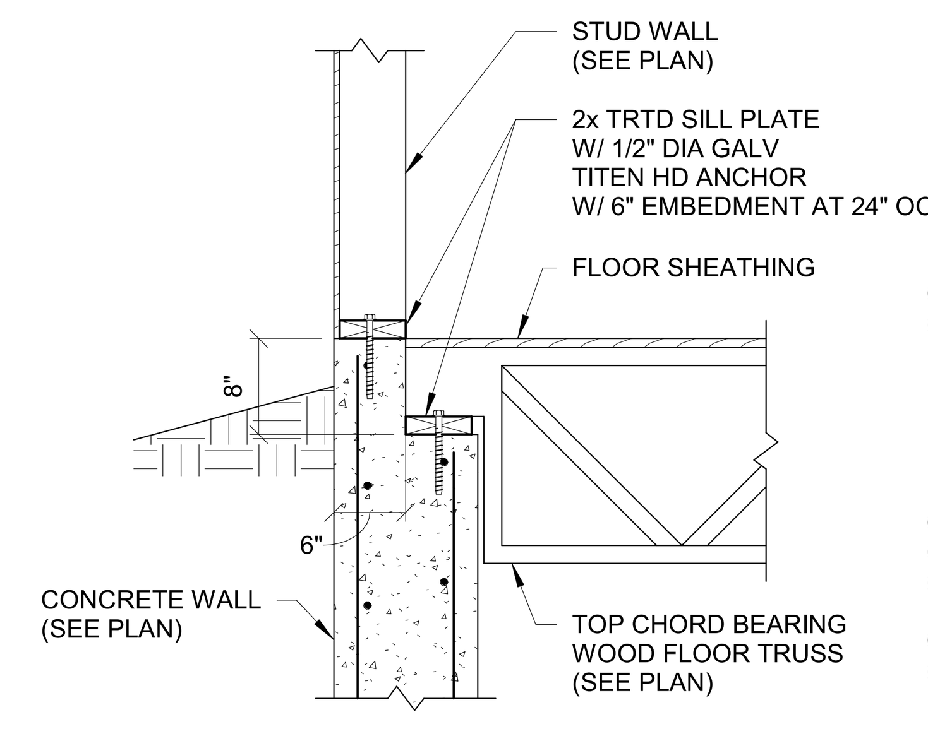

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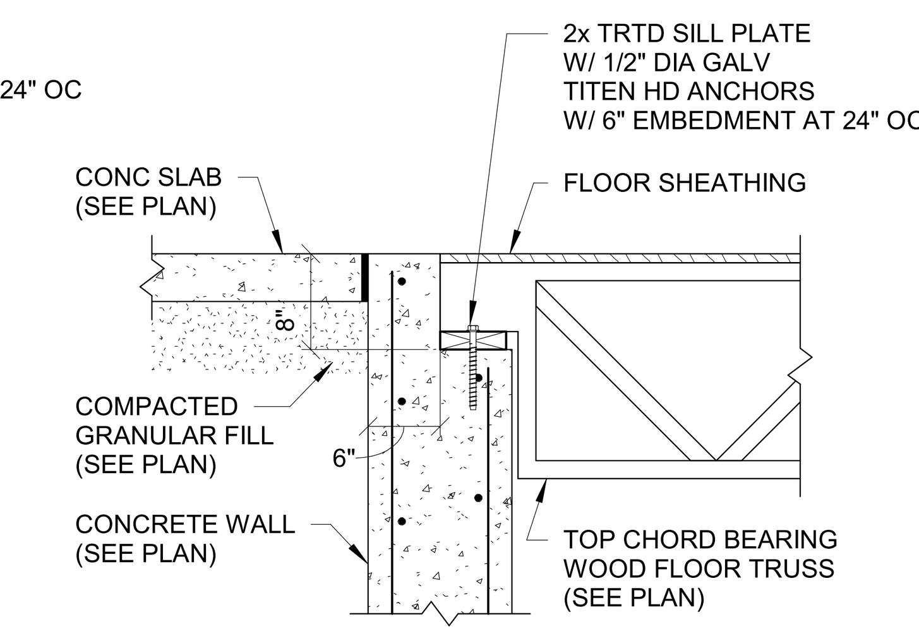

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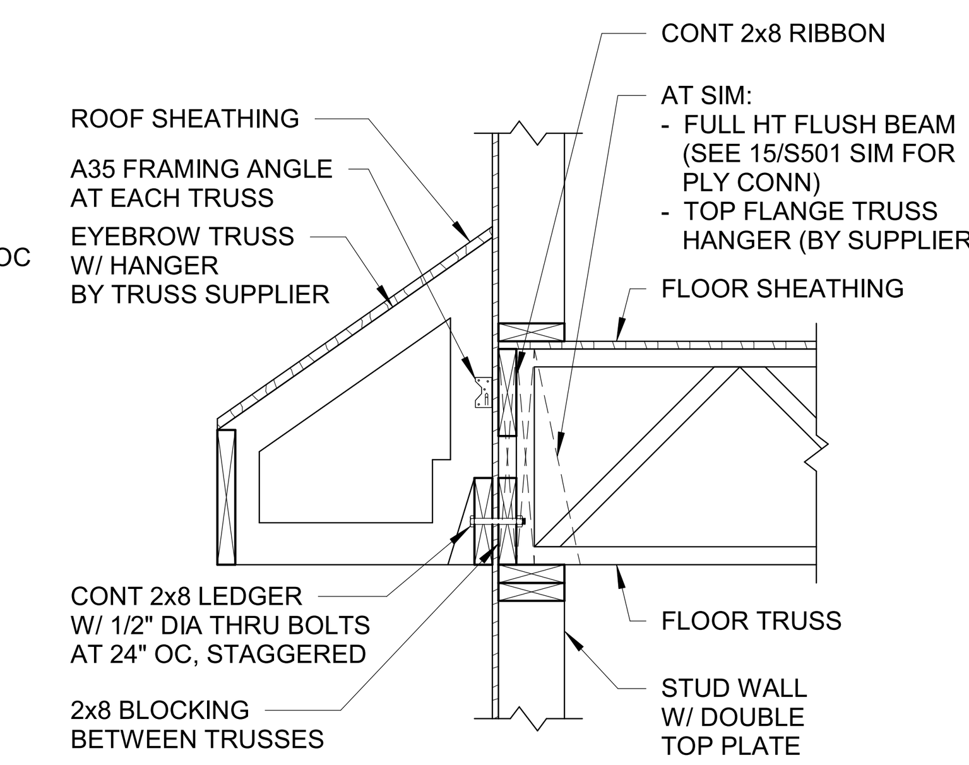

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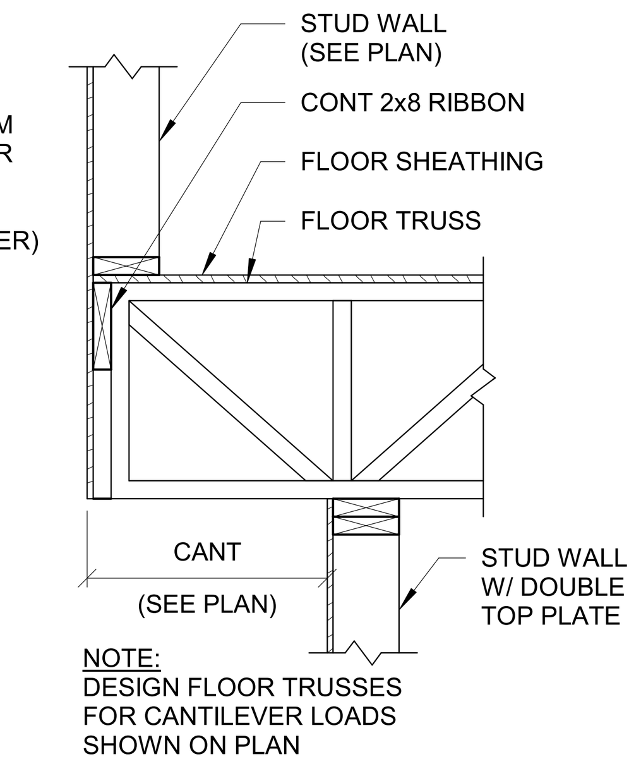

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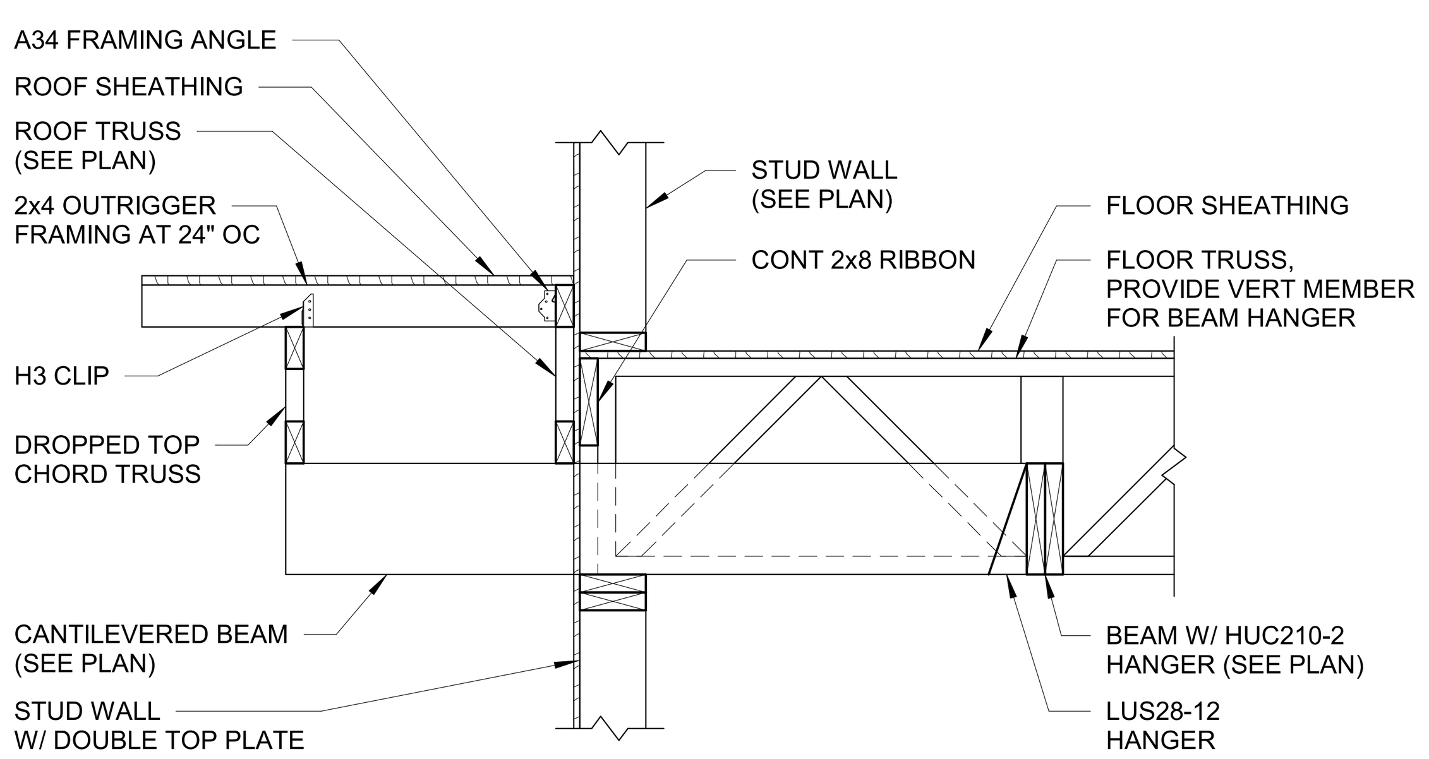

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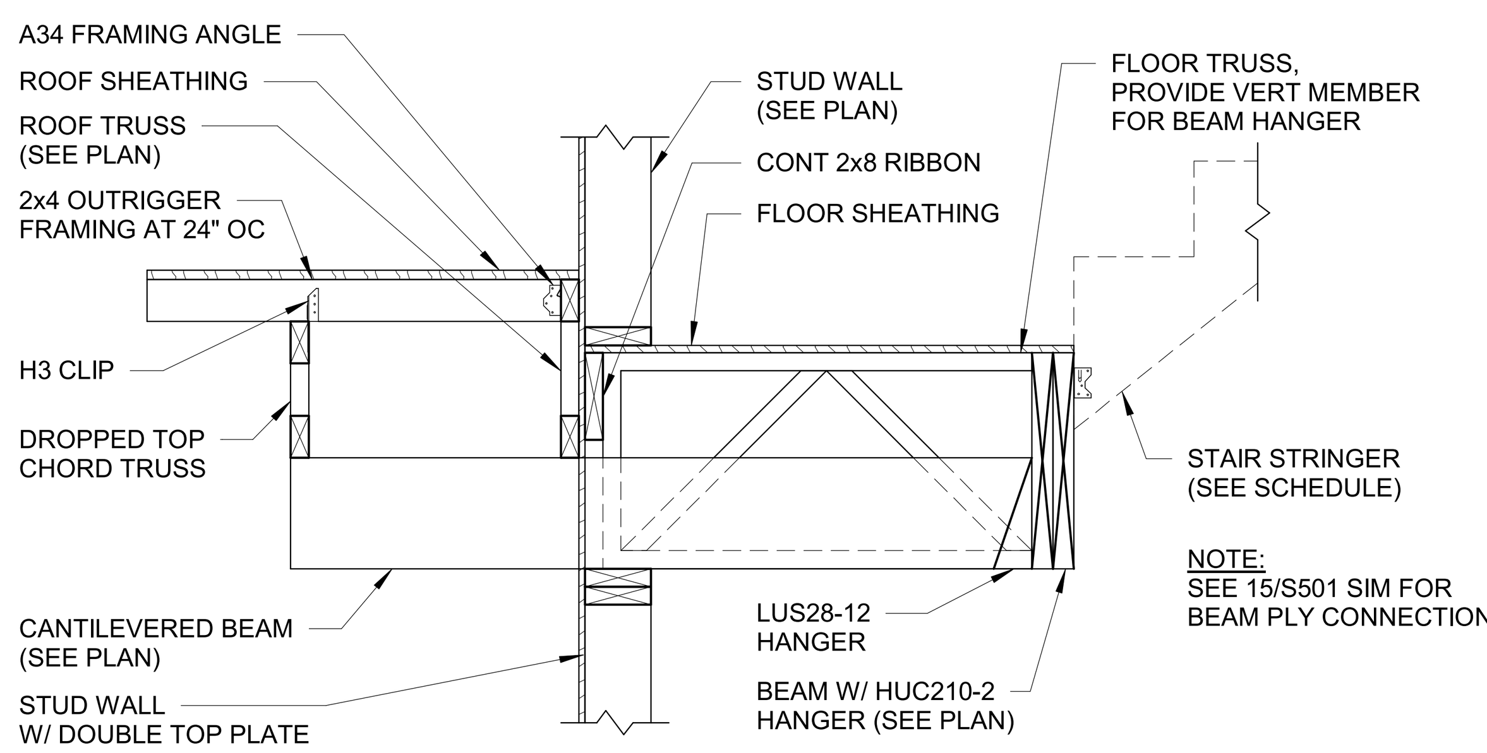

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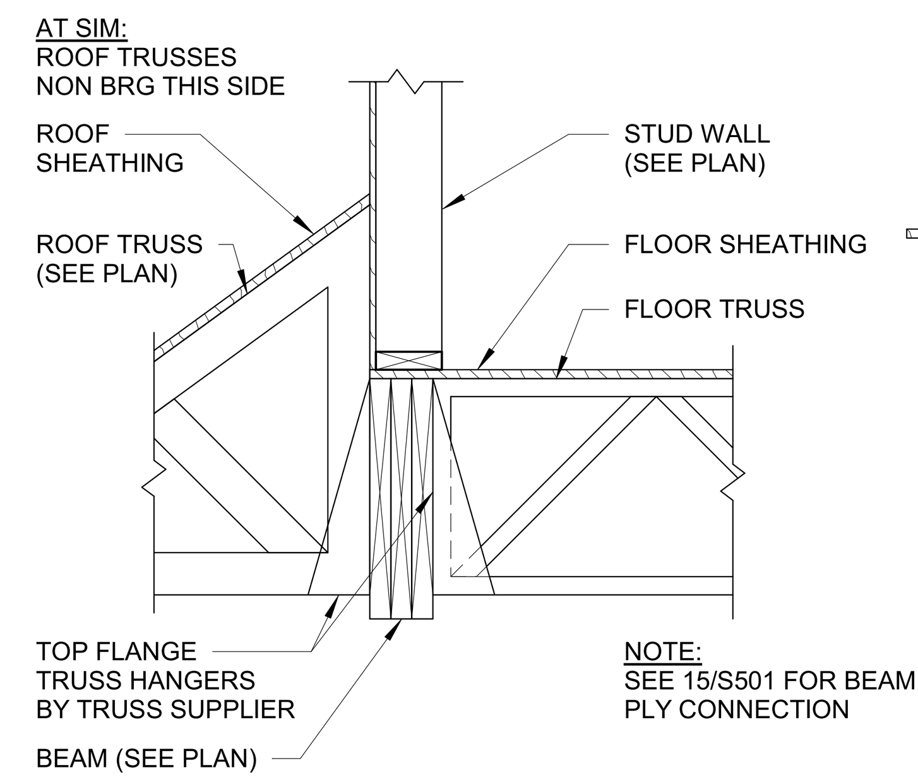

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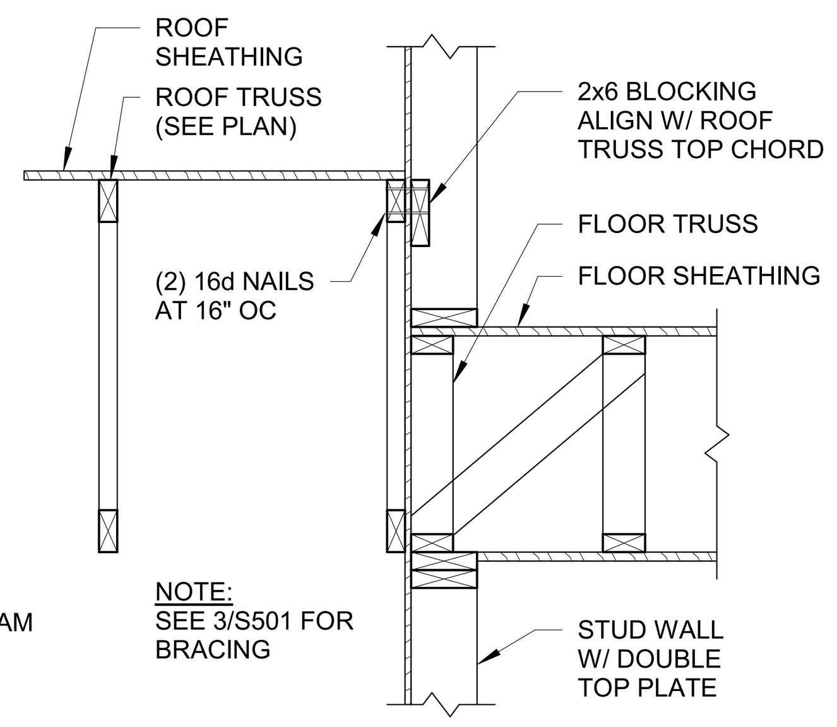

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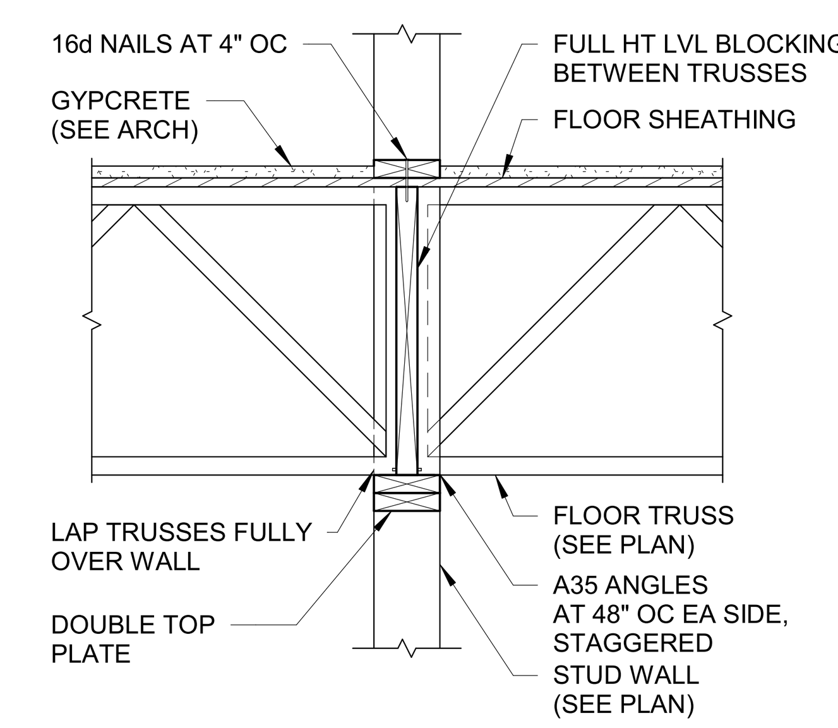

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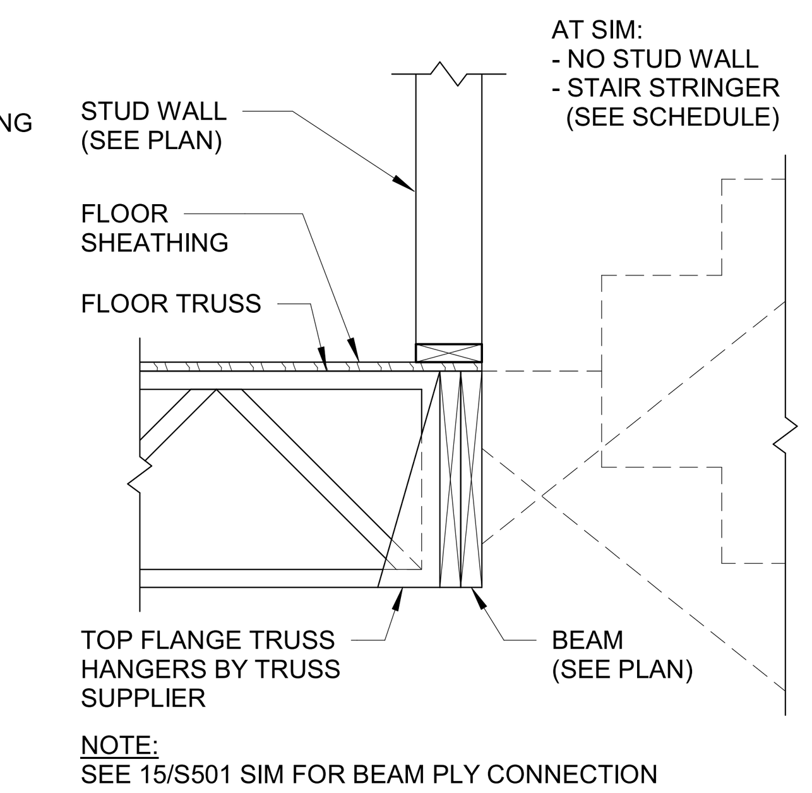

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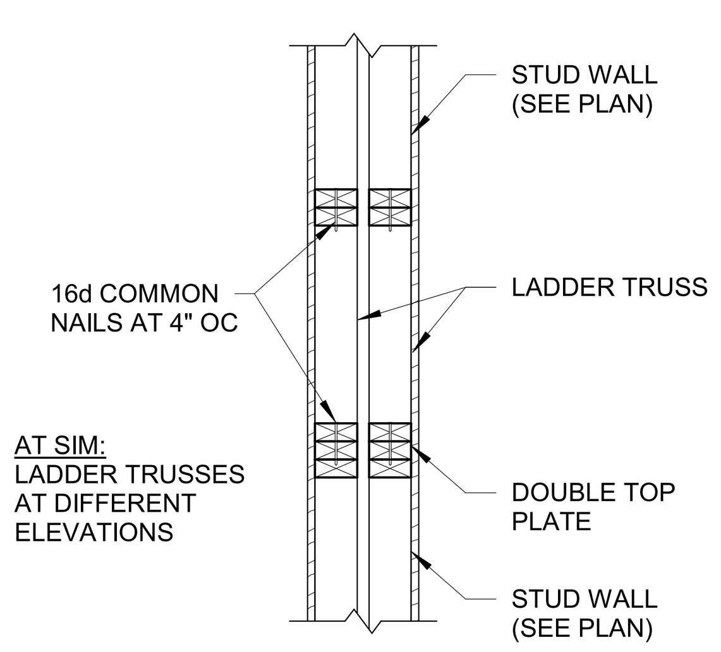

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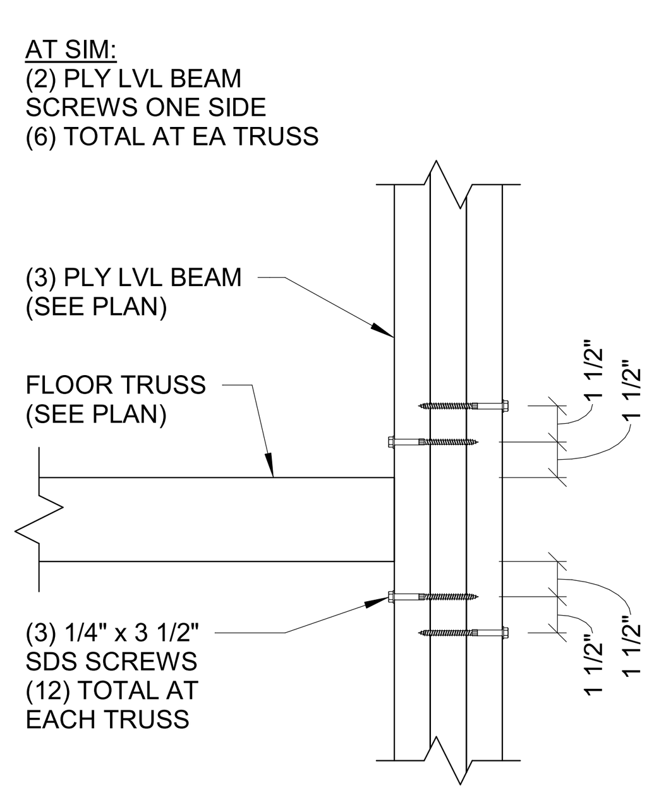

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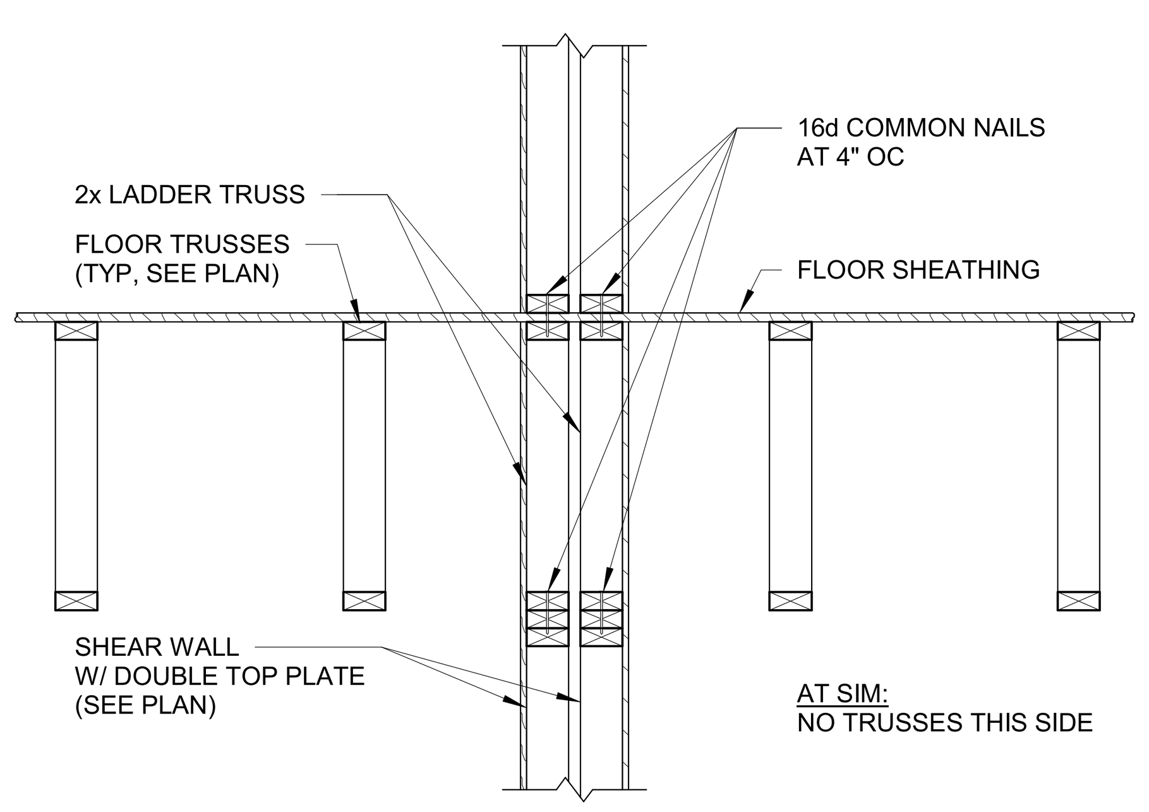

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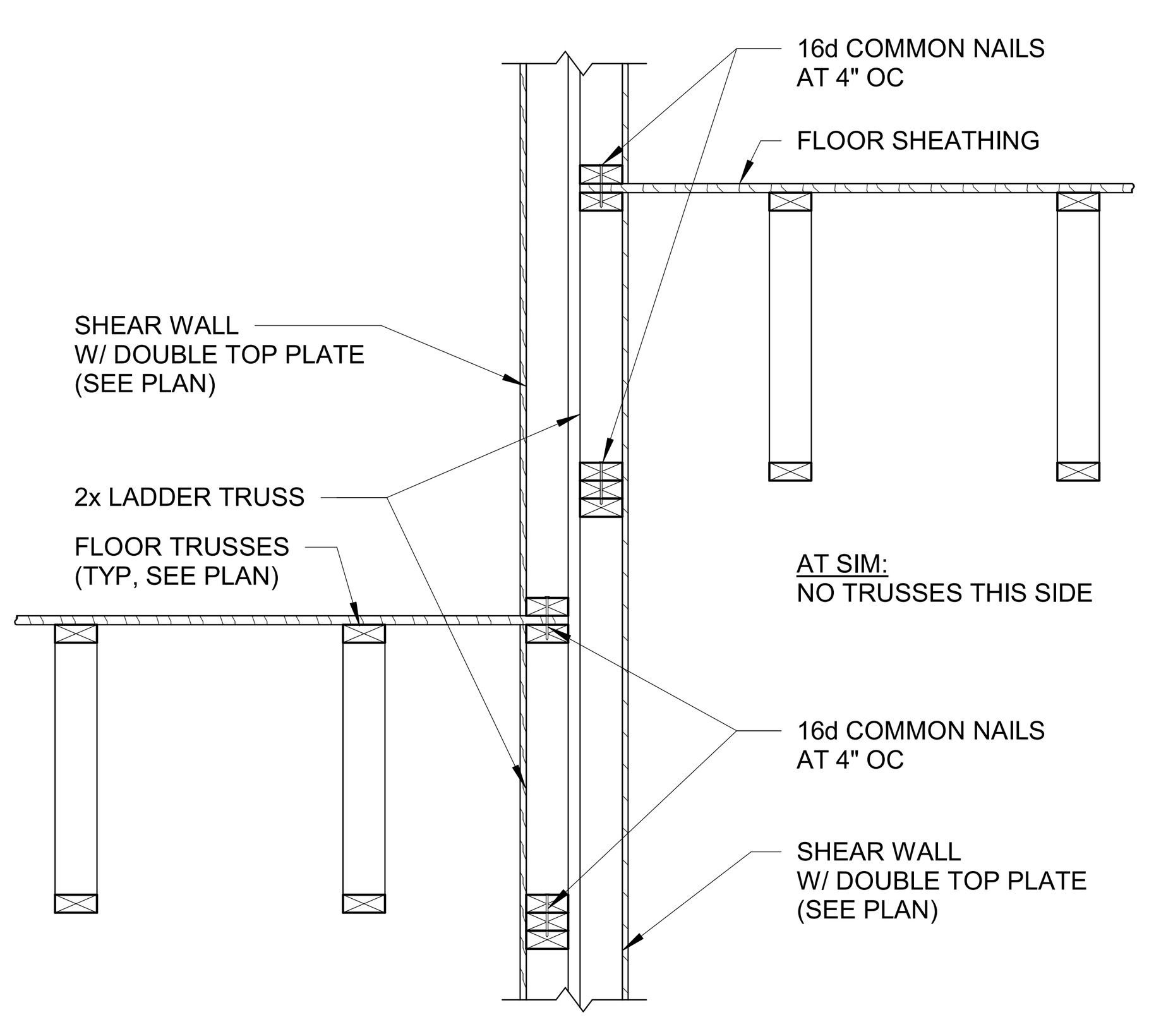

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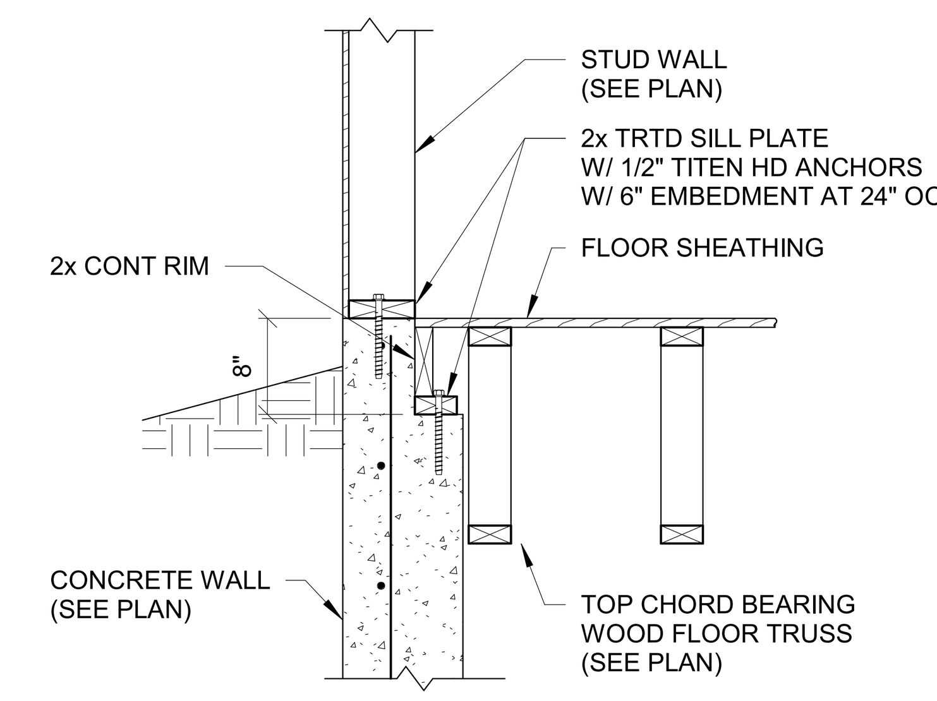

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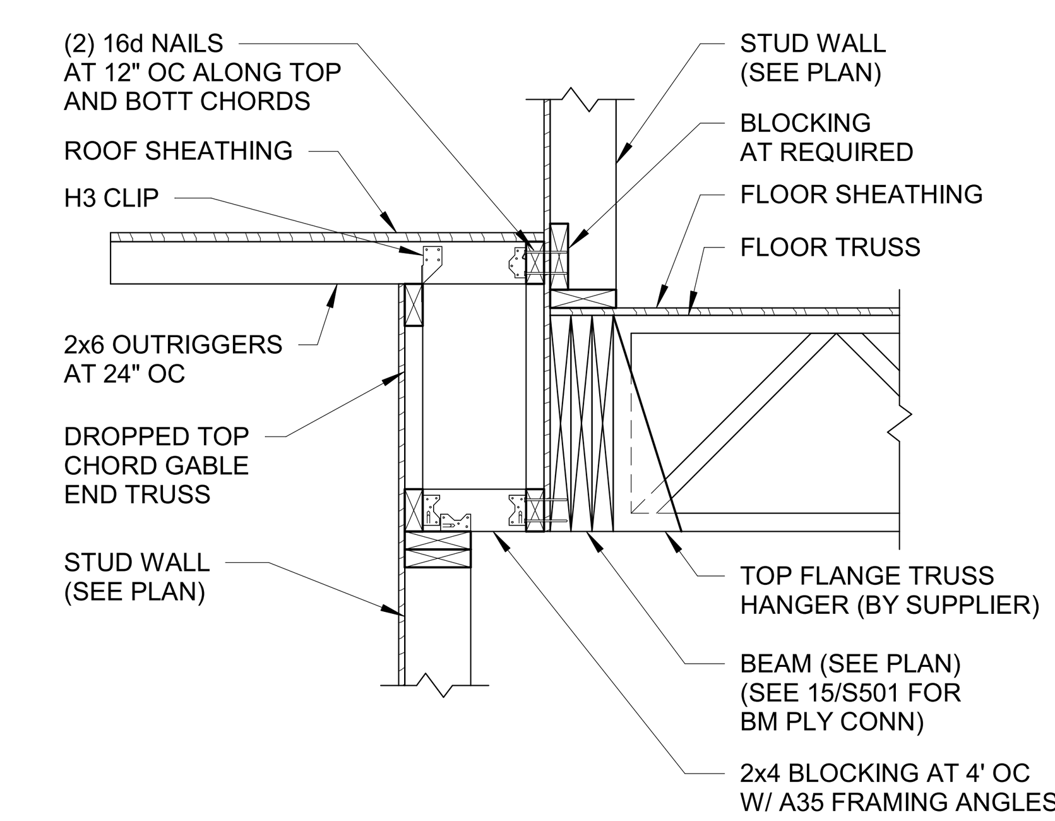
REF SHEET: S101



19 SECTION
S501 3/4" = 1'-0"
REF SHEET: S102

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Catherine A. Kray
Date: 09/30/2020 Reg No: 25407

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RED WING, MN

PERMIT SET 09-30-2020

Revisions:
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Sheet Title:
DETAILS

Project No: 11200109
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Checked by: CAK
Date: 09-30-2020

Sheet No:
S501

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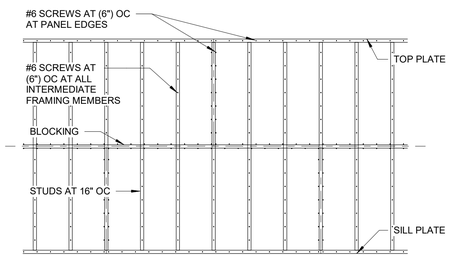
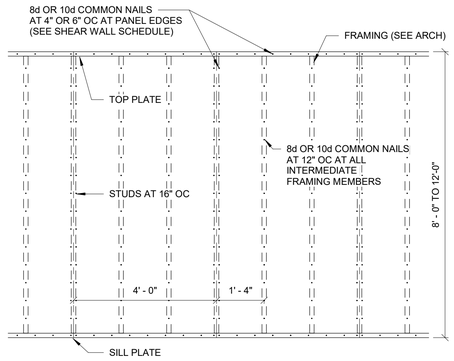
GYPSUM FASTENING PATTERN (BLOCKED HORIZ SHEATHING)



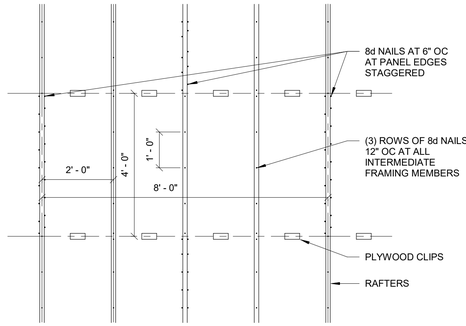
1 S502 SECTION 3/8" = 1'-0"

PLYWOOD/OSB FASTENING PATTERN (BLOCKED)



2 S502 SECTION 1/2" = 1'-0"

ROOF SHEATHING NAILING PATTERN



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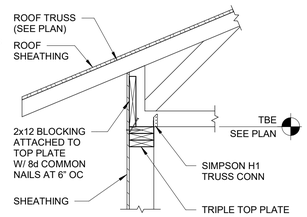

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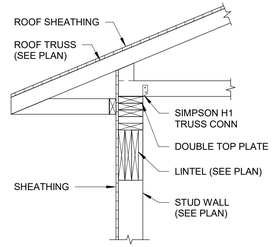

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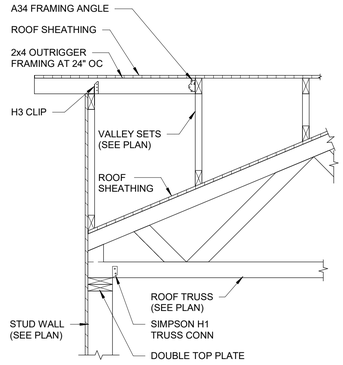

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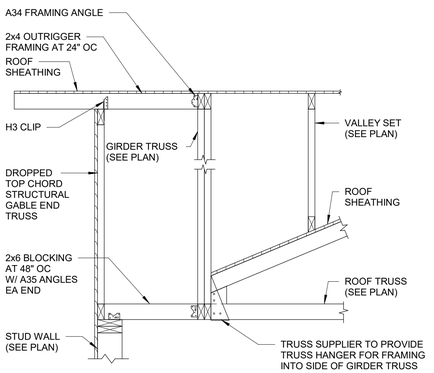

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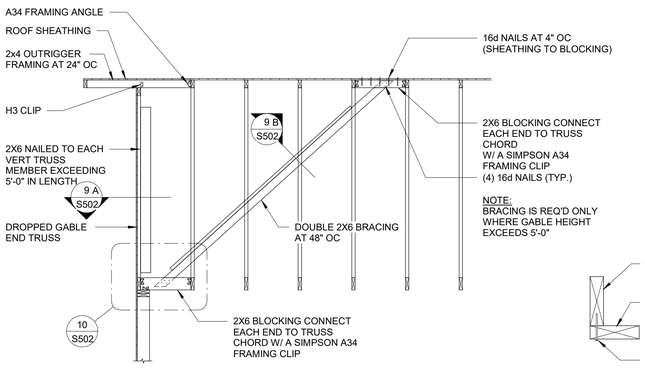

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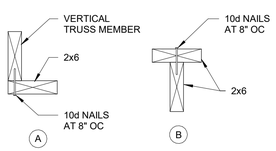

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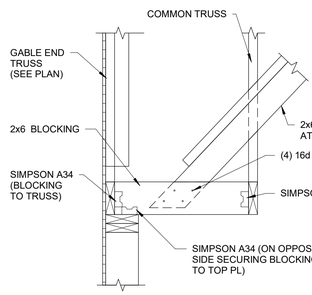

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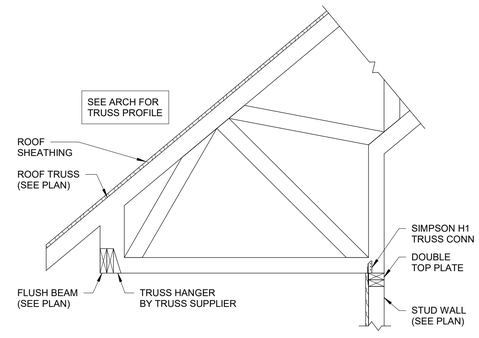

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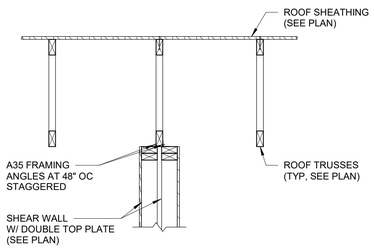

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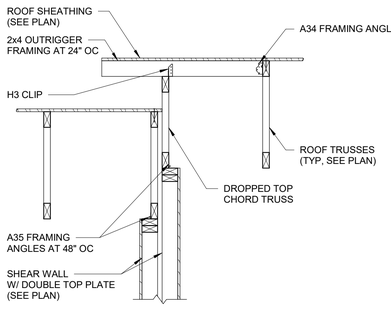

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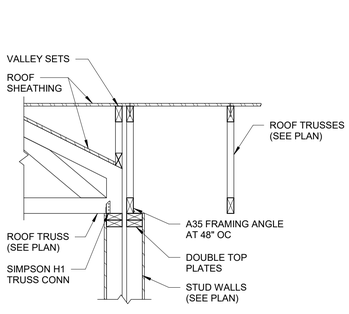

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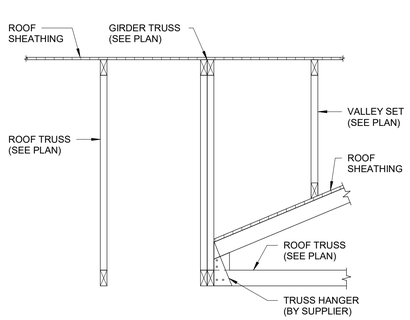

15 S502 SECTION 3/4" = 1'-0"

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Catherine A. Kraus

Reg No: 25407

Date: 09/30/2020

PERMIT SET 09-30-2020

RED WING TOWN HOMES BLDG

RED WING, MN

Revisions:
No. Date: Description:

Sheet Title:
DETAILS

Project No:
11200103
Drawn by: AJM
Checked by: CAK
Date: 09-30-2020

Sheet No:
S502

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