ROACH RESIDENCE

2255 EUCLID AVE.
EL CAJON, CA. 92019

STORM WATER QUALITY NOTES
CONSTRUCTION BMP'S

THIS PROJECT SHALL COMPLY WITH ALL REQUIREMENTS OF THE STATE PERMIT, CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, COUNTY OF SAN DIEGO MUNICIPAL STORM WATER PERMIT, THE CITY OF SAN DIEGO LAND DEVELOPMENT CODE, AND THE STORM WATER STANDARDS MANUAL.

PRIOR TO ANY SOIL DISTURBANCE, TEMPORARY SEDIMENT CONTROLS SHALL BE INSTALLED BY THE CONTRACTOR OR QUALIFIED PERSON(S) AS INDICATED BELOW:

1. ALL REQUIREMENTS OF THE COUNTY OF SAN DIEGO "STORM WATER STANDARDS MANUAL" MUST BE INCORPORATED INTO THE DESIGN AND CONSTRUCTION OF THE PROPOSED GRADING / IMPROVEMENTS CONSISTENT WITH THE APPROVED STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND / OR WATER POLLUTION CONTROL PLAN (WPCP) FOR CONSTRUCTION LEVEL BMPS AND, IF APPLICABLE, THE STORM WATER QUALITY MANAGEMENT PLAN (SWQMP) FOR POST CONSTRUCTION BMPS.
2. THE CONTRACTOR SHALL INSTALL & MAINTAIN ALL STORM DRAIN INLET PROTECTION. INLET PROTECTION IN THE PUBLIC RIGHT OF WAY MUST BE TEMPORARILY REMOVED PRIOR TO A RAIN EVENT TO ENSURE NO FLOODING OCCURS & REINSTALLED AFTER RAIN IS OVER.
3. ALL CONSTRUCTION BMPS SHALL BE INSTALLED & PROPERLY MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION.
4. THE CONTRACTOR SHALL ONLY GRADE, INCLUDING CLEARING & GRUBBING, AREAS FOR WHICH THE CONTRACTOR OR QUALIFIED CONTACT PERSON CAN PROVIDE EROSION & SEDIMENT CONTROL MEASURES.
5. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL SUB CONTRACTORS & SUPPLIERS ARE AWARE OF ALL STORM WATER BMPS & IMPLEMENT SUCH MEASURES. FAILURE TO COMPLY WITH THE APPROVED SWPPP / WPCP WILL RESULT IN THE ISSUANCE OF CORRECTION NOTICES, CITATIONS, CIVIL PENALTIES, & / OR STOP WORK NOTICES.
6. THE CONTRACTOR OR QUALIFIED CONTACT PERSON SHALL BE RESPONDIBLE FOR CLEANUP OF ALL SILT DEBRIS, AND MUD ON AFFECTED & ADJACENT STREET(S) & WITHIN STORM DRAIN SYSTEM DUE TO CONSTRUCTION VEHICLES / EQUIPMENT & CONSTRUCTION ACTIVITY AT THE END OF EACH WORK DAYS.
7. THE CONTRACTOR SHALL PROTECT NEW & EXISTING STORM WATER CONVEYANCE SYSTEM FROM SEDIMENTATION, CONCRETE RINSE, OR OTHER CONSTRUCTION RELATED DEBRIS & DISCHARGES WITH THE APPROPRIATE BMPS THAT ARE ACCEPTABLE TO THE CITY RESIDENT ENGINEER & AS INDICATED IN THE SWPPP / WPCP.
8. THE CONTRACTOR OR QUALIFIED CONTACT PERSON SHALL CLEAR DEBRIS, SILT, & MUD FROM ALL DITCHES & SWALES PRIOR TO & WITHIN 3 BUSINESS DAYS AFTER EACH RAIN EVENT OR PRIOR TO THE NEXT RAIN EVENT, WHICHEVER IS SOONER.
9. IF A NON-STORM WATER DISHARGE LEAVES THE SITE, THE CONTRACTOR SHALL IMMEDIALTELY STOP THE ACTIVITY & REPAIR THE DAMAGES. THE CONTRACTOR SHALL NOTIFY THE CITY RESIDENT ENGINEER OF THE DISCHARGE, PRIOR TO RESUMING CONSTRUCTION ACTIVITY, ANY AND ALL WASTE MASTERIAL, SEDIMENT, & DEBRIS FROM EACH NON-STORM WATER DISCHARGE SHALL BE REMOVED FROM THE STORM DRAIN CONVEYANCE SYSTEM & PROPERLY DISPOSED OF BY THE CONTRACTOR.
10. EQUIPMENT & WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL TIMES. ALL NECESSARY MATERIALS SHALL BE STOCKPILED ONSITE AT CONVENIENT LOCATIONS TO FACILITATE RAPID DEPLOYMENT OF CONSTRUCTION BMPS WHEN RAIN IS IMMINENT
11. THE CONTRACTOR SHALL RESTORE & MAINTAIN ALL EROSION & SEDIMENT CONTROL BMPS TO WORKING ORDER YEAR ROUND
12. THE CONTRACTOR SHALL INSTALL ADDITIONAL EROSION & SEDIMENT CONTROL MEASURES DUE TO UNFORESEEN CIRCUMSTANCES TO PREVENT NON-STORM WATER & SEDIMENT-LADEN DISCHARGES.
13. THE CONTRACTOR SHALL BE RESPONSIBLE & SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATERS CREATE A HAZARDOUS CONDITION.
14. ALL EROSION & SEDIMENT CONTROL MEASURES PROVIDED PER THE APPROVED SWPPP / WPCP SHALL BE INSTALLED & MAINTAINED. ALL EROSION & SEDIMENT CONTROLS FOR INTERIM CONDITIONS SHALL BE PROPERLY DOCUMENTED & INSTALLED TO THE SATISFACTION OF THE CITY RESIDENT ENGINEER.
15. AS NECESSARY, THE CITY RESIDENT ENGINEER SHALL SCHEDULE MEETINGS FOR THE PROJECT TEAM (GENERAK CINTRACTOR, WUALIFIED CONTACT PERSON, EROSION CONTROL SUBCINTRACTOR IF ANY, ENGINEER OR WORK, OWNER / DEVELOPER, & THE CITY RESIDENT ENGINEER) TO EVALUATE THE ADEQUACY OF THE EROSION & SEDIMENT CONTROL MEASURES & OTHER BMPS RELATIVE TO ANTICIPATED CONSTRUCTION ACTIVITIES.
16. THE CONTRACTOR OR QUALIFIED CONTACT PERSON SHALL CONDUCT VISUAL INSPECTIONS & MAINTAIN ALL BMPS DAILY & AS NEEDED. VISUAL INSPECTIONS & MAINTENANCE OF ALL BMPS SHALL BE CONDUCTED BEFORE, DURING, & AFETR EVERY RAIN EVENT & EVERY 24 HOURS DURING ANY PROLONGED RAIN EVENT. THE CONTRACTOR SHALL MAINTAIN & REPAIR ALL BMPS AS SOON AS POSSIBLE AS SAFETY ALLOWS.
17. CONSTRUCTION ENTRANCE & EXIT AREA. TE,PORARY CONSTRUCTION ENTRANCE & EXITS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CASQA FACT SHEET TC-10R CALTRANS FACT SHEET TC-01 TO PREVENT TRACKING OF SEDIMENT & OTHER POTENTIAL POLLUTANTS ONTO PAVED SURFACES & TRAVELED WAYS. WIDTH SHALL BE 10'+0" OR MINIMUM NECESSARY TO ACCOMMODATE VEHICLES & EQUIPMENT WITHOUT BY-PASSING THE ENTRANCE. (a) NON-STORM WATER DISCHARGES, SHALL BE EFFECTVELY MANAGED PER THE SAN DIEGO MUNICIPAL CODE CHAPTER 4, ARTICLE 3, DIVISION 3" STORM WATER MANAGEMENT & DISCHARGE CONTROL.

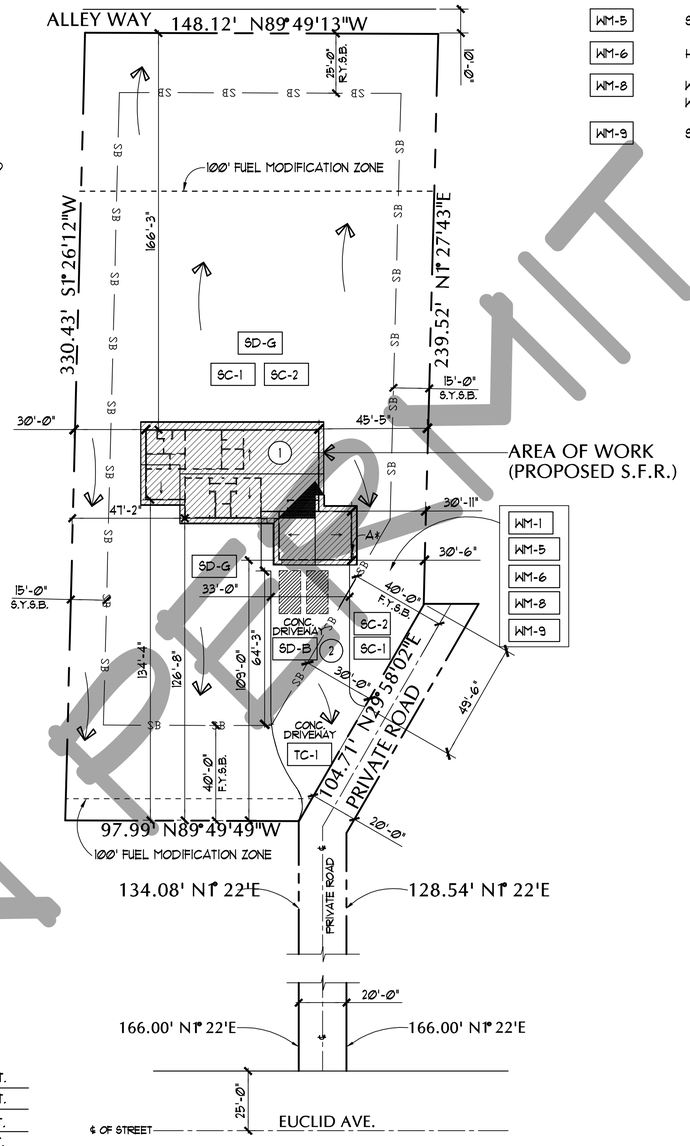
ENERGY/TITLE 24 NOTES:

1.AN ELECTRONICALLY SIGNED AND REGISTERED INSTALLATION CERTIFICATE(S) (CF2R) POSTED BY THE INSTALLING CONTRACTOR SHALL BE SUBMITTED TO THE FIELD INSPECTOR DURING CONSTRUCTION AT THE BUILDING SITE. A REGISTERED CF2R WILL HAVE A UNIQUE 21-DIGIT REGISTRATION NUMBER FOLLOWED BY FOUR ZEROS LOCATED AT THE BOTTOM OF EACH PAGE. THE FIRST 12 DIGITS OF THE NUMBER WILL MATCH THE REGISTRATION NUMBER OF THE ASSOCIATED CFIR. CERTIFICATE OF OCCUPANCY WILL NOT BE ISSUED UNTIL FORMS CF2R IS REVIEWED AND APPROVED.

2. AN ELECTRONICALLY SIGNED AND REGISTERED CERTIFICATE(S) OF FIELD VERIFICATION AND DIAGNOSTIC TESTING (CF3R) SHALL BE POSTED AT THE BUILDING SIGNED AND REGISTERED CERTIFICATE(S) OF FIELD VERIFICATION AND DIAGNOSTIC TESTING (CF3R) SHALL BE POSTED A THE BUILDING SITE BY A CERTIFIED HERS RATER. A REGISTERED CF3R WILL HAVE A UNIQUE 25-DIGIT REGISTRATION NUMBER LOCATED AT THE BOTTOM OF EACH PAGE. THE FIRST 20 DIGITS OF THE NUMBER WILL MATCH THE REGISTRATION OF THE ASSOCIATED CF2R. CERTIFICATE OF OCCUPANCY WILL NOT BE ISSUED UNTIL CF3R IS REVIEWED AND APPROVED.

PROPERLY COMPLETED CERTIFICATES OF INSTALLATION (CF-2R FORMS) SHALL BE PROVIDED TO THE INSPECTOR IN THE FIELD. FOR PROJECTS REQUIRING HERS VERIFICATION, THE CF-2R FORMS SHALL BE REGISTERED WITH A CALIFORNIA - APPROVED HERS PROVIDER DATA REGISTRY

PROPERLY COMPLETED CERTIFICATES OF VERIFICATION (CF-3R FORMS) SHALL BE PROVIDED TO THE INSPECTOR IN THE FIELD FOR ITEMS REQUIRING HERS VERIFICATION. CF-3R FORMS SHALL BE REGISTERED WITH A CALIFORNIA - APPROVED HERS PROVIDER DATA REGISTY.



SITE PLAN

SCALE: 1" = 30'-0"

BMPs LEGEND:

SC-1	SILT FENCE
SC-2	COUNTY STANDARD LOT PERIMETER PROTECTION DETAIL
TC-1	STABILIZED CONSTRUCTION ENTRANCE
WM-1	MATERIAL DELIVERY & STORAGE
WM-5	SOLID WASTE MANAGEMENT
WM-6	HAZARDOUS WASTE MANAGEMENT
WM-8	WASTE MANAGEMENT CONCRETE WASTE MANAGEMENT
WM-9	SANITARY WASTE MANAGEMENT

LEGEND:

1. — — — INDICATES EXISTING WALLS
2. ——— INDICATES EXISTING ROOF
3. SB —— INDICATES SET BACKS
4. ——— INDICATES PROPERTY LINE
5. ——— INDICATES STREET CENTER LINE
6. INDICATES AREA OF WORK
7. INDICATES DRAINAGE
8. INDICATES 9 x 18 PARKING SPOTS
9. A# 225 AMP MAIN ELECTRICAL PANEL

GREEN CODE NOTES:

1. ALL PLUMBING FIXTURES AND FITTINGS WILL BE WATER CONSERVING AND WILL COMPLY WITH THE 2022 CGBSC.
2. PROVIDE LAVATORY FAUCETS WITH A MAXIMUM FLOW OF 1.2 GALLONS PER MINUTE (GPM).
3. PROVIDE KITCHEN FAUCETS WITH A MAXIMUM FLOW OF 1.8 GALLONS PER MINUTE (GPM).
4. PROVIDE SHOWER HEADS WITH A MAX. FLOW OF 1.8 GALLONS PER MINUTE (GPM)
5. PROVIDE WATER CLOSET WITH A MAX. OF 1.28 GALLONS FLUSH (GPF)
6. PER 2022 CGBSC, WHEN A SHOWER IS SERVED BY MORE THAN ONE SHOWERHEAD, THE COMBINED FLOW RATE OF ALL SHOWERHEADS AND/OR OTHER SHOWER OUTLETS CONTROLLED BY A SINGLE VALVE SHALL NO EXCEED 2.0 GALLONS PER MINUTE AT 80 PSI, OR THE SHOWER SHALL BE DESIGNED TO ONLY ALLOW ONE SHOWER OUTLET TO BE IN OPERATION AT A TIME. HANDHELD SHOWERS ARE CONSIDERED SHOWERHEADS.
7. PERMANENT VACCUM BREAKERS SHALL BE INCLUDED WITH ALL NEW HOSE BIBBS
8. PER 2022 CGBSC, PLUMBING FIXTURES (WATER CLOSETS AND URINALS) AND FITTING (FAUCETS AND SHOWERHEADS) SHALL BE INSTALLED IN ACCORDANCE WITH THE CALIFORNIA PLUMBING CODE (CPC)
9. PER 2022 GREEN CODE, MECHANICAL EXHAUST FANS WHICH EXHAUST DIRECTLY FROM BATHROOMS SHALL COMPLY WITH THE FOLLOWING:
   1. FANS SHALL BE ENERGY STAR COMPLIANT AND BE DUCTED TO TERMINATE OUTSIDE BUILDING
   2. UNLESS FUNCTIONING AS A COMPONENT OF A WHOLE HOUSE VENTILATION SYSTEM, FANS MUST BE CONTROLLED BY A HUMIDISTAT WHICH SHALL BE READILY ACCESSIBLE. HUMIDISTAT CONTROLS SHALL BE CAPABLE OF ADJUSTEMENT BETWEEN A RELATIVE HUMIDITY RANGE OF 50 TO 80 PERCENT
10. HEATING AND AIR CONDITIONERS SHALL BE SIZED, DESIGNED AND HAVE THEIR EQUIPMENT SELECTED USING THE FOLLOWING METHODS:
    1. THE HEAT LOSS AND HEAT GAIN IS ESTABLISHED ACCORDING TO ANSI/ACCA 2 MANUAL J-2004 (RESIDENTIAL LOAD CALCULATION) ASHRAE HANDBOOKS OR OTHER EQUIVALENT DESIGN SOFTWARE OR METHODS.
    2. DUCT SYSTEMS ARE SIZED ACCORDING TO ANSI/ACCA 1 MANUAL D-2009 (RESIDENTIAL DUCT SYSTEMS) ASHRAE HANDBOOKS OR OTHER EQUIVALENT DESIGN SOFTWARE OR METHODS.
    3. SELECT HEATING AND COOLING EQUIPMENT ACCORDING TO ANSI/ACCA 3 MANUAL S-2004 (RESIDENTIAL EQUIPMENT SELECTION).
11. PER CALIFORNIA CIVIL CODE ARTICLE 1101.4 AND CALGREEN SECTION 301.1, ALL BUILDING ALTERATIONS TO A SINGLE-FAMILY HOME, EXISTING PLUMBING FIXTURES IN THE ENTIRE HOUSE THAT DO NOT MEET COMPLIANT FLOW RATES NEED TO BE UPGRADED. WATER CLOSETS WITH A FLOW RATE IN EXCESS OF 1.6 GPF WILL NEED TO BE REPLACED WITH WATER CLOSETS WITH A MAXIMUM FLOW RATE OF 1.28 GPF. SHOWERS WITH A FLOW RATE IN EXCESS OF 2.5GPM WILL NEED TO BE REPLACED WITH SHOWER HEADS WITH A MAXIMUM FLOW RATE OF 1.8GPM. LAVATORY WITH A FLOW RATE IN EXCESS OF 2.2 GPM WILL NEED TO BE REPLACED WITH LAVATORY WITH A MAXIMUM FLOW RATE OF 1.2 GPM (1.8GPM FOR KITCHEN FAUCETS).

CONSTRUCTED IMPERVIOUS AREA

SITE ID	IMPERVIOUS ITEM	DIMENSIONS	NEW OR REPLACED AREA (SF)	EXISTING AREA (SF)
(1)	MAIN HOME	PER PLAN	3,139	0
(2)	CONCRETE	PER PLAN	3,145	0
		TOTAL =	6,284	0

TOTAL LAND DISTURBANCE AREA =	6,284	
(N) LOT COVERAGE PERCENTAGE	6,284 / 46,609.2 x 100% = 13.48%	

EARTHWORK QUANTITIES:

CUT QUANTITIES:	30	CYD
FILL QUANTITIES:	0	CYD
IMPORT/EXPORT:	0	CYD
MAX. CUT DEPTH:	0	FT.
MAX. FILL DEPTH:	0	FT.
a. TOTAL DISTURBANCE AREA:	6,284 SQ. FT.	
b. EXISTING AMOUNT OF IMPERVIOUS AREA:	0 SQ.FT.	
c. PROPOSED AMOUNT OF IMPERVIOUS AREA:	6,284 SQ. FT.	
d. TOTAL IMPERVIOUS AREA:	6,284 SQ. FT.	
e. IMPERVIOUS % INCREACE:	100%	

NOTE: IMPERVIOUS AREA SHALL INCLUDE: ROOF, SIDEWALK PARKING AREA, WALKWAYS, POOLS, POOL DECKS. ETC. THE PROJECT PROPOSES TO EXPORT 0 CUT YARDS OF MATERIAL FROM THIS SITE. ALL EXPORT MATERIAL SHALL BE DISCHARGED TO A LEGAL DISPOSAL SITE. THE APPROVAL OF THIS PROJECT DOES NOT ALLOW PROCESSING AND SALE OF THE MATERIAL, ALL SUCH ACTIVITIES REQUIRE A SEPARATE CONDITIONAL USE PERMIT.

REVISIONS	BY

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ROACH RESIDENCE
2255 EUCLID AVE.
EL CAJON, CA. 92019

DATE	07-31-2024
SCALE	
DRAWN	
PROJECT	

A0

A. General

Applicable codes. All projects will comply with the following building codes and associated County of San Diego amendment.
2022 California Building Code (CBC) and/or California Residential Code (CRC)
2022 California Green Building Standards Code (CalGreen)
2022 California Electrical Code (CEC)
2022 California Mechanical Code (CMC)
2022 California Plumbing Code (CPC)
2022 California Fire Code (CFC)
2022 California Building Energy Efficiency Standards (CBEES)

B. Electrical, Plumbing, and Mechanical

1. **Exterior lighting.** All projects shall comply with the County of San Diego lighting ordinance.
2. **GFCI outlets.** Ground Fault Circuit Interrupter (GFCI) outlets are required in bathrooms, at kitchen countertops, at laundry and wet bar sinks, in garages, in crawlspaces, in unfinished basements, and outdoors. (CEC 210.8)
3. **AFCI outlets.** Electrical circuits in bedrooms, living rooms, dining rooms, dens, closets, hallways, or similar rooms must be protected by Arc Fault Circuit Interrupters (AFCI). (CEC 210.12)
4. **Luminaire requirements.** Installed luminaires shall meet the efficacy and fixture requirements of CBEES 150.0(k).
5. **Smoke detectors in building remodels.** Smoke detectors are required in each existing sleeping room, outside each separate sleeping area in the immediate vicinity of sleeping rooms, and on each story of a dwelling including basements. Battery-operated detectors are acceptable in existing areas with no construction taking place and in alterations not resulting in removal of interior wall or ceiling finishes and without access via an attic, crawl space, or basement. (CRC R314.3)
6. **Carbon monoxide detectors in building remodels.** Carbon monoxide detectors are required outside each separate sleeping area in the immediate vicinity of sleeping rooms and on each story of a dwelling including basements. Battery-operated detectors are acceptable in existing areas with no construction taking place and in alterations not resulting in removal of interior wall or ceiling finishes and without access via an attic, crawl space, or basement. (CRC R315.3)
7. **Water heater seismic strapping.** Minimum two 3/4-inch-by-24-gauge straps required around water heaters, with 1/4-inch-by-3-inch lag bolts attached directly to framing. Straps shall be at points within upper third and lower third of water heater vertical dimension. Lower connection shall occur minimum 4 inches above controls. (CPC 507.2)
8. **Gas appliances in garages.** Water heaters and heating/cooling equipment capable of igniting flammable vapors shall be placed on minimum 18-inch-high platform unless listing report number provided showing ignition-resistant appliance. (CPC 507.13 and CMC 305.1)
9. **Impact protection of appliances.** Water heaters and heating/cooling equipment subject to vehicular impact shall be protected by bollards or an equivalent measure. (CPC 507.13.1 and CMC 305.11)
10. **Water closet clearance.** Minimum 30-inch-wide by 24-inch-deep clearance required at front of water closets. (CPC 402.5)
11. **Shower size.** Shower compartments shall have minimum area of 1024 square inches and be able to encompass a 30-inch-diameter circle. Shower doors shall have a minimum 22-inch unobstructed width. (CPC 408.5 and CPC 408.6)
12. **Fireplace appliances.** Fireplaces with gas appliances are required to have the flue damper permanently fixed in the open position and fireplaces with LPG appliances are to have no 'pit' or 'sump' configurations. (CMC 303.7.1)
13. **Chimney clearance.** Minimum 2-foot chimney clearance required above building within 10-foot horizontally of chimney. The chimney shall extend minimum 3 feet above highest point where chimney passes through roof. (CRC R1003.9)

C. Mechanical Ventilation and Indoor Air Quality (ASHRAE 62.2-2010)

1. **Transfer air.** Ventilation air shall be provided directly from the outdoors and not as transfer air from adjacent dwelling units or other spaces, such as garages, unconditioned crawlspaces, or unconditioned attics. (CBEES 150.0(o))
2. **Instructions and labeling.** Ventilation system controls shall be labeled, and the homeowner shall be provided with instructions on how to operate the system. (CBEES 150.0(o))
3. **Combustion and solid-fuel burning appliances.** Combustion appliances shall be properly vented and air systems shall be designed to prevent back drafting. (CBEES 150.0(o))
4. **Garages.** The wall and openings between occupiable spaces and the garage shall be sealed. HVAC systems that include air handlers or return ducts located in garages shall have total air leakage of no more than 6% of total fan flow when measured at 0.1 in. w.c. using California Title 24 or equivalents. (CBEES 150.0(o))
5. **Minimum filtration.** Mechanical systems supplying air to occupiable space through ductwork shall be provided with a filter having a minimum efficiency of MERV 6 or better. (CBEES 150.0(o))
6. **Air inlets.** Air inlets (not exhaust) shall be located away from known contaminants. (CBEES 150.0(o))
7. **Air moving equipment.** Air moving equipment used to meet either the whole-building ventilation requirement or the local ventilation exhaust requirement shall be rated in terms of airflow and sound. (CBEES 150.0(o))
   a. All continuously operating fans shall be rated at a maximum of 1.0 sone.
   b. Intermittently operated whole-building ventilation fans shall be rated at a maximum of 1.0 sone.
   c. Intermittently operated local exhaust fans shall be rated at maximum of 3.0 sone.
   d. Remotely located air-moving equipment (mounted outside of habitable spaces) need not meet sound requirements if at least 4 feet of ductwork between fan and intake grill.

D. Foundation and Underfloor

1. **Foundation reinforcement.** Continuous footings and stem walls shall be provided with a minimum two longitudinal No. 4 bars, one at the top and one at the bottom of the footing. (CRC R403.1.3.3)
2. **Shear wall foundation support.** Shear walls shall be supported by continuous foundations. (CRC 403.1.2)
3. **Concrete slabs-on-grade.** Slabs-on-grade shall be minimum 3-1/2-inches thick. (CRC R506.1)
4. **Vapor retarder.** A 10-mil polyethylene or approved vapor retarder with joints lapped minimum 6 inches shall be placed between a concrete slab-on-grade and the base course or subgrade. (CRC 506.2.3)
5. **Anchor bolts and sills.** Foundation plates or sills shall be bolted or anchored to the foundation or foundation wall per the following (CRC R403.1.6 and CRC R602.11.1):
   a. Minimum 1/2-inch-diameter steel bolts
   b. Bolts embedded at least 7 inches into concrete or masonry
   c. Bolts spaced maximum 6 feet on center
   d. Minimum two bolts per plate/sill piece with one bolt located maximum 12 inches and minimum 7 bolt diameters from each end of each sill plate/piece
   e. Minimum 3-inch by 3-inch by 0.299-inch steel plate washer between sill and nut on each bolt
6. Hold-**downs**. All hold-downs must be tied in place prior to foundation inspection.
7. **Protection of wood against decay.** Naturally durable or preservative-treated wood shall be provided in the following locations (CRC R317.1):
   a. All wood in contact with ground, embedded in concrete in direct contact with ground, or embedded in concrete exposed to weather
   b. Wood joists within 18 inches and wood girders within 12 inches of the exposed ground in crawl spaces shall be of naturally durable or preservative-treated wood
   c. Wood framing members that rest on concrete or masonry exterior foundation walls and are less than 8 inches from exposed earth shall be of naturally durable or preservative-treated wood
   d. Wood framing, sheathing, and siding on the exterior of the building and having clearance less than 6 inches from the exposed ground or less than 2 inches vertically from concrete steps, porch slabs, patio slabs, and similar horizontal surface exposed to weather
   e. Sills and sleepers on concrete or masonry slab in direct contact with ground unless separated from such slab by impervious moisture barrier
   f. Ends of wood girders entering masonry or concrete walls with clearances less than 1/2 inch on tops, sides, and ends
   g. Wood structural members supporting moisture-permeable floors or roofs exposed to weather, such as concrete or masonry slabs, unless separated from such floors or roofs by an impervious moisture barrier
   h. Wood furring strips or other wood framing members attached directly to interior of exterior concrete or masonry walls below grade except where vapor retarder applied between wall and furring strips or framing members
8. **Underfloor ventilation.** Underfloor areas shall have ventilation openings through foundation walls or exterior walls, with minimum net area of ventilation openings of 1 square foot for each 150 square feet of underfloor area. On such ventilating opening shall be within 3 feet of each corner of the building. (CRC R408.1)
9. **Underfloor access.** Underfloor areas shall be provided with a minimum 18-inch by 24-inch access opening. (CRC R408.4)

E. Wood Framing

1. **Fastener requirements.** The number, size, and spacing of fasteners connecting wood members/elements shall not be less than that set forth in CRC Table R602.3(1). (CRC R502.9, CRC R602.3, and CRC R802.2)
2. **Stud size, height, and spacing.** The size, height, and spacing of studs shall be in accordance with CRC Table R602.3(5). (CRC R602.3.1)

E. Wood Framing (Continued)

3. **Sill plate**. Studs shall have full bearing on nominal 2-inch thick or larger sill plate with width at least equal to stud width. (CRC R602.3.4)
4. **Bearing studs.** Where joists, trusses, or rafters are spaced more than 16 inches on center and the bearing studs below are spaced 24 inches on center, such members shall bear within 5 inches of the studs beneath. (CRC R602.3.3)
5. **Drilling and notching of studs.** Any stud in an exterior wall or bearing partition may be cut or notched to a depth not exceeding 25% of its width. Studs in nonbearing partitions may be notched to a depth not to exceed 40% of a single stud width. Any stud may be bored or drilled, provided the diameter of the resulting hole is no more than 60% of the stud width, the edge of the hole is no more than 5/8 inch to the edge of the stud, and the hole is not located in the same section as a cut or notch. Studs located in exterior wall or bearing partitions drilled over 40% and up to 60% shall also be doubled with no more than two successive studs bored. (CRC R602.6)
6. **Top plate.** Wood stud walls shall be capped with a double top plate installed to provide overlapping at corners and at intersections with other partitions. End joints in double top plates shall be offset at least 24 inches. Joints in plates need not occur over studs. Plates shall be minimum nominal 2 inches thick and have width at least equal to width of studs. (CRC R602.3.2)
7. **Top plate splices.** Top plate lap splices shall be face-nailed with minimum 8 16d nails on each side of splice. (CRC R602.10.8.1)
8. **Drilling and notching of top plate.** When piping or ductwork is placed in or partly in an exterior wall or interior load-bearing wall, necessitating cutting, drilling, or notching of the top plate by more than 50% of its width, a galvanized metal tie not less than 0.054-inch thick and 1-1/2-inches wide shall be fastened across and to the plate at each side of the opening with not less than 8 10d nails having a minimum length of 1-1/2 inches at each side or equivalent. The metal tie must extend minimum 6 inches past the opening. (CRC R602.6.1)
9. **Cripple walls.** Foundation cripple walls shall be framed of studs not less in size than the studding above. Cripple walls more than 4 feet in height shall have studs sized as required for an additional story. Cripple walls with stud height less than 14 inches shall be sheathed on at least one side with a wood structural panel fastened to both the top and bottom plates in accordance with Table R602.3(1), or the cripple walls shall be constructed of solid blocking. Cripple walls shall be supported on continuous foundations. (CRC R602.9)
10. **Wall bracing.** Buildings shall be braced in accordance with the methods allowed per CRC R602.10.2, CRC R602.10.4, and/or CRC R602.10.5.
11. **Braced wall line spacing.** Spacing between braced wall lines shall not exceed 20 feet or alternate provisions of CRC R602.10.1.3.
12. **Shear wall cumulative length.** The cumulative length of shear walls within each braced wall line shall meet the provisions of CRC Table R602.10.3(1) for wind loads and CRC Table R602.10.3(2) for seismic loads. (CRC R602.10.1.1)
13. **Shear wall spacing.** Shear walls shall be located not more than 25 feet on center. (CRC R602.10.2.2)
14. **Shear wall offset.** Shear walls may be offset out-of-plan not more than 4 feet from the designated braced wall line and not more than 8 feet from any other offset wall considered part of the same braced wall line. (CRC R602.10.1.2)
15. **Shear wall location.** Shear walls shall be located at the ends of each braced wall line or meet the alternate provisions of CRC R602.10.2.2.
16. **Individual shear wall length.** Shear walls shall meet minimum length requirements of CRC R602.10.6.5.1.
17. **Cripple wall bracing**. Cripple walls shall be braced per CRC R602.10.11.
18. **Shear wall and diaphragm nailing**. All shear walls, roof diaphragms, and floor diaphragms shall be nailed to supporting construction per CRC Table R602.3(1). (CRC R604.3)
19. **Shear wall joints.** All vertical joints in shear wall sheathing shall occur over, and be fastened to, common studs. Horizontal joints in shear walls shall occur over, and be fastened to, minimum 1-1/2-inch-thick blocking. (CRC R602.10.10)
20. **Framing over openings.** Headers, double joists, or trusses of adequate size to transfer loads to vertical members shall be provided over window and door openings in load-bearing walls and partitions. (CBC 2304.3.2)
21. **Joists under bearing partitions.** Joists under parallel bearing partitions shall be of adequate size to support the load. Double joists, sized to adequately support the load, that are separated to permit the installation of piping or vents shall be full-depth solid-blocked with minimum 2-inch nominal lumber spaced at maximum 4 feet on center. Bearing partitions perpendicular to joists shall not be offset from supporting girders, walls, or partitions more than the joist depth unless such joists are of sufficient size to carry the additional load. (CRC R502.4)
22. **Joists above or below shear walls.** Where joists are perpendicular to a shear wall above or below, a rim joist, band joist, or blocking shall be provided along the entire length of the shear wall. Where joists are parallel to a shear wall above or below, a rim joist, end joist, or other parallel framing shall be provided directly above and/or below the shear wall. Where a parallel framing member cannot be located directly above and/or below the shear wall, full-depth blocking at 16-inch spacing shall be provided between the parallel framing members to each side of the shear wall. (CRC R602.10.8)
23. **Floor member bearing.** The ends of each floor joist, beam, or girder shall have minimum 1-1/2 inches of bearing on wood or metal and minimum 3 inches of bearing on masonry or concrete except where supported on a 1-inch-by-4-inch ribbon strip and nailed to the adjoining stud or by the use of approved joist hangers. (CRC R502.6)
24. **Floor joist lap.** Floor joists framing opposite sides over a bearing support shall lap minimum 3 inches and shall be nailed together within minimum 3 10d face nails. A wood or metal splice with strength equal to or greater than that provided by the lap is permitted. (CRC R502.6.1)
25. **Floor joist-to-girder support.** Floor joists framing into the side of a wood girder shall be supported by approved framing anchors or on ledger strips minimum nominal 2 inches by 2 inches. (CRC R502.6.2)
26. **Floor joist lateral restraint.** Floor joists shall be supported laterally at ends and each intermediate support by minimum 2-inch full-depth blocking, by attachment to full-depth header, band joist, or rim joist, to an adjoining stud, or shall be otherwise provided with lateral support to prevent rotation. (CRC R502.7)
27. **Floor joist bridging.** Floor joists exceeding nominal 2 inches by 12 inches shall be supported laterally by solid blocking, diagonal bridging (wood or metal), or a continuous 1-inch-by-3-inch strip nailed across the bottom of joists perpendicular to joists at maximum 8-foot intervals. (CRC R502.7.1)
28. **Framing of floor openings.** Openings in floor framing shall be framed with a header and trimmer joists. When the header joist span does not exceed 4 feet, the header joist may be a single member the same size as the floor joist. Single trimmer joists may be used to carry a single header joist located within 3 feet of the trimmer joist bearing. When the header joist span exceeds 4 feet, the trimmer joists and header joist shall be doubled and of sufficient cross section to support the floor joists framing into the header. Approved hangers shall be used for the header-joist-to-trimmer-joist connections when the header joist span exceeds 6 feet. Tail joists over 12 feet long shall be supported at the header by framing anchors or on ledger strips minimum 2 inches by 2 inches. (CRC R502.10)
29. **Girders**. Girders for single-story construction or girders supporting loads from a single floor shall not be less than 4 inches by 6 inches for spans 6 feet or less, provided that girders are spaced not more than 8 feet on center. Other girders shall be designed to support the loads specified in the CBC. Girder end joints shall occur over supports. When a girder is spliced over a support, an adequate tie shall be provided. The ends of beams or girders supported on masonry or concrete shall not have less than 3 inches of bearing. (CBC 2308.7)
30. **Ridges, hips, and valleys**. Rafters shall be framed to a ridge board or to each other with a gusset plate as a tie. Ridge boards shall be minimum 1-inch nominal thickness and not less in depth than the cut end of the rafter. At all valley and hips, there shall be a valley or hip rafter not less than 2-inch nominal thickness and not less in depth than the cut end of the rafter. Hip and valley rafters shall be supported at the ridge by a brace to a bearing partition or be designed to carry and distribute the specific load at that point. Where the roof pitch is less than 3:12 slope (25% gradient), structural members that support rafters and ceilings joists, such as ridges, hips, and valleys, shall be designed as beams. (CRC R802.3)
31. **Ceiling joist and rafter connections.** Ceiling joists and rafters shall be nailed to each other per CRC Table R802.5.1(9), and the rafter shall be nailed to the wall top plate per CRC Table R602.3(1). Ceiling joists shall be continuous or securely joined per CRC Table R802.5.1(9) where they meet over interior partitions and are nailed to adjacent rafters to provide a continuous tie across the building when such joists are parallel to rafters. Where ceiling joists are not connected to the rafters at the wall top plate, joists connected higher in the attic shall be installed as rafter ties, or rafter ties shall be installed to provide a continuous tie. Where ceiling joists are not parallel to rafters, rafter ties shall be installed. Rafter ties shall be minimum 2 inches by 4 inches nominal, installed per CRC Table R802.5.1(9), or connections of equivalent capacities shall be provided. Where ceilings joists or rafter ties are not provided, the ridge formed by these rafters shall be supported by a wall or engineer-designed girder. (CRC R802.3.1)
32. **Ceiling joists lapped.** Ends of ceiling joists shall be lapped minimum 3 inches or butted overbearing partitions or beams and toenailed to the bearing element. Where ceiling joists provide resistance to rafter thrust, lapped joists shall be nailed together per CRC Table R602.3(1) and butted joists shall be tied together in a manner to resist such thrust. (CRC R802.3.2)
33. **Collar ties.** Collar ties or ridge straps to resist wind uplift shall be connected in the upper third of the attic space. Collar ties shall be a minimum 1 inch by 4 inches nominal and spaced at maximum 4 feet on center. (CRC R802.3.1)
34. **Purlins.** Purlins installed to reduce the span of rafters shall be sized not less than the required size of the rafters they support. Purlins shall be continuous and shall be supported by 2-inch-by-4-inch nominal braces installed to bearing walls at a minimum 45-degree slope from horizontal. The braces shall be spaced maximum 4 feet on center with a maximum 8-foot unbraced length. (CRC R802.5.1)
35. **Roof/ceiling member bearing.** The ends of each rafter or ceiling joist shall have not less than 1-1/2 inches of bearing on wood or metal and not less than 3 inches of bearing on masonry or concrete. (CRC R802.6)
36. **Roof/ceiling member lateral support.** Roof framing members and ceiling joists with a nominal depth-to-thickness ratio exceeding 5:1 shall be provided with lateral support at points of bearing to prevent rotation. (CRC R802.8)
37. **Roof/ceiling bridging.** Rafters and ceiling joists with a nominal depth-to-thickness ratio exceeding 6:1 shall be supported laterally by solid blocking, diagonal bridging (wood or metal), or a continuous 1-inch-by-3-inch wood strip nailed across the rafters or ceiling joists at maximum 8-foot intervals. (CRC R802.8.1)

E. Wood Framing (Continued)

38. **Framing of roof/ceiling openings.** Openings in roof and ceiling framing shall be framed with a header and trimmer joists. When the header joist span does not exceed 4 feet, the header joist may be a single member the same size as the ceiling joist or rafter. Single trimmer joists may be used to carry a single header joist located within 3 feet of the trimmer joist bearing. When the header joist span exceeds 4 feet, the trimmer joists and header joist shall be doubled and of sufficient cross section to support the ceiling joists or rafters framing into the header. Approved hangers shall be used for the header-joist-to-trimmer-joist connections when the header joist span exceeds 6 feet. Tail joists over 12 feet long shall be supported at the header by framing anchors or on ledger strips minimum 2 inches by 2 inches. (CRC R502.10)
39. **Roof framing above shear walls.** Rafters or roof trusses shall be connected to top plates of shear walls with blocking between the rafters or trusses. (CRC R602.10.8)
40. **Roof diaphragm under fill framing.** Roof plywood shall be continuous under California fill framing.
41. **Roof diaphragm at ridges.** Minimum 2-inch nominal blocking required for roof diaphragm nailing at ridges.
42. **Blocking of roof trusses.** Minimum 2-inch nominal blocking required between trusses at ridge lines and at points of bearing at exterior walls.
43. **Truss clearance.** Minimum 1/2-inch clearance required between top plates of interior non-bearing partitions and bottom chords of trusses.
44. **Drilling, cutting, and notching of roof/floor framing.** Notches in solid lumber joists, rafters, blocking, and beams shall not exceed one-sixth the member depth, shall be not longer than one-third the member depth, and shall not be located in the middle one-third of the span. Notches at member ends shall not exceed one-fourth the member depth. The tension side of members 4 inches or greater in nominal thickness shall not be notched except at member ends. The diameter of holes bored or cut into members shall not exceed one-third the member depth. Holes shall not be closer than 2 inches to the top or bottom of the member or to any other hole located in the member. Where the member is also notched, the hole shall not be closer than 2 inches to the notch. (CRC R502.8.1)
45. **Exterior landings, decks, balconies, and stairs.** Such elements shall be positively anchored to the primary structure to resist both vertical and lateral forces or shall be designed to be self-supporting. Attachment shall not be accomplished by use of toenails or nails subject to withdrawal. (CRC R311.3)
46. **Fireblocking.** Fireblocking shall be provided in the following locations (CRC R302.11 and CRC R1003.19):
   a. In concealed spaces of stud walls and partitions, including furred spaces, and parallel rows of studs or staggered studs, as follows:
      I. Vertically at the ceiling and floor levels
      II. Horizontally at intervals not exceeding 10 feet
   b. At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings, and cove ceilings
   c. In concealed spaces between stair stringers at the top and bottom of the run
   d. At openings around vents, pipes, ducts, cables and wires at ceiling and floor level, with an approved material to resist the free passage of flame and products of combustion
   e. At chimneys and fireplaces per item E.49
   f. Cornices of a two-family dwelling at the line of dwelling-unit separation
47. **Fireblocking materials.** Except as otherwise specified in items E.48 and E.49, fireblocking shall consist of the following materials with the integrity maintained (CRC R302.11.1):
   a. Two-inch nominal lumber
   b. Two thicknesses of one-inch nominal lumber with broken lap joints
   c. One thickness of 23/32-inch wood structural panel with joints backed by 23/32-inch wood structural panel
   d. One thickness of 3/4-inch particleboard with joints backed by 3/4-inch particleboard
   e. 1/2-inch gypsum board
   f. 1/4-inch cement-based millboard
   g. Batts or blankets of mineral or glass fiber of other approved materials installed in such a manner as to be securely retained in place. Batts or blankets of mineral or glass fiber or other approved non-rigid materials shall be permitted for compliance with the 10-foot horizontal fireblocking in walls constructed using parallel rows of studs or staggered studs. Unfaced fiberglass batt insulation used as fireblocking shall fill the entire cross-section of the wall cavity to a minimum height of 16 inches measured vertically. When piping, conduit, or similar obstructions are encountered, the insulation shall be packed tightly around the obstruction. Loose-fill insulation material shall not be used as a fireblock unless specifically tested in the form and manner intended for use to demonstrate its ability to remain in place and to retard the spread of fire and hot gases.
48. **Fireblocking at openings around vents, pipes, ducts, cables, and wires at ceiling and floor level**. Such openings shall be fireblocked with an approved material to resist the free passage of flame and products of combustion. (CRC R302.11)
49. **Fireblocking of chimneys and fireplaces.** All spaces between chimneys and floors and ceilings through which chimneys pass shall be fireblocked with noncombustible material securely fastened in place. The fireblocking of spaces between chimneys and wood joists, beams, or headers shall be self-supporting or be placed on strips of metal or metal lath laid across the spaces between combustible material and the chimney. (CRC R1003.19)
50. **Draftstopping**. In combustible construction where there is usable space both above and below the concealed space of a floor/ceiling assembly, draftstops shall be installed so that the area of the concealed space does not exceed 1000 square feet. Draftstopping shall divide the concealed space into approximately equal areas. Where the assembly is enclosed by a floor membrane above and a ceiling membrane below, draftstopping shall be provided in floor/ceiling assemblies under the following circumstances (CRC R302.12):
   a. Ceiling is suspended under the floor framing
   b. Floor framing is constructed of truss-type open-web or perforated members
51. **Draftstopping materials.** Draftstopping shall not be less than 1/2-inch gypsum board, 3/8-inch wood structural panels, or other approved materials adequately supported. Draftstopping shall be installed parallel to the floor framing members unless otherwise approved by the building official. The integrity of draftstops shall be maintained. (CRC R302.12.1)
52. **Combustible insulation clearance.** Combustible insulation shall be separated minimum 3 inches from recessed luminaires, fan motors, and other heat-producing devices. (CRC R302.14)

F. General Material Specifications

1. **Lumber.** All joists, rafters, beams, and posts 2-inches to 4-inches thick shall be No. 2 grade Douglas Fir-Larch or better. All posts and beams 5 inches and thicker shall be No. 1 grade Douglas Fir-Larch or better. Studs not more than 8 feet long shall be stud-grade Douglas Fir-Larch or better when supporting not more than one floor, roof, and ceiling. Studs longer than 8 feet shall be No. 2 grade Douglas Fir-Larch or better.
2. **Concrete.** Concrete shall have a minimum compressive strength of 2,500 psi at 28 days and shall consist of 1 part cement, 3 parts sand, 4 parts 1-inch maximum size rock, and not more than 7-1/2 gallons of water per sack of cement. (CRC R402.2)
3. **Mortar.** Mortar used in construction of masonry walls, foundation walls, and retaining walls shall conform to ASTM C 270 and shall consist of 1 part portland cement, 2-1/4 to 3 parts sand, and 1/4 to 1/2 part hydrated lime. (CBC 2103.2)
4. **Grout.** Grout shall conform to ASTM C 476 and shall consist of 1 part portland cement, 1/10 part hydrated lime, 2-1/4 to 3 parts sand, and 1 to 2 parts gravel. Grout shall attain a minimum compressive strength of 2,000 psi at 28 days. (CBC 2103.3)
5. **Masonry.** Masonry units shall comply with ASTM C 90 for load-bearing concrete masonry units. (CBC 2103.1)
6. **Reinforcing steel.** Reinforcing steel used in construction of reinforced masonry or concrete structures shall be deformed and comply with ASTM A 615. (CBC 2103.4)
7. **Structural steel.** Steel used as structural shapes such as wide-flange sections, channels, plates, and angles shall comply with ASTM A36. Pipe columns shall comply with ASTM A53. Structural tubes shall comply with ASTM A500, Grade B.
8. **Fasteners for preservative-treated wood.** Fasteners for preservative-treated and fire-retardant-treated wood - including nuts and washers -- shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze, or copper. (CRC R317.3.1)
   Exception: 1/2-inch diameter or greater steel bolts
   Exception: Fasteners other than nails and timber rivets may be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum
   Exception: Plain carbon steel fasteners acceptable in SBX/DOT and zinc borate preservative-treated wood in an interior, dry environment
9. **Fasteners for fire-retardant-treated wood.** Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze, or copper. (CRC R317.3.3)

G. Roofing and Weatherproofing

1. **Roof covering.** All roof covering shall be installed per applicable requirements of CBC 1507. Roof coverings shall be at least Class A rated in accordance with ASTM E 108 or UL 790. (County Building Code 92.1.1505.1)
2. **Roof flashing.** Flashing shall be installed at wall and roof intersections, at gutters, wherever there is a change in roof slope or direction, and around roof openings. Where flashing is of metal, the metal shall be corrosion-resistant with a thickness of not less than 0.019 inch (No. 26 galvanized sheet). (CRC R903.2.1)
3. Crickets and saddles. A cricket or saddle shall be installed on the ridge side of any chimney or penetration more than 30 inches wide as measured perpendicular to the slope. Cricket or saddle covering shall be sheet metal or the same material as the roof covering. (CRC R903.2.2)

G. Roofing and Weatherproofing (Continued)

4. **Water-resistive barrier.** A minimum of one layer of No. 15 asphalt felt shall be attached to studs or sheathing of all exterior walls. Such felt or material shall be applied horizontally, with the upper layer lapped over the lower layer minimum 2 inches. Where joints occur, felt shall be lapped minimum 6 inches. The felt shall be continuous to the top of walls and terminated at penetrations and building appendages in a manner to maintain a weather-resistant exterior wall envelope. (CRC R703.2)
5. **Wall flashing.** Approved corrosion-resistant flashing shall be applied shingle fashion at the following locations to prevent entry of water into the wall cavity or penetration of water to the building structural framing components (CRC R703.8):
   a. Exterior door and window openings, extending to the surface of the exterior wall finish or to the water-resistive barrier for subsequent drainage
   b. At the intersection of chimneys or other masonry construction with frame or stucco walls, with projecting lips on both sides under stucco copings
   c. Under and at the ends of masonry, wood, or metal copings and sills
   d. Continuously above all projecting wood trim
   e. Where exterior porches, decks, or stairs attach to a wall or floor assembly of wood-frame construction
   f. At wall and roof intersections
   g. At built-in gutters
6. **Damp proofing.** Damp proofing materials for foundation walls enclosing usable space below grade shall be installed on the exterior surface of the wall and shall extend from the top of the footing to finished grade. (CRC R406.1)
7. **Weep screed.** A minimum 0.019-inch (No. 26 galvanized sheet gage), corrosion-resistant weep screed or plastic weep screed with a minimum vertical attachment flange of 3-1/2 inches shall be provided at or below the foundation plate line on exterior stud walls in accordance with ASTM C 92. The weep screed shall be placed a minimum 4 inches above the earth or 2 inches above paved areas and shall be of a type allowing trapped water to drain to the exterior of the building. (CRC R703.7.2.1)

H. Grading and soils

1. **Grading permit.** Grading permit required if volume of earth moved exceeds 200 cubic yards or if any cuts or fills exceed 8 feet in height/depth. (County Grading Ordinance 202)
2. **Compaction report.** Compaction report required for fill material 12 inches or more in depth. (CBC 1803.5.8)

I. Green Building Standards Code (CALGreen) Requirements

1. Applicability. CalGreen residential mandatory measures shall apply to every newly constructed building or structure and within any addition or alteration increasing a building's conditioned area, volume, or size. (CalGreen 101.3, CalGreen 301.1.1)
   Exception: All residential buildings undergoing permitted alterations, additions, or improvements shall replace noncompliant plumbing fixtures with water-conserving plumbing fixtures per CalGreen 301.1.1 and CalGreen 4.303.1
2. Water conserving plumbing fixtures and fittings. Plumbing fixtures and fittings shall comply with the following per CalGreen 4.303.1:
   a. Water closets: Maximum 1.28 gallons per flush
   b. Urinals: Maximum 0.5 gallons per flush
   c. Single showerheads: Maximum flow rate of 1.8 gallons per minute at 80 psi
   d. Multiple showerheads serving one shower: Maximum combined flow rate of 1.8 gallons per minute at 80 psi
   e. Lavatory faucets: Maximum flow rate of 1.2 gallons per minute at 60 psi, minimum flow rate of 0.8 gallons per minute at 20 psi
   f. Kitchen faucets: Maximum flow rate of 1.5 gallons per minute at 60 psi (County Green Building Code 97.1.4.303.1.4.4)
   Exception: Temporary increase allowed to maximum 2.2 gallons per minute at 60 psi if faucet defaults back to maximum 1.5 gallons per minute at 60 psi
   g. Appliances: At least one qualified ENERGY STAR dishwasher or clothes washer shall be installed in each dwelling unit. (County Green Building Code 97.1.4.303.3)
3. **Outdoor potable water uses in landscape areas.** Residential developments shall comply with local water efficient landscape ordinance or the current California Department of Water Resources Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent. (CalGreen 4.304.1)
4. **Joints and openings.** Openings in the building envelope separating conditioned space from unconditioned space needed to accommodate utility and other penetrations must be sealed in compliance with the California Energy Code. (CALGreen 4.406.1)
   Exception: Annular spaces around pipes, electric cables, conduits or other openings in plates at exterior walls shall be protected against the passage of rodents by closing such opening with cement mortar, concrete masonry or a similar method acceptable to the enforcing agency.
5. **Construction waste reduction, disposal, and recycling.** Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with either Section 4.408.2, 4.408.3, or 4.408.4, or meet a more stringent local construction and demolition waste management ordinance. (CalGreen 4.408.1)
   Exception: Excavated soil and land-clearing debris.
   Exception: Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist or are not located reasonably close to the jobsite The County of San Diego, Department of Public Works, Construction & Demolition (C&D) Facilities Guide is online at:
   https://www.sandiegocounty.gov/content/dam/sdc/dpw/SOLID_WASTE_PLANNING_and_RECYCLING/UpdatedCDResources/CDFacility_QuickGuide.pdf
   Exception: The enforcing agency may make exceptions to the requirements of this section when isolated jobsites are located in areas beyond the haul boundaries of the diversion facility.
6. **Construction waste management plan.** A construction waste management plan in conformance with Items 1-5 shall be completed and available on the job site. The construction waste management plan shall be updated as necessary and shall be available during construction for examination by the enforcing agency. (CalGreen 4.408.2)
   a. Identify the construction and demolition waste materials to be diverted from disposal by recycling, reuse on the project or salvage for future use or sale.
   b. Specify if construction and demolition waste materials will be sorted on-site (source-separated) or bulk mixed (single stream).
   c. Identify diversion facilities where the construction and demolition waste materials will be taken.
   d. Identify construction methods employed to reduce the amount of construction and demolition waste generated.
   e. Specify that the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both.
7. **Waste management company.** Utilize a waste management company, approved by the enforcing agency, which can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with Section 4.408.1. (CalGreen 4.408.3)
   Note: The owner or contractor may make the determination if the construction and demolition waste materials will be diverted by a waste company.
8. **Waste stream reduction alternative [LR].** Projects that generate a total combined weight of construction and demolition waste disposed of in landfills, which do not exceed 3.4 pounds per square foot of the building area shall meet the 65 percent construction waste reduction requirement in Section 4.408.1. (CalGreen 4.408.4)
   4.408.4.1 Waste stream reduction alternative. Projects that generate a total combined weight of construction and demolition waste disposed of in landfills, which do not exceed 2 pounds per square foot of the building area shall meet the 65 percent construction waste reduction requirement in Section 4.408.1.
9. **Documentation.** Documentation shall be provided to the enforcing agency which demonstrates compliance with Section 4.408.2, Items 1-5, Section 4.408.3, or Section 4.408.4.
10. **Operation and maintenance manual.** Prior to final inspection, a manual, compact disc, web-based reference, or other acceptable media which includes all of the following shall be placed in the building (CALGreen 4.410.1):
   a. Directions to owner or occupant that manual shall remain with the building throughout the life cycle of the structure.
   b. Operation and maintenance instructions for the following:
      I. Equipment and appliances, including water-saving devices and systems, HVAC system, photovoltaic systems, water-heating systems and other major appliances and equipment.
      II. Roof and yard drainage, including gutters and downspouts.
      III. Space conditioning systems, including condensers and air filters.
      IV. Landscape irrigation systems.
      V. Water reuse systems.
   c. Information from local utility, water, and waste recovery providers on methods to further reduce resource consumption, including recycle programs and locations.
   d. Public transportation and/or carpool options available in the area.
   e. Educational material on the positive impacts of an interior relative humidity between 30-60 percent and what methods an occupant may use to maintain the relative humidity level in that range.
   f. Information about water-conserving landscape and irrigation design and controllers which conserve water.
   g. Instructions for maintaining gutters and downspouts and the importance of diverting water at least 5 feet away from the foundation.

I. (CalGreen) Requirements (Continued)

   h. Information on required routine maintenance measures, including, but not limited to, caulking, painting, grading around the building, etc.
   i. Information about state solar energy and incentive programs available.
   j. A copy of all special inspection verifications required by the enforcing agency or code.
   k. Information from the Department of Forestry and Fire Protection on maintenance of defensible space around residential structures.
   l. Information and/or drawings identifying the location of grab bar reinforcements.
11. **Covering of duct openings and protection of mechanical equipment during construction.** At the time of rough installation or during storage on the construction site and until final startup of the heating and cooling equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, Sheetmetal or other methods acceptable to the enforcing agency to reduce the amount of dust or debris which may collect in the system. (CALGreen 4.504.1)
12. **Adhesives, sealants, caulks, paints, and coatings pollutant control.** Adhesives (including carpet adhesives), sealants, caulks, paints, and coatings shall comply with VOC limits per CALGreen 4.504.2. Verification of compliance shall be provided at the request of the enforcing agency. (CALGreen 4.504.2.1)
13. **Carpet systems.** All carpet installed in the building interior shall meet the testing and product requirements of one of the following (CALGreen 4.504.3):
   a. Carpet and Rug Institute's Green Label Plus Program (all carpet cushions must meet the requirements of this program).
   b. California Department of Public Health Standard Practice for the testing of VOCs (Specification 01350).
   c. NSF/ANSI 140 at the Gold level.
   d. Scientific Certifications Systems Indoor Advantage™ Gold.
14. **Resilient flooring systems.** At least 80 percent of the floor area receiving resilient flooring shall comply with one of or more of the following (CALGreen 4.504.4):
   a. VOC emission limits defined in the Collaborative for High Performance Schools (CHPS) High Performance Products Database
   b. Products compliant with CHPS criteria certified under the Greenguard Children & Schools program.
   c. Certification under the Resilient Floor Covering Institute (RFCI) FloorScore program.
   d. Meet the currently adopted version of California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," (also known as Specification 01350)
15. **Composite wood products.** Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure for Composite Wood (17 CCR 93120 et seq.) by or before the dates specified in those sections, as shown in CalGreen Table 4.504.5. The following limits are in parts per million (CALGreen 4.504.5):
   a. Hardwood plywood veneer core 0.05
   b. Hardwood plywood composite core 0.05
   c. Particle board 0.09
   d. Medium-density fiberboard (MDF) 0.11
   e. Thin MDF (5/16 inch or less) 0.13
16. **Moisture content of building materials.** Building materials with visible signs of water damage shall not be installed. Wall and floor framing shall not be enclosed when the framing members exceed 19 percent moisture content. Moisture content shall be verified in compliance with the following (CALGreen 4.505.3):
   a. Moisture content shall be determined with either a probe-type or contact-type moisture meter.
   b. Moisture readings shall be taken at a point 2 feet to 4 feet from the grade stamped end of each piece to be verified.
   c. At least three random moisture readings shall be performed on wall and floor framing with documentation acceptable to the enforcing agency provided at the time of approval to enclose the wall and floor framing.
   Insulation products which are visibly wet or have high moisture content shall be replaced or allowed to dry prior to enclosure in wall or floor cavities. Wet-applied insulation products shall follow the manufacturers' drying recommendations prior to enclosure.
17. **Bathrooms with a bathtub and/or shower** shall be mechanically ventilated per the following (CalGreen 4.506.1):
   a. Fans shall be ENERGY STAR compliant and ducted to terminate outside building
   b. Unless functioning as a component of a whole-house ventilation system, fans shall have humidity controls capable of adjustment - manually or automatically -- between a relative humidity range of 50% to 80%.
18. **Heating and air-conditioning system design.** Heating and air-conditioning systems shall be sized, designed, and have their equipment selected using the following methods (CALGreen 4.507.2):
   a. The heat loss and heat gain are established according to the currently adopted version of ANSI/ACCA 2 Manual J, ASHRAE handbooks, or other equivalent design software or methods.
   b. Duct systems are sized according to the currently adopted version of ANSI/ACCA 1 Manual D, ASHRAE handbooks, or other equivalent design software or methods.
   c. Select heating and cooling equipment according to the currently adopted version of ACCA 36-S Manual S or other equivalent design software or methods.

TABLE R602.3(1)
FASTENER SCHEDULE FOR STRUCTURAL MEMBERS

TABLE R602.3(1) FASTENING SCHEDULE

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER[a, b, c]	SPACING AND LOCATION
	Roof		
1	Blocking between ceiling joists, rafters or trusses to top plate or other framing below	4-8d box (2½″ × 0.113″); or 3-8d common (2½″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	Toe nail
	Blocking between rafters or truss not at the wall top plates, to rafter or truss	2-8d common (2½″ × 0.131″); or 2-3″ × 0.131″ nails	Each end toe nail
		2-16d common (3½″ × 0.162″); or 3-3″ × 0.131″ nails	End nail
	Flat blocking to truss and web filler	16d common (3½″ × 0.162″); or 3″ × 0.131″ nails	6″ o.c. face nail
2	Ceiling joists to top plate	4-8d box (2½″ × 0.113″); or 3-8d common (2½″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	Per joist, toe nail
3	Ceiling joist not attached to parallel rafter, laps over partitions [see Section R802.5.2 and Table R802.5.2(1)]	4-10d box (3″ × 0.128″); or 3-16d common (3½″ × 0.162″); or 4-3″ × 0.131″ nails	Face nail
4	Ceiling joist attached to parallel rafter (heel joint) [see Section R802.5.2 and Table R802.5.2(1)]	Table R802.5.2(1)	Face nail
5	Collar tie to rafter, face nail	4-10d box (3″ × 0.128″); or 3-10d common (3″ × 0.148″); or 4-3″ × 0.131″ nails	Face nail each rafter
6	Rafter or roof truss to plate	3-16d box (3½″ × 0.135″); or 3-10d common (3″ × 0.148″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails	2 toe nails on one side and 1 toe nail on opposite side of each rafter or truss[i]
7	Roof rafters to ridge, valley or hip rafters or roof rafter to minimum 2″ ridge beam	4-16d box (3½″ × 0.135″); or 3-10d common (3″ × 0.148″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails	Toe nail
		3-16d box (3½″ × 0.135″); or 2-16d common (3½″ × 0.162″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	End nail
	Wall		
8	Stud to stud (not at braced wall panels)	16d common (3½″ × 0.162″)	24″ o.c. face nail
		10d box (3″ × 0.128″); or 3″ × 0.131″ nails	16″ o.c. face nail
9	Stud to stud and abutting studs at intersecting wall corners (at braced wall panels)	16d box (3½″ × 0.135″); or 3″ × 0.131″ nails	12″ o.c. face nail
		16d common (3½″ × 0.162″)	16″ o.c. face nail
10	Built-up header (2″ to 2″ header with ½″ spacer)	16d common (3½″ × 0.162″)	16″ o.c. each edge face nail
		16d box (3½″ × 0.135″)	12″ o.c. each edge face nail
11	Continuous header to stud 3½″	5-8d box (2½″ × 0.113″); or 4-8d common (2½″ × 0.131″); or 4-10d box (3″ × 0.128″)	Toe nail
12	Adjacent full-height stud to end of header	4-16d box (3½″× 0.135″); or 3-16d common (3½″ × 0.162″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails	End nail
13	Top plate to top plate	16d common (3½″ × 0.162″)	16″ o.c. face nail
		10d box (3″ × 0.128″); or 3″ × 0.131″ nails	12″ o.c. face nail
14	Double top plate splice	8-16d common (3½″ × 0.162″); or 12-16d box (3½″ × 0.135″); or 12-10d box (3″ × 0.128″); or 12-3″ × 0.131″ nails	Face nail on each side of end joint (minimum 24″ lap splice length each side of end joint)
15	Bottom plate to joist, rim joist, band joist or blocking (not at braced wall panels)	16d common (3½″ × 0.162″)	16″ o.c. face nail
		16d box (3½″ × 0.135″); or 3″ × 0.131″ nails	12″ o.c. face nail
	Roof		
16	Bottom plate to joist, rim joist, band joist or blocking (at braced wall panel)	3-16d box (3½″ × 0.135″); or 2-16d common (3½″ × 0.162″); or 4-3″ × 0.131″ nails	16″ o.c. face nail
17	Top or bottom plate to stud	4-8d box (2½″ × 0.113″); or 3-16d box (3½″ × 0.135″); or 4-8d common (2½″ × 0.131″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails	Toe nail
		3-16d box (3½″ × 0.135″); or 2-16d common (3½″ × 0.162″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	End nail
18	Top plates, laps at corners and intersections	3-10d box (3″ × 0.128″); or 2-16d common (3½″ × 0.162″); or 3-3″ × 0.131″ nails	Face nail
19	1″ brace to each stud and plate	3-8d box (2½″ × 0.113″); or 2-8d common (2½″ × 0.131″); or 2-10d box (3″ × 0.128″); or 2 staples 1¾″	Face nail
20	1″ × 6″ sheathing to each bearing	3-8d box (2½″ × 0.113″); or 2-8d common (2½″ × 0.131″); or 2-10d box (3″ × 0.128″); or 2 staples, 1″ crown, 16 ga., 1¾″ long	Face nail
21	1″ × 8″ and wider sheathing to each bearing	3-8d box (2½″ × 0.113″); or 3-8d common (2½″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3 staples, 1″ crown, 16 ga., 1¾″ long	Face nail
		Wider than 1″ × 8″ 4-8d box (2½″ × 0.113″); or 3-8d common (2½″ × 0.131″); or 3-10d box (3″ × 0.128″); or 4 staples, 1″ crown, 16 ga., 1¾″ long	
	Floor		
22	Joist to sill, top plate or girder	4-8d box (2½″ × 0.113″); or 3-8d common (2½″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	Toe nail
23	Rim joist, band joist or blocking to sill or top plate (roof applications also)	8d box (2½″ × 0.113″)	4″ o.c. toe nail
		8d common (2½″ × 0.131″); or 10d box (3″ × 0.128″); or 3″ × 0.131″ nails	6″ o.c. toe nail
24	1″ × 6″ subfloor or less to each joist	3-8d box (2½″ × 0.113″); or 2-8d common (2½″ × 0.131″); or 3-10d box (3″ × 0.128″); or 2 staples, 1″ crown, 16 ga., 1¾″ long	Face nail
25	2″ subfloor to joist or girder	3-16d box (3½″ × 0.135″); or 2-16d common (3½″ × 0.162″)	Blind and face nail
26	2″ planks (plank & beam—floor & roof)	3-16d box (3½″ × 0.135″); or 2-16d common (3½″ × 0.162″)	At each bearing, face nail
27	Band or rim joist to joist	3-16d common (3½″ × 0.162″); or 4-10 box (3″ × 0.128″); or 4-3″ × 0.131″ nails; or 4-3″ × 14 ga. staples, 7/16″ crown	End nail
28	Built-up girders and beams, 2-inch lumber layers	20d common (4″ × 0.192″); or	Nail each layer as follows: 32″ o.c. at top and bottom and staggered.
		10d box (3″ × 0.128″); or 3″ × 0.131″ nails	24″ o.c. face nail at top and bottom staggered on opposite sides
		And: 2-20d common (4″ × 0.192″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	Face nail at ends and at each splice
29	Ledger strip supporting joists or rafters	4-16d box (3½″ × 0.135″); or 3-16d common (3½″ × 0.162″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails	At each joist or rafter, face nail
30	Bridging or blocking to joist, rafter or truss	2-10d box (3″ × 0.128″); or 2-8d common (2½″ × 0.131″); or 2-3″ × 0.131″ nails	Each end, toe nail

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER[a, b, c]	SPACING OF FASTENERS: Edges[h] (inches)	SPACING OF FASTENERS: Intermediate supports[c, e] (inches)
	Wood structural panels, subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing [see Table R602.3(3) for wood structural panel exterior wall sheathing to wall framing]			
31	3/8″ – 1/2″	6d common or deformed (2″ × 0.113″× 0.266″ head); or 2⅜″ × 0.113″ × 0.266″ head nail (subfloor, wall)[j]	6	6[f]
		8d common (2½″ × 0.131″) nail (roof); or RSRS-01 (2⅜″ × 0.113″) nail (roof)[b]	6	6[f]
32	19/32″ – 3/4″	8d common (2-2½″ × 0.131″) nail (subfloor, wall)	6	12
		8d common (21/2″ × 0.131″) nail (roof); or RSRS-01; (2⅜″ × 0.113″) nail (roof)[b]	6	6[f]
		Deformed 2⅜″ × 0.113″ × 0.266″ head (wall or subfloor)	6	12
33	7/8″ – 1¼″	10d common (3″ × 0.148″) nail; or (2½″ × 0.131 × 0.281″ head) deformed nail	6	12
	Other wall sheathing[g]			
34	½″ structural cellulosic fiberboard sheathing	1½″ × 0.120″ galvanized roofing nail, 7/16″ head diameter; or 1¼″ long 16 ga. staple with 7/16″ or 1″ crown	3	6
35	25/32″ structural cellulosic fiberboard sheathing	1¾″ × 0.120″ galvanized roofing nail, 7/16″ head diameter; or 1¼″ long 16 ga. staple with 7/16″ or 1″ crown	3	6
36	½″ gypsum sheathing[d]	1½″ × 0.120″ galvanized roofing nail, 7/16″ head diameter, or 1¼″long 16 ga.; staple galvanized, 1½″ long; 7/16″ or 1″ crown or 1¼″ screws, Type W or S	7	7
37	⅝″ gypsum sheathing[d]	1¾″ × 0.120″ galvanized roofing nail, 7/16″ head diameter, or 1¼″ long 16 ga.; staple galvanized, 1½″ long; 7/16″ or 1″crown or 1¼″ screws, Type W or S	7	7
	Wood structural panels, combination subfloor underlayment to framing			
38	¾″ and less	Deformed (2″× 0.113″) or Deformed (2″ × 0.120″) nail; or 8d common (2½″ × 0.131″) nail	6	12
39	7/8″ – 1″	8d common (2½″ × 0.131″) nail; or Deformed (2″ × 0.113″); or Deformed (2½″ × 0.120″) nail	6	12
40	1⅛″ – 1¼″	10d common (3″ × 0.148″) nail; or Deformed (2″ × 0.113″);or Deformed (2½″ × 0.120″) nail	6	12

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s; 1 ksi = 6.895 MPa.

a. Nails are smooth-common, box or deformed shanks except where otherwise stated. Nails used for framing and sheathing connections are carbon steel and shall have minimum average bending yield strengths as shown: 80 ksi for shank diameter of 0.192 inch (20d common nail), 90 ksi for shank diameters larger than 0.142 inch but not larger than 0.177 inch, and 100 ksi for shank diameters of 0.142 inch or less. Connections using nails and staples of other materials, such as stainless steel, shall be designed by accepted engineering practice or approved under Section R104.11.
b. RSRS-01 is a Roof Sheathing Ring Shank nail meeting the specifications in ASTM F1667.
c. Nails shall be spaced at not more than 6 inches on center at all supports where spans are 48 inches or greater.
d. Four-foot by 8-foot or 4-foot by 9-foot panels shall be applied vertically.
e. Spacing of fasteners not included in this table shall be based on Table R602.3(2).
f. For wood structural panel roof sheathing attached to gable end roof framing and to intermediate supports within 48 inches of roof edges and ridges, nails shall be spaced at 4 inches on center where the ultimate design wind speed is greater than 130 mph in Exposure B or greater than 110 mph in Exposure C.
g. Gypsum sheathing shall conform to ASTM C1396 and shall be installed in accordance with ASTM C1280 or GA 253. Fiberboard sheathing shall conform to ASTM C208.
h. Spacing of fasteners on floor sheathing panel edges applies to panel edges supported by framing members and required blocking and at floor perimeters only. Spacing of fasteners on roof sheathing panel edges applies to panel edges supported by framing members and required blocking. Blocking of roof or floor sheathing panel edges perpendicular to the framing members need not be provided except as required by other provisions of this code. Floor perimeter shall be supported by framing members or solid blocking.
i. Where a rafter is fastened to an adjacent parallel ceiling joist in accordance with this schedule, provide two toe nails on one side of the rafter and toe nails from the ceiling joist to top plate in accordance with this schedule. The toe nail on the opposite side of the rafter shall not be required.

THERE ARE MINIMUM REQUIREMENTS AND SHALL NOT SUPERSEDE MORE RESTRICTIVE SPECIFICATIONS ON THE PLANS OR AS REQUIRED BY APPLICABLE CODE

BUILDING RECORD ID:
PDS2023-RESPRI-000163

OWNER OR CONTRACTOR SIGNATURE:

County of San Diego, Planning & Development Services
MINIMUM CONSTRUCTION SPECIFICATIONS
BUILDING DIVISION

Sheet Number

CS-1

A. REINFORCEMENT FOR GRAB BARS CRC R327.1.1)

1. REINFORCEMENT SHALL BE SOLID LUMBER OR OTHER APPROVED CONSTRUCTION MATERIALS.
2. REINFORCEMENT FOR GRAB BARS SHALL NOT BE LESS THAN 2 BY 8 INCH NOMINAL LUMBER (1.5 INCH BY 7.25 INCH ACTUAL DIMENSION) OR OTHER APPROVED CONSTRUCTION MATERIAL PROVIDING EQUAL HEIGHT AND LOAD CAPACITY. REINFORCEMENT SHALL BE LOCATED BETWEEN 32 INCHES AND 39¼ INCHES ABOVE THE FINISHED FLOOR FLUSH WITH THE WALL FRAMING.
3. WATER CLOSET REINFORCEMENT SHALL BE INSTALLED ON BOTH SIDE WALLS OF THE FIXTURE, OR ONE SIDE WALL AND THE BACK WALL.
4. SHOWER REINFORCEMENT SHALL BE CONTINUOUS WHERE WALL FRAMING IS PROVIDED.
5. BATHTUB AND COMBINATION BATHTUB/ SHOWER REINFORCEMENT SHALL BE CONTINUOUS ON EACH END OF THE BATHTUB AND THE BACK WALL. ADDITIONALLY, BACK WALL REINFORCEMENT FOR A LOWER GRAB BAR SHALL BE PROVIDED WITH THE BOTTOM EDGE LOCATED NO MORE THAT 6 INCHES ABOVE THE BATHTUB RIM.

B. ELECTRICAL RECEPTACLE OUTLET, SWITCH AND CONTROL HEIGHTS (CRC R327.1.2)

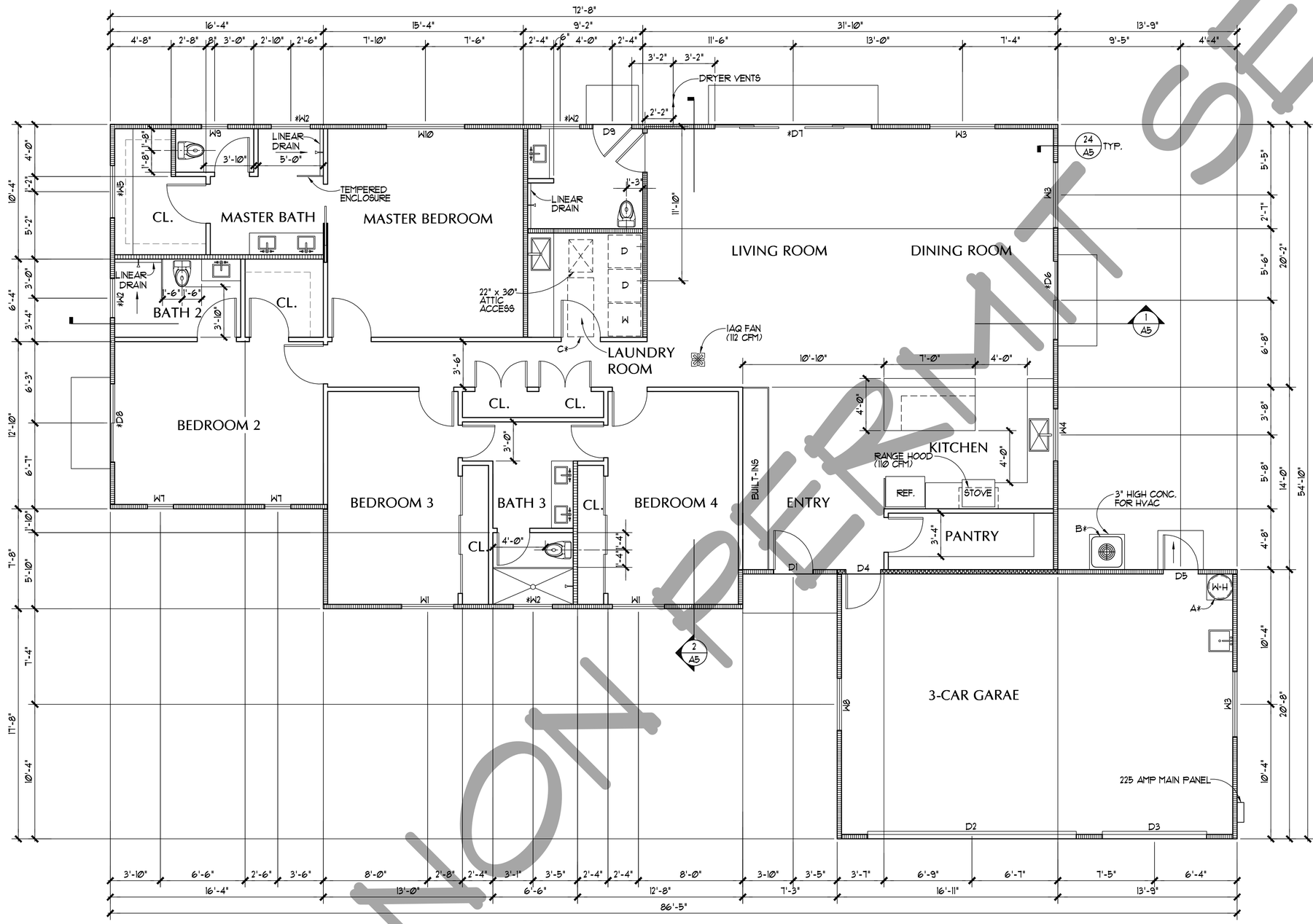
1. ELECTRICAL RECEPTACLE OUTLETS, SWITCHES AND CONTROLS (INCLUDING CONTROLS FOR HEATING, VENTILATION AND AIR CONDITIONING) INTENDED TO BE USED BY OCCUPANTS SHALL BE LOCATED NO MORE THAN 48 INCHES MEASURED FROM THE TOP OF THE OUTLET BOX AND NOT LESS THAN 15 INCHES MEASURED FROM THE BOTTOM OF THE OUTLET BOX ABOVE THE FINISH FLOOR.

EXCEPTIONS:

1. DEDICATED RECEPTACLE OUTLETS, FLOOR RECEPTACLE OUTLETS, CONTROLS MOUNTED ON CEILING FANS AND CEILING LIGHTS, AND CONTROLS LOCATED ON APPLIANCES.
2. RECEPTACLE OUTLETS REQUIRED BY THE CALIFORNIA ELECTRICAL CODE ON A WALL SPACE WHERE THE DISTANCE BETWEEN THE FINISHED FLOOR AND A BUILT-IN FEATURE ABOVE THE FINISH FLOOR, SUCH AS A WINDOW, IS LESS THAN 15 INCHES.

C. DOORBELL BUTTONS (CRC R327.1.4

1. DOORBELL BUTTONS OR CONTROLS SHALL NOT EXCEED 48 INCHES ABOVE EXTERIOR FLOOR OR LANDING, MEASURED FROM THE TOP OF THE DOORBELL BUTTON ASSEMBLY. WHERE DOORBELL BUTTONS INTEGRATED WITH OTHER FEATURES ARE REQUIRED TO BE INSTALLED ABOVE 48 INCHES MEASURED FROM THE EXTERIOR FLOOR OR LANDING, A STANDARD DOORBELL BUTTON OR CONTROL SHALL ALSO BE PROVIDED AT A HEIGHT NOT EXCEEDING 48 INCHES ABOVE EXTERIOR FLOOR OR LANDING, MEASURED FROM THE TOP OF THE DOORBELL BUTTON OR CONTROL



1ST FLOOR PLAN

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

LIVING AREA: 2,511 SQ. FT.
GARAGE: 628 SQ. FT.

NOTES:

1. CONTRACTOR TO HAULL ALL DAMAGED OR UNUSABLE MATERIAL TO THE CITY/ COUNTY APPROVED LOCATIONS.
2. ALL PROPOSED BUILDINGS, STRUCTURES, ADDITIONS, MODIFICATIONS TO BUILDINGS/ STRUCTURES MUST COMPLY WITH THE APPROVED LOCATION, AS SHOWN ON THE COUNTY APPROVED PLOT PLAN. AT THE DISCRETION OF THE COUNTY, THE PROPERTY OWNER MAY BE REQUIRED TO PROVIDE PROOF OF CURRENT PLACEMENT OF EACH ON THE PARCEL. THIS MAY INCLUDE A STAMPED AND SIGNED SETBACK CERTIFICATE PREPARED BY A CALIFORNIA LICENSED SURVEYOR OR CIVIL ENGINEER. COUNTY BUILDING CODE 91.1.101.2.
3. BATHTUB AND SHOWER FLOOR AND WALLS ABOVE BATHTUBS WITH INSTALLED SHOWER HEADS AND IN SHOWER COMPARTMENTS SHALL BE FINISHED WITH A NONABSORBENT SURFACE. SUCH WALL SURFACES SHALL EXTEND TO A HEIGHT OF NOT LESS THAN 6 FEET ABOVE THE FLOOR. CRC R307.2.
4. GYPSUM BOARD SHALL NOT BE USED WHERE THERE WILL BE DIRECT EXPOSURE TO WATER, OR IN AREAS SUBJECT TO CONTINUOUS HIGH HUMIDITY. CRC R1003.7.1.
5. DUCTS IN THE GARAGE OR PENETRATING THE WALLS OR CEILING SEPARATING THE DWELLING FROM THE GARAGE SHALL BE CONSTRUCTED OF A MINIMUM 26 GAGE SHEET STEEL OR OTHER APPROVED MATERIAL AND SHALL HAVE NO OPENINGS INTO GARAGE. CRC R302.5.2.
6. EXTERIOR GARAGE DOORS SHALL RESIST THE INTRUSION OF EMBERS INTO THE GARAGE BY LIMITING THE SIZE OF ANY GAPS AT THE BOTTOM, SIDES, AND TOP OF THE DOOR TO 1/8 INCH OR LESS USING:
   a) WEATHER-STRIPPING PRODUCTS WITH TENSILE STRENGTH AND FLAMMABILITY RATING PER CBC 708A.4.
7. SEISMIC STRAP TO BE PROVIDED PER CPC 507.2.
   a) STRAPPING SHALL BE AT POINTS WITHIN THE UPPER ONE THIRD AND LOWER ONE-THIRD OF THE WATER HEATER.
   b) AT THE LOWER POINT, A MINIMUM DISTANCE OF FOUR INCHES SHALL BE MAINTAINED ABOVE THE CONTROLS WITH THE STRAPPING.

LEGEND

1. INDICATES 2 x 4 @ 16" STUD WALLS
2. INDICATES 2 x 6 @ 16" STUD WALLS
3. INDICATES 1-HR FIRE RATED WALLS PER (10/A5)
4. A* RHEEM PERFORMANCE PLATINUM HYBRID HIGH EFFICIENCY SMART TANK ELECTRIC WATER HEATER MODEL #: XE50T10H45U0 50 GAL.
5. B* AC PRO A-SERIES HEAT PUMP CONDENSER 5 TON, 14.3 SEER2, 11.7 EER2 208/ 230 SINGLE PHASE SINGLE STAGE COOLING BTU: 60,000 HEATING BTU: 60,000 MODEL: 4HP17L60P
6. C* AC PRO BCE5E AIR HANDLER, 20 KW MODEL #: BCE5E60M44X
7. * INDICATES WINDOWS AND DOOR TO BE TEMPERED

DOOR SCHEDULE

MARK	SIZE	AREA (ft^2)	U-FACTOR	SHGC	OPERATION
D1	3'-0" x 8'-0"	24	0.32	0.25	SWING
D2	16'-0" x 8'-0"	128	0.32	0.25	GARAGE
D3	8'-0" x 8'-0"	64	0.32	0.25	GARAGE
D4	2'-8" x 6'-8"	18.6	0.32	0.25	- SELF LATCHING - 1-HR FIRE RATED
D5	2'-8" x 8'-0"	21.3	0.32	0.25	SWING
D6	6'-0" x 8'-0"	48	0.32	0.25	SLIDER
D7	12'-0" x 8'-0"	96	0.32	0.25	SLIDER
D8	6'-0" x 8'-0"	48	0.32	0.25	SLIDER
D9	3'-0" x 8'-0"	24	0.32	0.25	FRENCH

NOTE:
EXTERIOR DOORS WILL COMPLY WITH:
(COUNTY BUILDING CODE 92.1.7084.2)
a) EXTERIOR SURFACE OR CLADDING OF NONCOMBUSTIBLE OR APPROVED EXTERIOR FIRE-RETARDANT TREATED WOOD.

WINDOW SCHEDULE

MARK	SIZE	AREA (ft^2)	U-FACTOR	SHGC	OPERATION
W1	4'-0" x 5'-0"	20	0.29	0.22	SLIDER
W2	3'-0" x 2'-0"	6	0.29	0.22	SINGLE-HUNG
W3	5'-0" x 5'-0"	25	0.29	0.22	SLIDER
W4	4'-0" x 4'-6"	18	0.29	0.22	SLIDER
W5	4'-0" x 1'-0"	4	0.29	0.22	FIXED
W6	5'-0" x 1'-0"	5	0.29	0.22	FIXED
W7	2'-0" x 5'-0"	10	0.29	0.22	SINGLE-HUNG
W8	4'-0" x 4'-0"	16	0.29	0.22	SLIDER
W9	2'-0" x 3'-0"	6	0.29	0.22	SLIDER
W10	6'-0" x 5'-0"	30	0.29	0.22	SLIDER

NOTE:
EXTERIOR WINDOWS, EXTERIOR GLAZED DOORS, GLAZED OPENINGS WITHIN EXTERIOR DOORS, GLAZED OPENINGS WITHIN EXTERIOR GARAGE DOORS, AND EXTERIOR STRUCTURAL GLASS VENEER COMPLYING WITH:
(COUNTY BUILDING CODE 92.1.7084.2)
a) MULTI-PANE GLAZING WITH A MINIMUM OF ONE TEMPERED PANE MEETING THE REQUIREMENTS OF SECTION 2406 SAFETY GLAZING, AND WHERE ANY GLAZING FRAMES MADE OF VINYL MATERIALS SHALL HAVE WELDED CORNERS, METAL REINFORCEMENT IN INTERLOCK AREA, AND BE CERTIFIED TO AAMA/ ADMA/CSA 101/I.S.2/A440.

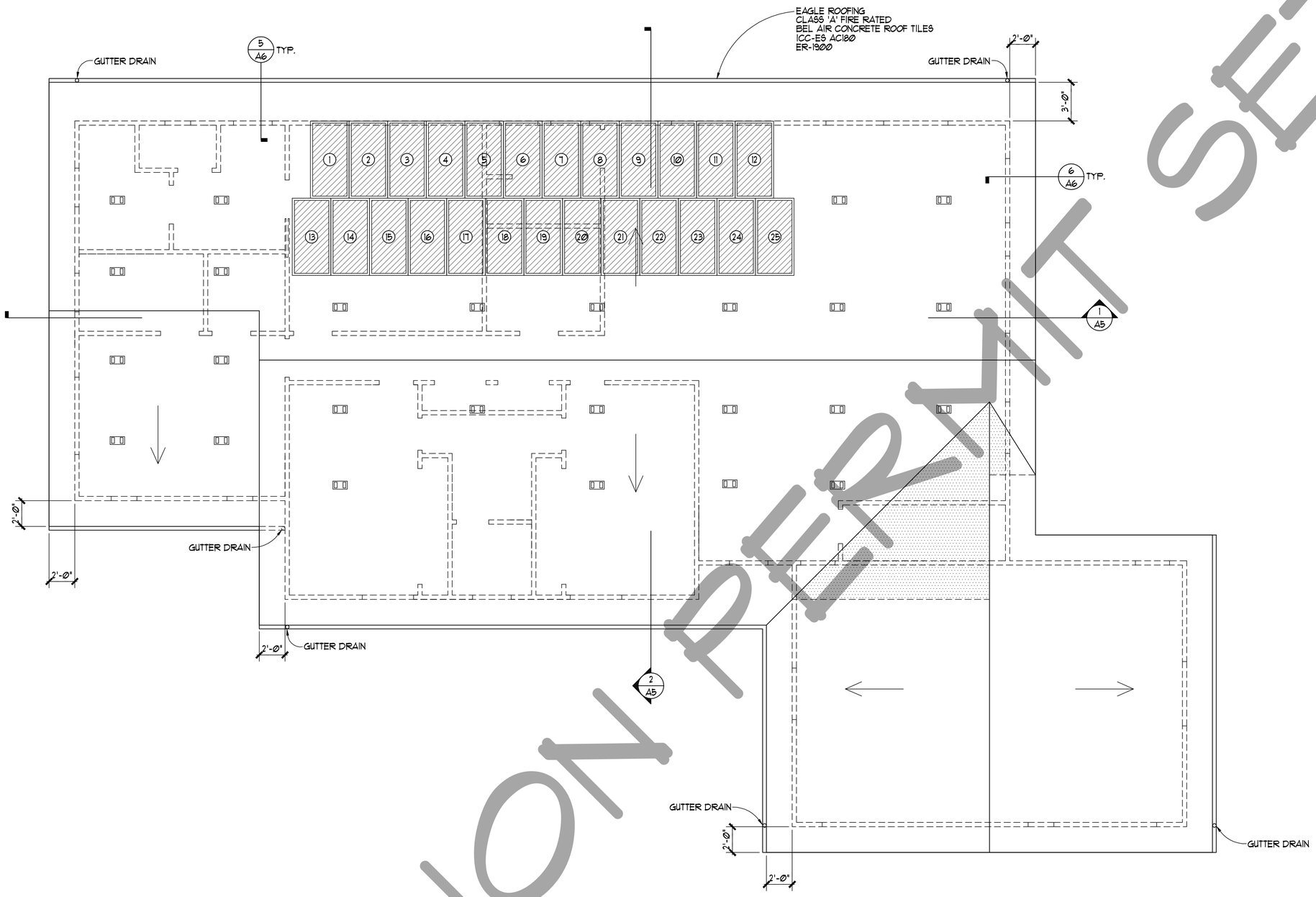
REVISIONS	BY

KUSH DRAFTING SERVICES
14288 DANIELSON ST., SUITE 201
POWAY, CA. 92064
TEL: 858-271-4106
FAX: 858-271-4223

ROACH RESIDENCE
2255 EUCLID AVE.
EL CAJON, CA. 92019

DATE 07-31-2024
SCALE
DRAWN
PROJECT

A1



ROOF PLAN

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

LEGEND

1. INDICATES NEW 2 x 4 @ 16" STUD WALLS
2. INDICATES CALIFORNIA FILL
2. INDICATES SOLAR PANELS
3. INDICATES AMOUNT OF SOLAR PANELS
4. INDICATES O'HAGIN ROOF VENTS

NOTES

1. ROOF SLOPES FROM 2:12 TO 4:12 WILL BE PROVIDED WITH DOUBLE UNDERLAYMENT PER CRC R905.2.2
2. IN THE ROOF COVERINGS WHERE THE PROFILE CREATES SPACE BETWEEN THE ROOF COVERING AND COMBUSTIBLE ROOF DECKING, SPECIFY ONE OF THE FOLLOWING MEANS OF PROTECTING SPACES AT EAVE ENDS (COUNTY BUILDING CODE 92.1.1105A.2.):
   a) FIRE STOPPING WITH APPROVED MATERIALS (E.G., NON COMBUSTIBLE BIRDSTOPS FOR CURVED TILE)
3. EXPOSED VALLEY FLASHINGS SHALL BE CONSTRUCTED WITH NOT LESS THAN 0.019-INCH (NO. 26 GALVANIZED SHEET GAGE) CORROSION-RESISTANT METAL INSTALLED OVER A MINIMUM 36-INCH WIDE UNDERLAYMENT CONSISTING OF ONE LAYER OF NO. 72 ASTM CAP SHEET RUNNING THE FULL LENGTH OF THE VALLEY. (COUNTY BUILDING CODE 92.1.1105A.3)
4. ANY ROOF GUTTERS SHALL BE PROVIDED WITH MEANS TO PREVENT ACCUMULATION OF LEAVES AND DEBRIS. (COUNTY BUILDING CODE 92.1.1105A.4)
5. ALL VENTS (ROOF, FOUNDATION, COMBUSTION-AIR, ETC.) SHALL RESIST THE INTRUSION OF FLAMES AND EMBERS. (COUNTY BUILDING CODE 92.1.1106A.1)
6. VENTILATION OPENINGS FOR ENCLOSED ATTICS, EAVE SOFFIT SPACES, ENCLOSED RAFTER SPACES FORMED WHERE CEILINGS ARE APPLIED DIRECTLY TO THE UNDERSIDE OF ROOF RAFTERS, UNDERFLOOR VENTILATION OPENINGS, AND VENT OPENINGS IN EXTERIOR WALLS AND EXTERIOR DOORS SHALL BE LISTED TO ASTM E 2886 AND COMPLY WITH ALL OF THE FOLLOWING: (COUNTY BUILDING CODE 92.1.1106A.2, 92.1.1071A5)
   a) THERE SHALL BE NO FLAMING IGNITION OF THE COTTON MATERIAL DURING THE EMBER INTRUSION TEST.
   b) THERE SHALL BE NO FLAMING IGNITION DURING THE INTEGRITY TEST PORTION OF THE FLAME INTRUSION TEST.
   c) THE MAXIMUM TEMPERATURE OF THE UNEXPOSED SIDE OF THE VENT SHALL NOT EXCEED 662 DEGREES FAHRENHEIT (350 DEGREES CELSIUS)
7. EAVES AND SOFFITS SHALL MEET THE REQUIREMENTS OF SFM 12-7A-3 OR SHALL BE PROTECTED BY NONCOMBUSTIBLE CONSTRUCTION OR APPROVED EXTERIOR FIRE-RETARDANT TREATED WOOD ON THE EXPOSED UNDERSIDE.
   a) EXCEPTION: THE BUILDING OFFICIAL MAY ALLOW EAVES AND SOFFITS TO BE CONSTRUCTED OF DIFFERENT MATERIALS THE PROVIDE THE SAME OR GREATER DEGREE OF PROTECTION AGAINST FIRE, AS PROVIDED IN GUIDANCE DOCUMENTS.
   b) EXCEPTION: EAVE CONSTRUCTION ON AN ADDITIONS MAY MATCH THE EXISTING STRUCTURE PROVIDED THAT THE SQUARE FOOTAGE OF THE ADDITION DOES NOT EXCEED 80% OF THE EXISTING STRUCTURE OR 2,500 SQ. FT, WHICHEVER IS LESS. ANY VENTS IN THESE EAVES, HOWEVER, SHALL COMPLY WITH COMMENTS J.6 AND J.7 ABOVE AS APPLICABLE.
8. PATIO COVER CONSTRUCTION WITH ALL EXPOSED ELEMENTS WILL COMPLY WITH: (COUNTY BUILDING CODE 92.1.1093A.1)
   a) NON-COMBUSTIBLE MATERIAL

ROOF VENTILATION CALCS.

AREA TO BE VENTILATED =3,116 S.F.
3,116/150= 20.77 ≈ 21 SQ. FT. OF NFA (NET FREE AREA OF VENT.)
21 SQ. FT. x 144= 3,024 SQ. INCH. OF NFA NEEDED

VULCAN GABLE VENT:
14" x 18" GALV. STEEL GABLE VENT.
(MODEL # VG1418S)
GABLE VENT NOTE: G90 GALVANIZED STEEL-26GA
5MM HEXAGONAL MATRIX - ALUMINUM WITH INTUMESCENT COATING
14 MESH - 304 STAINLESS STEEL
NET-FREE AREA (SQ. INCH.)= 86

VULCAN GABLE VENT:
14" x 12" GALV. STEEL GABLE VENT.
(MODEL # VG1412S)
GABLE VENT NOTE: G90 GALVANIZED PERFORATED STEEL-26GA
5MM HEXAGONAL MATRIX - ALUMINUM WITH INTUMESCENT COATING
14 MESH - 304 STAINLESS STEEL
NET-FREE AREA (SQ. INCH.)= 58

O'HAGIN CONCRETE TILE ROOF VENT:
26 GAUGE, G-90 GALV. STEEL.
LOW PROFILE CONCRETE TILE ROOF VENT WITH 2" FLANGE AND ¼" GALVANIZED WIRE MESH.
(VENT MEETS ICC REQUIREMENTS)
ICC-ES-9650A
NET-FREE AREA (SQ. INCH.)= 98.75

3,024 SQ. IN. VENT REQUIRED.

14 x 18 GABLE END VENT= 86 SQ. IN. x 2 = 172 SQ. IN.

14 x 12 GABLE END VENT= 58 SQ. IN. x 5 = 290 SQ. IN.

ON ROOF VENT= 98.75 SQ. IN. x 26 = 2,567.5 SQ. IN.

PROVIDED = 258 + 348 + 2,468.75 = 3,029.5 SQ IN. > 3,024 SQ. IN.

SEE ELEVATIONS & ROOF PLAN FOR VENT LOCATIONS.

ALL EXISTING DIMENSIONS NEED TO BE VERIFIED IN FIELD

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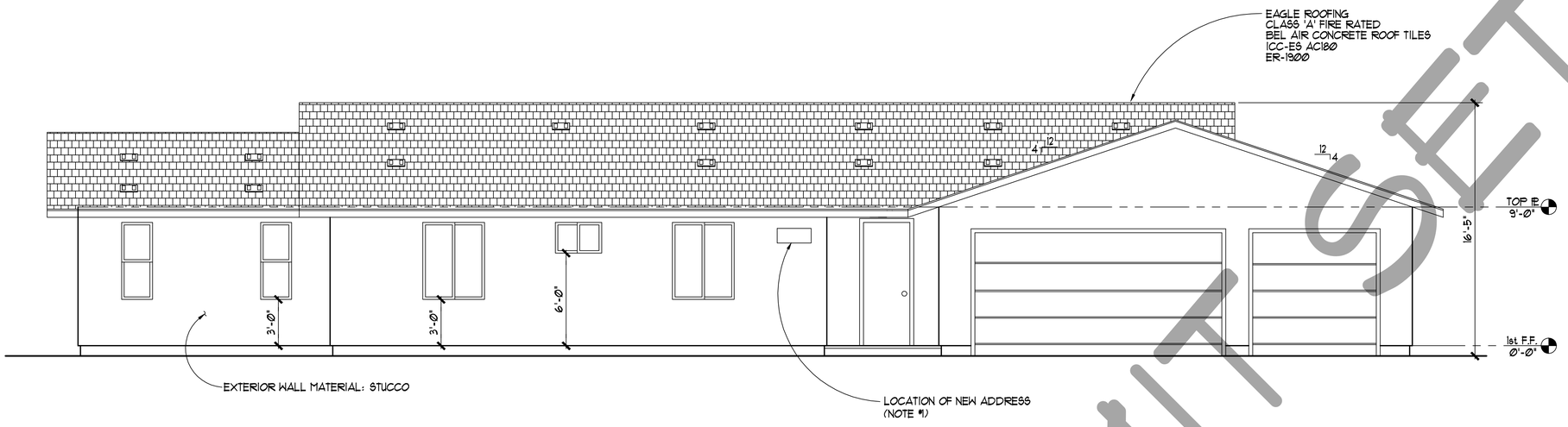
ROACH RESIDENCE
2255 EUCLID AVE.
EL CAJON, CA. 92019

DATE	07-31-2024
SCALE	
DRAWN	
PROJECT	

A2

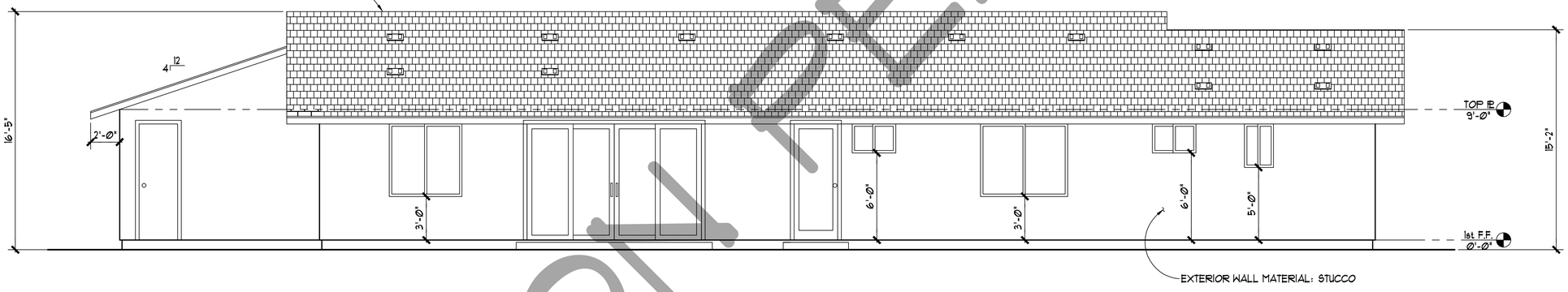
NOTES

1. ADDRESS LETTERS/ NUMBERS SHALL BE MINIMUM 4 INCHES HIGH, WITH A MINIMUM STROKE WIDTH OF ½ INCH, AND SHALL CONTRAST WITH THEIR BACKGROUND. CRC R319.1.
2. EXTERIOR WALL FINISH WILL COMPLY WITH:
   a) NON COMBUSTIBLE MATERIAL (STUCCO)
   - STUCCO AND CEMENT PLASTER USED AS AN EXTERIOR WALL COVERING SHALL BE MINIMUM ⅞ INCH THICK.
3. EXTERIOR WINDOWS, EXTERIOR GLAZED DOORS, GLAZED OPENINGS WITHIN EXTERIOR DOORS, GLAZED OPENINGS WITHIN EXTERIOR GARAGE DOORS, AND EXTERIOR STRUCTURAL GLASS VENEER COMPLYING WITH: (COUNTY BUILDING CODE 92.1.7106.4.2, 92.1.7107.4.5)
   a) MULTI-PANE GLAZING WITH A MINIMUM OF ONE TEMPERED PANE MEETING THE REQUIREMENTS OF SECTION 2406 SAFETY GLAZING, AND WHERE ANY GLAZING FRAMES MADE OF VINYL MATERIALS SHALL HAVE WELDED CORNERS, METAL REINFORCEMENT IN INTERLOCK AREA, AND BE CERTIFIED TO AAMA/ ADMA/CSA 101/I.S.2/A440.
4. ANY PORTION OF A FENCE OR OTHER STRUCTURE WITHIN FIVE FEET OF BUILDING SHALL BE CONSTRUCTED PER ONE OF THE FOLLOWING: (COUNTY BUILDING CODE 92.1.7112.A.1)
   a) NON COMBUSTIBLE MATERIAL
   b) APPROVED EXTERIOR FIRE-RETARDANT TREATED WOOD.
   c) MATERIAL MEETING SAME FIRE-RESISTIVE STANDARDS AS EXTERIOR WALLS OF BUILDING.
5. PAINTS, COATINGS, STAINS, OR OTHER SURFACE TREATMENTS ARE NOT ACCEPTABLE MEANS OF COMPLIANCE WITH ANY WILDFIRE-RESISTIVE CONSTRUCTION REQUIREMENT. (COUNTY BUILDING CODE 92.1.7103.4)



FRONT ELEVATION

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



REAR ELEVATION

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

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DATE	07-31-2024
SCALE	
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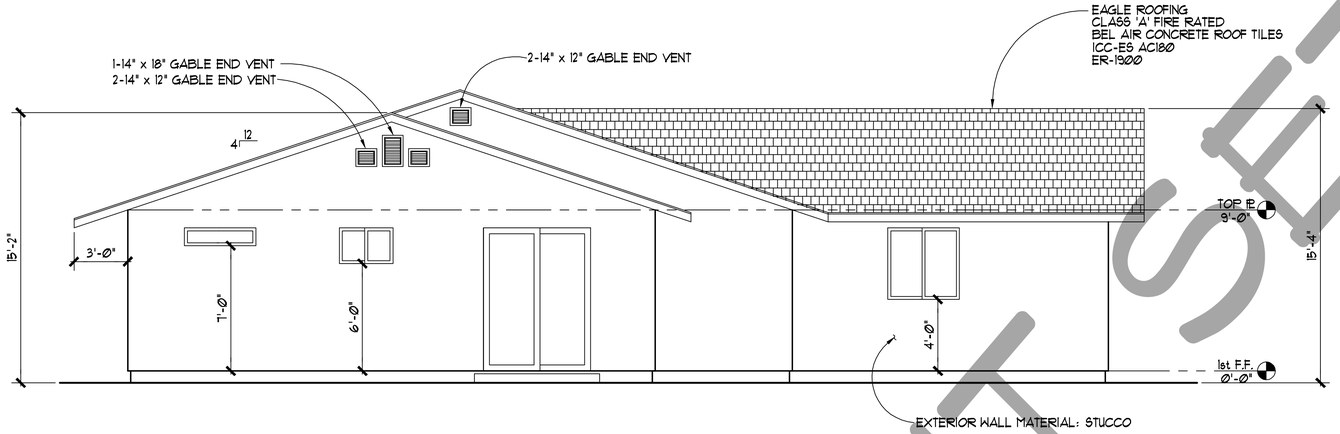
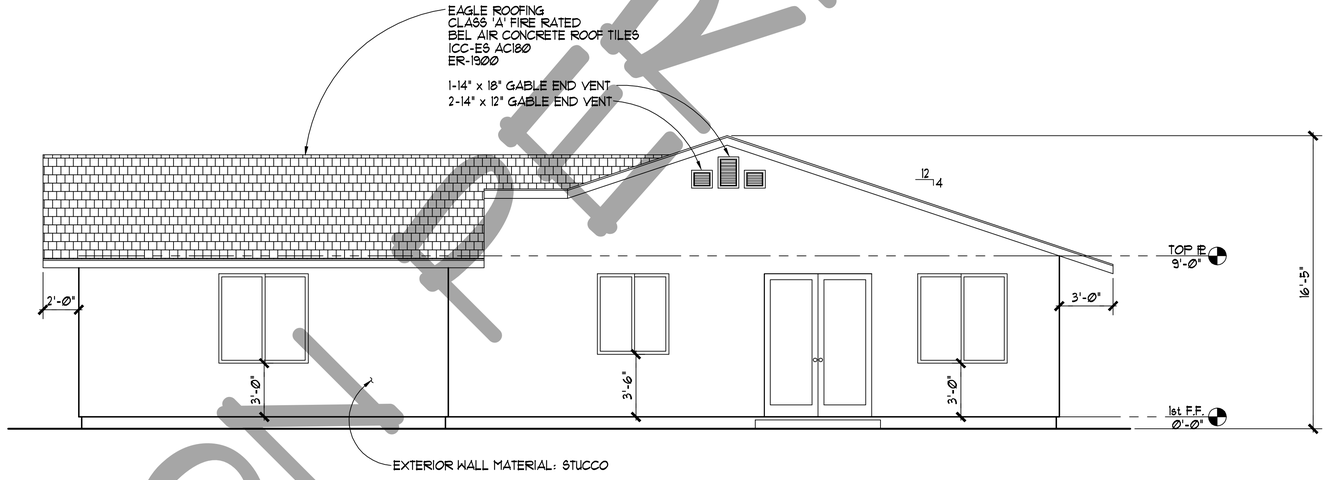
A3



LEFT SIDE ELEVATION

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



RIGHT SIDE ELEVATION

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

NOTES

1. ADDRESS LETTERS/ NUMBERS SHALL BE MINIMUM 4 INCHES HIGH, WITH A MINIMUM STROKE WIDTH OF ½ INCH, AND SHALL CONTRAST WITH THEIR BACKGROUND. CRC R319.1.
2. EXTERIOR WALL FINISH WILL COMPLY WITH:
   a) NON COMBUSTIBLE MATERIAL (STUCCO)
   - STUCCO AND CEMENT PLASTER USED AS AN EXTERIOR WALL COVERING SHALL BE MINIMUM ⅞ INCH THICK.
3. EXTERIOR WINDOWS, EXTERIOR GLAZED DOORS, GLAZED OPENINGS WITHIN EXTERIOR DOORS, GLAZED OPENINGS WITHIN EXTERIOR GARAGE DOORS, AND EXTERIOR STRUCTURAL GLASS VENEER COMPLYING WITH: (COUNTY BUILDING CODE 92.1.7064.2, 92.1.7071.5)
   a) MULTI-PANE GLAZING WITH A MINIMUM OF ONE TEMPERED PANE MEETING THE REQUIREMENTS OF SECTION 2406 SAFETY GLAZING, AND WHERE ANY GLAZING FRAMES MADE OF VINYL MATERIALS SHALL HAVE WELDED CORNERS, METAL REINFORCEMENT IN INTERLOCK AREA, AND BE CERTIFIED TO AAMA/ ADMA/CSA 101/I.S.2/A440.
4. ANY PORTION OF A FENCE OR OTHER STRUCTURE WITHIN FIVE FEET OF BUILDING SHALL BE CONSTRUCTED PER ONE OF THE FOLLOWING: (COUNTY BUILDING CODE 92.1.7124.1)
   a) NON COMBUSTIBLE MATERIAL
   b) APPROVED EXTERIOR FIRE-RETARDANT TREATED WOOD.
   c) MATERIAL MEETING SAME FIRE-RESISTIVE STANDARDS AS EXTERIOR WALLS OF BUILDING.
5. PAINTS, COATINGS, STAINS, OR OTHER SURFACE TREATMENTS ARE NOT ACCEPTABLE MEANS OF COMPLIANCE WITH ANY WILDFIRE-RESISTIVE CONSTRUCTION REQUIREMENT. (COUNTY BUILDING CODE 92.1.7103.4)

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ROACH RESIDENCE
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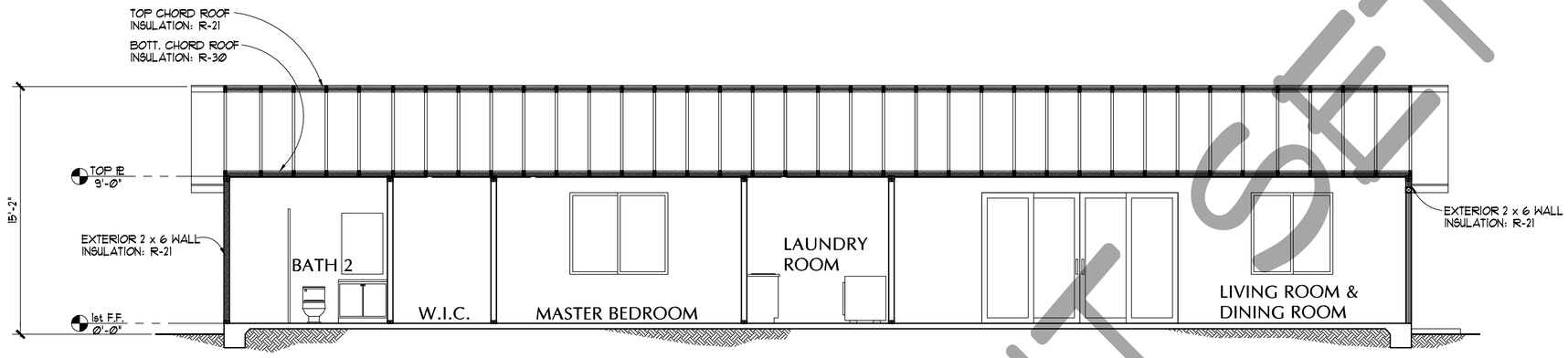
EL CAJON, CA. 92019

DATE	07-31-2024
SCALE	
DRAWN	
PROJECT	

A4

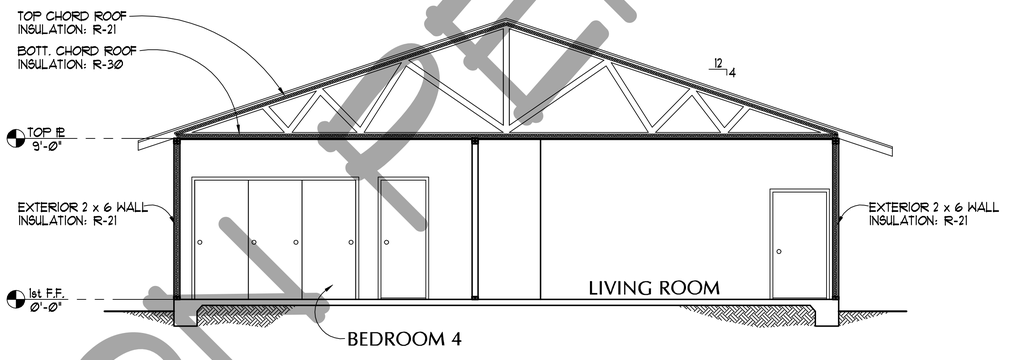
NOTES

1. PAPER-FACED INSULATION PROHIBITED IN ATTICS OR OTHER VENTILATED SPACES (COUNTY BUILDING CODE 92.1.711A.1)



SECTION 1

SCALE: ¼" = 1'-Ø"



SECTION 2

SCALE: ¼" = 1'-Ø"

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DRAWN	
PROJECT	

A5

VENTILATION REQUIREMENTS:

KITCHENS REQUIRE EXHAUST FANS WITH A MINIMUM 110 CFM DUCTED TO THE EXTERIOR.

BATHROOMS REQUIRE EXHAUST FANS (MINIMUM 50 CFM) TO BE DUCTED TO THE EXTERIOR. A BATHROOM IS DEFINED "AS A ROOM WITH A BATHTUB, SHOWER, OR SPA OR SOME SIMILAR SOURCE OF MOISTURE".

RESIDENTIAL BATHROOM EXHAUST FANS SHALL BE ENERGY STAR RATED AND SHALL BE CONTROL BY A HUMIDISTAT CAPABLE OF AN ADJUSTMENT BETWEEN 50 AND 80% HUMIDITY. CALGREEN 4.506.1. EXCEPTION: CONTROL BY A HUMIDISTAT IS NOT REQUIRED IF THE BATHROOM EXHAUST FAN IS ALSO THE DWELLING WHOLE HOUSE VENTILATION.

ALL FANS INSTALLED TO MEET ALL OF THE PRECEDING REQUIREMENTS MUST BE SPECIFIED AT A NOISE RATING OF A MAXIMUM 1 "SONE" (FOR THE CONTINUOUS USE CALCULATION) OR 3 "SONE" (FOR THE INTERMITTENT USE CALCULATION).

FAN SHALL PROVIDE 50 CFM'S MIN., 4" DUCT WITH MAXIMUM OF LESS THAN 1 SONE. BATHROOM EXHAUST FANS SHALL BE ENERGY STAR COMPLIANT & DUCTED TO TERMINATE OUTSIDE THE BUILDING.

NOTES

1. GROUND FAULT CIRCUIT INTERRUPTER (G.F.C.I.) OUTLETS ARE REQUIRED IN BATHROOMS, AT KITCHENS, AND WET BAR SINKS, IN GARAGES, IN CRAWLSPACES, IN UNFINISHED BASEMENTS, AND OUTDOORS (N.E.C. 210-8).
2. DWELLING UNITS FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS OR SIMLILAR ROOMS ELECTRICAL CIRCUITS MUST BE PROTECTED BY ARC FAULT CIRCUIT INTERRUPTERS (A.F.C.I.). (NEC 210.12)
3. ALL LUMINAIRES IN BATHROOMS, GARAGES, LAUNDRY ROOMS, UTILITY ROOMS, AND OTHER ROOMS SHALL BE HIGH EFFICACY.
4. EXTERIOR LIGHTING SHALL BE HIGH EFFICACY LUMINAIRES PER CENERGYC 150.0(kX3)
   (1) CONTROLLED BY A MANUAL ON & OFF SWITCH THAT DOES NOT OVERRIDE TO ON THE AUTOMATIC ACTIONS OF ITEMS b) OR c) BELOW AND
   (1) CONTROLLED BY PHOTOCELL AND MOTION SENSOR. CONTROLS THAT OVERRIDE TO ON SHALL NOT BE ALLOWED UNLESS THE OVERRIDE AUTOMATICALLY REACTIVATES THE MOTION SENSOR WITHIN 6 HOURS, OR OVERRIDE AUTOMATICALLY REACTIVATES
   (1) CONTROLLED BY PHOTOCONTROL AND AUTOMATIC TIME SWITCH CONTROL.
5. ALL NEW OR REPLACED RECEPTICALS IN DWELLING UNITS SHALL BE TAMPER - RESISTANT RECEPTICALS
6. RECEPTACLE OUTLET LOCATIONS WILL COMPLY WITH CEC ARTICLE 210.52
7. PER CEC ART. 210.8 & 210.11(C)3 BATHROOM CIRCUITING SHALL BE EITHER:
   - A 20 AMPERE CIRCUIT DEDICATED TO EACH BATHROOM, OR
   - AT LEAST ONE 20-AMPERE CIRCUIT SUPPLYING ONLY BATHROOM RECEPTICAL OUTLETS.
8. SMOKE ALARMS SHALL COMPLY WITH NFPA 72 AND SHALL BE LISTED IN ACCORDANCE WITH UL 217

   COMBINATION SMOKE AND CARBON MONOXIDE ALARMS BE LISTED IN ACCORDANCE WITH UL 217 AND UL 2034

   SMOKE ALARM SYSTEM AND COMPONENTS SHALL BE CALIFORNIA STATE FIRE MARSHAL LISTED AND APPROVED IN ACCORDANCE WITH CALIFORNIA CODE REGULATIONS, TITLE 19, DIVISION 1 FOR THE PURPOSE FOR WHICH THEY ARE INTALLED
9. UNLESS OTHERWISE PERMITTED OR REQUIRED BY THE DRYER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND APPROVED BY THE CITY, DOMESTIC DRYER MOISTURE EXHAUST DUCTS SHALL NOT EXCEED A TOTAL COMBINED HORIZONTAL AND VERTICAL LENGTH OF FOURTEEN FEET, INCLUDING TWO 90 DEGREE ELBOWS. TWO FEET SHALL BE DEDUCTED FOR EACH 90 DEGREE ELBOW IN EXCESS OF TWO. CMC 504.4.2.
10. FOR APPLIANCES IN THE ATTIC SPACE:
    a) AN ACCESS THROUGH AN OPENING AND PASSAGEWAY AT LEAST AS LARGE AS THE LARGEST COMPONENT OF THE APPLIANCE, 22-INCH x 30-INCH MINIMUM. CMC 304.4.
    b) A PASSAGEWAY FROM THE ACCESS TO THE APPLIANCE. PASSAGEWAY SHALL HAVE SOLID FLOORING NOT LESS THAN 24-INCHES WIDE. CMC 304.4.2
    c) A 30-INCH x 30-INCH PLATFORM SHALL BE PROVIDED IN FRONT OF THE SERVICE SIDE OF THE APPLIANCE. CMC 304.4.3.
    d) A LIGHT FIXTURE AND CONVENIENCE OUTLET SHALL BE PROVIDED NEAR THE APPLIANCE. SWITCH CONTROLING THE LIGHT FIXTURE SHALL BE LOCATED AT THE ENTRANCE TO THE PASSAGEWAY. CMC 304.4.4.
11. PER THE 2022 GBSC SECTION 4.106.4.1.
    a) INSTALL A LISTED RACEWAY TO ACCOMODATE A DEDICATED 208/ 240V BRANCH CIRCUIT FOR FUTURE ELECTRIC VEHICLE CHARGING STATION. THE RACEWAY SHALL NOT BE LESS THAN 1" NOMINAL INSIDE DIAMETER.
    b) THE SERVICE PANEL AND/ OR SUB-PANEL SHALL PROVIDE CAPACITY TO INSTALL A 40AMP MINIMUM DEDICATED CIRCUIT AND SPACE(S) RESERVED TO PERMIT INSTALLATION OF A BRANCH CIRCUIT OVERCURRENT PROTECTIVE DEVICE.
    c) THE SERVICE PANEL OR SUB-PANEL DIRECTORY SHALL IDENTIFY THE OVERCURRENT PROTECTIVE DEVICE SPACE(S) RESEERVED FOR FUTURE EV CHARGING AS "EV CAPABLE".
    d) THE RACEWAY TERMINATION LOCATION SHALL BE PERMANENTLY AND VISIBLY MARKED AS "EV CAPABLE".
12. INTERIOR LIGHTING FIXTURES THAT ARE NOT CONTROLED BY OCCUPANCY OR VACANCY SENSORS TO BE EQUIPPED WITH DIMMING CONTROLS. CENERGYC 150.0(K)2(XF)
13. EXHAUST FAN MUST BE DUCTED TO THE EXTERIOR OF THE BUILDING. PER CENERGYC 150.0-G
14. CLOTHS DRYER EXHAUST DUCTS SHALL TERMINATE ON THE OUTSIDE OF THE BUILDING AND EQUIPPED WITH A BACK-DRAFT DAMPER. CMC 504.4.
15. ALL LIGHTING TO BE HIGH EFFICIENCY. CENERGYC 150.0(k)1(A)
16. FOR RECESSED LUMINAIRIES, SPECIFY FIXTURES TO BE LISTED FOR ZERO CLEARANCE INSULATION CONTACT (IC) BY UL OR OTHER NATIONALLY RECOGNIZED TESTING/ RATING LABORATORY. CENERGYC 150.(k)8)

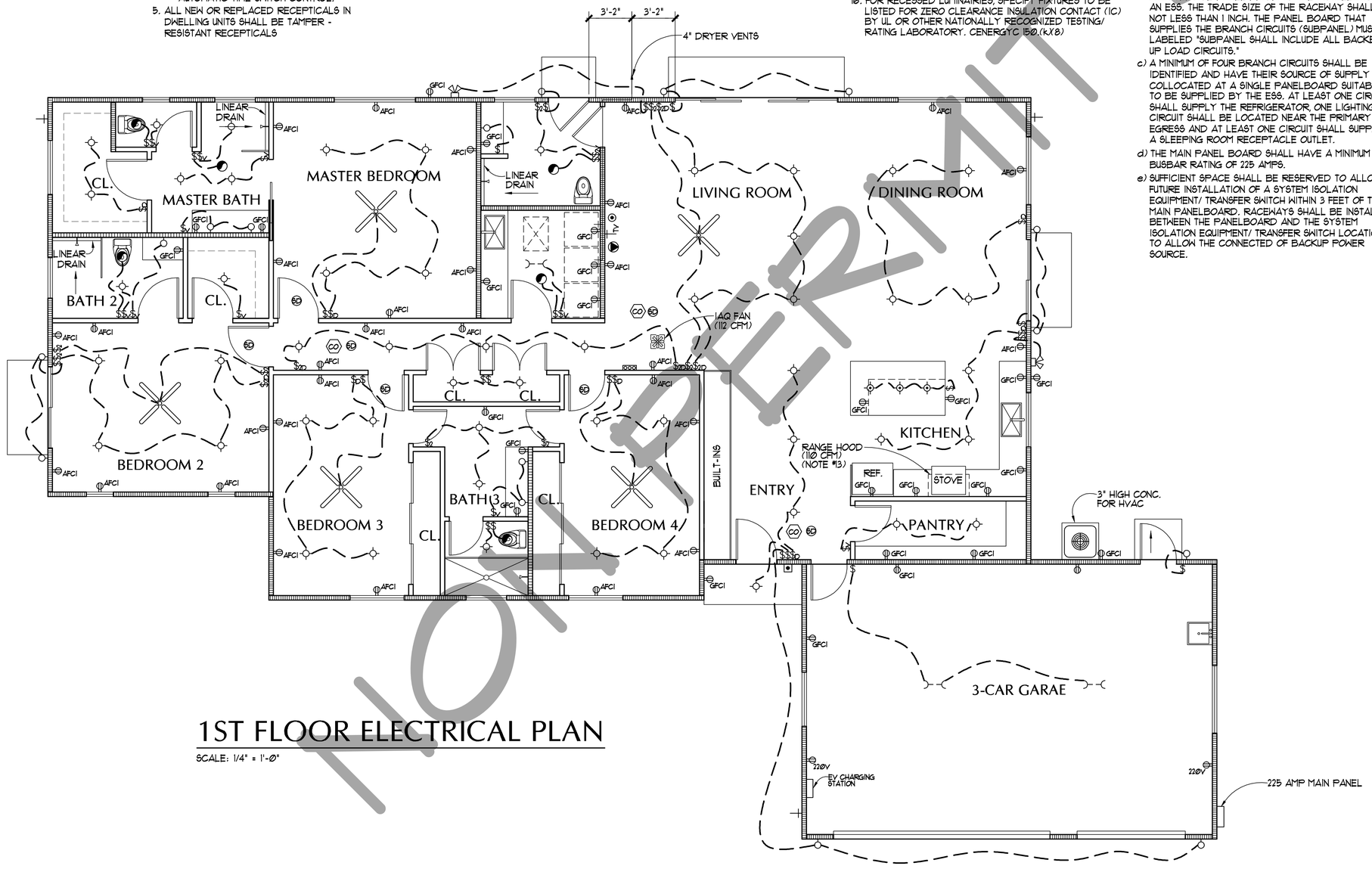
ENERGY EFFICIENCY NOTES:

1. LIGHTING IN BATHROOMS SHALL BE HAVE ALL HIGH EFFICACY LUMINAIRE AND AT LEAST ONE LUMINAIRE MUST BE CONTROLLED BY A VACANCY SENSOR.
2. KITCHENS: ALL THE INSTALLED WATTAGE OF LUMINAIRES IN KITCHENS SHALL BE HIGH EFFICACY AND SHALL HAVE A MANUAL ON/OFF IN ADDITION TO A VACANCY SENSOR OR DIMMER. UNDER CABINET LIGHTING SHALL BE SWITCHED SEPARATELY.
3. OTHER ROOMS: ALL LUMINAIRES SHALL BE HIGH EFFICACY AND SHALL HAVE A MANUAL ON/OFF IN ADDITION TO A VACANCY SENSOR OR DIMMER.
4. OUTDOOR LIGHTING: ALL LUMINAIRES MOUNTED TO THE BUILDING OR TO OTHER BUILDINGS ON THE SAME LOT SHALL BE HIGH EFFICACY LUMINAIRES AND MUST BE CONTROLLED BY A MANUAL ON AND OFF SWITCH, AND CONTROLLED BY ONE OF THESE AUTOMATIC CONTROL TYPES: PHOTOCONTROL AND A MOTION SENSOR, OR ASTRONOMICAL TIME CLOCK, OR ENERGY MANAGEMENT CONTROL SYSTEM (EMCS).
5. ALL NEW RESIDENTIAL UNITS ARE REQUIRED TO BE ENERGY STORAGE SYSTEM (ESS) READY.
   a) ESS READY INTERCONNECTION EQUIPMENT WITH A MINIMUM BACKED UP CAPACITY OF 60 AMPS AND A MINIMUM OF FOUR ESS-SUPPLIED BRANCH CIRCUITS.
   b) A DEDICATED RACEWAY FROM THE MAIN SERVICE TO A PANELBOARD (SUBPANEL) THAT SUPPLIES THE BRANCH CIRCUITS IN SECTION 150.0(s)(2). ALL BRANCH CIRCUITS ARE PERMITTED TO BE SUPPLIED BY THE MAIN SERVICE PANEL PRIOR TO THE INSTALLATION OF AN ESS. THE TRADE SIZE OF THE RACEWAY SHALL BE NOT LESS THAN 1 INCH. THE PANEL BOARD THAT SUPPLIES THE BRANCH CIRCUITS (SUBPANEL) MUST BE LABELED "SUBPANEL SHALL INCLUDE ALL BACKED UP LOAD CIRCUITS."
   c) A MINIMUM OF FOUR BRANCH CIRCUITS SHALL BE IDENTIFIED AND HAVE THEIR SOURCE OF SUPPLY COLLOCATED AT A SINGLE PANELBOARD SUITABLE TO BE SUPPLIED BY THE ESS. AT LEAST ONE CIRCUIT SHALL SUPPLY THE REFRIGERATOR, ONE LIGHTING CIRCUIT SHALL BE LOCATED NEAR THE PRIMARY EGRESS AND AT LEAST ONE CIRCUIT SHALL SUPPLY A SLEEPING ROOM RECEPTACLE OUTLET.
   d) THE MAIN PANEL BOARD SHALL HAVE A MINIMUM BUSBAR RATING OF 225 AMPS.
   e) SUFFICIENT SPACE SHALL BE RESERVED TO ALLOW FUTURE INSTALLATION OF A SYSTEM ISOLATION EQUIPMENT/ TRANSFER SWITCH WITHIN 3 FEET OF THE MAIN PANELBOARD. RACEWAYS SHALL BE INSTALLED BETWEEN THE PANELBOARD AND THE SYSTEM ISOLATION EQUIPMENT/ TRANSFER SWITCH LOCATION TO ALLOW THE CONNECTED OF BACKUP POWER SOURCE.

LEGEND

- EXHAUST FAN (MINIMUM 50 CFM)
- SPECIAL CONNECTION REQUIRED
- GFCI OUTLET
- WP WATERPROOF OUTLET
- AFCI AFCI OUTLET
- DUPLEX OUTLET @ 12" U.O.N.
- 42" DUPLEX OUTLET @ 42" U.O.N.
- FLOOR OUTLET
- SURFACE MOUNTED CEILING LIGHT
- WALL MOUNTED LIGHT
- FLOOD LIGHT
- PENDANT FIXTURE
- HOSE BIBB
- DUPLEX G.F.I. OUTLET
- FIREPLACE KEY (LOOSE)
- SQUARE RECESSED LIGHT W/ EXHAUST FAN
- CABLE
- RECESSED EYEBALL
- FLUORESCENT LIGHT
- FUEL GAS
- SD SMOKE DETECTOR
- CHIMES
- CHIMES PUSH BUTTON (LIGHTED)
- $D SINGLE POLE SWITCH W/ DIMMER
- $V SINGLE POLE SWITCH W/ VACANVY SENSOR
- $2 2 WAY SWITCH
- $2D 2 WAY SWITCH W/ VACANCY SENSOR
- $2D 2 WAY SWITCH W/ DIMMER
- $3 3 WAY SWITCH
- $4 4 WAY SWITCH
- $T THERMOSTAT ELECTRIC RADIENT FLOOR HEATING SWITCH
- TELEPHONE
- TV TELEVISION
- VAC VACUUM INLET
- RECESSED CAN LIGHT
- FLUORESCENT LIGHT TUBE
- CO INDICATES CARBON MONOXIDE TO BE INTERCONNECTED PER CRC R315.1.7 AND HARD WIRED WITH BATTERY BACK-UP PER CRC R315.5-IN THE FOLOWING LOCATIONS ON FLOOR PLANS OR UTILIY PLANS IN DWELLING UNITS WITH FUEL-BURNING APPLICANCES, FIRE PLACE, OR AN ATTACHED GARAGE COMMUNICATING WITHT THE DWELLING UNIT (CRC R315).
- SD INDICATES SMOKE DETECTORS TO BE PERMANENTLY WIRED WITH BATTERY BACKUP POWER (HARD WIRE) IN A CENTRAL LOCATION AT THE NEW FLOOR. CONTRACTOR TO PROVIDE SMOKE DETECTORS IN ALL EXISTING & PROPOSED SLEEPING ROOMS & HALLWAYS OR AREAS LEADING TO EACH SLEEPING ROOM (INSTALLATION OF SMOKE DETECTORS SHALL COMPLY WITH CRC SEC. R314, PER 2019 CRC)
- CEILING FAN WITH LIGHT

*NOTE: FAN SHALL PROVIDE 5 AIR CHANGES PER HOUR



1ST FLOOR ELECTRICAL PLAN

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

REVISIONS	BY

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PROJECT	

E1

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Roach Residence | **Calculation Date/Time:** 2024-04-16T15:32:44-07:00
Calculation Description: Roach Residence | **Input File Name:** Roach Res.ribd22

GENERAL INFORMATION					
01	Project Name	Roach Residence			
02	Run Title	Roach Residence			
03	Project Location	Euclid Ave.			
04	City	El Cajon, CA	05	Standards Version	2022
06	Zip code	92019	07	Software Version	CBECC-Res 2022.2.0
08	Climate Zone	10	09	Front Orientation (deg/ Cardinal)	0
10	Building Type	Single family	11	Number of Dwelling Units	1
12	Project Scope	Newly Constructed	13	Number of Bedrooms	4
14	Addition Cond. Floor Area (ft²)	0	15	Number of Stories	1
16	Existing Cond. Floor Area (ft²)	n/a	17	Fenestration Average U-factor	0.31
18	Total Cond. Floor Area (ft²)	2511	19	Glazing Percentage (%)	16.20%
20	ADU Bedroom Count	n/a			

COMPLIANCE RESULTS	
01	Building Complies with Computer Performance
02	This building incorporates features that require field testing and/or verification by a certified HERS rater under the supervision of a CEC-approved HERS provider.
03	This building incorporates one or more Special Features shown below

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Roach Residence | **Calculation Date/Time:** 2024-04-16T15:32:44-07:00
Calculation Description: Roach Residence | **Input File Name:** Roach Res.ribd22

ENERGY DESIGN RATINGS	Energy Design Ratings			Compliance Margins		
	Source Energy (EDR1)	Efficiency[1] EDR (EDR2efficiency)	Total[2] EDR (EDR2total)	Source Energy (EDR1)	Efficiency[1] EDR (EDR2efficiency)	Total[2] EDR (EDR2total)
Standard Design	36.7	41.2	29.2			
Proposed Design	31	41	23.8	5.7	0.2	5.4
RESULT[3]: PASS						

[1]Efficiency EDR includes improvements like a better building envelope and more efficient equipment
[2]Total EDR includes efficiency and demand response measures such as photovoltaic (PV) system and batteries
[3]Building complies when source energy, efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded

- Standard Design PV Capacity: 3.06 kWdc

Registration Number: 424-P010067717A-000-000-0000000-0000 Registration Date/Time: 04/18/2024 13:26 HERS Provider: CHEERS
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Schema Version: rev 20220901

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Roach Residence | **Calculation Date/Time:** 2024-04-16T15:32:44-07:00
Calculation Description: Roach Residence | **Input File Name:** Roach Res.ribd22

ENERGY USE SUMMARY

Energy Use	Standard Design Source Energy (EDR1) (kBtu/ft² -yr)	Standard Design TDV Energy (EDR2) (kTDV/ft² -yr)	Proposed Design Source Energy (EDR1) (kBtu/ft² -yr)	Proposed Design TDV Energy (EDR2) (kTDV/ft² -yr)	Compliance Margin (EDR1)	Compliance Margin (EDR2)
Space Heating	2.46	18.69	1.47	11.28	0.99	7.41
Space Cooling	0.74	17.91	1.27	29.85	-0.53	-11.94
IAQ Ventilation	0.35	3.63	0.25	2.6	0.1	1.03
Water Heating	1.18	12.17	0.76	8.44	0.42	3.73
Self Utilization/Flexibility Credit				0		0
Efficiency Compliance Total	4.73	52.4	3.75	52.17	0.98	0.23
Photovoltaics	-1.39	-39.11	-1.82	-50.7		
Battery			0	0		
Flexibility						
Indoor Lighting	0.67	6.5	0.67	6.5		
Appl. & Cooking	2.41	15.45	2.42	15.59		
Plug Loads	2.55	26.08	2.55	26.08		
Outdoor Lighting	0.18	1.66	0.18	1.66		
TOTAL COMPLIANCE	9.15	62.98	7.75	51.3		

Registration Number: 424-P010067717A-000-000-0000000-0000 Registration Date/Time: 04/18/2024 13:26 HERS Provider: CHEERS
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CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Roach Residence | **Calculation Date/Time:** 2024-04-16T15:32:44-07:00
Calculation Description: Roach Residence | **Input File Name:** Roach Res.ribd22

ENERGY USE INTENSITY

	Standard Design (kBtu/ft² - yr)	Proposed Design (kBtu/ft² - yr)	Compliance Margin (kBtu/ft² - yr)	Margin Percentage
Gross EUI[1]	12.62	12.31	0.31	2.46
Net EUI[2]	5.53	3.04	2.49	45.03

Notes
1. Gross EUI is Energy Use Total (not including PV) / Total Building Area.
2. Net EUI is Energy Use Total (including PV) / Total Building Area.

REQUIRED PV SYSTEMS

01	02	03	04	05	06	07	08	09	10	11	12
DC System Size (kWdc)	Exception	Module Type	Array Type	Power Electronics	CFI	Azimuth (deg)	Tilt Input	Array Angle (deg)	Tilt: (x in 12)	Inverter Eff. (%)	Annual Solar Access (%)
4	NA	Standard (14-17%)	Fixed	none	false	170	Degrees	22.62	5	96	98

REQUIRED SPECIAL FEATURES

The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.

- PV System: 4 kWdc
- IAQ Ventilation System: as low as 0.25 W/CFM
- Insulation below roof deck
- Northwest Energy Efficiency Alliance (NEEA) rated heat pump water heater; specific brand/model, or equivalent, must be installed

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HERS FEATURE SUMMARY

The following is a summary of the features that must be field-verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building tables below. Registered CF2Rs and CF3Rs are required to be completed in the HERS Registry

- Indoor air quality ventilation
- Kitchen range hood
- Whole house fan airflow and fan efficacy
- Minimum Airflow
- Verified Refrigerant Charge
- Fan Efficacy Watts/CFM
- Duct leakage testing

BUILDING - FEATURES INFORMATION

01	02	03	04	05	06	07
Project Name	Conditioned Floor Area (ft²)	Number of Dwelling Units	Number of Bedrooms	Number of Zones	Number of Ventilation Cooling Systems	Number of Water Heating Systems
Roach Residence	2511	1	4	1	0	1

ZONE INFORMATION

01	02	03	04	05	06	07
Zone Name	Zone Type	HVAC System Name	Zone Floor Area (ft²)	Avg. Ceiling Height	Water Heating System 1	Status
Entire Area	Conditioned	AC Pro Air Handler BCE5E60MA4X	2511	9	Rheem Heatpump XE50T10H45U0	New

OPAQUE SURFACES

01	02	03	04	05	06	07	08
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft²)	Window and Door Area (ft2)	Tilt (deg)
Front Wall	Entire Area	2 x 6 Stud Walls	0	Front	654	90	90
Right Wall	Entire Area	2 x 6 Stud Walls	270	Right	306	91	90
Left Wall	Entire Area	2 x 6 Stud Walls	90	Left	333	58	90
Back Wall	Entire Area	2 x 6 Stud Walls	180	Back	654	193	90
Ceiling Insulation	Entire Area	Ceiling Insulation.	n/a	n/a	2511	n/a	n/a

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ATTIC

01	02	03	04	05	06	07	08
Name	Construction	Type	Roof Rise (x in 12)	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof
Ceiling	Roof (Above attic)	Ventilated	4	0	0	No	No

FENESTRATION / GLAZING

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft²)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading
Entry Door	Window	Front Wall	Front	0			1	24	0.32	NFRC	0.25	NFRC	Bug Screen
Window (front)	Window	Front Wall	Front	0			1	66	0.29	NFRC	0.22	NFRC	Bug Screen
Window (Right)	Window	Right Wall	Right	270			1	43	0.29	NFRC	0.22	NFRC	Bug Screen
Sliding Door (Right)	Window	Right Wall	Right	270			1	48	0.32	NFRC	0.25	NFRC	Bug Screen
Window (Left)	Window	Left Wall	Left	90			1	10	0.29	NFRC	0.22	NFRC	Bug Screen
Sliding Door (Left)	Window	Left Wall	Left	90			1	48	0.32	NFRC	0.25	NFRC	Bug Screen
Window (Back)	Window	Back Wall	Back	180			1	73	0.29	NFRC	0.22	NFRC	Bug Screen
Sliding Doors (Rear)	Window	Back Wall	Back	180			1	96	0.32	NFRC	0.25	NFRC	Bug Screen

OPAQUE DOORS

01	02	03	04
Name	Side of Building	Area (ft²)	U-factor
Door (Back)	Back Wall	24	0.2

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SLAB FLOORS

01	02	03	04	05	06	07	08
Name	Zone	Area (ft²)	Perimeter (ft)	Edge Insul. R-value and Depth	Edge Insul. R-value and Depth	Carpeted Fraction	Heated
Slab On Grade	Entire Area	2511	207	none	0	80%	No

OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
2 x 6 Stud Walls	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O. C.	R-21	None / None	0.063	Inside Finish: Gypsum Board Sheathing / Insulation: Gypsum Board Cavity / Frame: R-21 / 2x6 Sheathing / Insulation: Gypsum Board Exterior Finish: 3 Coat Stucco
Roof (Above attic)	Attic Roofs	Wood Framed Ceiling	2x4 Top Chord of Roof Truss @ 24 in. O. C.	R-21	None / None	0.053	Roofing: 10 PSF (RoofTileNoGap) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-21 / 2x4 Top Chrd Inside Finish: Gypsum Board
Ceiling Insulation.	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O. C.	R-30	None / None	0.032	Over Ceiling Joists: R-20.9 insul. Cavity / Frame: R-9.1 / 2x4 Btm Chrd Inside Finish: Gypsum Board

BUILDING ENVELOPE - HERS VERIFICATION

01	02	03	04	05
Quality Insulation Installation (QII)	High R-value Spray Foam Insulation	Building Envelope Air Leakage	CFM50	CFM50
Not Required	Not Required	N/A	n/a	n/a

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WATER HEATING SYSTEMS

01	02	03	04	05	06	07	08	09
Name	System Type	Distribution Type	Water Heater Name	Number of Units	Solar Heating System	Compact Distribution	HERS Verification	Water Heater Name (#)
Rheem Heatpump XE50T10H45U0	Domestic Hot Water (DHW)	Standard	Rheem Heatpump W/H XE50T10H45U0	1	n/a	None	n/a	Rheem Heatpump W/H XE50T10H45U0 (1)

WATER HEATERS - NEEA HEAT PUMP

01	02	03	04	05	06	07	08
Name	# of Units	Tank Vol. (gal)	NEEA Heat Pump Brand	NEEA Heat Pump Model	Tank Location	Duct Inlet Air Source	Duct Outlet Air Source
Rheem Heatpump W/H XE50T10H45U0	1	50	Rheem	RheemXE50T10H45U0	Entire Area	Outside	Outside

WATER HEATING - HERS VERIFICATION

01	02	03	04	05	06	07
Name	Pipe Insulation	Parallel Piping	Compact Distribution	Compact Distribution Type	Recirculation Control	Shower Drain Water Heat Recovery
Rheem Heatpump XE50T10H45U0 - 1/1	Not Required	Not Required	Not Required	None	Not Required	Not Required

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06	07	08	09
Name	System Type	Heating Unit Name	Heating Equipment Count	Cooling Unit Name	Cooling Equipment Count	Fan Name	Distribution Name	Required Thermostat Type
AC Pro Air Handler BCE5E60MA4X	Heating and cooling system other	AC Pro Air Handler BCE5E60MA4X.	1	AC Pro A-Series 4HP17L60P.	1	HVAC Fan System 1	Distribution System	Setback

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HVAC - HEATING UNIT TYPES

01	02	03	04
Name	System Type	Number of Units	Heating Efficiency
AC Pro Air Handler BCE5E60MA4X.	Electric	1	HSPF-3.41

HVAC - COOLING UNIT TYPES

01	02	03	04	05	06	07	08	09
Name	System Type	Number of Units	Efficiency Metric	Efficiency EER/EER2/CEER	Efficiency SEER/SEER2	Zonally Controlled	Mulit-speed Compressor	HERS Verification
AC Pro A-Series 4HP17L60P.	Central split AC	1	EER2/SEER2	11.7	14.3	Not Zonal	Single Speed	AC Pro A-Series 4HP17L60P.-hers-cool

HVAC COOLING - HERS VERIFICATION

01	02	03	04	05	06
Name	Verified Airflow	Airflow Target	Verified EER/EER2	Verified SEER/SEER2	Verified Refrigerant Charge
AC Pro A-Series 4HP17L60P.-hers-cool	Required	350	Not Required	Not Required	Required

HVAC - DISTRIBUTION SYSTEMS

01	02	03	04	05	06	07	08	09	10	11	12
Name	Type	Design Type	Duct Ins. R-value		Duct Location		Surface Area		Bypass Duct	Duct Leakage	HERS Verification
			Supply	Return	Supply	Return	Supply	Return			
Distribution System	Unconditioned attic	Non-Verified	R-8	R-8	Attic	Attic	n/a	n/a	No Bypass Duct	Sealed and Tested	Distribution System-hers-dist

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HVAC DISTRIBUTION - HERS VERIFICATION

01	02	03	04	05	06	07	08	09
Name	Duct Leakage Verification	Duct Leakage Target (%)	Verified Duct Location	Verified Duct Design	Buried Ducts	Deeply Buried Ducts	Low-leakage Air Handler	Low Leakage Ducts Entirely in Conditioned Space
Distribution System-hers-dist	Yes	5.0	Not Required	Not Required	Not Required	Credit not taken	Not Required	No

HVAC - FAN SYSTEMS

01	02	03	04
Name	Type	Fan Power (Watts/CFM)	Name
HVAC Fan System 1	HVAC Fan	0.35	HVAC Fan System 1-hers-fan

HVAC FAN SYSTEMS - HERS VERIFICATION

01	02	03
Name	Verified Fan Watt Draw	Required Fan Efficacy (Watts/CFM)
HVAC Fan System 1-hers-fan	Required	0.35

INDOOR AIR QUALITY (IAQ) FANS

01	02	03	04	05	06	07	08	09
Dwelling Unit	Airflow (CFM)	Fan Efficacy (W/CFM)	IAQ Fan Type	Includes Heat/Energy Recovery?	IAQ Recovery Effectiveness - SRE	Includes Fault Indicator Display?	HERS Verification	Status
SFam IAQVentRpt 1-1	112	0.25	Exhaust	No	n/a	No	Yes	

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Hamid Kushkaki	Documentation Author Signature: Hamid Kushkaki
Company: KUSH Drafting Services	Signature Date: 04/18/2024
Address: 9285 Dowdy Drive	CEA/ HERS Certification Identification (If applicable):
City/State/Zip: San Diego, CA 92126	Phone: 585-271-4106

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:
1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance.
2. I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
3. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

Responsible Designer Name: Michelle Pettycord	Responsible Designer Signature: Michelle Pettycord
Company: Heritage General Contractors	Date Signed: 04/18/2024
Address: 1405 Ferrara Ct	License: 967356
City/State/Zip: Escondido, CA 92025	Phone: 7606850345

Digitally signed by California Home Energy Efficiency Rating Services (CHEERS). This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information.

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REVISIONS	BY

KUSH DRAFTING SERVICES
14288 DANIELSON ST., SUITE 201
POWAY, CA. 92064
TEL: 858-271-4106
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ROACH RESIDENCE
2255 EUCLID AVE.
EL CAJON, CA. 92019

DATE 07-31-2024
SCALE
DRAWN
PROJECT

T24

ABBREVIATIONS

AB	ANCHOR BOLT
ABV	ABOVE
ADJ	ADJACENT
ALT	ALTERNATE
ARCH'L	ARCHITECTURAL
BLD'G	BUILDING
BLK	BLOCK
BLK'G	BLOCKING
BLW	BELOW
BM	BEAM
BN	BOUNDARY NAIL
BOTT	BOTTOM
BRG	BEARING
BTWN	BETWEEN
BS	BOTH SIDES
CAMB	CAMBER
CANT'L	CANTILEVER
C.I.P	CAST IN PLACE
C.J.	CEILING JOIST
CL	CENTER LINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY
COL	COLUMN
CONN	CONNECTION
CONT	CONTINUOUS
CTR	CENTER(ED)
d	PENNY WEIGHT
D.F.	DOUGLAS FIR
DIA	DIAMETER
DIAPH.	DIAPHRAGM
DIM	DIMENSION
do	DITTO
DP	DEEP
EA	EACH
EN	EDGE NAIL
EQ	EQUAL
E.S.	EACH SIDE
(E)	EXISTING
FDN	FOUNDATION
F.J.	FLOOR JOIST
FN	FIELD NAIL
FT (')	FOOT (FEET)
FTG	FOOTING
GA	GAUGE
G.E.	GABLE END
GB	GRADE BEAM
GLB	GLU-LAMINATED BEAM
G.T.	GIRDER TRUSS
HD	HOLDOWN
HDR	HEADER
HGR	HANGER
(H)	HORIZONTAL
HT	HEIGHT
IN (")	INCH(ES)
JST	JOIST
K	KIPS
KS	KING STUD
LB (#)	POUNDS
LSL	TIMBERSTRAND BEAM
LVL	MICROLAM
MAX	MAXIMUM
MB	MACHINE BOLT
MANUF.	MANUFACTURER
MISCMISCELLANEOUS	
MIN	MINIMUM
(N)	NEW
NTS	NOT TO SCALE
O.C.	ON CENTER
PCF	POUNDS PER CUBIC FT
PERP	PERPENDICULAR
PL	PLATE
PLY	PLYWOOD
PSL	PARALLAM BEAM
P.T.	PRESSURE TREATED
REF	REFERENCE
REINF	REINFORCING
REQ'D	REQUIRED
R.J.	ROOF JOIST
R.R.	ROOF RAFTER
SCHED	SCHEDULE
SIM	SIMILAR
SPL	SPLICE
SP. INSP.	SPECIAL INSPECTION
STRUC	STRUCTURAL
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
T. PL	TOP PLATE
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
(V)	VERTICAL
V.I.F	VERIFY IN FIELD
W/	WITH
WT	WEIGHT

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY DIMENSIONS AND SITE CONDITIONS PRIOR TO STARTING WORK AND SHALL CONTACT THE ENGINEER OF RECORD IMMEDIATELY OF ANY DISCREPANCIES.
2. USE PROVIDED DIMENSIONS FOR CONSTRUCTION. DIMENSIONS SHALL NOT BE SCALED FROM STRUCTURAL PLANS OR DETAILS. CONTACT ENGINEER OF RECORD OR ARCHITECT FOR ANY MISSING DIMENSIONS.
3. ALL OMISSIONS AND CONFLICTS BETWEEN THE WORKING DRAWINGS OR SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD PRIOR TO PROCEDING WITH ANY AFFECTED WORK.
4. THE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES PRIOR TO BEGINNING EXCAVATIONS.
5. ALL MATERIALS AND CONSTRUCTION SHALL COMPLY WITH THE APPLICABLE BUILDING CODE LISTED IN THE DESIGN NOTES.
6. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO THE ENGINEER OF RECORD PRIOR TO FABRICATION AND INSTALLATION.
7. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE AND DO NOT INDICATE THE MEANS OR METHOD OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY BRACING, SHORING AND SUPPORT NECESSARY TO ACHIEVE THE FINISHED STRUCTURE.

FOUNDATION NOTES

1. SOILS REPORT BY: CBC ALLOWED VALUE PER TABLE 1806.2
   SOILS REPORT NUMBER: N/A
   DATE OF REPORT: N/A
2. DESIGN SOIL PRESSURE: 1500 PSF
3. FOOTING DEPTH
   BELOW BUILDING PAD: 18"
   BELOW EXERIOR GRADE: 18"
4. SUBRADE PREPARATION AND COMPACTION SHALL BE IN ACCORDANCE WITH THE SOILS REPORT UNDER THE SUPERVISION OF THE GEOTECHNICAL ENGINEER.
5. FOOTING EXCAVATIONS SHALL BE KEPT FREE FROM LOOSE MATERIAL AND STANDING WATER. EXCAVATIONS SHALL BE CHECKED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING CONCRETE TO ASSURE COMPLIANCE WITH THE SOILS REPORT.
6. FOUNDATIONS MAY BE POURED AGAINST STABLE SOIL.
7. METHOD OF SUPPORTING REINFORCING PIPE SLEEVES MUST BE APPROVED BY THE STRUCTURAL ENGINEER.
8. CONTRACTOR SHALL PROTECT ALL UTILITIES ENCOUNTERED DURING EXCAVATION AND BACKFILLING.
9. CONTRACTOR SHALL BRACE OR PROTECT FROM LATERAL LOADS ALL RETAINING WALLS UNTIL RESTRAINING FLOORS OR SLABS ARE IN PLACE AND HAVE ATTAINED FULL STRENGTH.
10. ALL HOLDOWNS SHALL BE TIED IN PLACE PRIOR TO FOUNDATION INSPECTION.
11. ANCHOR BOLTS SHALL BE ⅝"ø W/ 7" MINIMUM EMBEDMENT INTO CONCRETE W/ ¼"x3"x3" PLATE WASHERS.
12. MINIMUM ATTACHMENT FOR EXTERIOR WALLS SHALL BE ⅝"ø ANCHOR BOLTS @ 60" O.C. UON ON PLANS. MINIMUM ATTACHMENT FOR INTERIOR WALLS SHALL BE ½"ø ITW RAMSET/REDHEAD SHOTPIN (ICC-ESR ****) @ 32" O.C. UON ON PLANS.

CONCRETE NOTES (CBC CHAPTER 19)

1. ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI 301, EXCEPT AS MODIFIED BY THESE NOTES.
2. CONCRETE SHALL BE STANDARD WEIGHT CONCRETE (145 PCF) AND HAVE THE FOLLOWING ULTIMATE COMPRESSIVE STRENGTH AT 28 DAYS:
   A. FOOTINGS: 2500 PSI
   B. SLAB ON GRADE: 3000 PSI
   C. GRADE BEAMS: 2500 PSI
   D. WALLS 2500 PSI
   E. COLUMNS 2500 PSI
   F. CIP BEAMS/SLAB 2500 PSI
   G. POST TENSION SLAB 4000 PSI
3. CEMENT SHALL CONFORM TO ASTM C-150, TYPE I OR TYPE II.
4. AGGREGATES SHALL CONFORM TO ASTM C-33 FOR NORMAL WEIGHT CONCRETE AND ASTM C-330 FOR LIGHTWEIGHT CONCRETE.
5. READY MIX CONCRETE SHALL CONFORM TO ASTM C94.
6. ADMIXTURES SHALL COMPLY WITH ASTM A494 AND SHALL NOT BE CONSIDERED TO REDUCE THE CEMENT CONTENT. (CALCIUM CHLORIDE SHALL NOT BE USED)
7. STRUCTURAL LIGHTWEIGHT CONCRETE SHALL BE SAND LIGHTWEIGHT AND HAVE A DRY DENSITY RANGE OF 110 PCF TO 115 PCF.
8. WATER SHALL BE CLEAN AND FREE OF ACID, ALKALIS AND ORGANIC MATERIALS.
9. CONCRETE SLUMPS SHALL CONFORM TO ASTM C-143 AND SHALL NOT EXCEED THE FOLLOWING:
   A. FOOTINGS: 4"
   B. SLAB ON GRADE: 4"
   C. IF TEMP IS ABOVE 80°: 6" (PROVIDE REVISED MIX DESIGN)
10. CONCRETE SHALL BE PROPORTIONED SUCH THAT THE 7 DAY STRENGTHS ARE A MINIMUM OF SEVENTY PERCENT OF THE SPECIFIED 28 DAY STRENGTH FOR ANY CONCRETE CONSTRUCTION REQUIRING SHORING, BRACING OR TO RECEIVE CONSTRUCTION LOADS.
11. REFER TO ARCHITECTURAL DRAWINGS FOR CURBS, DEPRESSIONS, SLOPES, GROOVES AND GROUNDS REQUIRED TO BE CAST INTO CONCRETE.
12. SLEEVE PLUMBING OPENINGS IN CONCRETE SLABS BEFORE PLACING CONCRETE.
13. NO SLEEVES OR CHASES SHALL BE PLACED IN FOOTINGS UNLESS SPECIFICALLY NOTED BY THE STRUCTURAL PLANS.
14. PROJECTION CORNERS OF SLABS, WALLS, COLUMNS, ETC SHALL BE FORMED WITH A ¾" CHAMFER.
15. MIX DESIGNS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW PRIOR TO POURING CONCRETE.
16. COMPRESSIVE STRENGTH TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD WHEN CONCRETE REQUIRES SPECIAL INSPECTION.
17. REFER TO SECTION 7.7 OF ACI 318 FOR CONCRETE COVER NOT NOTED IN THE PLANS OR DETAILS.
18. DO NOT DISPLACE REBAR FROM THEIR INTENDED POSITIONS DURING PLACEMENT OF CONCRETE.
19. CLEAN AND ROUGHEN THE SURFACES OF ANY COLD JOINTS. USE A BONDING AGENT THAT EXCEEDS THE COMPRESSIVE STRENGTH OF THE CONCRETE BY 25%.

REINFORCING STEEL

1. REBAR GRADES SHALL BE:
   A. #4 AND SMALLER: GRADE 40
   B. #5 AND LARGER: GRADE 60
2. CONCRETE COVER FOR REBAR SHALL BE:
   A. CONCRETE POURED AGAINST EARTH: 3"
   B. CONCRETE EXPOSED TO WEATHER:
      1. #5 AND SMALLER: 1½"
      2. #6 AND LARGER: 2"
   C. CONCRETE NOT EXPOSED TO WEATHER:
      1. #11 AND SMALLER: ¾"
      2. #14 AND LARGER: 1½"
3. REBAR DETAILING AND PLACEMENT SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE" BY THE REINFORCING STEEL INSTITUTE.
4. VERTICAL BARS SHALL BE TIED IN PLACE AT THE TOP, BOTTOM AND INTERMEDIATE POINTS PER CBC CHAPTERS 19 AND 21.
5. ALL REBAR, ANCHOR BOLTS, DOWELS AND INSERTS SHALL BE WELL SECURED IN POSITION PRIOR TO PLACING CONCRETE.
6. CONTRACTOR SHALL SUBMIT REINFORCING STEEL SHOP DRAWINGS FOR REVIEW BEFORE FABRICATION AND INSTALLATION.
7. WELDING OF REINFORCING BARS SHALL CONFORM TO AWS D1.4-05. E90XX ELECTRODES SHALL BE USED FOR BAR TO BAR & E70XX ELECTRODES SHALL BE USED FOR REINFORCING TO STRUCTURAL STEEL.

WOOD NOTES (CBC CHAPTER 23)

1. ALL WOOD MEMBERS SHALL BE DOUGLAS FIR OR LARCH GRADED BY W.C.L.A. OR W.W.P.A.
2. ALL FRAMING MEMBERS EXCEPT THOSE LISTED BELOW SHALL BE NUMBER 2 OR BETTER:
   A. 6x HEADERS AND POSTS: #1
   B. STUDS: STUD GRADE
3. THE MOISTURE CONTENT OF THE WOOD SHALL NOT EXCEED 19% AT TIME OF PLACEMENT.
4. PLYWOOD AND OSB SHALL BE CERTIFIED AS CONFORMING TO U.S. PRODUCTS STANDARD PS-2-92.
5. ALL BOLT HEADS AND NUTS BEARING ON WOOD SHALL HAVE WASHERS. OVERDRILL ALL BOLT HOLES BY ⅛". BOLT HOLES SHALL BE NO LESS THAN 7 ø FROM THE END OF THE MEMBER AND NO LESS THAN 4 ø FROM THE EDGE OF THE MEMBER.
6. ALL NAILS SHALL BE COMMON NAILS (UON)
7. ALL HARDWARE SPECIFIED ON PLANS SHALL BE MANUFACTURED BY 'SIMPSON'. ALTERNATE MANUFACTURERS MAY BE USED PROVIDED THE HARDWARE HAS EQUIVALENT CAPACITY AND CURRENT ICC APPROVALS.
8. CUTTING, NOTCHING OR DRILLING OF BEAMS AND JOISTS SHALL IS NOT ALLOWED EXCEPT WHERE SPECIFIED BY ENGINEER OF RECORD OR PER CBC SECTION 2308.
9. ALL WOOD IN CONTACT WITH CONCRETE OR MASONRY WITHIN 48" OF SOIL SHALL BE PRESSURE TREATED. USE APPROVED CORROSION RESISTANT FASTENERS AND CONNECTORS WHEN USING PRESSURE TREATED WOOD. CONTRACTOR SHALL COORDINATE WITH THE PRESSURE TREATED LUMBER SUPPLIER AND HARDWARE MANUFACTURER.
10. PLYWOOD FLOOR SHEATHING SHALL BE GLUED TO FLOOR JOISTS WITH ONE CONTINUOUS BEAD OF AN ADHESIVE COMPOUND CONFORMING TO ASTM D 3024.
11. PROVIDE JOISTS UNDER ALL PARALLEL, NON-BEARING PARTITIONS PRE DETAIL 11/S2 AND SOLID BLOCKING UNDER ALL PERPENDICULAR NON-BEARING PARTITIONS.

MANUFACTURED LUMBER AND TRUSS NOTES

1. "I" JOISTS SHALL BE SELECTED FROM THE APPROVED MANUFACTURER AS SHOWN IN THE JOIST LEGEND ON THE PLANS.
2. JOISTS AND/OR TRUSSES HAVE BEEN DESIGNED AND DETAILED WITH THE MANUFACTURER'S SPECIFICATIONS. ANY CONTRACTOR ALTERNATES MUST BE SUBMITTED TO THE ENGINEER WITH DESIGN PROPERTIES AND SPECIFICATIONS. ANY ALTERNATE DESIGN MUST BE RE-SUBMITTED AND APPROVED BY THE BUILDING DEPARTMENT.
3. THE CONTRACTOR SHALL SUBMIT BRACING LAYOUT AND DETAILS TO THE ENGINEER OF RECORD AND BUILDING DEPARTMENT FOR APPROVAL PRIOR TO FABRICATION.
4. ALL TRUSSES AND JOISTS SUPPORTING MECHANICAL EQUIPMENT SHALL BE DESIGNED BY THE MANUFACTURER AND SUBMITTED TO THE ENGINEER OF RECORD FOR APPROVAL.
5. WOOD TRUSSES AND/OR JOISTS SHALL BE DESIGNED FOR THE LOADS SPECIFIED IN THE DESIGN NOTES.
6. SHOP DRAWINGS FOR ALL OPEN WEB TRUSSES SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW PRIOR TO CONSTRUCTION. ALL TRUSS LAYOUTS SHALL BE REVIEWED AND PROFESSIONALLY SEALED BY THE MANUFACTURER'S ENGINEER OF RECORD PRIOR TO SUBMITTAL.
7. PREFABRICATED WOOD BEAMS SHALL BE PARALLEL STRAND (PSL, LSL) OR LAMINATED VENEER (LVL) WITH THE FOLLOWING MINIMUM DESIGN VALUES (UON).
   A) PSL: Fb = 2900 PSI
   Fv = 290 PSI
   E = 2.0x10^6 PSI
   B) LSL: Fb = 2315 PSI
   Fv = 310 PSI
   E = 1.55x10^6 PSI
   A) LVL: Fb = 2600 PSI
   Fv = 285 PSI
   E = 1.8x10^6 PSI

DESIGN NOTES:

DESIGN CODE: 2022 CBC

WIND

ULTIMATE DESIGN WIND SPEED: 97 MPH
NOMINAL DESIGN WIND SPEED: 85 MPH
RISK CATEGORY: II
INTERNAL PRESSURE COEFFICIENT: 0.18
WIND EXPOSURE: B
COMPONENTS AND CLADDING PRESSURE: 19.33PSF

SEISMIC

RISK CATEGORY: II
SEISMIC IMPORTANCE FACTOR:1.0
S_S : 0.746 S_{DS}: 0.598
S_1 : 0.275
C_S : 0.092
DESIGN BASE SHEAR: 0.085 W
SITECLASS: D
SEISMIC DESIGN CATEGORY: D
BASIC FORCE RESISTING SYSTEM:
LIGHT FRAME SHEARWALL (R = 6.5)
STEEL CANTILEVER COLUMN (R = 2.5)

☐ SIMPLIFIED ANALYSIS PROCEDURE (ASCE 7-16 12.14)
☒ EQUIVALENT LATERAL FORCE PROC. (ASCE 7-16 12.8)

DESIGN LOADS

ROOF: (SLOPE)
D.L. = 25 PSF
*L.L. = 20 PSF

* LIVE LOADS ARE REDUCIBLE PER CBC SECTION 1607 AND TABLE 1607.1. ADDITIONAL LOADS DUE TO MECHANICAL UNITS, PARTITIONS, ETC SHALL BE CONSIDERED.

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DATE	07-31-2024
SCALE	
DRAWN	
PROJECT	

S0.1

HTK
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FASTENING SCHEDULE

CONNECTION	FASTENING [a,m]	LOCATION
1 JOIST TO SILL OR GIRDER	3 - 8d COMMON (2-1/2" X Ø.131") 3 - 3" X Ø.131" NAILS 3 - 3" 14 gage staples	TOE NAIL
2 BRIDGING TO JOIST	2 - 8d COMMON (2-1/2" X Ø.131") 2 - 3" X Ø.131" NAILS 2 - 3" 14 gage staples	TOENAIL EACH END
3 1x6 SUBFLOOR OR LESS TO EACH JOIST	2 - 8d COMMON (2-1/2" X Ø.131")	FACE NAIL
4 WIDER THAN 1x6 SUBFLOOR OR LESS TO EACH JOIST	2 - 8d COMMON (2-1/2" X Ø.131")	FACE NAIL
5 2" SUBFLOOR TO JOIST OR GIRDER	2 - 16d COMMON (3-1/2" X Ø.162")	BLIND & FACE NAIL
6 SOLE PLATE TO JOIST OR BLOCKING	16d COMMON (3-1/2" X Ø.135") @ 16" 3" X Ø.131 NAILS AT 8" O.C. 3" 14 GAGE STAPLES AT 12"	TYPICAL FACE NAIL
SOLE PLATE TO JOIST OR BLOCKING AT BRACED WALL PANEL	3-16d COMMON (3-1/2" X Ø.135") @ 16" 4" X Ø.131 NAILS AT 16" O.C. 4-3" 14 GAGE STAPLES AT 16"	BRACED WALL PANELS
7 TOP PLATE TO STUD	2 - 16d COMMON (3-1/2" X Ø.162") 3 - 3" X Ø.162" NAILS 3 - 3" 14 GAGE STAPLES	END NAIL
8 STUD TO SOLE PLATE	4- 8d COMMON (2-1/2" X Ø.131") 4 - 3" X Ø.131 NAILS 3 - 3" 14 GAGE STAPLES	TOE NAIL
	2 - 16d COMMON (3-1/2" X Ø.162") 3 - 3" X Ø.131" NAILS 3 - 3" 14 GAGE STAPLES	END NAIL
9 DOUBLE STUD	16d (3-1/2" X Ø.135") @ 24" 3" X Ø.131 NAILS AT 8" O.C. 3" 14 GAGE STAPLES AT 8"	FACE NAIL
10 DOUBLE TOP PLATES	16d (3-1/2" X Ø.135") @ 16" 3" X Ø.131 NAILS AT 12" O.C. 3" 14 GAGE STAPLES AT 12"	TYPICAL FACE NAIL
DOUBLE TOP PLATES	8 - 16d COMMON (3-1/2" X Ø.162") 12-3" X Ø.131" C 12 - 3" 3" 14 GAGE STAPLES	LAP SPLICE
11 BLOCKING BETWEEN JOIST OR RAFTERS TO TOP PLATE	3 - 8d COMMON (2-1/2" X Ø.131") 3 - 3" X Ø.131" NAILS 3 - 3" 14 GAGE STAPLES	TOE NAIL
12 RIM JOIST TO TOP PLATE	8d (2-1/2" X Ø.131") @ 6" O.C. 3" X Ø.131 NAILS AT 6" O.C. 3" 14 GAGE STAPLES AT 6" O.C.	TOE NAIL
13 TOP PLATES, LAPS AND INTERSECTIONS	2 - 16d COMMON (3-1/2" X Ø.162") 3 - 3" X Ø.131" NAILS 3 - 3" 14 GAGE STAPLES	FACE NAIL
14 CONTINUOUS HEADER, TWO PIECES	16d COMMON (3-1/2" X Ø.162")	16" O.C. ALONG EDGE
15 CEILING JOIST TO PLATE	3 - 8d COMMON (2-1/2" X Ø.131") 5 - 3" X Ø.131" NAILS 5 - 3" 14 GAGE STAPLES	TOE NAIL
16 CONTINUOUS HEADER TO STUD	4 - 8d COMMON (2-1/2" X Ø.131")	TOE NAIL
17 CEILING JOISTS, LAPS OVER PARTITIONS (SEE SECTION 2308.10.4.1, TABLE 2308.10.4.1)	3 - 16d COMMON (3-1/2" X Ø.162") TABLE 2308.10.4.1 4 - 3" X Ø.131" NAILS 4 - 3" 14 GAGE STAPLES	FACE NAIL
18 CEILING JOISTS PARALLEL TO RAFTERS (SEE SECTION 2308.10.4.1, TABLE 2308.10.4.1)	3 - 16d COMMON (3-1/2" X Ø.162") TABLE 2308.10.4.1 4 - 3" X Ø.131" NAILS 4 - 3" 14 GAGE STAPLES	FACE NAIL
19 RAFTER TO PLATE (SEE SECTION 2308.10.1, TABLE 2308.10.1)	2 - 8d COMMON (2-1/2" X Ø.131") 3 - 3" X Ø.131" NAILS 3 - 3" 14 GAGE STAPLES	TOE NAIL
20 1" DIAGONAL BRACE TO EACH STUD AND PLATE	2 - 8d COMMON (2-1/2" X Ø.131") 2 - 3" X Ø.131" NAILS 3 - 3" 14 GAGE STAPLES	FACE NAIL
21 1 X 8 SHEATHING TO EACH BEARING	2 - 8d COMMON (2-1/2" X Ø.131")	FACE NAIL
22 WIDER THAN 1 X 8 SHEATHING TO EACH BEARING	3 - 8d COMMON (2-1/2" X Ø.131")	FACE NAIL
23 BUILT UP CORNER STUDS	16d COMMON (3-1/2" X Ø.162") 3 - 3" X Ø.131" NAILS 3 - 3" 14 GAGE STAPLES	24" O.C. 16" O.C. 16" O.C.
24 BUILT UP GIRDERS AND BEAMS	20d COMMON (4" X Ø.192") 32" O.C. 3" X Ø.131" NAIL AT 24" O.C. 3" 14 GAGE STAPLES AT 24" O.C.	FACE NAIL AT TOP AND BOTTOM STAGGERED ON OPPOSITE SIDES
	20d COMMON (4" X Ø.192") 3" X Ø.131" NAILS 3 - 3" 14 GAGE STAPLES	FACE NAIL AT ENDS AND AT EACH SPLICE
25 2" PLANKS	16d COMMON (3-1/2" X Ø.162")	AT EACH BEARING
26 COLLAR TIE TO RAFTER	3 - 10d COMMON (3" X Ø.148") 4 - 3" X Ø.131" NAILS 4 - 3" 14 GAGE STAPLES	FACE NAIL
27 JACK RAFTER TO HIP	3 - 10d COMMON (3" X Ø.148") 4 - 3" X Ø.131" NAILS 4 - 3" 14 GAGE STAPLES	TOE NAIL
	20d COMMON (4" X Ø.192") 3" X Ø.131" NAILS 3 - 3" 14 GAGE STAPLES	FACE NAIL
28 ROOF RAFTER TO 2X RIDGE BEAM	2 - 16d COMMON (3-1/2" X Ø.162") 3 - 3" X Ø.131" NAILS 3 - 3" 14 GAGE STAPLES	TOE NAIL
	2-16d COMMON (3-1/2" X Ø.162") 3 - 3" X Ø.131" NAILS 3 - 3" 14 GAGE STAPLES	FACE NAIL
29 JOIST TO BAND JOIST	2 - 16d COMMON (3-1/2" X Ø.162") 4 - 3" X Ø.131" NAILS 4 - 3" 14 GAGE STAPLES	FACE NAIL
30 LEDGER STRIP	3 - 16d COMMON (3-1/2" X Ø.162") 4 - 3" X Ø.131" NAILS 4 - 3" 14 GAGE STAPLES	FACE NAIL
31 WOOD STRUCTURAL PANELS AND PARTICLE BOARD[b] SUBFLOOR/ROOF AND WALL SHEATHING (TO FRAMING)	1/2" AND LESS: 6d[c],1; 2-3/8" X Ø.113 NAIL[n], 1-3/4 16 GAGE[o] 19/32" TO 3/4": 8d[d] OR 6d[e]; 2-3/8" X Ø.113 NAIL[p], 2" 16 GAGE[p] 7/8" TO 1": 8d[c] 1 1/8" TO 1 1/4": 10d[d] OR 8d[d]	
SINGLE FLOOR (COMBINATION SUBFLOOR-UNDERLAYMENT TO FRAMING	3/4" AND LESS: 6d[e] 7/8" TO 1": 8d[e] 1 1/8" TO 1 1/4": 10d[d] OR 8d[e]	
32 PANEL SIDING (TO FRAMING)	1/2" AND LESS: 6d[f] 5/8": 8d[f]	
33 FIBERBOARD SHEATHING[g]	1/2": No.11 GAGE ROOFING NAIL[q], 6d COMMON NAIL (2"X0.113"), No.16 GAGE STAPLE 25/32": No.11 GAGE ROOFING NAIL[q], 8d COMMON NAIL (2-1/2 X Ø.113"), No.16 GAGE STAPLE	
34 INTERIOR PANELING	1/4": 4d[j] 3/8": 6d[k]	

A. COMMON OR BOX NAILS ARE PERMITTED TO BE USED EXCEPT WHERE OTHERWISE STATED.
B. NAILS SPACED AT 6 INCHES ON CENTER AT EDGES, 12 INCHES AT INTERMEDIATE SUPPORTS EXCEPT 6 INCHES AT SUPPORTS WHERE SPANS ARE 48 INCHES 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.
C. COMMON OR DEFORMED SHANK (6d - 2" X Ø.113"; 8d - 2 1/2" X Ø.131"; 10d - 3" X Ø.148")
D. COMMON OR DEFORMED SHANK (6d - 2" X Ø.113"; 8d - 2 1/2" X Ø.131"; 10d - 3" X Ø.148")
E. DEFORMED SHANK (6d - 2" X Ø.113"; 8d - 2 1/2" X Ø.131"; 10d - 3" X Ø.148")
F. CORROSION-RESISTANT SIDING (6d - 1-1/8" X Ø.106"; 8d - 2-3/8" X Ø.128") OR CASING (6d - 2" X Ø.099"; 8d - 2-1/2" X Ø.113") NAIL.
G. FASTENERS SPACED 3 INCHES ON CENTER AT EXTERIOR EDGES AND 6 INCHES ON CENTER AT EXTERIOR EDGES AND 6 INCHES ON CENTER AT INTERMEDIATE SUPPORTS, WHEN USED AS STRUCTURAL SHEATHING. SPACING SHALL BE 6 INCHES ON CENTER ON THE EDGES AND 12 INCHES ON CENTER AT INTERMEDIATE SUPPORTS FOR NON-STRUCTURAL APPLICATIONS.
H. CORROSION - RESISTANT ROOFING NAILS WITH 7/16 INCH DIAMETER HEAD AND 1-1/2 INCH LENGTH FOR 1/2 INCH SHEATHING AND 1-3/4 INCH LENGTH FOR 24/32 INCH SHEATHING.
I. CORROSION - RESISTANT STAPLES WITH A NOMINAL 7/16 INCH CROWN AND 1-1/8" LENGTH FOR 1/2 INCH SHEATHING AND 1-1/2 INCH LENGTH FOR 25.32 INCH SHEATHING. PANEL SUPPORTS AT 16 INCHES (20 INCHES IF STRENGTH AXIS IN THE LONG DIRECTION OF THE PANEL,UNLESS OTHERWISE MARKED).
J. CASING (1-1/2" X Ø.080") OR FINISH (1-1/2" X Ø.072") NAILS SPACED 6 INCHES ON PANEL EDGES, 12 INCHES AT INTERMEDIATE SUPPORTS.
K. PANEL SUPPORTS AT 24 INCHES. CASING OR FINISH NAILS SPACED 6 INCHES ON PANEL EDGES, 12 INCHES AT INTERMEDIATE SUPPORTS.
L. FOR ROOF SHEATHING APPLICATIONS, 8d NAILS (2 -1/2" X Ø.131") ARE THE MINIMUM REQUIRED FOR WOOD STRUCTURAL PANELS.
M. STAPLES SHALL HAVE A MINIMUM CROWN WIDTH OF 7/16 INCH.
N. FOR ROOF SHEATHING APPLICATIONS, FASTENERS SPACED 4 INCHES ON CENTER AT EDGES, 8 INCHES AT INTERMEDIATE SUPPORTS.
O. FASTENERS SPACED 4 INCHES ON CENTER AT EDGES, 8 INCHES AT INTERMEDIATE SUPPORTS FOR SUBFLOOR AND WALL SHEATHING AND 3 INCHES ON CENTER AT EDGES, 6 INCHES AT INTERMEDIATE SUPPORTS FOR ROOF SHEATHING.
P. FASTENERS SPACED 4 INCHES ON CENTER AT EDGES, 8 INCHES AT INTERMEDIATE SUPPORTS.

ABBREVIATIONS:

C.N.	: COMMON NAILS	PLY.	: PLYWOOD
BLK'G.	: BLOCKED	GYP.	: GYPSUM
(BS)	: BOTH SIDES	BD.	: BOARD
FND.	: FOUNDATION	CONN.	: CONNECTION
	: PLATE	T.N.	: TOE NAIL
A.B.	: ANCHOR BOLTS	(U.O.N.)	: UNLESS OTHERWISE NOTED
	: LAG BOLTS	SCHED.	: SHEAR WALL SCHEDULE
REF.	: REFERENCE	ST	: STAGGERED
Ga.	: GAUGE	STR 1	: STRUCTURAL 1
MIN.	: MINIMUM	CDX	: EXTERIOR GRADE PLYWOOD
BLK	: BLOCK	BLK'G	: BLOCKING
O.C.	: ON CENTER	REQ'D	: REQUIRED

FOR ADDITIONAL ABBREVIATIONS SEE SHEET SM1

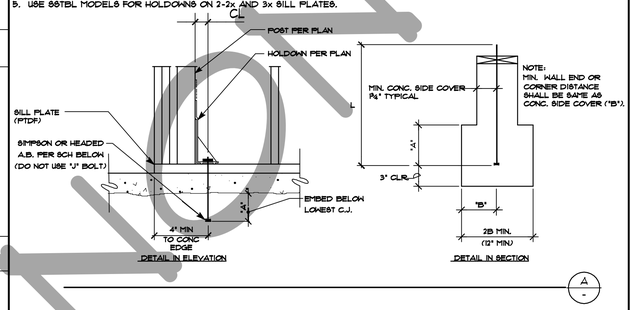
HOLDOWN SCHEDULE

(ICC-ESR 2330)

MARK	MIN. POST	SCREWS SDS ¼"Ø	CL	SSTB ANCHOR BOLT (5) (ICC-ESR 2611) MONO POUR	SSTB ANCHOR BOLT (5) (ICC-ESR 2611) TWO POUR	SB ANCHOR BOLT (ICC-ESR 2611) "A"	SB ANCHOR BOLT (ICC-ESR 2611) MONO POUR	FAB ALL THREAD (ICC-ESR 2611) "A"	FAB ALL THREAD (ICC-ESR 2611) SIZE	FAB ALL THREAD (ICC-ESR 2611) L MIN	FAB ALL THREAD (ICC-ESR 2611) "A"	FAB ALL THREAD (ICC-ESR 2611) "B"
HDU2	4x	6-SDS	1⅜"	SSTB16	SSTB20	12⅝"	SB ⅝x24	18"	FAB5	24"	5"	7½"
HDU4	4x	10-SDS	1⅜"	SSTB20	SSTB24	16⅝"	SB ⅝x24	18"	FAB5	24"	5"	7½"
HDU5	4x	14-SDS	1⅜"	SSTB24	SSTB28	20⅝"	SB ⅝x24	18"	FAB5	24"	5"	7½"
HDU8	6x	20-SDS	1⅜"	SSTB28	SSTB28	24⅛"	SB ⅞x24	18"	FAB7	30"	8"	12"
HDQ8	6x	20-SDS	1½"	SSTB28	SSTB28	24⅛"	SB ⅞x24	18"	FAB7	30"	8"	12"
HDU11	6x	30-SDS	1⅜"	N/A	N/A	-	SB 1x30	24"	FAB8	30"	10"	15"
HHDQ11	6x	24-SDS	1½"	N/A	N/A	-	SB 1x30	24"	FAB8	30"	10"	15"
HHDQ14	6x	30-SDS	1½"	N/A	N/A	-	SB 1x30	24"	FAB8	30"	10"	15"
HDU14	6x	36-SDS	1⅜"	N/A	N/A	-	SB 1x30	24"	FAB8	30"	10"	15"

HOLDOWN NOTES:

1. ALL HOLDOWN ANCHOR BOLTS SHALL BE SECURELY FASTENED IN PLACE PRIOR TO PLACING CONCRETE.
2. PROVIDE COVER (1⅝" MIN) AT EARTH FORMED SURFACES PER REINFORCING STEEL NOTES AT ALL HOLDOWN ANCHOR BOLTS (U.O.N.)
3. PROVIDE 8" MINIMUM FOOTING OR STEM WALL WIDTH.
4. SEE DETAIL A/- (EACH WAY AT CORNER)
5. USE SSTBL MODELS FOR HOLDOWNS ON 2-2x AND 3x SILL PLATES.



SHEARWALL SCHEDULE (2022 CBC)

MARK	SHEAR WALL MATERIAL (1)	EDGE NAILING W/ C.N. (2)	FOUNDATION CONN. ⅝" Ø DIA. ANCHOR BOLT SPACING (3) 2x SILL	FOUNDATION CONN. ⅝" Ø DIA. ANCHOR BOLT SPACING (3) 3x SILL	(A) FLOOR CONNECTION OR SCREW SPACING BOTTOM PLATE NAIL (4) 16d SINKER	(A) FLOOR CONNECTION OR SCREW SPACING BOTTOM PLATE NAIL (4) SDS¼x4½	(B) SHEAR TRANSFER A35/LTP4 SPACING BLK OR JOIST TO TOP PL. (5)(6)	ALLOWABLE SHEAR (LBS/FT) SEISMIC	ALLOWABLE SHEAR (LBS/FT) WIND	REFERENCE NOTES (7)
1	STUCCO	REF. NOTE a	48"	—	6"	-	24"	180	180	REF. NOTE a
3	3/8" PLY CDX	8d @ 6"	48"	—	5"	-	24"	260	320	
4	3/8" PLY CDX	8d @ 4"	32"	—	4"	-	16"	380	380	REF. NOTE e
5	3/8" PLY CDX	8d @ 3"	32"	—	3" (ST)	-	16"	490	500	REF. NOTE d, e
6	3/8" PLY CDX	8d @ 2"	24"	—	2" (ST)	10"	12"	640	670	REF. NOTE d, e
7	3/8" PLY STR 1	8d @ 2"	16"	—	2" (ST)	8"	8"	730	765	REF. NOTE d, e
10	15/32" PLY CDX	10d @ 6"	48"	—	4"	-	24"	310	335	REF. NOTE d, e
11	15/32" PLY CDX	10d @ 4"	32"	—	3" (ST)	-	16"	460	500	REF. NOTE d, e
12	15/32" PLY CDX	10d @ 3"	24"	—	2½" (ST)	10"	12"	600	610	REF. NOTE d, e
13	15/32" PLY CDX	10d @ 2"	16"	—	—	8"	8"	770	840	REF. NOTE d, e
14	15/32" PLY STR 1	10d @ 2"	16"	—	—	6"	8"	870	1000	REF. NOTE d, e
20	3/8" PLY CDX (BS)	8d @ 3"	—	16"	—	6"	8"	980	1000	REF. NOTES b, c, d, e
21	3/8" PLY STR 1 (BS)	8d @ 3"	—	16"	—	5"	6"	1120	1340	REF. NOTES b, c, d, e
22	15/32" PLY STR 1 (BS)	10d @ 3"	—	16"	—	4"	6"	1330	1370	REF. NOTES b, c, d, e
23	15/32" PLY STR 1 (BS)	10d @ 2"	—	12"	—	3"	4½"	1740	1820	REF. NOTES b, c, d, e

(1) ALL PLYWOOD PANEL EDGES TO BE BLOCKED AND EDGE NAILED.

(2) ALL PLYWOOD NAILING SHOULD BE WITH COMMON NAILS. CAN SUBSTITUTE COMMON WITH GALVANIZED BOX. FIELD NAILING SHALL BE MATCHING SIZE COMMON NAILS @ 12" O.C.

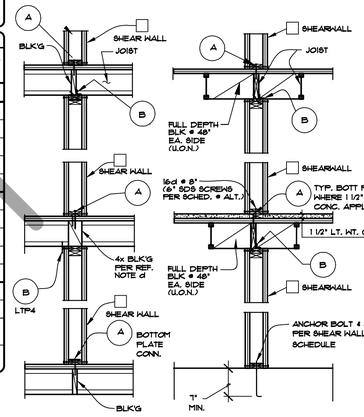
(3) ALL ANCHOR BOLTS TO BE Ø" LONG @ 2x SILL, 12" LONG AT 3x SILL. ALL ANCHORS SHALL HAVE MIN ¼"x3"x3" PLATE WASHERS. PLACE ALL ANCHORS A MINIMUM DISTANCE OF 4 3/8" (AND A MAXIMUM OF 12") FROM THE ENDS OF SILL PLATES. MINIMUM 2 ANCHOR BOLTS PER WALL OR PIECE OF SILL.

(4) SDS¼x4½ SCREWS MAY BE SUBSTITUTED WITH ⅜"Ø x 6" LAG SCREWS WITH PREDRILLED HOLES. MINIMUM STAGGER DISTANCE IS ½". MINIMUM OFFSET IS ¼". MINIMUM EDGE DISTANCE IS ½". VERIFY W/ SCL MANUF. MINIMUM SDS¼ LAG SCREW SPACING AND LEAD HOLE REQUIREMENTS OR USE 3x/4x NOMINAL MEMBERS PER REFERENCE NOTE d.

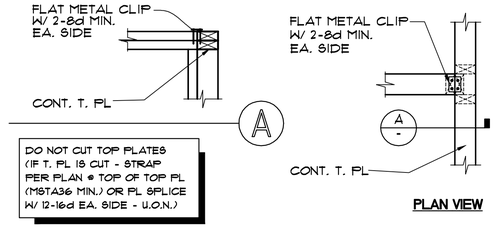
(5) AT ALL ROOF PLATES WITH FRAMING PERPENDICULAR TO WALL USE A35 @ 24" OR HI PER TRUSS (@ 24" MAX) TYPICAL (U.O.N.)

(6) USE 1¾" STRUCTURAL COMPOSITE LUMBER (SCL) FOR RIM OR BLOCKING (UON).

(7) **REFERENCE NOTES:**
- a) EXTERIOR STUCCO WHERE OCCURS SHALL BE WOVEN OR WELDED WIRE LATH WITH 7/8" PORTLAND CEMENT PLASTER WITH 2 11 GA. NAILS x 1 1/2" LONG x 7/16" Ø HEAD OR 2 16 GA. STAPLE x 1/8" LONG LEGS.
- b) 3x6 SILL, 3x6 TOP PLATE & 4x6 BLOCKING @ INTERMEDIATE PANEL JOINTS IS REQUIRED.
- c) SHEAR WALLS WITH PLYWOOD ON BOTH SIDES, BOTH VERTICAL AND HORIZONTAL INTERIOR JOINTS ON OPPOSITE SIDES OF THE WALL SHALL BE STAGGERED (SEE DETAIL BELOW).
- d) (A)-CONNECTIONS FOR 2ND FLOOR AND ABOVE ONLY, USE 3x MIN (NOMINAL) RIM OR BLOCKING BELOW WALLS WITH 16d SINKERS @ 2" O.C. OR CONNECTIONS WITH SDS/LAG SCREWS AS REQ'D BY SCL MANUF.
- e) 3x REQUIRED AT ALL PANEL JOINTS & INTERIOR BLOCKING



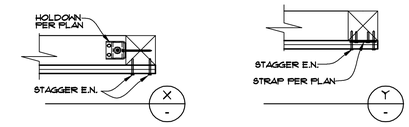
SHEARWALL SECTIONS

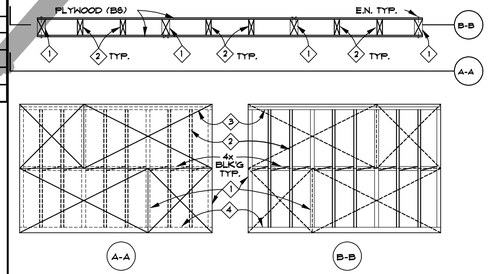


PLAN VIEW

PERPENDICULAR WALLS @ EXTERIOR + INTERIOR SHEARWALL/DRAG LINES

SHEARWALL SCHEDULE, NOTES, SECTIONS AND DETAILS

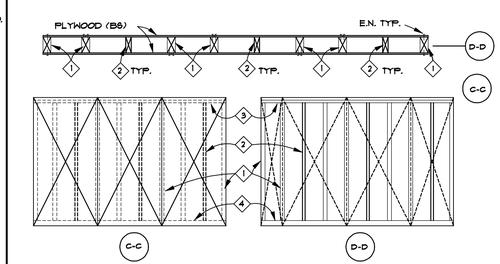




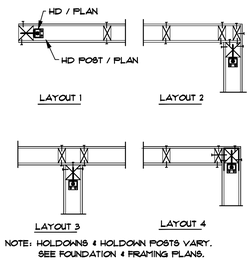
DOUBLE SHEAR WALL SECTIONS (PLYWOOD HORIZ.)

MINIMUM POST / STUDS (U.O.N.)	
MARK	WOOD SIZE
1	4x6
2	3x6
3	2-3x6
4	3x6

DOUBLE SHEAR WALL POST/STUD SCHEDULE

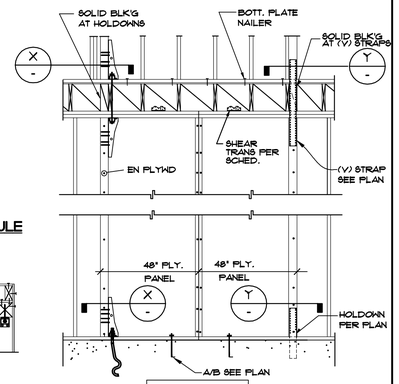


DOUBLE SHEAR WALL SECTIONS (PLYWOOD VERT.)



NOTE: HOLDOWNS & HOLDOWN POSTS VARY. SEE FOUNDATION & FRAMING PLANS.

TYPICAL HOLDOWN LOCATION



HOLDOWN BETWEEN FLOORS

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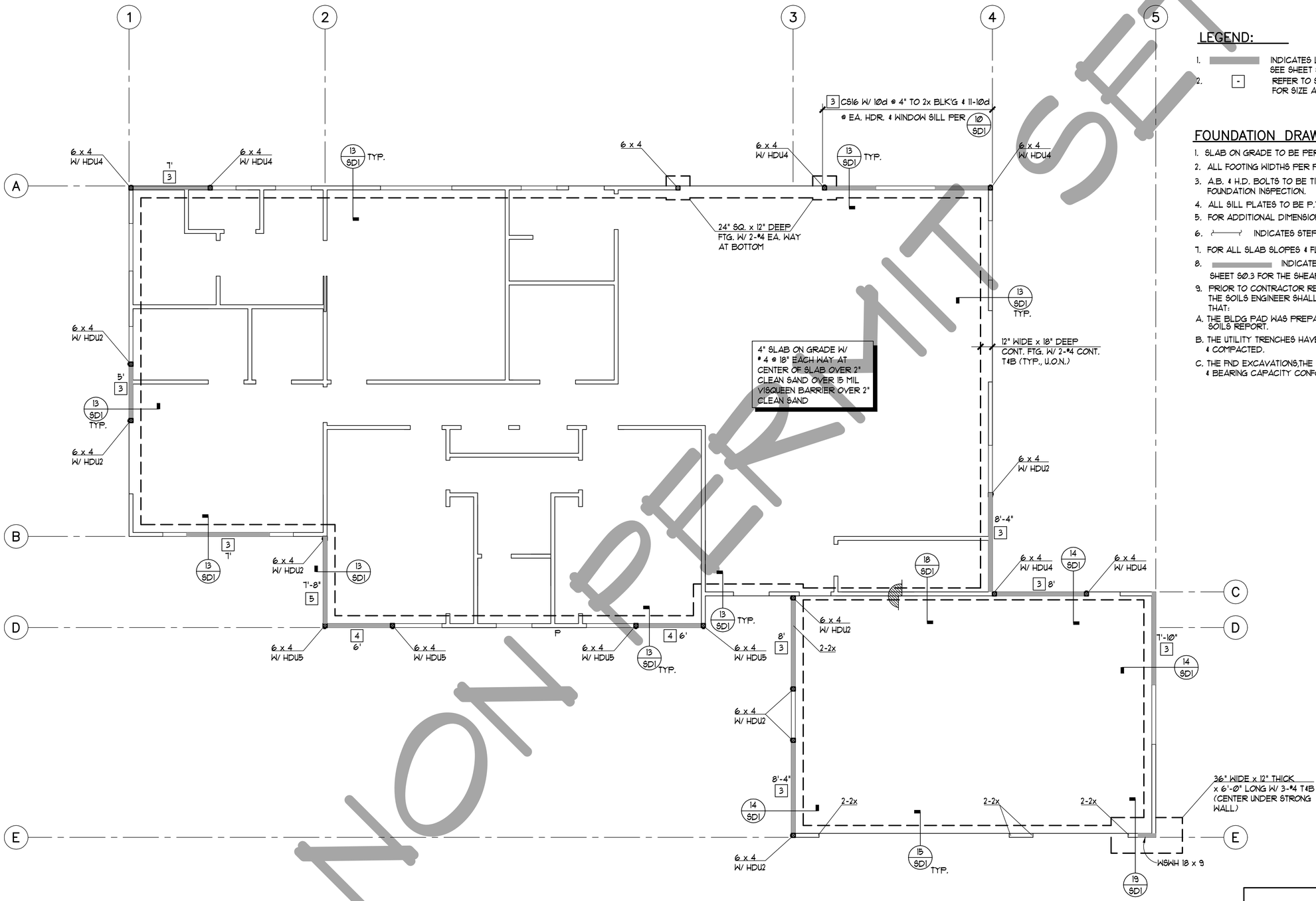
S0.3



NOTES:

1. SCALING OF STRUCTURAL DRAWINGS IS NOT ALLOWED.
2. FOR DIMENSIONS NOT SHOWN SEE ARCH. DRAWINGS.
3. NON-BEARING WALLS AND NON-SHEARWALLS ARE NOT STRUCTURAL WALLS.
4. NON-STRUCTURAL WALLS ARE NOT SHOWN FOR CLARITY.
5. FOR ADDITIONAL NOTES SEE SHEET SØ.1
6. ALL EXTERIOR WALLS ARE 2 x 6 STUDS @ 16"

LEGEND:

1. INDICATES LIMITS OF SHEAR WALL, SEE SHEET SØ.3 FOR THE SHEAR WALL SCHEDULE.
2. [-] REFER TO SHEARWALL SCHEDULE, SHEET SØ.3 FOR SIZE AND SPACING OF A.B.S

FOUNDATION DRAWING NOTES:

1. SLAB ON GRADE TO BE PER PLAN
2. ALL FOOTING WIDTHS PER PLAN
3. A.B. & H.D. BOLTS TO BE TIED IN PLACE PRIOR TO FOUNDATION INSPECTION.
4. ALL SILL PLATES TO BE P.T.D.F.
5. FOR ADDITIONAL DIMENSIONS, SEE ARCHT'L DRAWINGS.
6. INDICATES STEP FOOTING, SEE DET.
7. FOR ALL SLAB SLOPES & FLOOR DRAINS, SEE ARCH'L. DRAWINGS.
8. INDICATES LIMITS OF SHEARWALL. SEE SHEET SØ.3 FOR THE SHEARWALL SCHEDULE.
9. PRIOR TO CONTRACTOR REQUESTING A BLDG. DEPT FOUNDATION THE SOILS ENGINEER SHALL ADVISE BUILDING OFFICAL IN WRITING THAT:

A. THE BLDG PAD WAS PREPARED IN ACCORDANCE WITH THE SOILS REPORT.

B. THE UTILITY TRENCHES HAVE BEE PROPERLY BACKFILLED & COMPACTED.

C. THE FND EXCAVATIONS,THE SOLIS EXPANSIVE CHARACTERISTICS & BEARING CAPACITY CONFORM TO THE SOILS REPORT.

FOUNDATION PLAN

SCALE: ¼" = 1'-Ø"

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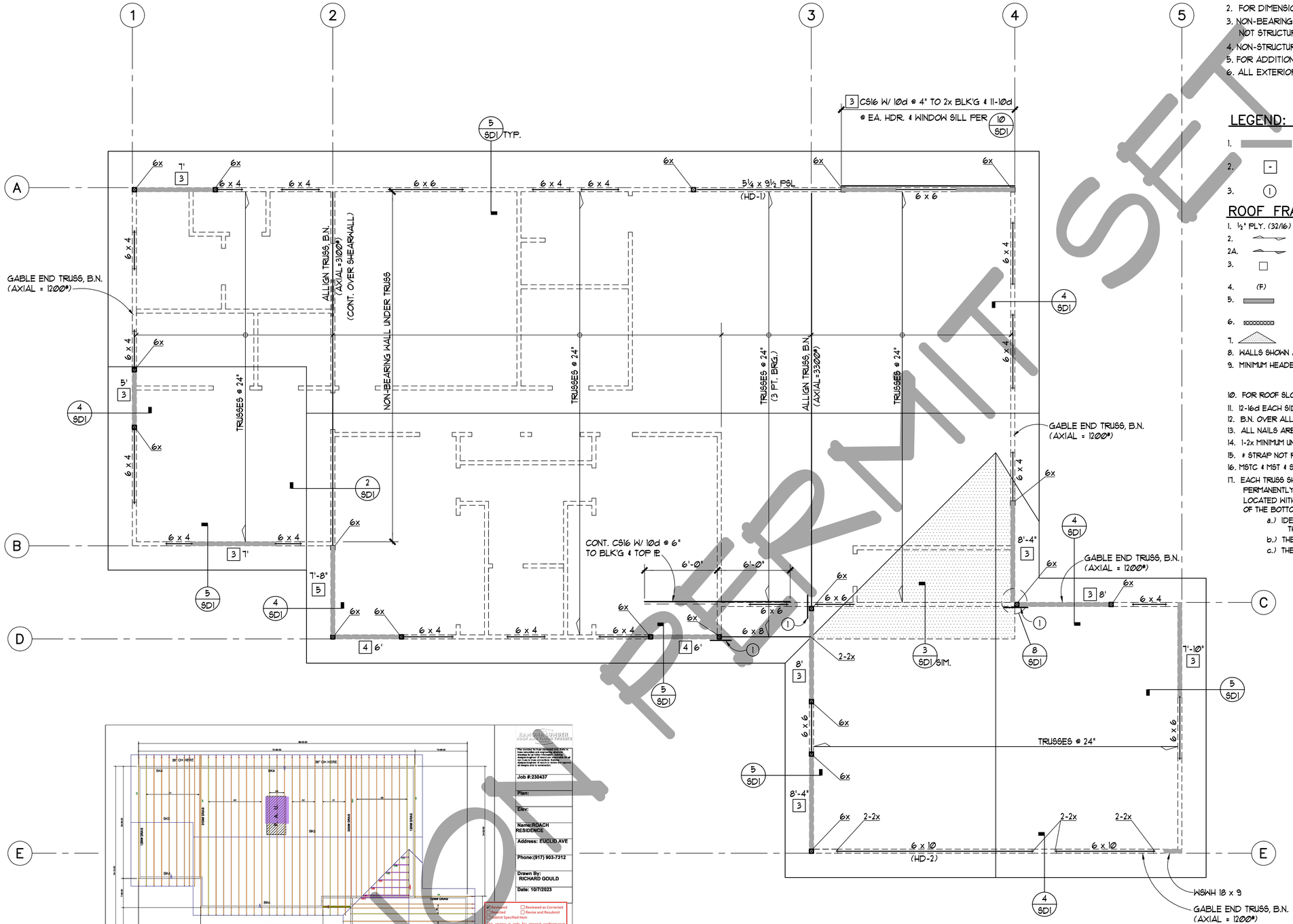

TRUSS LAYOUT

ROOF FRAMING PLAN

SCALE: ¼" = 1'-0"

NOTES:

1. SCALING OF STRUCTURAL DRAWINGS IS NOT ALLOWED.
2. FOR DIMENSIONS NOT SHOWN SEE ARCH. DRAWINGS.
3. NON-BEARING WALLS AND NON-SHEARWALLS ARE NOT STRUCTURAL WALLS.
4. NON-STRUCTURAL WALLS ARE NOT SHOWN FOR CLARITY.
5. FOR ADDITIONAL NOTES SEE SHEET S0.1
6. ALL EXTERIOR WALLS ARE 2 x 6 STUDS @ 16"

LEGEND:

1. INDICATES LIMITS OF SHEAR WALL, SEE SHEET S0.3 FOR THE SHEAR WALL SCHEDULE.
2. REFER TO SHEARWALL SCHEDULE, SHEET S0.3 FOR SIZE AND SPACING OF A.B.S
3. (1) INDICATES MSTI36 (H)

ROOF FRAMING DRAWING NOTES:

1. ½" PLY. (32/16) CDX B.N. 8d @ 6", EN 8d @ 6", FN. 8d @ 12" (U.O.N.)
2. INDICATES TRUSS DIRECTION @24" O.C. (U.O.N.)
2A. INDICATES N/A FRAMING DIRECTION (U.O.N.)
3. INDICATES SHEARWALLS AND SHEAR TRANSFER FOR WALLS, BELOW ROOF FRAMING. FOR SHEARWALL SCHED. SEE SHT. S03
4. (F) INDICATES FLUSH BEAMS.
5. INDICATES LIMITS OF SHEARWALL. FOR SHEARWALL SCHEDULE SEE SHT. S03
6. INDICATES 2x6 STUDS @ 16" O.C. (U.O.N.)
7. INDICATES DOUBLE FRAMED AREAS.
8. WALLS SHOWN ARE BELOW ROOF FRAMING & SHALL BE 2x4 @ 16" (U.O.N.)
9. MINIMUM HEADERS (TYP. U.O.N.) ARE: 6x6 TO 4'-0" SPAN; 6x8 TO 6'-0" SPAN; 6x10 TO 8'-0" SPAN
10. FOR ROOF SLOPES & ROOF OPENINGS, SEE ARCHITECTURAL DWG'S
11. 12-16d EACH SIDE OF TOP PLATE SPLICE (TYP. U.O.N.)
12. B.N. OVER ALL DRAGS & E.N. ALL VERTICAL POSTS AT SHEARWALLS (TYP.).
13. ALL NAILS ARE COMMON (U.O.N.)
14. 1-2x MINIMUM UNDER BEAMS & HEADERS TYPICAL (U.O.N.)
15. # STRAP NOT REQUIRED IF JOIST, TOP PLATE OR BEAM IS CONTINUOUS.
16. MSTC & MST & ST STRAPS (H) SHALL BE LOCATED ON TOP OF DOUBLE TOP PL'S
17. EACH TRUSS SHALL BE LEGIBLY BRANDED MARKED OR OTHERWISE HAVE PERMANENTLY AFFIXED THERETO THE FOLLOWING INFORMATION LOCATED WITHIN 2 FEET OF THE CENTER OF THE SPAN ON THE FACE OF THE BOTTOM CHORD.
    a.) IDENTITY OF THE COMPANY MANUFACTURING THE TRUSS. THE SPAN ON THE FACE OF THE BOTTOM CHORD.
    b.) THE DESIGN LOAD.
    c.) THE SPACING OF THE TRUSS.

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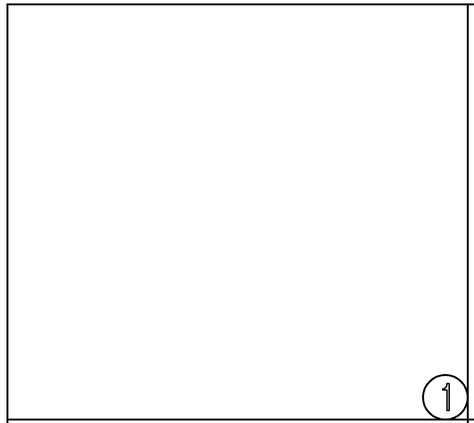

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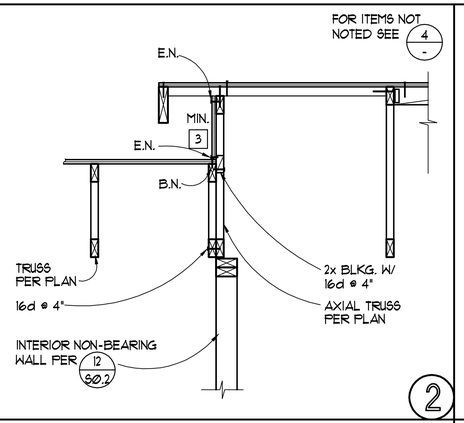

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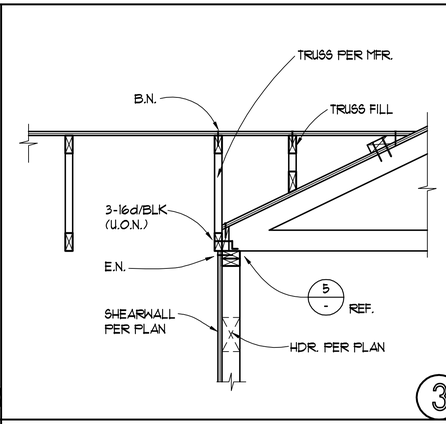

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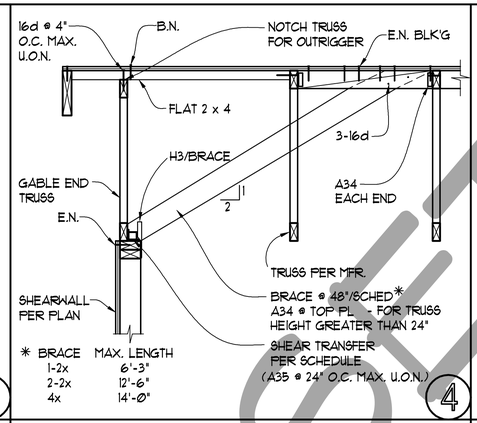

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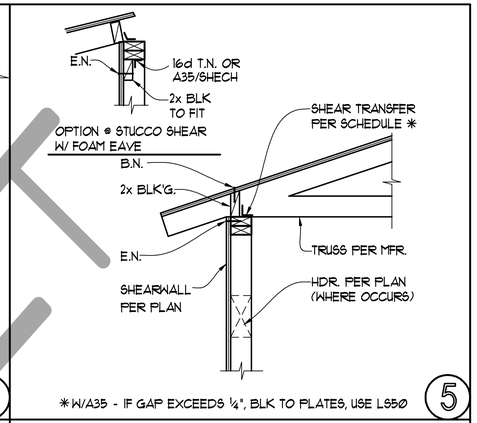

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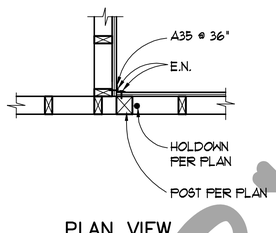
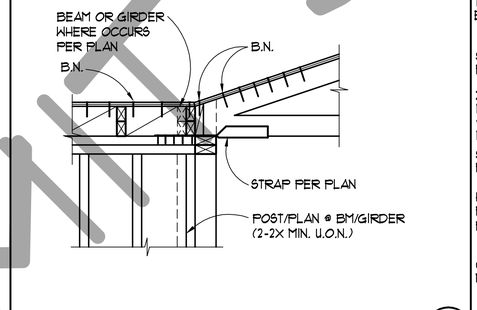


PLAN VIEW

8



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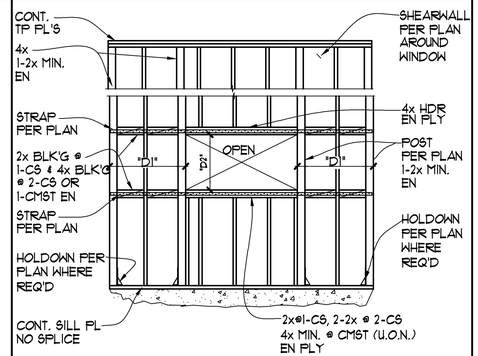
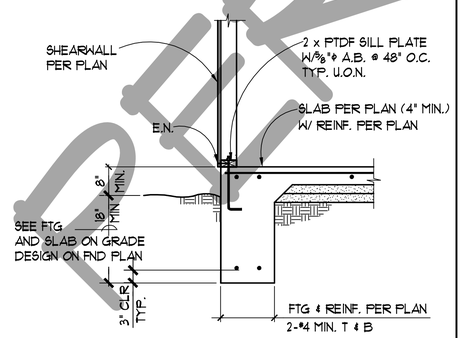


NOTE: IN ALL WALL PIER STRAP & BLOCK CONDITIONS: DIMENSION "D2" SHALL BE LESS THAN OR EQ. TO 2 TIMES DIMENSION "D1"

10

11

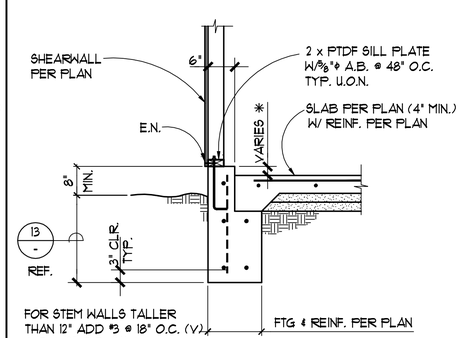
12



TYPICAL EXTERIOR PERIMETER FOOTING

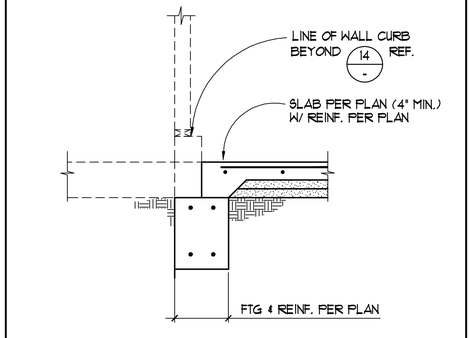
ALL SECTS @ ¾"=1'-0" TYP. U.O.N.

13



TYPICAL EXTERIOR GARAGE

14

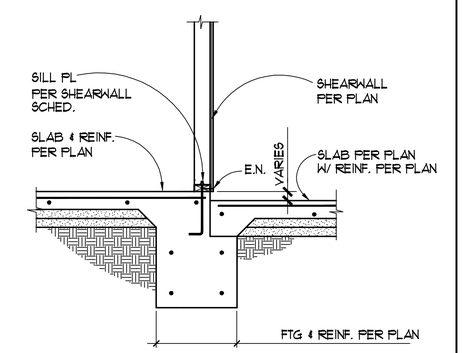


TYPICAL GARAGE ENTRY

15

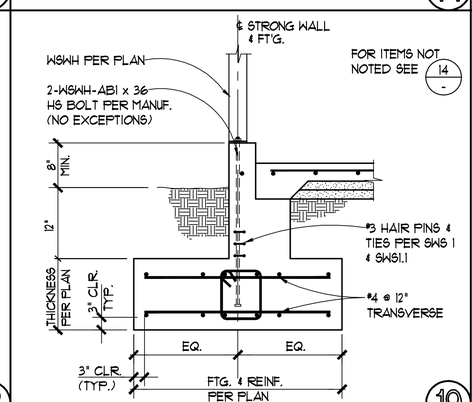
16

17



TYPICAL INTERIOR GARAGE

18



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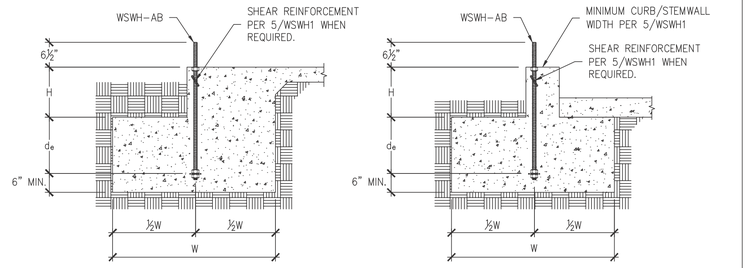
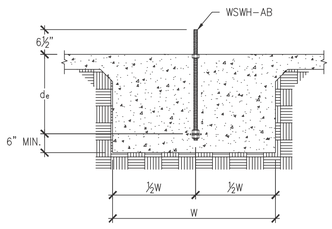


SLAB ON GRADE FOUNDATION

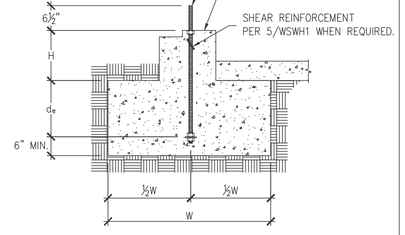
CURB OR STEMWALL FOUNDATION

NOTES :
1. SEE 2/WSWH1 FOR DIMENSIONS AND ADDITIONAL NOTES.
2. SEE 5/WSWH1 FOR SHEAR REINFORCEMENT WHEN REQUIRED.
3. MAXIMUM H = l_e–d_e. SEE 3/WSWH1 AND 4/WSWH1 FOR l_e.



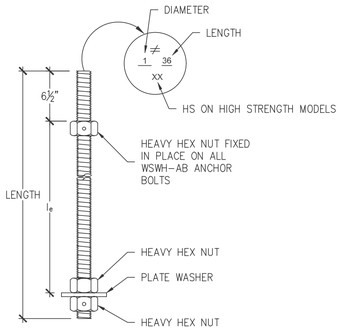
INTERIOR FOUNDATION

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.



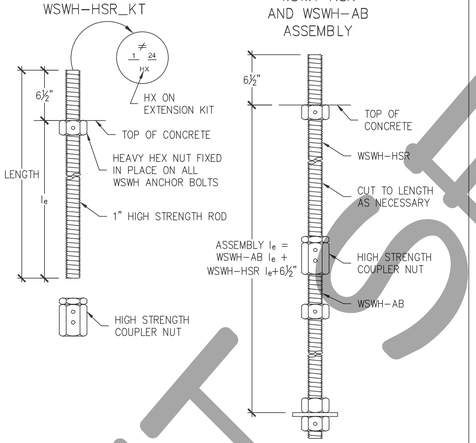
BRICK LEDGE FOUNDATION

STRONG–WALL® WSWH ANCHORAGE – TYPICAL SECTIONS | 1



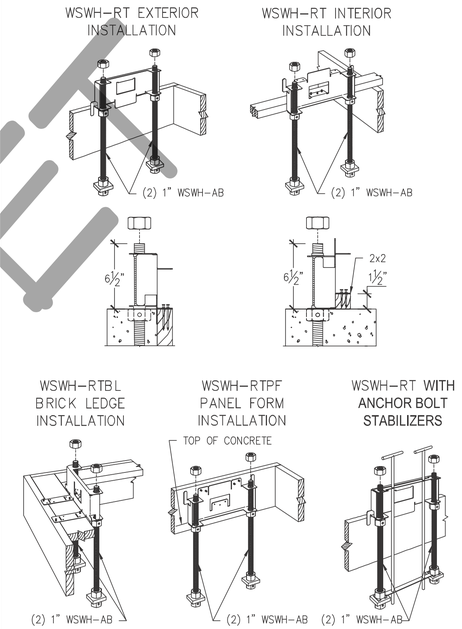
WSWH PANEL MODEL	MODEL NO.	DIAMETER	LENGTH	l_e
WSWH12, WSWH18 AND WSWH24	WSWH–AB1x24	1"	24"	15½"
	WSWH–AB1x24HS	1"	24"	15½"
	WSWH–AB1x30	1"	30"	21½"
	WSWH–AB1x30HS	1"	30"	21½"
	WSWH–AB1x36	1"	36"	27½"
	WSWH–AB1x36HS	1"	36"	27½"

WSWH ANCHOR BOLTS | 3

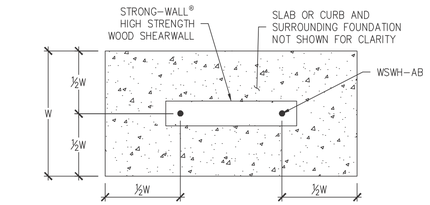


WSWH PANEL MODEL	MODEL NO.	DIAMETER	LENGTH	l_e
WSWH12, WSWH18 AND WSWH24	WSWH–HSR1x24KT	1"	24"	17½"
	WSWH–HSR1x36KT	1"	36"	29½"

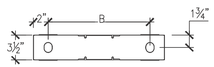
WSWH ANCHOR BOLT EXTENSION | 4



WSWH ANCHOR BOLT TEMPLATES | 6



FOUNDATION PLAN VIEW



WSWH PLAN VIEW
ANCHORAGE LAYOUT

ANCHOR BOLT LAYOUT	
STRONG–WALL® HIGH STRENGTH WOOD SHEARWALL MODEL NO.	DISTANCE FROM CENTER–TO–CENTER OF WSWH–AB, B (in)
WSWH12	8⅛
WSWH18	14
WSWH24	20

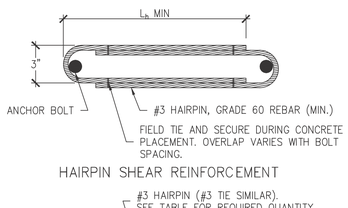
NOTES :
1. ANCHORAGE DESIGNS CONFORM TO ACI 318–11 APPENDIX D, ACI 318–14 CHAPTER 17 AND ACI 318–19 CHAPTER 17 WITH NO SUPPLEMENTARY REINFORCEMENT FOR CRACKED OR UNCRACKED CONCRETE AS NOTED.
2. ANCHOR STRENGTH INDICATES REQUIRED GRADE OF WSWH–AB ANCHOR BOLT. STANDARD (ASTM F1554 GRADE 36) OR HIGH STRENGTH (HS) (ASTM A193 GRADE B7).
3. SEISMIC INDICATES SEISMIC DESIGN CATEGORY C–F. DETACHED 1 AND 2 FAMILY DWELLINGS IN SDC C MAY USE WIND ANCHORAGE SOLUTIONS. SEISMIC ANCHORAGE DESIGNS CONFORM TO ACI 318–11 SECTION D.3.3.4.3, ACI 318–14 SECTION 17.2.3.4.3 AND ACI 318–19 SECTION 17.10.5.3.
4. WIND INCLUDES SEISMIC DESIGN CATEGORY A AND B AND DETACHED 1 AND 2 FAMILY DWELLINGS IN SDC C.
5. FOUNDATION DIMENSIONS ARE FOR ANCHORAGE ONLY. FOUNDATION DESIGN (SIZE AND REINFORCEMENT) BY OTHERS. THE DESIGNER MAY SPECIFY ALTERNATE EMBEDMENT, FOOTING SIZE OR ANCHOR BOLT.
6. REFER TO 1/WSWH1 FOR d_e.

WSWH ANCHORAGE SOLUTIONS FOR 2500 PSI CONCRETE					
DESIGN CRITERIA	CONCRETE CONDITION	ANCHOR STRENGTH	WSWH–AB1 ANCHOR BOLT		
			ASD ALLOWABLE UPLIFT (lbs)	W (in)	d_e (in)
SEISMIC	CRACKED	STANDARD	16,000	33	11
			17,100	35	12
		HIGH STRENGTH	34,100	52	18
			36,800	55	19
	UNCRACKED	STANDARD	15,700	28	10
			17,100	30	10
		HIGH STRENGTH	33,500	45	15
			36,800	48	16
WIND	CRACKED	STANDARD	6,200	16	6
			11,400	24	8
		HIGH STRENGTH	17,100	32	11
			21,100	36	12
			27,300	42	14
			34,100	48	16
			36,800	51	17
	UNCRACKED	STANDARD	6,400	14	6
			12,500	22	8
		HIGH STRENGTH	17,100	28	10
			22,900	33	11
			26,400	36	12
			34,200	42	14
			36,800	44	15

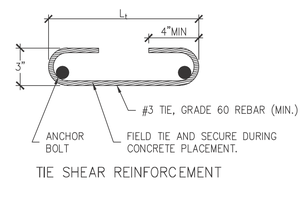
WSWH ANCHORAGE SOLUTIONS FOR 3000 PSI CONCRETE					
DESIGN CRITERIA	CONCRETE CONDITION	ANCHOR STRENGTH	WSWH–AB1 ANCHOR BOLT		
			ASD ALLOWABLE UPLIFT (lbs)	W (in)	d_e (in)
SEISMIC	CRACKED	STANDARD	16,000	31	11
			17,100	33	11
		HIGH STRENGTH	33,900	49	17
			36,800	52	18
	UNCRACKED	STANDARD	16,300	27	9
			17,100	28	10
		HIGH STRENGTH	34,000	43	15
			36,800	46	16
WIND	CRACKED	STANDARD	5,600	14	6
			10,200	21	7
		HIGH STRENGTH	17,100	30	10
			20,000	33	11
			26,500	39	13
			33,600	45	15
			36,800	48	16
	UNCRACKED	STANDARD	6,200	13	6
			12,800	21	7
		HIGH STRENGTH	17,100	26	9
			21,800	30	10
			28,900	36	12
			33,100	39	13
			36,800	42	14

WSWH ANCHORAGE SOLUTIONS FOR 4500 PSI CONCRETE					
DESIGN CRITERIA	CONCRETE CONDITION	ANCHOR STRENGTH	WSWH–AB1 ANCHOR BOLT		
			ASD ALLOWABLE UPLIFT (lbs)	W (in)	d_e (in)
SEISMIC	CRACKED	STANDARD	16,000	27	9
			17,100	29	10
		HIGH STRENGTH	34,700	44	15
			36,800	46	16
	UNCRACKED	STANDARD	15,700	23	8
			17,100	25	9
		HIGH STRENGTH	33,900	38	13
			36,800	40	14
WIND	CRACKED	STANDARD	6,800	14	6
			11,600	20	7
		HIGH STRENGTH	17,100	26	9
			21,400	30	10
			28,400	36	12
			32,400	39	13
			36,800	43	15
	UNCRACKED	STANDARD	6,800	12	6
			12,400	18	6
		HIGH STRENGTH	17,100	23	8
			22,800	27	9
			26,700	30	10
			30,700	33	11
			36,800	37	13

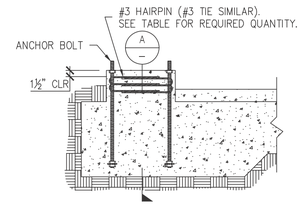
STRONG–WALL® HIGH STRENGTH WOOD SHEARWALL TENSION ANCHORAGE SCHEDULE 2,500, 3,000 AND 4,500 PSI | 2



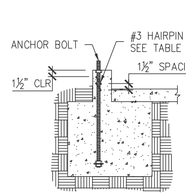
HAIRPIN SHEAR REINFORCEMENT



TIE SHEAR REINFORCEMENT



HAIRPIN INSTALLATION
(GARAGE CURB SHOWN. OTHER FOOTING TYPES SIMILAR.)



SECTION A

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

STRONG–WALL® HIGH STRENGTH WOOD SHEARWALL SHEAR ANCHORAGE						
MODEL	SEISMIC[3]			WIND[4]		
	L_t OR L_h (in.)	SHEAR REINFORCEMENT	MIN. CURB/ STEMWALL WIDTH (in.)	SHEAR REINFORCEMENT	MIN. CURB/ STEMWALL WIDTH (in.)	ASD ALLOWABLE SHEAR LOAD, V (lb.)
						UNCRACKED / CRACKED
WSWH12	10¼	(1) #3 TIE	6	SEE NOTE 7	6	1,080 / 770
WSWH18	15	(2) #3 HAIRPINS[5,6]	6	(1) #3 HAIRPIN	6	HAIRPIN REINF. ACHIEVES MAX. ALLOW SHEAR LOAD OF THE WSWH
WSWH24	19	(2) #3 HAIRPINS[5]	6	(2) #3 HAIRPINS[5]	6	

NOTES :
1. SHEAR ANCHORAGE DESIGNS CONFORM TO ACI 318–19, ACI 318–11 AND ACI 318–14 AND ASSUME MINIMUM 2,500 PSI CONCRETE.
2. SHEAR REINFORCEMENT IS NOT REQUIRED FOR INTERIOR FOUNDATION APPLICATIONS (PANEL INSTALLED AWAY FROM EDGE OF CONCRETE), OR BRACED WALL PANEL APPLICATIONS.
3. SEISMIC INDICATES SEISMIC DESIGN CATEGORY C THROUGH F. DETACHED 1 AND 2 FAMILY DWELLINGS IN SDC C MAY USE WIND ANCHORAGE SOLUTIONS. SEISMIC SHEAR REINFORCEMENT DESIGNS CONFORM TO ACI 318–19, SECTION 17.10.6.3, ACI 318–14, SECTION 17.2.3.5.3
4. WIND INCLUDES SEISMIC DESIGN CATEGORY A AND B.
5. ADDITIONAL TIES MAY BE REQUIRED AT GARAGE CURB OR STEMWALL INSTALLATIONS BELOW ANCHOR REINFORCEMENT PER DESIGNER.
6. USE (1) #3 HAIRPIN FOR WSWH18 WHEN STANDARD STRENGTH ANCHOR IS USED.
7. USE (1) #3 TIE FOR WSWH12 WHEN PANEL DESIGN SHEAR FORCE EXCEEDS TABULATED ANCHORAGE ALLOWABLE SHEAR LOAD.
8. #4 GRADE 40 SHEAR REINFORCEMENT MAY BE SUBSTITUTED FOR WSWH SHEAR ANCHORAGE SOLUTIONS.
9. CONCRETE EDGE DISTANCE FOR ANCHORS MUST COMPLY WITH ACI 318–19 SECTION 17.9.2, ACI 318–14 SECTION 17.7.2 AND ACI 318–11 SECTION D.8.2.
10. THE DESIGNER MAY SPECIFY ALTERNATE SHEAR ANCHORAGE.

STRONG–WALL® WSWH SHEAR ANCHORAGE SCHEDULE AND DETAILS | 5

NO.	DATE	REVISIONS
0	02-26-2021	FIRST RELEASE - 2018 IBC
1	03-16-2021	2021 IBC REVISIONS

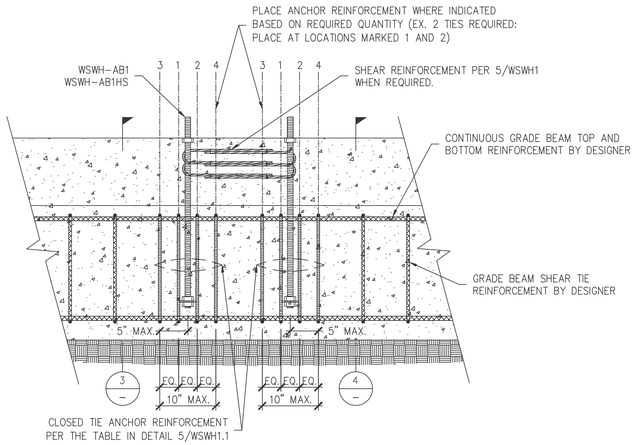
SIMPSON Strong-Tie, Co. Inc.
• 5956 W. Las Positas Blvd.
Pleasanton, CA 94588
• Tel: (800) 999-5099
• Website: www.strongtie.com

SIMPSON Strong-Tie THERE IS NO EQUAL

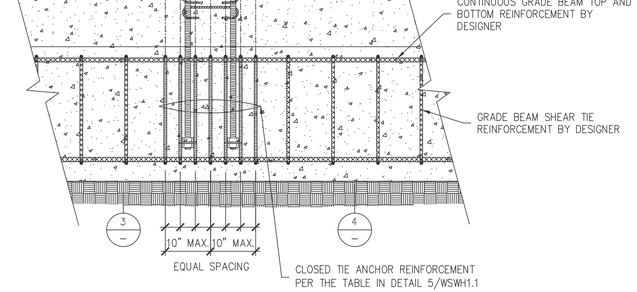
STRONG-WALL® WSWH
ANCHORAGE DETAILS
ENGINEERED DESIGNS

SIMPSON Strong-Tie THERE IS NO EQUAL

NAME	
DATE	03-26-2021
SCALE	N.T.S.
CHECKED	
SHEET	WSWH1
OF	SHEETS
JOB NO.	

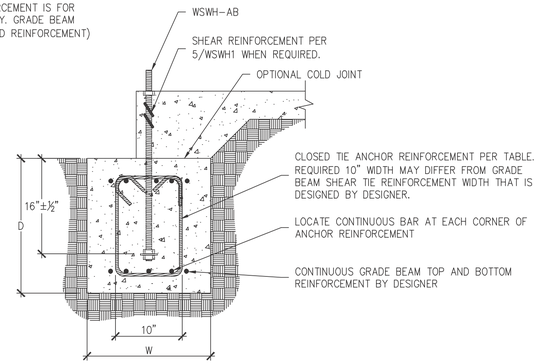


GRADE BEAM ELEVATION AT 18" AND 24" WALL MODELS | 1



GRADE BEAM ELEVATION AT 12" WALL MODEL | 2

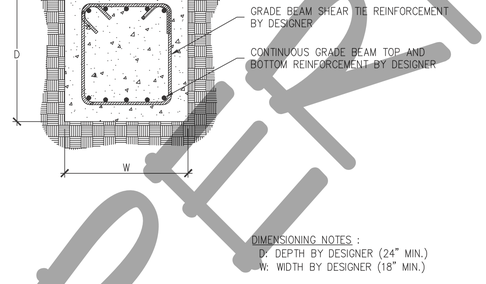
NOTES :
ANCHOR REINFORCEMENT IS FOR ANCHORAGE ONLY. GRADE BEAM DESIGN (SIZE AND REINFORCEMENT) BY DESIGNER.



ANCHOR REIN. NOTE :
MINIMUM DISTANCES FROM THE ANCHOR BOLT PLATE WASHER TO TOP AND BOTTOM OF CLOSED TIE REINFORCEMENT ARE 13" AND 5" RESPECTIVELY.

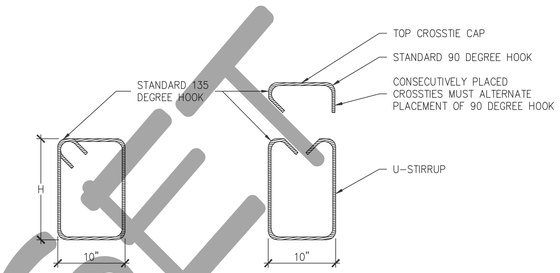
DIMENSIONING NOTES :
D: DEPTH BY DESIGNER (24" MIN.)
W: WIDTH BY DESIGNER (18" MIN.)

GRADE BEAM SECTION AT ANCHOR REINFORCEMENT | 3



DIMENSIONING NOTES :
D: DEPTH BY DESIGNER (24" MIN.)
W: WIDTH BY DESIGNER (18" MIN.)

GRADE BEAM SECTION AWAY FROM ANCHOR REINFORCEMENT | 4



DIMENSIONING NOTES :
H: HEIGHT OF ANCHOR REINFORCEMENT ASSEMBLY BY DESIGNER, SEE DETAIL 3/WSWH1.1 FOR MINIMUM REQUIREMENTS

CLOSED TIE ANCHOR REINFORCEMENT | 6

WSWH GRADE BEAM ANCHOR REINFORCEMENT

HIGH STRENGTH STRONG–WALL® WOOD SHEARWALL WIDTH (in.)	ANCHOR MODEL NO.	ANCHOR DIAMETER (in.)	ANCHOR REINFORCEMENT FOR WIND AND SEISMIC[3,8,9]		AMPLIFIED LRFD APPLIED DESIGN SEISMIC MOMENT (ft.–lbs.)[4,5,6,7]	
			STANDARD STRENGTH WSWH–AB1	HIGH STRENGTH (HS) WSWH–AB1HS	STANDARD STRENGTH WSWH–AB1	HIGH STRENGTH (HS) WSWH–AB1HS
12" MODEL	WSWH–AB1 WSWH–AB1HS	1	3–#4 CLOSED TIES PER (2)	7–#4 CLOSED TIES PER (2)	29,500	31,300
18" MODEL			2–#4 CLOSED TIES PER (1)	4–#4 CLOSED TIES PER (1)	48,000	72,900
24" MODEL					67,100	103,500

NOTE :
1. ANCHOR REINFORCEMENT CONFORMS TO ACI 318–19 SECTION 17.5.2.1, ACI 318–14 SECTION 17.4.2.9 AND ACI 318–11 SECTION D.5.2.9. FULL–SCALE TESTING WAS USED TO VALIDATE ANCHOR REINFORCEMENT CONFIGURATION AND PLACEMENT.
2. MINIMUM CONCRETE COMPRESSIVE STRENGTH, f'_c = 2500 psi.
3. CLOSED TIE ANCHOR REINFORCEMENT TO BE ASTM A615 GRADE 60 (MIN) #4 REBAR.
4. GRADE BEAM LONGITUDINAL AND TIE REINFORCEMENT SHALL BE SPECIFIED BY THE DESIGNER FOR FLEXURE AND SHEAR LOADING. DESIGN SHOULD CONSIDER PROJECT SPECIFIC DESIGN LOADS AND ALLOWABLE SOIL PRESSURE.
5. SIMPSON STRONG–TIE RECOMMENDS USING THE TABULATED MINIMUM AMPLIFIED LRFD APPLIED SEISMIC DESIGN MOMENT TO ENSURE GRADE BEAM DESIGN FLEXURE AND SHEAR STRENGTH IS ADEQUATE TO PREVENT PLASTIC HINGE FORMATION UNDER DEMANDS ASSOCIATED WITH ANCHORAGE FORCES CORRESPONDING TO ACI 318–19 SECTION 17.10.5.3, ACI 318–14 SECTION 17.2.3.4.3 AND ACI 318–11 SECTION D.3.3.4.3.
6. DESIGNER MAY USE REDUCED MOMENT DUE TO APPLIED WSWH LATERAL LOAD. MINIMUM MOMENT SHALL BE THE LESSER OF THE TABULATED MOMENT OR THE AMPLIFIED LRFD DESIGN MOMENT FOR SEISMIC: (ASD DESIGN DEMAND SHEAR/0.7) x Ω_o x WSWH WALL HEIGHT FOR GRADE BEAM DESIGN.
7. MINIMUM GRADE BEAM DESIGN MOMENT FOR WIND AND SEISMIC IN SEISMIC DESIGN CATEGORY A AND B AND DETACHED 1 AND 2 FAMILY DWELLINGS IN SDC C: (ASD DESIGN DEMAND SHEAR/0.6) x WSWH WALL HEIGHT.
8. CLOSED TIE MAY BE SINGLE PIECE HOOP OR TWO PIECE ASSEMBLY WITH A U–STIRRUP WITH STANDARD 135 DEGREE HOOKS AND A TOP CROSS TIE CAP. SEE DETAIL 6/WSWH1.1.
9. SEE DETAILS FOR GRADE BEAM ANCHOR REINFORCEMENT PLACEMENT, INSTALLATION AND SPACING REQUIREMENTS. CLOSED TIE ANCHOR REINFORCEMENT QUANTITY IS PER WALL FOR THE 12" WALL MODEL AND PER ANCHOR FOR THE 18" AND 24" MODELS.

WSWH–AB ANCHOR GRADE BEAM REINFORCEMENT AND DESIGN MOMENTS | 5

NO.	DATE	REVISIONS
0	10-12-2020	FIRST RELEASE - 2018 IBC
1	03-16-2021	2021 IBC REVISIONS

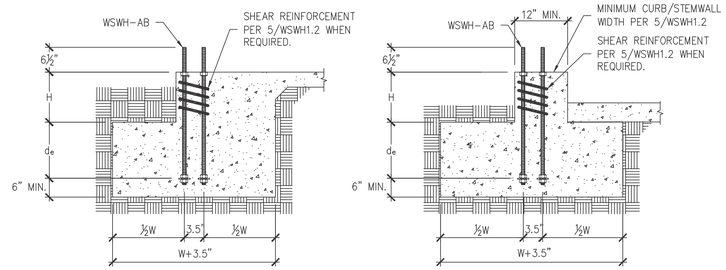
SIMPSON Strong-Tie, Co. Inc.
5956 W. Las Positas Blvd.
Pleasanton, CA 94588
Tel: (800) 999-5099
Website: www.strongtie.com

SIMPSON StrongTie THERE IS NO EQUAL

STRONG-WALL® WSWH
ALTERNATE ANCHORAGE DETAILS
ENGINEERED DESIGNS

SIMPSON StrongTie THERE IS NO EQUAL

NAME	
DATE	03-16-2021
SCALE	N.T.S.
CHECKED	
SHEET	WSWH1.1
OF	SHEETS
JOB NO.	

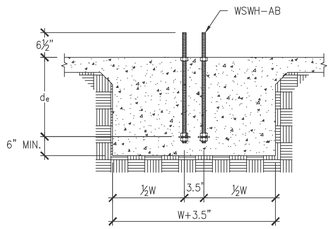


SLAB ON GRADE FOUNDATION

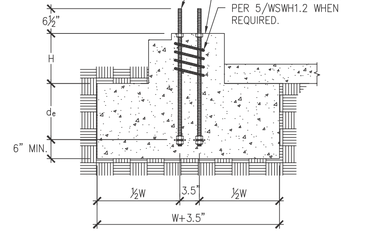
CURB OR STEMWALL FOUNDATION

NOTES :
1. SEE 2/WSWH1.2 FOR DIMENSIONS AND ADDITIONAL NOTES.
2. SEE 5/WSWH1.2 FOR SHEAR REINFORCEMENT WHEN REQUIRED.
3. MAXIMUM H = l_e–d_e. SEE 3/WSWH1.2 AND 4/WSWH1.2 FOR l_e.

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

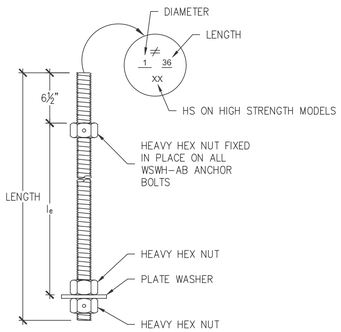


INTERIOR FOUNDATION



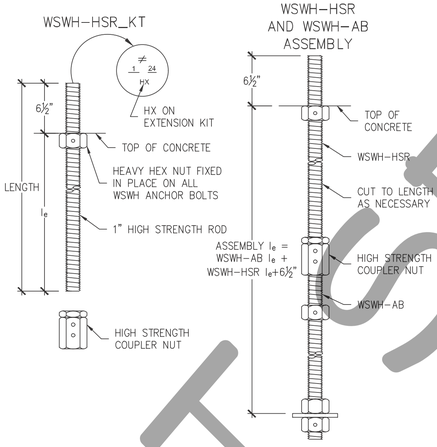
BRICK LEDGE FOUNDATION

STRONG–WALL® WSWH BACK–TO–BACK ANCHORAGE – TYPICAL SECTIONS | 1



WSWH PANEL MODEL	MODEL NO.	DIAMETER	LENGTH	l_e
WSWH12, WSWH18 AND WSWH24	WSWH–AB1x24	1"	24"	15½"
	WSWH–AB1x24HS	1"	24"	15½"
	WSWH–AB1x30	1"	30"	21½"
	WSWH–AB1x30HS	1"	30"	21½"
	WSWH–AB1x36	1"	36"	27½"
	WSWH–AB1x36HS	1"	36"	27½"

WSWH BACK–TO–BACK ANCHOR BOLTS | 3

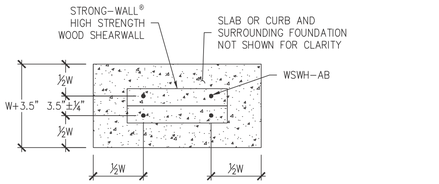


WSWH PANEL MODEL	MODEL NO.	DIAMETER	LENGTH	l_e
WSWH12, WSWH18 AND WSWH24	WSWH–HSR1x24KT	1"	24"	17½"
	WSWH–HSR1x36KT	1"	36"	29½"

WSWH BACK–TO–BACK ANCHOR BOLT EXTENSION | 4

TBD

WSWH BACK–TO–BACK ANCHOR BOLT TEMPLATES | 6



FOUNDATION PLAN VIEW

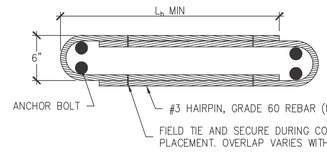
NOTES :
1. ANCHORAGE DESIGNS CONFORM TO ACI 318–11 APPENDIX D, ACI 318–14 CHAPTER 17 AND ACI 318–19 CHAPTER 17 WITH NO SUPPLEMENTARY REINFORCEMENT FOR CRACKED OR UNCRACKED CONCRETE AS NOTED.
2. ANCHOR STRENGTH INDICATES REQUIRED GRADE OF WSWH–AB ANCHOR BOLT. STANDARD (ASTM F1554 GRADE 36) OR HIGH STRENGTH (HS) (ASTM A193 GRADE B7).
3. SEISMIC INDICATES SEISMIC DESIGN CATEGORY C–F. DETACHED 1 AND 2 FAMILY DWELLINGS IN SDC C MAY USE WIND ANCHORAGE SOLUTIONS. SEISMIC ANCHORAGE DESIGNS CONFORM TO ACI 318–11 SECTION D.3.3.4.3, ACI 318–14 SECTION 17.2.3.4.3, AND ACI 318–19 SECTION 17.10.5.3.
4. WIND INCLUDES SEISMIC DESIGN CATEGORY A AND B AND DETACHED 1 AND 2 FAMILY DWELLINGS IN SDC C.
5. SOLUTIONS ASSUME THAT BACK–TO–BACK PANEL ARE IN CONTACT WITH EACH OTHER.
6. FOUNDATION DIMENSIONS ARE FOR ANCHORAGE ONLY. FOUNDATION DESIGN (SIZE AND REINFORCEMENT) BY OTHERS. THE DESIGNER MAY SPECIFY ALTERNATE EMBEDMENT, FOOTING SIZE OR ANCHOR BOLT.
7. REFER TO 1/WSWH1.2 FOR d_e.

WSWH BACK–TO–BACK ANCHORAGE SOLUTIONS FOR 2500 PSI CONCRETE					
DESIGN CRITERIA	CONCRETE CONDITION	ANCHOR STRENGTH	WSWH–AB1 ANCHOR BOLT		
			ASD ALLOWABLE UPLIFT (lbs)	W (in)	d_e (in)
SEISMIC	CRACKED	STANDARD	34,200	50	17
		HIGH STRENGTH	73,600	90	30
	UNCRACKED	STANDARD	34,200	44	15
		HIGH STRENGTH	73,600	71	24
WIND	CRACKED	STANDARD	8,800	18	6
			23,200	36	12
			34,200	46	16
		HIGH STRENGTH	44,200	54	18
			52,400	60	20
			61,100	66	22
			73,600	75	25
	UNCRACKED	STANDARD	11,100	18	6
			22,200	30	10
			34,200	40	14
		HIGH STRENGTH	45,800	48	16
			55,300	56	18
			65,500	60	20
			73,600	65	22

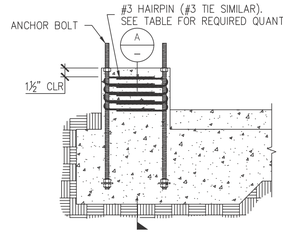
WSWH BACK–TO–BACK ANCHORAGE SOLUTIONS FOR 3000 PSI CONCRETE					
DESIGN CRITERIA	CONCRETE CONDITION	ANCHOR STRENGTH	WSWH–AB1 ANCHOR BOLT		
			ASD ALLOWABLE UPLIFT (lbs)	W (in)	d_e (in)
SEISMIC	CRACKED	STANDARD	34,200	48	16
		HIGH STRENGTH	73,600	76	26
	UNCRACKED	STANDARD	34,200	42	14
		HIGH STRENGTH	73,600	67	23
WIND	CRACKED	STANDARD	9,700	18	6
			19,506	30	10
			34,200	44	15
		HIGH STRENGTH	48,500	54	18
			57,400	60	20
			66,900	66	22
			73,600	70	24
	UNCRACKED	STANDARD	12,100	18	6
			24,400	30	10
			34,200	38	13
		HIGH STRENGTH	45,200	45	15
			60,600	54	18
			71,800	60	20
			73,600	61	21

WSWH BACK–TO–BACK ANCHORAGE SOLUTIONS FOR 4500 PSI CONCRETE					
DESIGN CRITERIA	CONCRETE CONDITION	ANCHOR STRENGTH	WSWH–AB1 ANCHOR BOLT		
			ASD ALLOWABLE UPLIFT (lbs)	W (in)	d_e (in)
SEISMIC	CRACKED	STANDARD	34,200	42	14
		HIGH STRENGTH	73,600	68	23
	UNCRACKED	STANDARD	34,200	37	13
		HIGH STRENGTH	73,600	59	20
WIND	CRACKED	STANDARD	11,900	18	6
			23,900	30	10
			34,200	39	13
		HIGH STRENGTH	39,700	42	14
			49,100	48	16
			64,700	57	19
			73,600	62	21
	UNCRACKED	STANDARD	14,800	18	6
			25,800	27	9
			34,200	34	12
		HIGH STRENGTH	44,100	39	13
			55,400	45	15
			67,700	51	17
			73,600	54	18

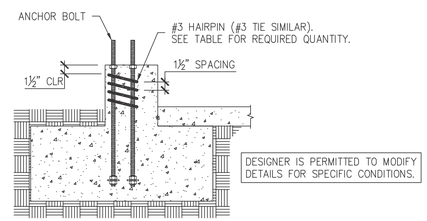
STRONG–WALL® WSWH BACK–TO–BACK TENSION ANCHORAGE SCHEDULE 2,500, 3,000 AND 4,500 PSI | 2



HAIRPIN SHEAR REINFORCEMENT



HAIRPIN INSTALLATION
(GARAGE CURB SHOWN. OTHER FOOTING TYPES SIMILAR.)



SECTION A

STRONG–WALL® WSWH BACK–TO–BACK SHEAR ANCHORAGE					
MODEL	SEISMIC[3]			WIND[4]	
	L_h (in.)	SHEAR REINFORCEMENT	MIN. CURB/ STEMWALL WIDTH (in.)	SHEAR REINFORCEMENT	MIN. CURB/ STEMWALL WIDTH (in.)
(2) WSWH12	10¼	(1) #3 HAIRPIN	12	(1) #3 HAIRPIN	12
(2) WSWH18	15	(3) #3 HAIRPINS[6,7]	12	(2) #3 HAIRPINS	12
(2) WSWH24	19	(4) #3 HAIRPINS[6,7]	12	(3) #3 HAIRPINS[6]	12

NOTES :
1. SHEAR ANCHORAGE DESIGNS CONFORM TO ACI 318–11, ACI 318–14 AND ACI 318–19 AND ASSUME MINIMUM 2,500 PSI CONCRETE.
2. SHEAR REINFORCEMENT IS NOT REQUIRED FOR INTERIOR FOUNDATION APPLICATIONS (PANEL INSTALLED AWAY FROM EDGE OF CONCRETE), OR BRACED WALL PANEL APPLICATIONS.
3. SEISMIC INDICATES SEISMIC DESIGN CATEGORY C THROUGH F. DETACHED 1 AND 2 FAMILY DWELLINGS IN SDC C MAY USE WIND ANCHORAGE SOLUTIONS. SEISMIC SHEAR REINFORCEMENT DESIGNS CONFORM TO ACI 318–19, SECTION 17.10.6.3 AND ACI 318–14, SECTION 17.2.3.5.3.
4. WIND INCLUDES SEISMIC DESIGN CATEGORY A AND B.
5. HIGH STRENGTH ANCHORAGE IS ASSUMED IN TABLE.
6. ADDITIONAL TIES MAY BE REQUIRED AT GARAGE CURB OR STEMWALL INSTALLATIONS BELOW ANCHOR REINFORCEMENT PER DESIGNER.
7. USE (2) #3 HAIRPINS FOR WSWH18 AND WSWH24 WHEN STANDARD STRENGTH ANCHORAGE IS USED.
8. #4 GRADE 40 SHEAR REINFORCEMENT MAY BE SUBSTITUTED FOR WSWH SHEAR ANCHORAGE SOLUTIONS.
9. CONCRETE EDGE DISTANCE FOR ANCHORS MUST COMPLY WITH ACI 318–19 SECTION 17.9.2, ACI 318–14 SECTION 17.7.2 AND ACI 318–11 SECTION D.8.2.
10. THE DESIGNER MAY SPECIFY ALTERNATE SHEAR ANCHORAGE.

STRONG–WALL® WSWH BACK–TO–BACK SHEAR ANCHORAGE SCHEDULE AND DETAILS | 5

NO.	DATE	REVISIONS
0	10-12-2020	FIRST RELEASE - 2018 IBC
1	03-16-2021	2021 IBC REVISIONS

SIMPSON Strong-Tie, Co. Inc.
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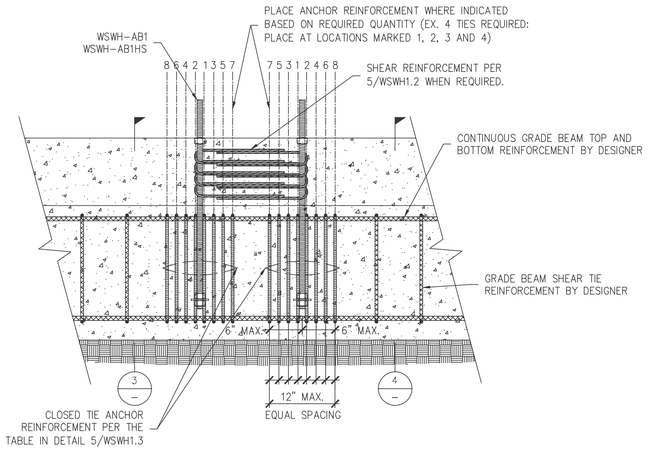
Pleasanton, CA 94588
• Tel: (800) 999-5099
• Website: www.strongtie.com

SIMPSON Strong-Tie THERE IS NO EQUAL

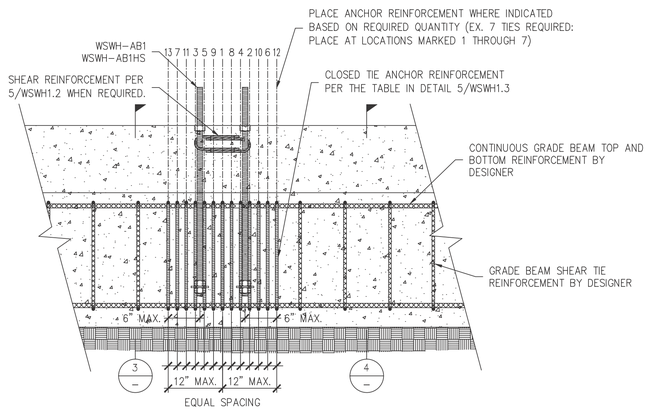
STRONG-WALL® WSWH
BACK-TO-BACK ANCHORAGE DETAILS ENGINEERED DESIGNS

SIMPSON Strong-Tie THERE IS NO EQUAL

NAME	
DATE	03-16-2021
SCALE	N.T.S.
CHECKED	
SHEET	WSWH1.2
OF	SHEETS
JOB NO.	

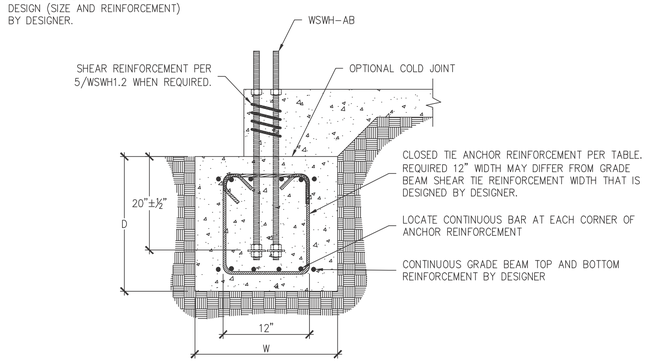


BACK–TO–BACK GRADE BEAM ELEVATION AT 18" AND 24" WALL MODELS | 1



BACK–TO–BACK GRADE BEAM ELEVATION AT 12" WALL MODEL | 2

NOTES :
ANCHOR REINFORCEMENT IS FOR ANCHORAGE ONLY. GRADE BEAM DESIGN (SIZE AND REINFORCEMENT) BY DESIGNER.



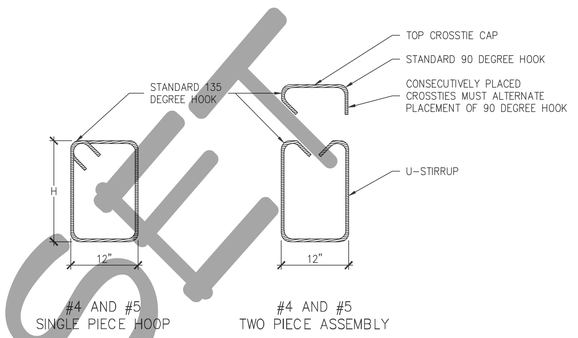
ANCHOR REIN. NOTE :
MINIMUM DISTANCES FROM THE ANCHOR BOLT PLATE WASHER TO TOP AND BOTTOM OF CLOSED TIE REINFORCEMENT ARE 17" AND 7" RESPECTIVELY.

DIMENSIONING NOTES :
D: DEPTH BY DESIGNER (30" MIN.)
W: WIDTH BY DESIGNER (24" MIN.)

BACK–TO–BACK GRADE BEAM SECTION AT ANCHOR REINFORCEMENT | 3

DIMENSIONING NOTES :
D: DEPTH BY DESIGNER (30" MIN.)
W: WIDTH BY DESIGNER (24" MIN.)

BACK–TO–BACK GRADE BEAM SECTION AWAY FROM ANCHOR REINFORCEMENT | 4



DIMENSIONING NOTES :
H: HEIGHT OF ANCHOR REINFORCEMENT ASSEMBLY BY DESIGNER, SEE DETAIL 3/WSWH1.3 FOR MINIMUM REQUIREMENTS

CLOSED TIE ANCHOR REINFORCEMENT | 6

WSWH BACK–TO–BACK GRADE BEAM ANCHOR REINFORCEMENT

HIGH STRENGTH STRONG–WALL® WOOD SHEARWALL WIDTH (in.)	ANCHOR MODEL NO.	ANCHOR DIAMETER (in.)	ANCHOR REINFORCEMENT FOR WIND AND SEISMIC[3,8,9]		AMPLIFIED LRFD APPLIED DESIGN SEISMIC MOMENT (ft.–lbs.)[4,5,6,7]	
			STANDARD STRENGTH WSWH–AB1	HIGH STRENGTH (HS) WSWH–AB1HS	STANDARD STRENGTH WSWH–AB1	HIGH STRENGTH (HS) WSWH–AB1HS
12" MODEL	WSWH–AB1 WSWH–AB1HS	1	7–#4 CLOSED TIES OR 5–#5 CLOSED TIES PER 2/–	13–#4 CLOSED TIES OR 11–#5 CLOSED TIES PER 2/–	58,900	62,600
18" MODEL			4–#4 CLOSED TIES OR 3–#5 CLOSED TIES PER 1/–	8–#4 CLOSED TIES OR 6–#5 CLOSED TIES PER 1/–	96,100	145,700
24" MODEL					134,200	207,000

NOTE :
1. ANCHOR REINFORCEMENT CONFORMS TO ACI 318–19 SECTION 17.5.2.1, ACI 318–14 SECTION 17.4.2.9 AND ACI 318–11 SECTION D.5.2.9. FULL–SCALE TESTING WAS USED TO VALIDATE ANCHOR REINFORCEMENT CONFIGURATION AND PLACEMENT.
2. MINIMUM CONCRETE COMPRESSIVE STRENGTH, f'_c = 2500 psi.
3. CLOSED TIE ANCHOR REINFORCEMENT TO BE ASTM A615 GRADE 60 (MIN.) #4 REBAR.
4. GRADE BEAM LONGITUDINAL AND TIE REINFORCEMENT SHALL BE SPECIFIED BY THE DESIGNER FOR FLEXURE AND SHEAR LOADING. DESIGN SHOULD CONSIDER PROJECT SPECIFIC DESIGN LOADS AND ALLOWABLE SOIL PRESSURE.
5. SIMPSON STRONG–TIE RECOMMENDS USING THE TABULATED MINIMUM AMPLIFIED LRFD APPLIED SEISMIC DESIGN MOMENT TO ENSURE GRADE BEAM DESIGN FLEXURE AND SHEAR STRENGTH IS ADEQUATE TO PREVENT PLASTIC HINGE FORMATION UNDER DEMANDS ASSOCIATED WITH ANCHORAGE FORCES CORRESPONDING TO ACI 318–19 SECTION 17.10.5.3, ACI 318–14 SECTION 17.2.3.4.3 AND ACI 318–11 SECTION D.3.3.4.3.
6. DESIGNER MAY USE REDUCED MOMENT DUE TO APPLIED WSWH LATERAL LOAD. MINIMUM MOMENT SHALL BE THE LESSER OF THE TABULATED MOMENT OR THE AMPLIFIED LRFD DESIGN MOMENT FOR SEISMIC: (ASD DESIGN DEMAND SHEAR/0.7) x Ω_o x WSWH WALL HEIGHT FOR GRADE BEAM DESIGN.
7. MINIMUM GRADE BEAM DESIGN MOMENT FOR WIND AND SEISMIC IN SEISMIC DESIGN CATEGORY A AND B AND DETACHED 1 AND 2 FAMILY DWELLINGS IN SDC C: (ASD DESIGN DEMAND SHEAR/0.6) x WSWH WALL HEIGHT.
8. CLOSED TIE MAY BE SINGLE PIECE HOOP OR TWO PIECE ASSEMBLY WITH A U–STIRRUP WITH STANDARD 135 DEGREE HOOKS AND A TOP CROSS TIE CAP. SEE DETAIL 6/WSWH1.3.
9. SEE DETAILS FOR GRADE BEAM ANCHOR REINFORCEMENT PLACEMENT, INSTALLATION AND SPACING REQUIREMENTS. CLOSED TIE ANCHOR REINFORCEMENT QUANTITY IS PER WALL FOR THE 12" WALL MODEL, AND PER ANCHOR FOR THE 18" AND 24" MODELS.

WSWH–AB ANCHOR BACK–TO–BACK GRADE BEAM REINFORCEMENT AND DESIGN MOMENTS | 5

NO.	DATE	REVISIONS
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STRONG-WALL® WSWH
BACK-TO-BACK ALTERNATE ANCHORAGE DETAILS
ENGINEERED DESIGNS

SIMPSON StrongTie THERE IS NO EQUAL

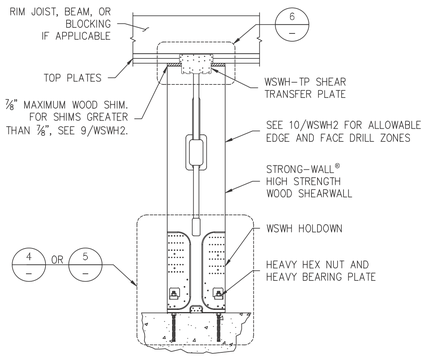
NAME	
DATE	03-16-2021
SCALE	N.T.S.
CHECKED	
SHEET	WSWH1.3
OF	SHEETS
JOB NO.	

STRONG-WALL® HIGH STRENGTH WOOD SHEARWALL MODELS

MODEL NO.	W (in.)	H (in.)	ANCHOR BOLTS QUANTITY	ANCHOR BOLTS DIA. (in.)	TOTAL WALL WEIGHT (lb.)
WSWH12x7	12	84	2	1	105
WSWH18x7	18	84	2	1	155
WSWH12x8	12	96	2	1	120
WSWH18x8	18	96	2	1	175
WSWH24x8	24	96	2	1	225
WSWH12x9	12	108	2	1	130
WSWH18x9	18	108	2	1	195
WSWH24x9	24	108	2	1	250
WSWH12x10	12	120	2	1	145
WSWH18x10	18	120	2	1	210
WSWH24x10	24	120	2	1	275
WSWH12x12	12	144	2	1	165
WSWH18x12	18	144	2	1	245
WSWH24x12	24	144	2	1	325
WSWH18x14	18	168	2	1	285
WSWH24x14	24	168	2	1	370
WSWH24x16	24	192	2	1	420
WSWH18x20	18	240	2	1	390
WSWH24x20	24	240	2	1	520

NOTES :
1. FOR HEIGHTS NOT LISTED, ORDER THE NEXT TALLEST PANEL AND TRIM TO FIT. MINIMUM TRIMMED HEIGHT FOR ALL PANELS IS 74½".
2. ALL PANELS COME WITH PRE-ATTACHED HOLDOWNS, TWO HEAVY HEX NUTS, TWO HEAVY BEARING PLATES, ONE WSWH-TP TOP CONNECTION PLATE WITH REQUIRED FASTENERS AND INSTALLATION INSTRUCTIONS.
3. ALL PANELS ARE 3½" THICK.

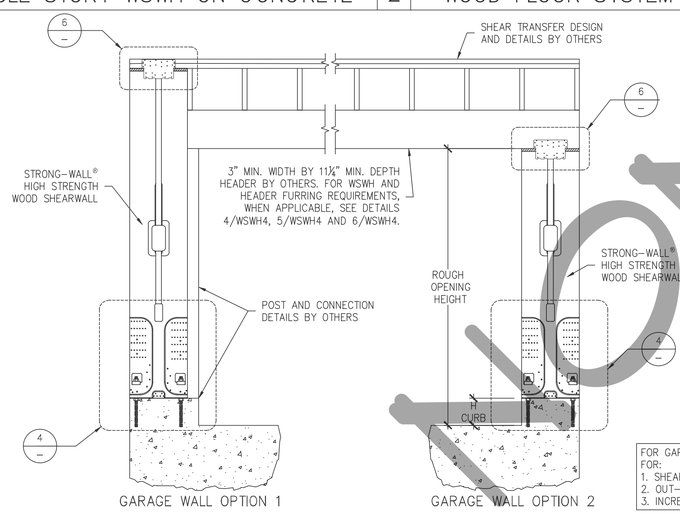
STRONG-WALL® WSWH MODELS | 1



DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

ENSURE CONCRETE IS LEVEL AND SMOOTH BENEATH PANEL. GRIND OR FILL AS NECESSARY.

SINGLE STORY WSWH ON CONCRETE | 2



GARAGE WALL OPTION 1 | GARAGE WALL OPTION 2

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

WHEN WSWH-PS STRAPS OMITTED, ALLOWABLE SHEAR VALUES FOR STANDARD PANEL APPLY.

GARAGE HEADER ROUGH OPENING HEIGHT

MODEL NO.	TRIMMED PANEL HEIGHT	H CURB	ROUGH OPENING HEIGHT
WSWH12x7 WSWH18x7 WSWH24x7	78"	5½"	6'-11½"
		6"	7'-0"
WSWH12x8 WSWH18x8 WSWH24x8	85½"	0"	7'-1½"
		5½"	8'-2¾"
	93¼"	6"	8'-3¾"

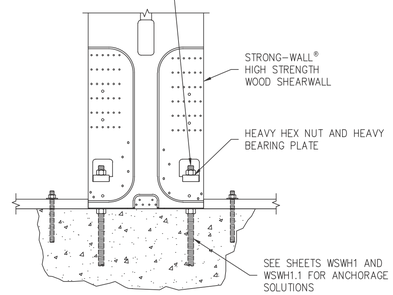
NOTES :
1. IF REQUIRED ROUGH OPENING HEIGHT EXCEEDS TABLE VALUE, SPECIFY NEXT TALLER PANEL AND TRIM AS NECESSARY. THE STRONG-WALL® HIGH STRENGTH WOOD SHEARWALL MAY BE TRIMMED TO A MINIMUM HEIGHT OF 74½".
2. FURRING DOWN GARAGE HEADER MAY BE REQUIRED FOR CORRECT ROUGH OPENING HEIGHT.

FOR GARAGE WALL OPTION 2, DESIGNER SHALL DESIGN AND DETAIL FOR:
1. SHEAR TRANSFER
2. OUT-OF-PLANE LOADING EFFECT
3. INCREASED OVERTURNING AND DRIFT DUE TO ADDITIONAL HEIGHT

ALTERNATE WSWH GARAGE FRONT OPTIONS | 3

PLACE STRONG-WALL® HIGH STRENGTH WOOD SHEARWALL OVER THE ANCHOR BOLTS AND SECURE WITH HEAVY BEARING PLATES AND HEAVY HEX NUTS (PROVIDED). DO NOT USE AN IMPACT WRENCH. USE 1⅛" WRENCH FOR 1" NUT. TIGHTEN ANCHOR NUTS FINGER TIGHT + ½" TURN.

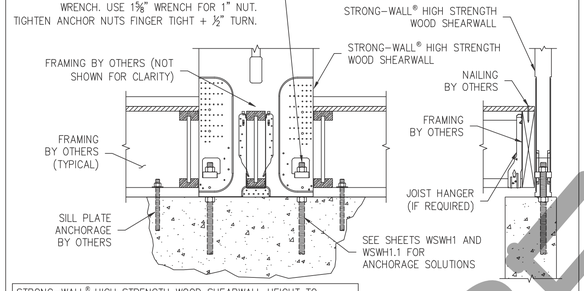
DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.



STANDARD INSTALLATION BASE CONNECTION | 4

PLACE STRONG-WALL® HIGH STRENGTH WOOD SHEARWALL OVER THE ANCHOR BOLTS AND SECURE WITH HEAVY BEARING PLATES AND HEAVY HEX NUTS (PROVIDED). DO NOT USE AN IMPACT WRENCH. USE 1⅛" WRENCH FOR 1" NUT. TIGHTEN ANCHOR NUTS FINGER TIGHT + ½" TURN.

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.



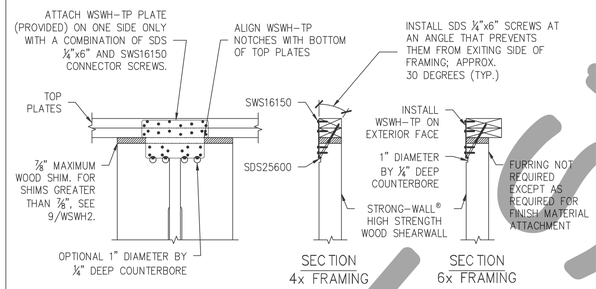
SECTION

STRONG-WALL® HIGH STRENGTH WOOD SHEARWALL HEIGHT TO INCLUDE THE DEPTH OF THE FLOOR SYSTEM AND SHALL BE INSTALLED DIRECTLY ON THE FOUNDATION. SPECIFY PANEL HEIGHT FROM TOP OF FOUNDATION TO UNDERSIDE OF TOP PLATES OR BEAM.

WOOD FLOOR SYSTEM BASE CONNECTION | 5

MODEL NO.	FASTENER QUANTITY SWS16150	FASTENER QUANTITY SDS25600
WSWH-TP12	14	2
WSWH-TP18	26	4
WSWH-TP24	46	8

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

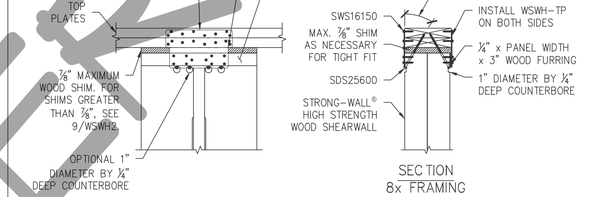


SECTION 4x FRAMING | SECTION 6x FRAMING

TOP CONNECTION | 6

MODEL NO.	FASTENER QUANTITY SWS16150	FASTENER QUANTITY SDS25600
WSWH-TP12	28	4
WSWH-TP18	52	8
WSWH-TP24	92	16

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.



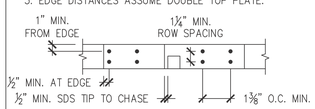
SECTION 8x FRAMING

BACK-TO-BACK TOP CONNECTION | 7

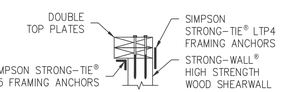
QTY. OF SDS¼"x6" SCREWS REQ'D.	
WSWH12	4
WSWH18	8
WSWH24	16

EDGE DISTANCE FOR SCREWS SLOPE	A (in.)	B (in.)
0:12-4:12	2	3
5:12-8:12	1½	4½
9:12-12:12	1½	5½

NOTES :
1. MAINTAIN END DISTANCES TO PREVENT SCREWS FROM PENETRATING THROUGH THE OUTER EDGES.
2. INSTALL SCREWS PERPENDICULAR TO THE TOP PLATE.
3. EDGE DISTANCES ASSUME DOUBLE TOP PLATE.

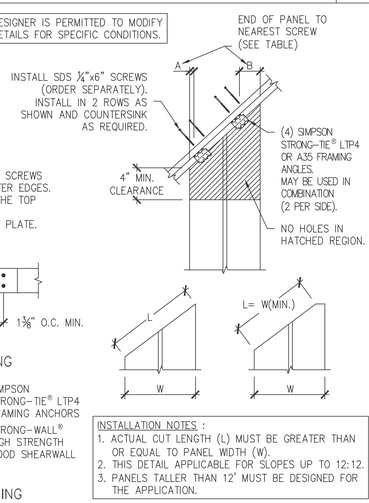


PLAN VIEW
SDS SCREW SPACING



SECTION VIEW
2X6 OR WIDER FRAMING

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

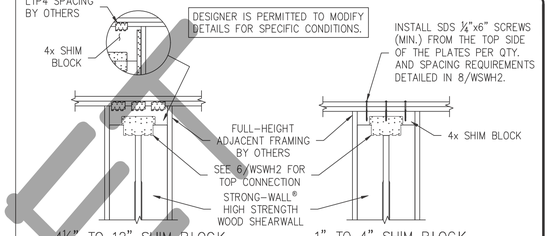


INSTALLATION NOTES :
1. ACTUAL CUT LENGTH (L) MUST BE GREATER THAN OR EQUAL TO PANEL WIDTH (W).
2. THIS DETAIL APPLICABLE FOR SLOPES UP TO 12:12.
3. PANELS TALLER THAN 12' MUST BE DESIGNED FOR THE APPLICATION.

RAKE WALL | 8

LTP4 SPACING BY OTHERS

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

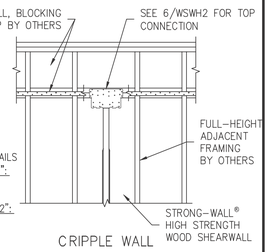


DESIGNER SHALL DESIGN AND DETAIL FOR:
1. SHEAR TRANSFER
2. OUT-OF-PLANE LOADING EFFECT
3. INCREASED OVERTURNING AND DRIFT DUE TO ADDITIONAL HEIGHT

FOR 8" TO 12" BLOCK DEPTHS:
ATTACH SIMPSON STRONG-TIE® CS16 STRAPS AT EDGE OF WSWH PANEL (EACH SIDE) USING 10dx1½" NAILS

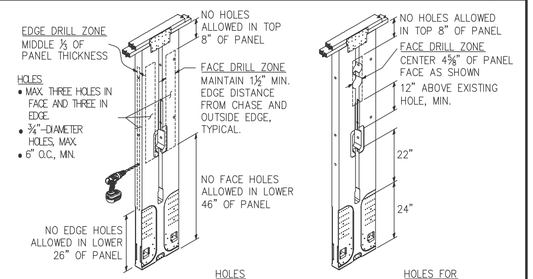
SHIM BLOCK HEIGHTS GREATER THAN 8" AND UP TO 10":
- 8 NAILS INTO BLOCK
- 8 NAILS INTO WSWH PANEL

SHIM BLOCK HEIGHTS GREATER THAN 10" AND UP TO 12":
- 10 NAILS INTO BLOCK
- 10 NAILS INTO WSWH PANEL



CRIPPLE WALL

TOP OF WALL HEIGHT ADJUSTMENTS | 9



HOLES
- 4⅜"-DIA. HOLES, MAX.
- MAX. OF TWO 4⅜"-DIA. HOLES OR ONE 4¾"x12" HOLE.
- NO MINIMUM ON-CENTER SPACING REQUIRED.

HOLES FOR WSWH24X7 PANEL ONLY
- MAX. OF ONE 4⅜"x6" HOLE
- 8" FROM TOP OF PANEL, MIN.

ALLOWABLE SMALL HOLES FACE AND EDGE DRILL ZONES

ALLOWABLE LARGE HOLES IN ADDITION TO ALLOWABLE SMALL HOLES

TRIM ZONE AND ALLOWABLE HOLES | 10

1. STRONG-WALL® HIGH STRENGTH WOOD SHEARWALL IS MANUFACTURED AND TRADEMARKED BY "SIMPSON STRONG-TIE COMPANY INC." HOME OFFICE: 5956 W. LAS POSITAS BLVD., PLEASANTON, CA 94588 TEL: (800) 999-5099, FAX: (925) 847-1597. "SIMPSON STRONG-TIE COMPANY INC." IS AN ISO 9001-2008 REGISTERED COMPANY.
2. USE OF THIS PRODUCT IS SUBJECT TO THE APPROVAL OF THE LOCAL BUILDING DEPARTMENT.
3. THIS PRODUCT IS PART OF THE OVERALL LATERAL FORCE RESISTING SYSTEM OF THE STRUCTURE. DESIGN OF THE BUILDING'S LATERAL FORCE RESISTING SYSTEM, INCLUDING THE LOAD PATH TO TRANSFER LATERAL FORCES FROM THE STRUCTURE TO THE GROUND, IS THE RESPONSIBILITY OF THE DESIGNER.
4. ENGINEER OF RECORD IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, CONDITIONS, ELEVATIONS, ETC. PRIOR TO INSTALLATION OF ANY COMPONENTS FOR THE STRONG-WALL SB SYSTEM. IF ANY DISCREPANCIES ARE FOUND, THEY SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGNER FOR CLARIFICATION PRIOR TO CONSTRUCTION.
6. INSTALLATION OF PRODUCT SHALL BE DONE IN CONFORMANCE TO THESE DRAWINGS. THE PERFORMANCE OF MODIFIED PRODUCTS OR ALTERED INSTALLATION PROCEDURES ARE THE SOLE RESPONSIBILITY OF THE DESIGNER.
7. SIMPSON STRONG-TIE COMPANY INC. RESERVES THE RIGHT TO CHANGE SPECIFICATIONS, DESIGNS, AND MODELS WITHOUT NOTICE OR LIABILITY FOR SUCH CHANGES.
8. ALL HARDWARE CALLED OUT IS SIMPSON STRONG-TIE.
9. SEE ICC-ES ESR-2652 OR CITY OF LOS ANGELES RR25730 AS APPLICABLE FOR ADDITIONAL INFORMATION.

NOTES | 11

NO.	DATE	REVISIONS
0	11-20-2020	FIRST RELEASE - 2018 IBC
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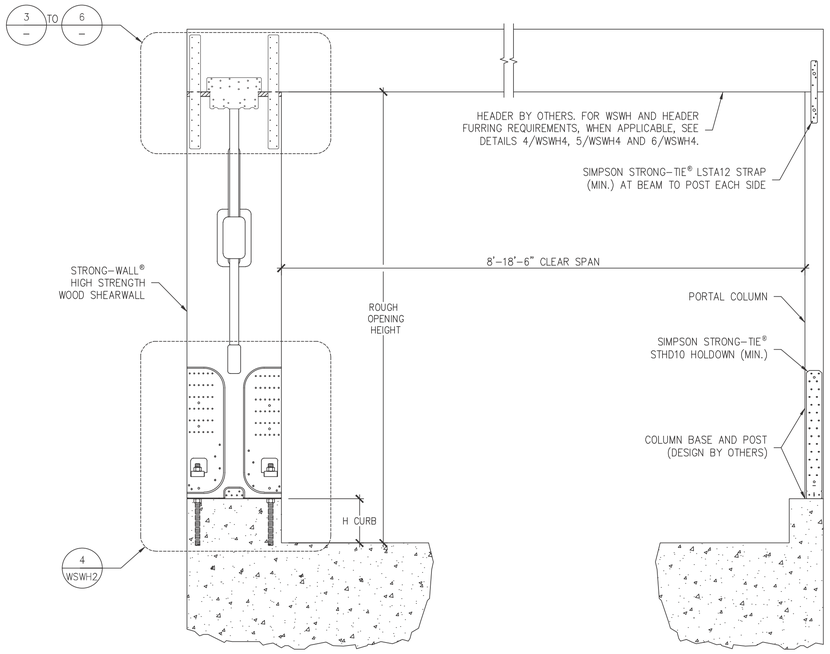
NAME	
DATE	03-16-2021
SCALE	N.T.S.
CHECKED	
SHEET	WSWH2
OF	SHEETS
JOB NO.	



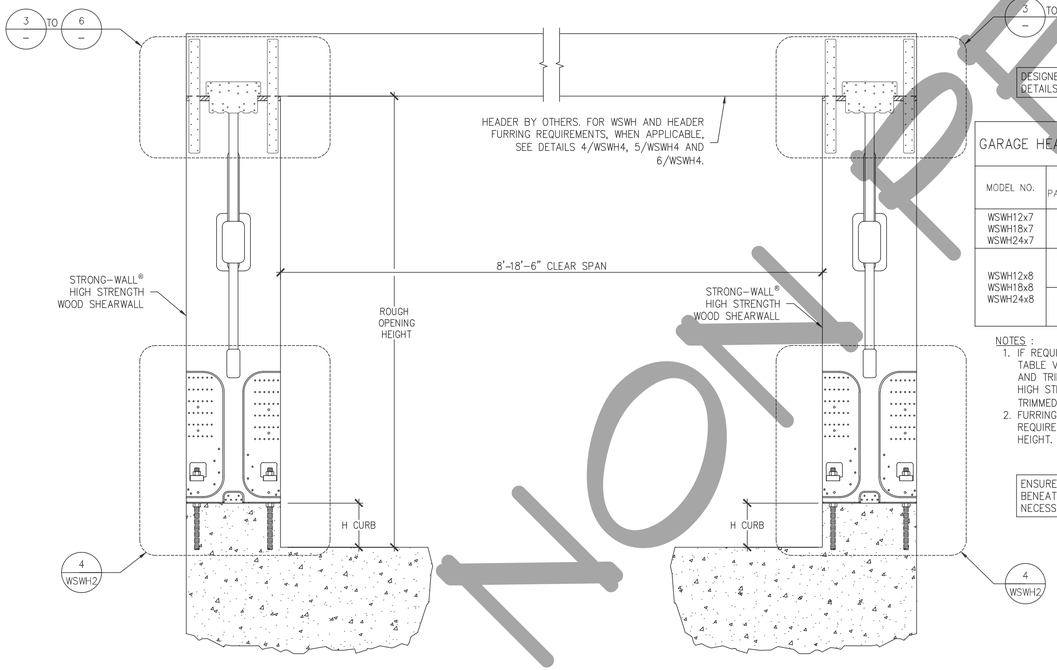
GARAGE HEADER ROUGH OPENING HEIGHT			
MODEL NO.	TRIMMED PANEL HEIGHT	H CURB	ROUGH OPENING HEIGHT
WSWH12x7 WSWH18x7 WSWH24x7	78"	5½"	6'-11½"
		6"	7'-0"
WSWH12x8 WSWH18x8 WSWH24x8	85½"	0"	7'-1½"
	93¼"	5½"	8'-2¾"
		6"	8'-3¼"

NOTES :
1. IF REQUIRED ROUGH OPENING HEIGHT EXCEEDS TABLE VALUE, SPECIFY NEXT TALLER PANEL AND TRIM AS NECESSARY. THE STRONG-WALL® HIGH STRENGTH WOOD SHEARWALL MAY BE TRIMMED TO A MINIMUM HEIGHT OF 74½".
2. FURRING DOWN GARAGE HEADER MAY BE REQUIRED FOR CORRECT ROUGH OPENING HEIGHT.

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

ENSURE CONCRETE IS LEVEL AND SMOOTH BENEATH PANEL. GRIND OR FILL AS NECESSARY.

STRONG-WALL® HIGH STRENGTH WOOD SHEARWALL SINGLE PORTAL ASSEMBLY 1



DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

GARAGE HEADER ROUGH OPENING HEIGHT			
MODEL NO.	TRIMMED PANEL HEIGHT	H CURB	ROUGH OPENING HEIGHT
WSWH12x7 WSWH18x7 WSWH24x7	78"	5½"	6'-11½"
		6"	7'-0"
WSWH12x8 WSWH18x8 WSWH24x8	85½"	0"	7'-1½"
	93¼"	5½"	8'-2¾"
		6"	8'-3¼"

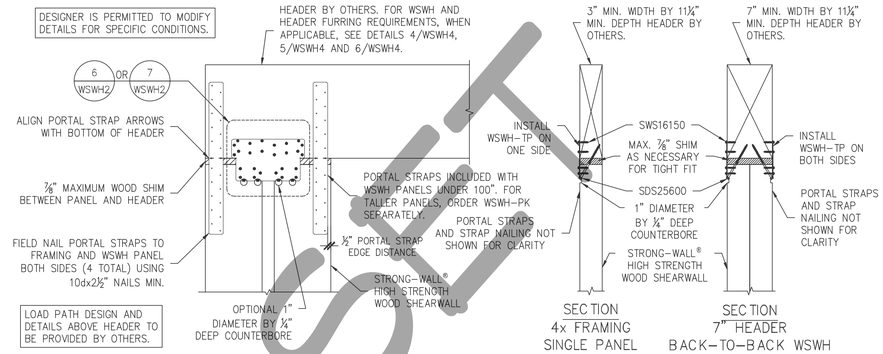
NOTES :
1. IF REQUIRED ROUGH OPENING HEIGHT EXCEEDS TABLE VALUE, SPECIFY NEXT TALLER PANEL AND TRIM AS NECESSARY. THE STRONG-WALL® HIGH STRENGTH WOOD SHEARWALL MAY BE TRIMMED TO A MINIMUM HEIGHT OF 74½".
2. FURRING DOWN GARAGE HEADER MAY BE REQUIRED FOR CORRECT ROUGH OPENING HEIGHT.

ENSURE CONCRETE IS LEVEL AND SMOOTH BENEATH PANEL. GRIND OR FILL AS NECESSARY.

STRONG-WALL® HIGH STRENGTH WOOD SHEARWALL DOUBLE PORTAL ASSEMBLY 2

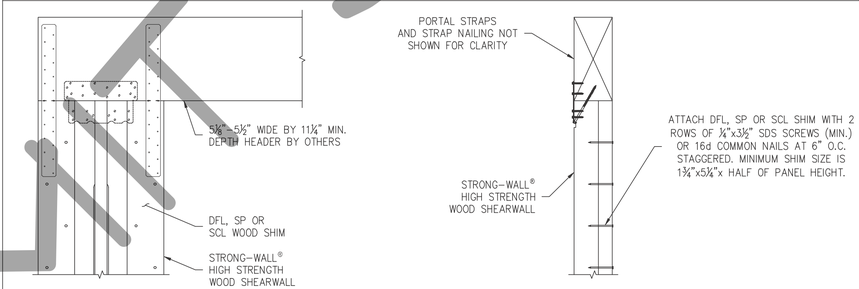
DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

HEADER BY OTHERS. FOR WSWH AND HEADER FURRING REQUIREMENTS, WHEN APPLICABLE, SEE DETAILS 4/WSWH4, 5/WSWH4 AND 6/WSWH4.



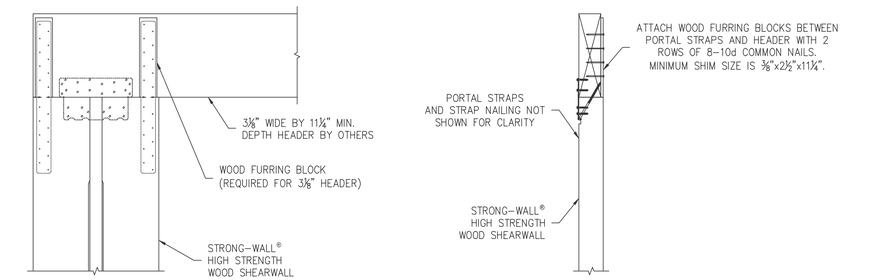
LOAD PATH DESIGN AND DETAILS ABOVE HEADER TO BE PROVIDED BY OTHERS.

PORTAL TOP CONNECTION 3



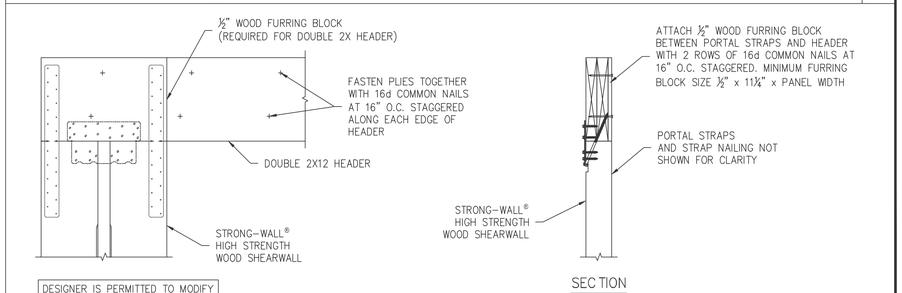
DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

FURRING FOR 5⅛" TO 5½" HEADER 4



DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

FURRING FOR 3⅛" HEADER 5



DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

FURRING FOR DOUBLE 2X12 HEADERS 6

NO.	DATE	REVISIONS
0	11-23-2020	FIRST RELEASE - 2018 IBC
1	03-16-2021	2021 IBC REVISIONS

SIMPSON Strong-Tie, Co. Inc.
5956 W. Las Positas Blvd.
Pleasanton, CA 94588
Tel: (800) 999-5099
Website: www.strongtie.com
THERE IS NO EQUAL

STRONG-WALL® WSWH
PORTAL SYSTEM
FRAMING DETAILS
ENGINEERED DESIGNS

NAME	
DATE	03-16-2021
SCALE	N.T.S.
CHECKED	
SHEET	WSWH4
OF	SHEETS
JOB NO.	