Front Elevation

APPENDIX H

TABLE H 101.8
LOCATION OF SEWAGE DISPOSAL SYSTEM

MINIMUM HORIZONTAL DISTANCE IN CLEAR REQUIRED FROM	BUILDING SEWER	SEPTIC TANK	DISPOSAL FIELD	SEEPAGE PIT OR CESSPOOL
Building or structures[1]	2 feet	5 feet	8 feet	8 feet
Property line adjoining private property	Clear[2]	5 feet	5 feet	8 feet
Water supply wells	50 feet[3]	50 feet	100 feet	150 feet
Streams and other bodies of water	50 feet	50 feet	100 feet[7]	150 feet[7]
Trees	–	10 feet	–	10 feet
Seepage pits or cesspools[8]	–	5 feet	5 feet	12 feet
Disposal field[8]	–	5 feet	4 feet[4]	5 feet
On-site domestic water service line	1 foot[5]	5 feet	5 feet	5 feet
Distribution box	–	–	5 feet	5 feet
Pressure public water main	10 feet[6]	10 feet	10 feet	10 feet

For SI units: 1 foot = 304.8 mm

Notes:

1 Including porches and steps, whether covered or uncovered, breezeways, roofed porte cocheres, roofed patios, carports, covered walks, covered driveways, and similar structures or appurtenances.
2 See Section 312.3.
3 Drainage piping shall clear domestic water supply wells by not less than 50 feet (15 240 mm). This distance shall be permitted to be reduced to not less than 25 feet (7620 mm) where the drainage piping is constructed of materials approved for use within a building.
4 Plus 2 feet (610 mm) for each additional 1 foot (305 mm) of depth in excess of 1 foot (305 mm) below the bottom of the drain line. (See Section H 601.0)
5 See Section 720.0.
6 For parallel construction – For crossings, approval by the Health Department shall be required.
7 These minimum clear horizontal distances shall also apply between disposal fields, seepage pits, and the mean high-tide line.
8 Where disposal fields, seepage pits, or both are installed in sloping ground, the minimum horizontal distance between any part of the leaching system and ground surface shall be 15 feet (4572 mm).

General Notes

Number	Note
1	LUMBER SHALL BE GRADE STAMPED AND CONFORM TO THE FOLLOWING MINIMUM STANDARDS: A) STRUCTURAL LUMBER TO BE WEST COAST DOUG FIR NO. 2 OR BETTER (UNLESS NOTED OTHERWISE) THIS INCLUDES BEAMS, HEADERS, BLOCKING, DIAGONAL BRACES, PLATFORMS, STRINGERS, JOISTS, RAFTERS AND POSTS. (BEAMS 4 x 12 AND LARGER TO BE DOUG FIR #1 & BTR.) B) STUDS MAY BE "CONSTRUCTION GRADE" DOUGLAS FIR OR #1 & BETTER. C) TOP PLATES MAY BE "CONSTRUCTION GRADE" HEM FIR OR DOUGLAS FIR. D) SILL PLATES IN CONTACT WITH CONCRETE SHALL BE PRESSURE TREATED "WOLMANIZED" OR FOUNDATION GRADE REDWOOD E) TRUSS MEMBERS AND COMPONENTS SHALL NOT BE CUT,DRILLED, NOTCHED, OR OTHERWISE ALTERED IN ANY WAY WITHOUT WRITTEN CONCURRENCE AND APPROVAL OF A REGISTERED DESIGN PROFESSIONAL
2	STRUCTURAL CONNECTOR REFERENCES ARE TO "SIMPSON STRONG-TIE" CONNECTORS. I.C.C. APPROVED
3	NO STRUCTURAL MEMBER SHALL BE SERIOUSLY WEAKENED OR IMPAIRED BY CUTTING OR NOTCHING
4	CONSTRUCTION OF THIS PROJECT SHALL BE IN ACCORDANCE WITH THE CALIFORNIA MODIFIED VERSION (TITLE 24, 2019 EDITION) OF THE FOLLOWING CODES: 2019 CALIFORNIA BUILDING CODE, (2018 IBC) 2019 CALIFORNIA PLUMBING CODE, (2018 UPC) 2019 CALIFORNIA MECHANICAL CODE, (2018 UMC) 2019 CALIFORNIA ELECTRICAL CODE (2017 NEC) 2019 CALIFORNIA FIRE CODE, (2018 IFC). 2019 CALIFORNIA ENERGY CODE HEALTH AND SAFETY CODE (HSC), SECTION 13145 CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24 2019 CAC ALL OTHER APPLICABLE LAWS AND REGULATIONS
5	DRAINAGE PIPING IN THE GROUND SHALL BE LAID ON A FIRM BED FOR ITS ENTIRE LENGTH AND BACKFILLED IN THIN LAYERS TO 12" ABOVE TOP OF PIPE WITH CLEAN EARTH, FREE FROM STONES AND BOULDERS. DRAIN PIPE SHALL BE A MINIMUM OF 3" DIAMETER WITH 2% MIN. SLOPE.
6	OFFSET PLUMBING OUT OF BEARING FOOTINGS.
7	FIXTURES, DEVICES AND EQUIPMENT SHALL COMPLY WITH APPLICABLE CEC REGULATIONS.
8	FASTENERS FOR PRESERVATIVE TREATED AND FIRE-RETARDANT-TREATED WOOD SHALL BE OF HOT DIPPED ZINC-COATED GALVANIZED STEEL, STAINLESS STEEL, SILICON BRONZE OR COPPER. THE COATING WEIGHTS FOR ZINC-COATED FASTENERS SHALL BE IN ACCORDANCE WITH ASTM A 153. FASTENERS OTHER THAN NAILS, TIMBER RIVETS WOOD SCREWS AND LAG SCREWS SHALL BE PERMITTED TO BE OF MECHANICALLY DEPOSITED ZINC-COATED STEEL WITH COATING WEIGHTS IN ACCORDANCE WITH ASTM B 695, CLASS 55 MINIMUM.
9	THE MANUFACTURED WINDOWS SHALL HAVE A LABEL ATTACHED CERTIFIED BY THE NATIONAL FENESTRATION RATING COUNCIL (NFRC) AND SHOWING COMPLIANCE WITH THE ENERGY CALCULATIONS.
10	APPROVAL OF THESE PLANS BY THE BUILDING DEPARTMENT DOES NOT INCLUDE APPROVAL FOR ANY TYPE OF ALARM SYSTEM THAT MAY BE SHOWN OR REQUIRED. SEPARATE APPROVALS FOR ANY ALARM SYSTEMS MUST BE OBTAINED.
12	ALL STEEL REINFORCEMENT TO COMPLY WITH ASTM-615, GRADE 40 AND 60
13	PROTECTION OF WOOD AND WOOD BASED PRODUCTS FROM DECAY SHALL BE PROVIDED IN THE LOCATIONS SPECIFIED PER SECTION R317.1 BY THE USE OF NATURALLY DURABLE WOOD OR WOOD THAT IS PRESERVATIVE-TREATED IN ACCORDANCE WITH AWPA U1 FOR THE SPECIES, PRODUCT, PRESERVATIVE AND END USE. PRESERVATIVES SHALL BE LISTED IN SECTION 4 OF AWPA U1.
14	NO HAZARDOUS MATERIALS WILL BE USED/STORED WITHIN THE BUILDING WHICH EXCEED THE QUANTITIES LISTED IN CBC TABLES 307.1 (1) & 307.1 (2).
15	WALLS AND FENCES ARE TO BE REVIEWED UNDER SEPARATE PERMIT APPLICATION (NOT A PART OF THIS PROJECT)
16	ALL NEW RESIDENTIAL SINGLE-FAMILY PROJECTS REQUIRE A FIRE SPRINKLER SYSTEM, AND FIRE SPRINKLER PLANS SHALL BE SUBMITTED TO THE FIRE DEPARTMENT FOR REVIEW.
17	AN AUTOMATIC RESIDENTIAL FIRE SPRINKLER SYSTEM SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH SECTION R313.3 OR NFPA 13D. SPRINKLERS SHALL BE INSTALLED TO PROJECT ALL AREAS OF A DWELLING UNIT
18	EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF A MAIN WIND OR SEISMIC FORCE RESISTING SYSTEM, DESIGNATED SEISMIC SYSTEM OR A WIND OR SEISMIC RESISTING COMPONENT LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND THE OWNER PRIOR TO THE COMMENCEMENT OF WORK ON THE SYSTEM OR COMPONENT. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL CONTAIN THE FOLLOWING: (a) ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS. (b) ACKNOWLEDGEMENT THAT CONTROL WILL BE EXERCISED TO OBTAIN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS APPROVED BY THE BUILDING OFFICIAL. (c) PROCEDURES FOR EXERCISING CONTROL WITHIN THE CONTRACTOR'S ORGANIZATION, THE METHOD AND FREQUENCY OF REPORTING AND THE DISTRIBUTION OF THE REPORTS. (d) IDENTIFICATION AND QUALIFICATION OF THE PERSON(S) EXERCISING SUCH CONTROL AND THEIR POSITION(S) IN THE ORGANIZATION.
19	ALL HOT WATER PIPES FROM SOURCE TO KITCHEN SHALL BE INSULATED WITH 1" THICK PIPE INSULATION.
20	CONNECTORS IN CONTACT WITH PRESERVATIVE TREATED WOOD SHALL HAVE COATING TYPES AND WEIGHTS IN ACCORDANCE WITH THE CONNECTOR MANUFACTURER'S RECOMMENDATION OR IN THE ABSENCE OF MANUFACTURERS RECOMMENDATION SHALL BE A MINIMUM OF ASTM A653 TYPE G185 ZINC COATED GALVANIZED. (R217.3.1)

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Loading Conditions

ROOF LOAD
DEAD LOAD:

COMPOSITION SHINGLES	4.5	PSF
SHTG	2.0	PSF
FRAMING	3.0	PSF
INSULATION	1.0	PSF
MISCELLANEOUS	7.0	PSF
GYP BOARD	2.5	PSF
TOTAL	20.0	PSF
LIVE LOAD:	20.0	PSF
W_T =	**40.0**	**PSF**

INTERIOR WALLS
DEAD LOAD:

GYP BOARD	4.0	PSF
FRAMING	2.0	PSF
TOTAL	6.0	PSF

EXTERIOR WALLS
DEAD LOAD:

STUCCO	10.0	PSF
GYP BOARD	2.0	PSF
MISC.	2.0	PSF
FRAMING	2.0	PSF
TOTAL	16.0	PSF

CHECK UPLIFT AT OVERHANG (ASCE 7-16 FIG. 6-2)
E_{OH} = (24.0 PSF)(2' OVERHANG)(2' O/C TRUSSES) = 96 # UPLIFT < 455 # OK!
USE "SIMPSON" H1 CLIP AT EACH RAFTER

CHECK GUARDRAIL CONNECTION
G = 0.49 (DF) D = 0.265 (ROOT DIA.) L = 2.5" (PEN.) $(1,800)(0.49^{3/2})(0.265^{3/4})(2.5")$ = 570 # PER SCREW
P = 200 # AT ANY POINT ALONG TOP OF RAIL.
(WITH POSTS AT 4'-0" O/C, WORST CASE IS A 200 # LOAD IN CENTER OF TWO POSTS SHARING THE LOAD)
T = C = (200 #)(42") / (3.75")(2 POSTS) = 1,120 # < (570 #)(2) = 1,140 # OK!
USE FOUR 3/8" DIA. x 3" LONG WOOD SCREWS (2-1/2" PENETRATION) ON 4-1/2" SQ. x 1/4" THICK STEEL PLATE TO 6x MIN. BEAM (OR BLOCKING) AT 4'-0" ON CENTER MAXIMUM
M = (200 #)(42") = 8,400 IN-LBS / (1.5" WELD)(3 SIDES) = 1,867 # < (0.707)(3/16")(1.5")(14,400) = 2,683 # OK! USE 3/16" WELD AT BASE 1-1/2" x 0.060" TOP RAIL SPANNING 4'-0" IS OK BY INSPECTION

CHECK SNOW LOAD (ASCE 7-16 FIG. 7.2-1)
Pg = 30 + 1.6 (EL – H) / 100 = 30 + 1.6 (1,235 – 1,000) / 100 = 33.76 PSF

CHECK REENTRANT CORNERS AT GRIDLINES D & 2 (ASCE 7-16 SEC. 12.10.1)

F_{px} = DIAPHRAGM DESIGN FORCE AT EACH LEVEL
F_i = THE DESIGN FLORCE APPLIED TO EACH LEVEL
w_i = THE WEIGHT TRIBUTARY TO EACH LEVEL
w_{px} = THE WEIGHT TRIBUTARY TO THE DIAPHRAGM AT EACH LEVEL

CHECK REENTRANT CORNERS AT GRIDLINES D & 2 AT ROOF LEVEL
$F_{px} = (F_i)(w_{px}) / w_i$ = (7,241 #)(3,362 #) / 29,760 # = 818 # < 2,050 # OK! USE MSTA30 DRAG STRAP

MIN $F_{px} = (0.2)(S_{DS})(I_e)(w_{px})$ = (0.2)(1.20)(1.0)(3,362 #) = 806 #

MAX $F_{px} = (0.2)(S_{DS})(I_e)(w_{px})$ = (0.4)(1.20)(1.0)(3,362 #) = 1,612 #

CHECK REENTRANT CORNERS AT GRIDLINES D & 2 AT SECOND FLOOR LEVEL
$F_{px} = (F_i)(w_{px}) / w_i$ = (10,617 #)(6,323 #) / 57,510 # = 1,168 # (USE 1,516 #) < 2,050 # OK! USE MSTA30 DRAG STRAP OR CS16 DRAG STRAP TO SOLID BLOCKING (L = 16'-0" - SEE PLAN)

MIN $F_{px} = (0.2)(S_{DS})(I_e)(w_{px})$ = (0.2)(1.20)(1.0)(6,323 #) = 1,516 #

MAX $F_{px} = (0.2)(S_{DS})(I_e)(w_{px})$ = (0.4)(1.20)(1.0)(3,362 #) = 3,035 #

CONSTRUCTION OF THIS PROJECT SHALL BE IN CONFORMANCE WITH THE 2019 CALIFORNIA BUILDING CODE

Second Floor Lateral Analysis (Seismic) ASCE 7-16 Section 12.8 Equivalent Lateral Force Procedure

1,200	Floor Area - Including Overhangs (sf)
20	Roof Weight (psf)
8	Wall Height (ft.)
12	Average Wall Weight (psf)
42	Length of Building (ft) (North / South Direction)
28	Length of Building (ft) (East / West Direction)
12	Height of Building From This Floor to Ridge (ft)
120	Length of All Walls (Interior & Exterior, one Direction - lf)
29,760 #	Seismic Load (lbs) 7,241 # (Use V_2)

2d Flr Base Shear (psf) **5.60** psf

First Floor Lateral Analysis (Seismic)

1,130	Floor Area - Including Overhangs (sf)
15	Floor Weight (psf)
9	Wall Height (ft.)
12	Average Wall Weight (psf)
43	Length of Building (ft) (North / South Direction)
28	Length of Building (ft) (East / West Direction)
22	Height of Building From This Floor to Ridge (ft)
100	Length of All Walls (Interior & Exterior, One Direction - lf)
27,750 #	Seismic Load (lbs) 3,376 # (Use V_1)

1st Flr Base Shear (psf) **2.77** psf

Lateral Load in N / S Direction

			(Wi)(hi)		Fx (lbs)	ρ	EQ Shear (plf)
29,760	V_2	18 Hgt. (ft)	535,680	0.68	7,241 lbs.	1.30	160.09 plf
27,750	V_1	9 Hgt. (ft)	249,750	0.32	3,376 lbs.	1.30	74.64 plf
57,510			785,430		10,617 lbs.		

Lateral Load in E / W Direction

			(Wi)(hi)		Fx (lbs)	ρ	EQ Shear (plf)
29,760	V_2	18 Hgt. (ft)	535,680	0.68	7,241 lbs.	1.30	240.14 plf
27,750	V_1	9 Hgt. (ft)	249,750	0.32	3,376 lbs.	1.30	111.96 plf
57,510			785,430		10,617 lbs.		

Seismic Base Shear

1.50 = S_S Fa = 1.20
0.59 = S_1 Fv = N/A
6.50 = R
0.20 = $T_a = C_t * h_n^x$ (Eq. 12.8-7)
8.00 = T_L = Long Period Transition (Fig. 22-12)

1.80	=	$S_{MS} = F_a * S_S$	1.20	=	S_{DS} = 2/3 S_{MS}
N/A	=	$S_{M1} = F_v * S_1$	N/A	=	S_{D1} = 2/3 S_{M1}
D	=	Site Class	D	=	SDC
II	=	Risk Category	1.00	=	I_E Factor

ASCE 7-16 (Eq. 12.8-2) $Cs = S_{DS} * I_E / R$ 0.18 GOVERNS
ASCE 7-16 (Eq. 12.8-3) $Cs_{MAX} = S_{DS} * I_E / R * T$ 7.04
ASCE 7-16 (Eq. 12.8-4) $Cs = S_{DS} * T_L * I_E / R * T^2$ 36.92 Only occurs when Ta > T_L (N/A on this project)
ASCE 7-16 (Eq. 12.8-5) $Cs = 0.44 * S_{DS} * I_E$ 0.528
ASCE 7-16 (Eq. 12.8-6) $Cs = 0.5 * S_{D1} * I_E / R$ N/A

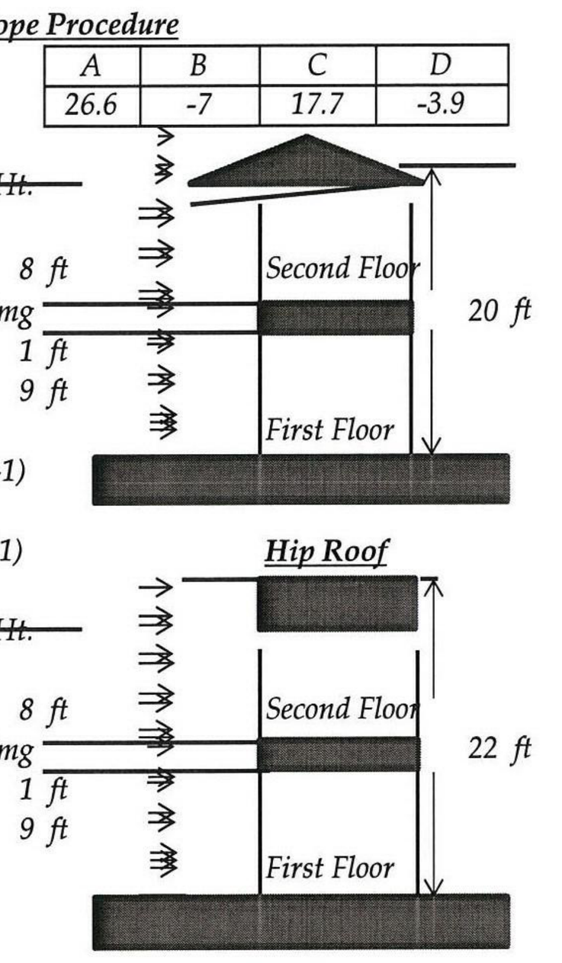
Two Story Lateral Analysis (Wind) ASCE 7-16 Section 28: Envelope Procedure

130	Basic Wind Speed (mph) (Fig. 26.5-1)
0.85	Directionality Factor, Kd (Table 26-6.1)
1.00	Risk Factor, I (Table 1.5-2)
C	Exposure Category (Sec. 26.7)
1.00	Topographic Factor, Kzt (Sec. 26.8)
9.5	Terrain Exp. Constant, α (Table 26.9-1,
1.35	Adjustment Factor, λ (Sec. 26.8)
900	Terrain Exposure Constant, Zg (feet)
0.85	Gust Factor, G or Gf (Sec. 26.9)
Enclosed	Enclosure Classification (Sec. 26.10)
0.18	Internal Pressure Coefficient, GCpi (Table 26.11-1)
A,B,C, & D Above	External Pressure Coefficient, Cp (Fig. 28-6.1)
See Below	Design Wind Load, p = qGCp - qGCpi (Eq. 28-4.1)

A	B	C	D
26.6	-7	17.7	-3.9

Building Data

4 :12	Roof Slope (inches per foot)
18.4	Theta Θ (degrees)
42	North / South Dimension (ft)
28	East / West Dimension (ft)
20	Mean Roof Height, h (ft)
9	First Floor Plate Height (ft)
8	Second Floor Plate Height (ft)
1	Floor Depth (ft)



North-South Direction

Floor Diaphragm

Location	Trib.	Pressure	Load	Load *ω
Wall Above	4.00	24.98	99.93	77.95
Wall Below	5.50	21.28	117.05	91.30
Total (plf)				**169.25**

Hip Roof

Location	Trib.	Pressure	Load	Load *ω
Wall Above	2.00	19.19	38.37	29.93
Wall Below	4.00	24.98	99.93	77.95
Total (plf)				**107.88**

Gable Roof

Location	Trib.	Pressure	Load	Load *ω
Wall Above	2.00	24.98	49.97	38.97
Wall Below	4.00	24.98	99.93	77.95
Total (plf)				**116.92**

East-West Direction

Gable Roof

Floor Diaphragm

Location	Trib.	Pressure	Load	Load *ω
Wall Above	4.00	25.21	100.85	78.66
Wall Below	5.50	21.48	118.12	92.13
Total (plf)				**170.79**

Hip Roof

Location	Trib.	Pressure	Load	Load *ω
Wall Above	2.00	19.33	38.67	30.16
Wall Below	4.50	25.21	113.45	88.49
Total (plf)				**118.65**

Gable Roof

Location	Trib.	Pressure	Load	Load *ω
Wall Above	2.00	25.21	50.42	39.33
Wall Below	4.50	25.21	113.45	88.49
Total (plf)				**127.82**

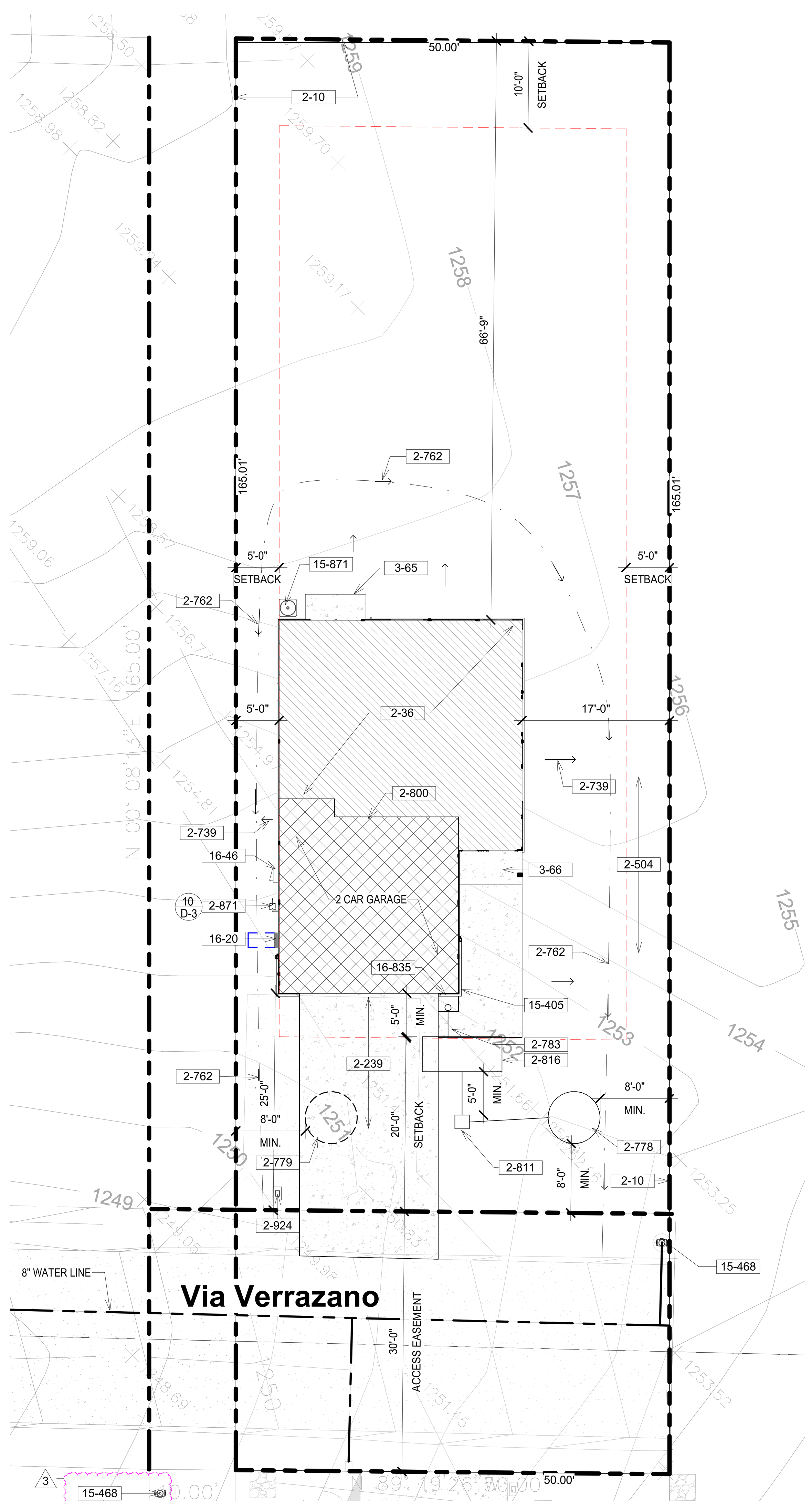
When Alternative Basic Load Combination, Sec. 1605.3.2 is used, the wind load is magnified by 0.6 ω = 0.78 Since all internal wind pressures for enclosed buildings act equally on all the internal surfaces (equally and in opposite directions) these pressures cancel each other out in the lateral directions only. Net uplift pressures acting on components to be analyzed and designed separately.

Proposed Single Family Residence For:

Parthenon Development, LLC

13024 Via Verrazano, Riverside, CA 92503

THIS RESIDENCE IS IN A HIGH FIRE HAZARD SEVERITY ZONE OF RIVERSIDE COUNTY

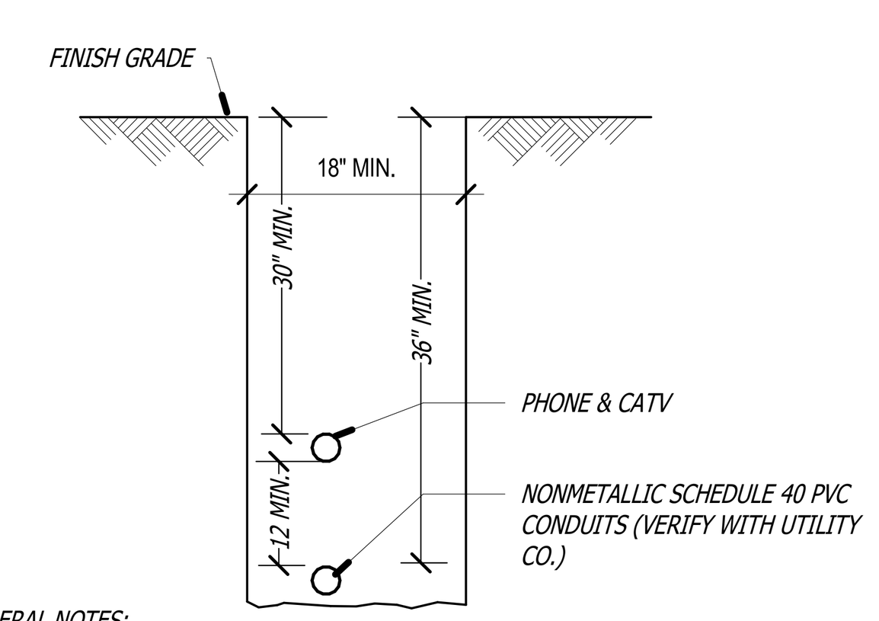


Site Plan

1" = 10'-0"

Deferred Submittal

1. FIRE SPRINKLER SYSTEM
2. ROOF TRUSSES
3. WALLS & FENCES
4. SOLAR SYSTEM



GENERAL NOTES:
1. PLACE CONDUIT IN TRENCH, FILL, AND COMPACT TO 90%. REPAIR AREA TO MATCH SURROUNDING. BACK FILL IS TO BE FREE OF LARGE ROCK, PAVING MATERIALS, ETC., THAT MAY CAUSE PHYSICAL DAMAGE TO CONDUIT.

1 ***Conduit Burial in Trench***

Special Inspection List

STATEMENT OF SPECIAL INSPECTIONS AND TESTING

1. THE SPECIAL INSPECTOR'S DUTIES ARE DESCRIBED IN CBC SECTION 1704 AND 1705. COPIES OF TEST RESULTS AND FINAL REPORTS SHALL BE DELIVERED TO THE ARCHITECT'S OFFICE IN ADDITION TO OTHER NORMAL DISTRIBUTIONS WITHIN ONE WEEK OF EST OR INSPECTION.
2. ALL TEST AND INSPECTIONS SHALL BE PREPARED BY AN INDEPENDENT TESTING AND INSPECTION AGENCY EMPLOYED BY THE OWNER, NOT THE CONTRACTOR PER CBC 1703.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE TESTING AGENCY WITH A SCHEDULE OF INSPECTIONS AND 48 HOUR NOTICE.
4. PORTIONS OF TH WORK REQUIRING SPECIAL INSPECTION ARE AS FOLLOWS:
   A. FOUNDATION: (COMPACTED FILL, GRADING AND EXCAVATIONS)
   B. CONCRETE: (N/A – ALL DESIGN BASED ON 2,500 PSI)
   C. REINFORCING STEEL: (PLACEMENT OF STEEL)
   D. STRUCTURAL STEEL: (NOT REQUIRED)
   E. WELDING: (ALL STRUCTURAL WELDING, INCLUDING WELDED STUDS, EXCEPT WELDING IN APPROVED SHOPS PER CBC 1701.7)
   F. BOLTING: (EXPANSION / ADHESIVE ANCHORS, AND ANCHOR BOLTS AT SHEAR WALLS)
   G. WOOD: (SHEAR WALL NAILING, BOLTING AND ANCHORING AND OTHER FASTENING TO SEISMIC-FORCE-RESISTING-SYSTEM WHEN NAIL SPACING IS 4" ON CENTER OR CLOSER)
   H. FABRICATORS: (MUST SUBMIT CERTIFICATE OF COMPLIANCE FOR ALL OFF-SITE FABRICATIONS SUCH AS STRUCTURAL STEEL, GLU-LAMS, ENGINEERED LUMBER, ETC.) STRUCTURAL OBSERVATION NOTES PER CBC SEC. 1702
5. THE FOLLOWING ITEMS REQUIRE STRUCTURAL OBSERVATION BY THE ARCHITECT
   A. FIRST FTG. POUR (VERIFY REINFORCING PLACEMENT)
   B. ROOF FRAMING (ROOF FRAMING AND NAILING SPACING)

Plan Notes

2-10	PROPERTY LINE
2-36	PROPOSED TWO-STORY SINGLE FAMILY RESIDENCE
2-239	NEW 3-1/2" THICK CONCRETE DRIVEWAY AND WALK (2,500 PSI MIX) ON NATIVE SOIL
2-504	NEW LANDSCAPING THIS AREA (SEE LANDSCAPING PLAN)
2-739	DRAIN 5% MIN. FOR FIRST 10'-0" AWAY FROM BUILDING AND THEN 2% MIN. AFTERWARDS
2-762	PROVIDE DRAINAGE SWALE AS INDICATED (1% MINIMUM)
2-778	6'-0" DIAMETER x 20'-0" DEEP SEEPAGE PIT PER COUNTY STANDARDS.
2-779	100% SEEPAGE PIT EXPANSION (RESERVE AREA)
2-783	3" DIAMETER ABS HOUSE SEWER WITH 1/4 INCH PER FOOT FALL MINIMUM
2-800	INSTALL CLEAN-OUT TO GRADE PER COUNTY STANDARD
2-811	DISTRIBUTION BOX
2-816	NEW 1,200 GALLON SEPTIC TANK
2-871	NEW GAS METER LOCATION (BY UTILITY). (VERIFY EXACT LOCATION WITH UTILITY COMPANY)
2-924	NEW 3" WATER METER WITH 3" PVC MAIN (VERIFY EXACT LOCATION WITH UTILITY)
3-65	3-1/2" THICK CONCRETE SLAB ON GRADE WITH MEDIUM BROOM FINISH. SLOPE 1/8" PER FOOT MINIMUM AWAY FROM BUILDING. PROVIDE A LANDING AT ALL DOORS A MINIMUM OF 2" BEYOND EACH SIDE OF DOOR AND A MINIMUM OF 3'-0" OUT FROM FACE OF DOOR.
3-66	3-1/2" THICK CONCRETE SLAB ON GRADE WITH MEDIUM BROOM FINISH. SLOPE 1/8" PER FOOT MINIMUM AWAY FROM BUILDING.
15-405	HOSE BIB AND MAIN SHUT-OFF VALVE WITH PRESSURE REGULATOR VALVE AND ANTI-SIPHON VALVE (AN APPROVED PRESSURE REGULATING VALVE (PRV) SHALL BE INSTALLED TO REDUCE THE WATER PRESSURE AT ANY FIXTURE TO 80 PSI OR LESS (CPC 60S.2)).
15-468	INSTALL NEW FIRE HYDRANT (6" x 4" x 2-1/2"). VERIFY EXACT LOCATION WITH FIRE AUTHORITY
15-871	CONDENSING UNIT. PROVIDE 3-1/2" THICK POLYETHYLENE PAD EXTENDED 3" MINIMUM ABOVE GROUND PER C.M.C.
16-20	200 AMP RECESSED MAIN PANEL (UNDERGROUND FEED WITH TWO #3/0 AWG & ONE #2 GROUND) (VERIFY EXACT LOCATION WITH UTILITY COMPANY) (PROVIDE GAS AND WATER BONDING TO SERVICE) PROVIDE 3'-0" DEEP BY 2'-6" WIDE MINIMUM CLEARANCE IN FRONT OF PANEL PER ARTICLE 110-26a
16-46	SOLAR READY - FUTURE PANEL
16-835	ILLUMINATED ADDRESS LIGHT AT +84" ABOVE FLOOR LINE (UON) PER CITY STANDARD WITH 4" HIGH MINIMUM HEIGHT NUMBERS ON CONTRASTING BACKGROUND AND ILLUMINATED AT ALL HOURS OF DARKNESS. WITH A MINIMUM STROKE WIDTH OF 1/2 INCH. THE TYPE LOCATION AND SIZE OF BUILDING ADDRESS WHICH MUST BE CLEARLY VISIBLE AND LEGIBLE FROM THE ADJACENT PUBLIC WAY OR STREET.

Building Area Schedule

Name	Area
1st Floor Living	651 SF
2nd Floor Living	984 SF
Garage	432 SF
Total Building Footprint	2067 SF

Area Analysis

LOT AREA: 6,738 SF.

BUILDING FOOTPRINT 1,083 SF.
LOT COVERAGE: 16.1 %
LANDSCAPE AREA: 5,074 SF. ~ 75.3 %

1ST FLOOR AREA: 651 SF.
2ND FLOOR AREA: 984 SF.
TOTAL FLOOR AREA: 1,635 SF.

GARAGE AREA: 432 SF.

Sequence of Drawings

Special Inspections

Type of Construction	Provided If Marked: Test	Continuous Inspection	Periodic Inspection
Epoxy Adhesive			X
Shear Walls w/ fasteners spaced 4" O/C or less			X

ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

Project Information

OWNER:	Parthenon Development, LLC
PROJECT ADDRESS:	13024 VIA VERRAZANO RIVERSIDE, CA 92503
ARCHITECT:	ANDRESEN ARCHITECTURE, INC. 17087 ORANGE WAY FONTANA, CA 92335
CONTACT:	DOUG ANDRESEN (909) 355-6688 doug.andresen@aaifirm.com
SOLAR	AC CONSTRUCTION 385 HALBERTA CIRCLE CALIMESA, CA 92320
CONTACT:	JENNIFER KEMME (909) 748-1300

Building Data

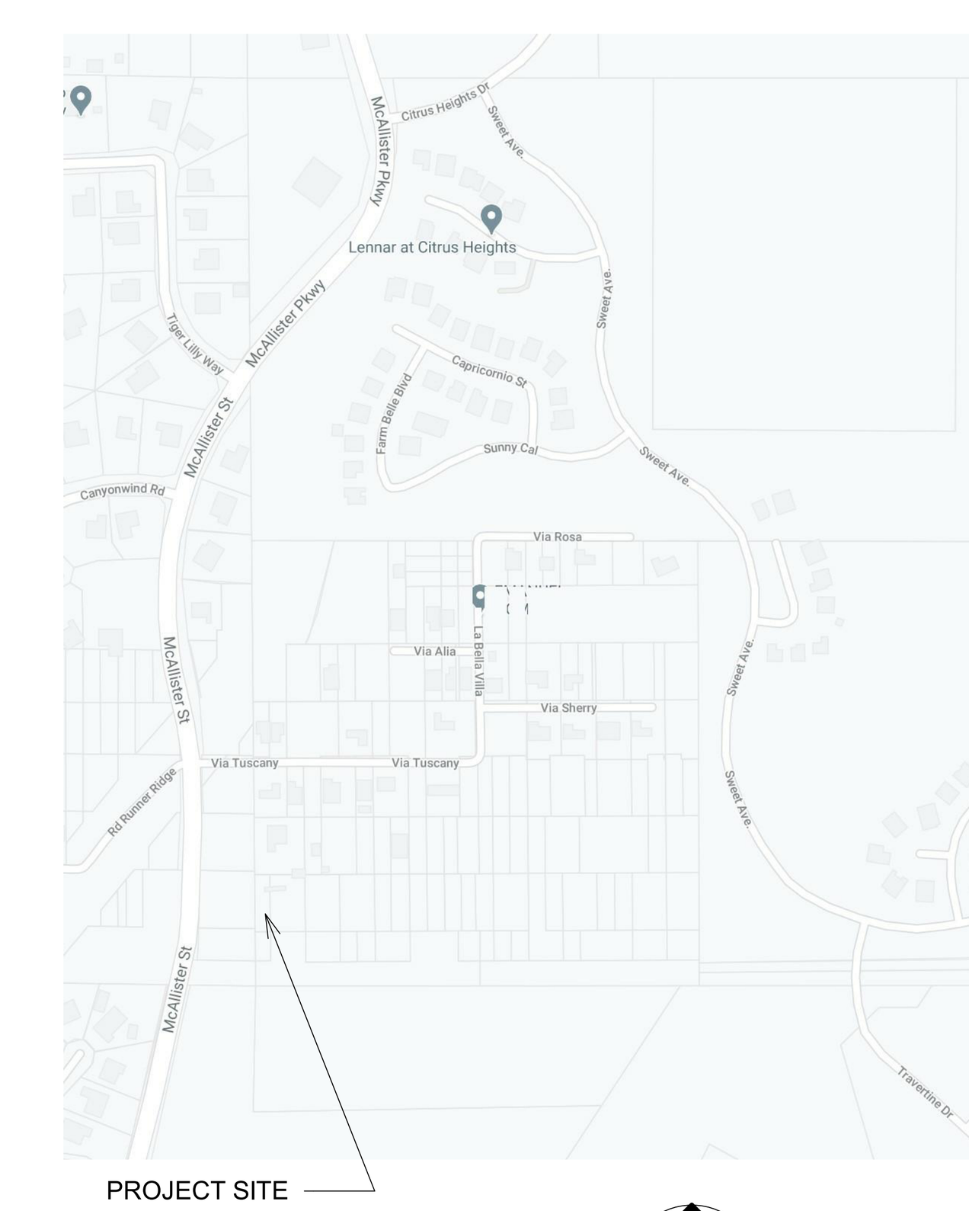
APN:	269-201-055
ZONING:	R-1
OCCUPANCY:	R3-U
CONSTRUCTION:	V-B
FIRE SPRINKLERS:	REQUIRED. 1. PROVIDE A FIRE DEPARTMENT NOTE INDICATING COMPLIANCE WITH THE FOLLOWING REQUIREMENT FOR NEW RESIDENTIAL CONSTRUCTION. AN AUTOMATIC FIRE SPRINKLER SYSTEM DESIGNED AND INSTALLED IN ACCORDANCE WITH NFPA 13D IS REQUIRED FOR THIS PROJECT. A MINIMUM THREE SETS OF DETAILED PLANS SHALL BE SUBMITTED BY A STATE LICENSED FIRE PROTECTION CONTRACTOR (C-16) TO THE RIVERSIDE FIRE DEPARTMENT FOR REVIEW, APPROVAL AND SEPARATE PERMIT ISSUANCE PRIOR TO INSTALLATION. 2. A MUNICIPAL WATER SUPPLY SYSTEM SHALL BE PROVIDED, CAPABLE OF PROVIDING THE REQUIRED FIRE FLOW FOR THE PROPOSED TYPE OF CONSTRUCTION. MINIMUM FIRE FLOW FOR THIS PROJECT SHALL BE 1,000_ G.PM. (PUBLIC FIRE HYDRANTS)
PROJECT DESCRIPTION:	NEW SINGLE FAMILY RESIDENCE
NUMBER OF STORIES	2
HEIGHT TO RIDGE	23'

APPROVED
RIVERSIDE COUNTY FIRE DEPARTMENT
OFFICE OF THE FIRE MARSHAL
BY: Mikki Sherry
Mikki Sherry, Fire Safety Specialist
06/24/2022 1:31:35 PM
The approval of plans and specifications does not permit the violation, deletion, omission or faulty installation of any requirements of Title 24 or any Local Ordinances. Construction shall remain accessible and exposed for inspection purposes until approved by the Fire Department.

NOTE: THE PROJECT IS LOCATED AT FIRE HAZARD SEVERITY ZONE

REQUIRED SPECIAL FEATURES
The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.
• Whole house fan • Raised heel truss (height above top plate) • Cool roof • Ceiling has high level of insulation • Floor has high level of insulation • Insulation below roof deck • Window overhangs and/or fins

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 buildng tables below. Registered CF2Rs and CF3Rs are required to be completed in the HERS Registry
Building-level Verifications: • Indoor air quality ventilation Cooling System Verifications: • Minimum Airflow • Verified EER • Verified SEER • Fan Efficacy Watts/CFM Heating System Verifications: • Verified HSPF • Verified heat pump rated heating capacity HVAC Distribution System Verifications: • Duct leakage testing Domestic Hot Water System Verifications: • -- None --



Vicinity Map

Proposed Single Family Residence For:
Parthenon Development, LLC
13024 Via Verrazano, Riverside, CA 92503

26 Apr. 2022	2	26 Apr. 2022 P.C.C.
	3	19 May 2022 Fire PCC
21-4372		

LICENSED ARCHITECT Douglas Andresen C-14504 12-31-23 RENEWAL DATE STATE OF CALIFORNIA

Site Plan

A-1

C:\Users\JonatanBallesteros\Andresen Architecture Inc\AAI - Access\Projects\4_Projects 2020-2029\2021\21-4372 Russo's Lot 55\Revit\21-4372 Lot 55 SFR - John Russo.rvt

5/19/2022 1:26:44 PM

CERTIFICATE OF COMPLIANCE — CF1R-PRF-01E
Project Name: 1635 Plan — **Calculation Date/Time:** 2022-01-18T16:04:17-08:00 — (Page 1 of 10)
Calculation Description: Title 24 Analysis — **Input File Name:** Russo Lot 55 (21-4372).ribd19x

GENERAL INFORMATION					
01	Project Name	1635 Plan			
02	Run Title	Title 24 Analysis			
03	Project Location	Via Verrazano			
04	City	Riverside	05	Standards Version	2019
06	Zip code	92503	07	Software Version	EnergyPro 8.2
08	Climate Zone	10	09	Front Orientation (deg/ Cardinal)	180
10	Building Type	Single family	11	Number of Dwelling Units	1
12	Project Scope	NewConstruction	13	Number of Bedrooms	3
14	Addition Cond. Floor Area (ft²)	0	15	Number of Stories	2
16	Existing Cond. Floor Area (ft²)	n/a	17	Fenestration Average U-factor	0.3
18	Total Cond. Floor Area (ft²)	1635	19	Glazing Percentage (%)	18.71%
20	ADU Bedroom Count	n/a	21	ADU Conditioned Floor Area	n/a
22	Is Natural Gas Available?	Yes			

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

Registration Number: 422-P010007544A-000-000-0000000-0000 Registration Date/Time: 01/18/2022 16:04 HERS Provider: CHEERS
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ENERGY DESIGN RATING	Energy Design Ratings		Compliance Margins	
	Efficiency[1] (EDR)	Total[2] (EDR)	Efficiency[1] (EDR)	Total[2] (EDR)
Standard Design	47.3	24.5		
Proposed Design	46.6	23.8	0.7	0.7
RESULT: [3] COMPLIES				

1: Efficiency EDR includes improvements to the building envelope and more efficient equipment
2: Total EDR includes efficiency and demand response measures such as photovoltaic (PV) systems and batteries
3: Building complies when efficiency and total compliance margins are greater than or equal to zero

- Standard Design PV Capacity: 2.51 kWdc
- PV System resized to 2.51 kWdc (a factor of 2.510) to achieve 'Standard Design PV' PV scaling

ENERGY USE SUMMARY				
Energy Use (kTDV/ft²-yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	6.88	9.68	-2.8	-40.7
Space Cooling	29.45	27.57	1.88	6.4
IAQ Ventilation	2.75	2.75	0	0
Water Heating	14.27	11.75	2.52	17.7
Self Utilization/Flexibility Credit	n/a	0	0	n/a
Compliance Energy Total	53.35	51.75	1.6	3

REQUIRED PV SYSTEMS - SIMPLIFIED											
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 (%)
2.51	NA	Standard	Fixed	none	true	150-270	n/a	n/a	<=7:12	96	100

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REQUIRED SPECIAL FEATURES

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

- Whole house fan
- Cool roof
- Ceiling has high level of insulation
- Floor has high level of insulation
- Insulation below roof deck
- Window overhangs and/or fins

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 buildng tables below. Registered CF2Rs and CF3Rs are required to be completed in the HERS Registry

Building-level Verifications:
- Indoor air quality ventilation

Cooling System Verifications:
- Minimum Airflow
- Verified EER
- Verified SEER
- Fan Efficacy Watts/CFM

Heating System Verifications:
- Verified HSPF
- Verified heat pump rated heating capacity

HVAC Distribution System Verifications:
- Duct leakage testing

Domestic Hot Water System Verifications:
- -- None --

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
1635 Plan	1635	1	3	1	1	1

Registration Number: 422-P010007544A-000-000-0000000-0000 Registration Date/Time: 01/18/2022 16:04 HERS Provider: CHEERS
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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	Water Heating System 2
SFR	Conditioned	Res HVAC1	1635	8	DHW Sys 1	N/A

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)
Rear Wall (North)	SFR	R-19 Wall	0	Back	476	119.952	90
Left Wall (West)	SFR	R-19 Wall	270	Left	513	43.962	90
Right Wall (East)	SFR	R-19 Wall	90	Right	587	102	90
Front Wall (South)	SFR	R-19 Wall	180	Front	290	59.984	90
Roof - Attic	SFR	R-49 Clg. + R-19 Attic	n/a	n/a	984	n/a	n/a
Floor Over Gar	SFR	R-30 Floor	n/a	n/a	356	n/a	n/a

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
Attic SFR	Attic RoofSFR	Ventilated	4	0.3	0.75	Yes	Yes

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
Rear Windows	Window	Rear Wall (North)	Back	0	6	17	1	119.95	0.3	NFRC	0.25	NFRC	Bug Screen
Left Windows	Window	Left Wall (West)	Left	270	6	17	0	43.96	0.3	NFRC	0.25	NFRC	Bug Screen
Right Windows	Window	Right Wall (East)	Right	90	6	17	1	102	0.3	NFRC	0.25	NFRC	Bug Screen

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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
Front Windows	Window	Front Wall (South)	Front	180	6	17	0	39.98	0.3	NFRC	0.25	NFRC	Bug Screen

OPAQUE DOORS			
01	02	03	04
Name	Side of Building	Area (ft²)	U-factor
Door	Front Wall (South)	20	1

OVERHANGS AND FINS													
01	02	03	04	05	06	07	08	09	10	11	12	13	14
Window	Overhang					Left Fin				Right Fin			
	Depth	Dist Up	Left Extent	Right Extent	Flap Ht.	Depth	Top Up	Dist L	Bot Up	Depth	Top Up	Dist R	Bot Up
Rear Windows	2	0.1	2	2	0	2	0	0.1	0	0	0	0	0
Left Windows	2	0.1	2	2	0	0	0	0	0	0	0	0	0
Right Windows	2	0.1	2	2	0	0	0	0	0	0	0	0	0
Front Windows	2	0.1	2	2	0	0	0	0	0	0	0	0	0

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	SFR	651	80	none	0	80%	No

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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
R-19 Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O. C.	R-19	None / None	0.074	Inside Finish: Gypsum Board Cavity / Frame: R-19 in 5-1/2 in. (R-18) / 2x6 Exterior Finish: 3 Coat Stucco
Attic RoofSFR	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-19	None / None	0.052	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-13.0 / 2x4 Under Roof Joists: R-6.0 insul.
R-30 Floor	Floors Over Crawlspace	Wood Framed Floor	2x10 @ 16 in. O. C.	R-30	None / None	0.034	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-30 / 2x10
R-49 Clg. + R-19 Attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-49	None / None	0.02	Over Ceiling Joists: R-39.9 insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board

BUILDING ENVELOPE - HERS VERIFICATION			
01	02	03	04
Quality Insulation Installation (QII)	High R-value Spray Foam Insulation	Building Envelope Air Leakage	CFM50
Not Required	Not Required	Not Required	n/a

WATER HEATING SYSTEMS						
01	02	03	04	05	06	07
Name	System Type	Distribution Type	Water Heater Name (#)	Solar Heating System	Compact Distribution	HERS Verification
DHW Sys 1	Domestic Hot Water (DHW)	Standard Distribution System	DHW Heater 1 (1)	n/a	None	n/a

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WATER HEATERS											
01	02	03	04	05	06	07	08	09	10	11	12
Name	Heating Element Type	Tank Type	# of Units	Tank Vol. (gal)	Energy Factor or Efficiency	Input Rating or Pilot	Tank Insulation R-value (Int/Ext)	Standby Loss or Recovery Eff	1st Hr. Rating or Flow Rate	NEEA Heat Pump Brand or Model	Tank Location or Ambient Condition
DHW Heater 1	Gas	Consumer Instantaneous	1	0	0.97-UEF	<= 200 kBtu/hr	0	n/a	n/a	n/a	n/a

WATER HEATING - HERS VERIFICATION							
01	02	03	04	05	06	07	08
Name	Pipe Insulation	Parallel Piping	Compact Distribution	Compact Distribution Type	Recirculation Control	Central DHW Distribution	Shower Drain Water Heat Recovery
DHW Sys 1 - 1/1	Not Required	Not Required	Not Required	None	Not Required	Not Required	Not Required

SPACE CONDITIONING SYSTEMS										
01	02	03	04	05	06	07	08	09	10	11
Name	System Type	Heating Unit Name	Cooling Unit Name	Fan Name	Distribution Name	Required Thermostat Type	Status	Verified Existing Condition	Heating Equipment Count	Cooling Equipment Count
Res HVAC1	Heat pump heating cooling	Heat Pump System 1	Heat Pump System 1	HVAC Fan 1	Air Distribution System 1	Setback	New	NA	1	1

HVAC - HEAT PUMPS										
01	02	03	04	05	06	07	08	09	10	11
Name	System Type	Number of Units	Heating			Cooling		Zonally Controlled	Compressor Type	HERS Verification
			HSPF/COP	Cap 47	Cap 17	SEER	EER/CEER			
Heat Pump System 1	Central split HP	1	10.5	50000	40000	20	13.5	Not Zonal	Single Speed	Heat Pump System 1-hers-htpump

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HVAC HEAT PUMPS - HERS VERIFICATION								
01	02	03	04	05	06	07	08	09
Name	Verified Airflow	Airflow Target	Verified EER	Verified SEER	Verified Refrigerant Charge	Verified HSPF	Verified Heating Cap 47	Verified Heating Cap 17
Heat Pump System 1-hers-htpump	Required	350	Required	Required	No	Yes	Yes	Yes

HVAC - DISTRIBUTION SYSTEMS											
01	02	03	04	05	06	07	08	09	10	11	12
			Duct Ins. R-value		Duct Location		Surface Area				
Name	Type	Design Type	Supply	Return	Supply	Return	Supply	Return	Bypass Duct	Duct Leakage	HERS Verification
Air Distribution System 1	Unconditioned attic	Non-Verified	R-8	R-8	Attic	Attic	n/a	n/a	No Bypass Duct	Sealed and Tested	Air Distribution System 1-hers-dist

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
Air Distribution System 1-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 1	HVAC Fan	0.45	HVAC Fan 1-hers-fan

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HVAC FAN SYSTEMS - HERS VERIFICATION		
01	02	03
Name	Verified Fan Watt Draw	Required Fan Efficacy (Watts/CFM)
HVAC Fan 1-hers-fan	Required	0.45

IAQ (INDOOR AIR QUALITY) FANS					
01	02	03	04	05	06
Dwelling Unit	IAQ CFM	IAQ Watts/CFM	IAQ Fan Type	IAQ Recovery Effectiveness (%)	IAQ Recovery Effectiveness - SREIAQ Recovery Effectiveness - SRE
SFam IAQVentRpt	77	0.25	Default	0	n/a

COOLING VENTILATION								
01	02	03	04	05	06	07	08	09
Name	Airflow Rate (CFM/ft2)	Cooling Vent CFM	Cooling Vent Watts/CFM	Total Watts	Number of Fans	CFVCS Type	Exhausts to	HERS Verification
Whole House Fan	1.5	2452.5	0.14	343.35	1	Not a CFVCS	Attic	No

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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: Adriana Gomez	Documentation Author Signature: *Adriana Gomez*
Company: Andresen Architecture, Inc.	Signature Date: 01/18/2022
Address: 17087 Orange Way	CEA/ HERS Certification Identification (If applicable):
City/State/Zip: Fontana, CA 92335	Phone: 909-355-6688

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: Adriana Gomez	Responsible Designer Signature: *Adriana Gomez*
Company: Andresen Architecture, Inc.	Date Signed: 01/18/2022
Address: 17087 Orange Way	License: C 33098
City/State/Zip: Fontana, CA 92335	Phone: 909-355-6688

Digitally signed by ConSol Home Energy Efficiency Rating System Services, Inc. (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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2019 Low-Rise Residential Mandatory Measures Summary

*NOTE: Low-rise residential buildings subject to the Energy Standards must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information. *Exceptions may apply.*
(01/2020)

Building Envelope Measures:	
§ 110.6(a)1:	**Air Leakage.** Manufactured fenestration, exterior doors, and exterior pet doors must limit air leakage to 0.3 CFM per square foot or less when tested per NFRC-400, ASTM E283 or AAMA/WDMA/CSA 101/I.S.2/A440-2011.*
§ 110.6(a)5:	**Labeling.** Fenestration products and exterior doors must have a label meeting the requirements of § 10-111(a).
§ 110.6(b):	**Field fabricated exterior doors and fenestration** products must use U-factors and solar heat gain coefficient (SHGC) values from Tables 110.6-A, 110.6-B, or JA4.5 for exterior doors. They must be caulked and/or weather-stripped.*
§ 110.7:	**Air Leakage.** All joints, penetrations, and other openings in the building envelope that are potential sources of air leakage must be caulked, gasketed, or weather stripped.
§ 110.8(a):	**Insulation Certification by Manufacturers.** Insulation must be certified by the Department of Consumer Affairs, Bureau of Household Goods and Services (BHGS).
§ 110.8(g):	**Insulation Requirements for Heated Slab Floors.** Heated slab floors must be insulated per the requirements of § 110.8(g).
§ 110.8(i):	**Roofing Products Solar Reflectance and Thermal Emittance.** The thermal emittance and aged solar reflectance values of the roofing material must meet the requirements of § 110.8(i) and be labeled per §10-113 when the installation of a cool roof is specified on the CF1R.
§ 110.8(j):	**Radiant Barrier.** When required, radiant barriers must have an emittance of 0.05 or less and be certified to the Department of Consumer Affairs.
§ 150.0(a):	**Ceiling and Rafter Roof Insulation.** Minimum R-22 insulation in wood-frame ceiling; or the weighted average U-factor must not exceed 0.043. Minimum R-19 or weighted average U-factor of 0.054 or less in a rafter roof alteration. Attic access doors must have permanently attached insulation using adhesive or mechanical fasteners. The attic access must be gasketed to prevent air leakage. Insulation must be installed in direct contact with a continuous roof or ceiling which is sealed to limit infiltration and exfiltration as specified in § 110.7, including but not limited to placing insulation either above or below the roof deck or on top of a drywall ceiling.*
§ 150.0(b):	**Loose-fill Insulation.** Loose fill insulation must meet the manufacturer's required density for the labeled R-value.
§ 150.0(c):	**Wall Insulation.** Minimum R-13 insulation in 2x4 inch wood framing wall or have a U-factor of 0.102 or less, or R-20 in 2x6 inch wood framing or have a U-factor of 0.071 or less. Opaque non-framed assemblies must have an overall assembly U-factor not exceeding 0.102. Masonry walls must meet Tables 150.1-A or B.*
§ 150.0(d):	**Raised-floor Insulation.** Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-factor.*
§ 150.0(f):	**Slab Edge Insulation.** Slab edge insulation must meet all of the following: have a water absorption rate, for the insulation material alone without facings, no greater than 0.3 percent; have a water vapor permeance no greater than 2.0 perm per inch; be protected from physical damage and UV light deterioration; and, when installed as part of a heated slab floor, meet the requirements of § 110.8(g).
§ 150.0(g)1:	**Vapor Retarder.** In climate zones 1 through 16, the earth floor of unvented crawl space must be covered with a Class I or Class II vapor retarder. This requirement also applies to controlled ventilation crawl space for buildings complying with the exception to § 150.0(d).
§ 150.0(g)2:	**Vapor Retarder.** In climate zones 14 and 16, a Class I or Class II vapor retarder must be installed on the conditioned space side of all insulation in all exterior walls, vented attics, and unvented attics with air-permeable insulation.
§ 150.0(q):	**Fenestration Products.** Fenestration, including skylights, separating conditioned space from unconditioned space or outdoors must have a maximum U-factor of 0.58; or the weighted average U-factor of all fenestration must not exceed 0.58.*
Fireplaces, Decorative Gas Appliances, and Gas Log Measures:	
§ 110.5(e)	**Pilot Light.** Continuously burning pilot lights are not allowed for indoor and outdoor fireplaces.
§ 150.0(e)1:	**Closable Doors.** Masonry or factory-built fireplaces must have a closable metal or glass door covering the entire opening of the firebox.
§ 150.0(e)2:	**Combustion Intake.** Masonry or factory-built fireplaces must have a combustion outside air intake, which is at least six square inches in area and is equipped with a readily accessible, operable, and tight-fitting damper or combustion-air control device.*
§ 150.0(e)3:	**Flue Damper.** Masonry or factory-built fireplaces must have a flue damper with a readily accessible control.*
Space Conditioning, Water Heating, and Plumbing System Measures:	
§ 110.0-§ 110.3:	**Certification.** Heating, ventilation and air conditioning (HVAC) equipment, water heaters, showerheads, faucets, and all other regulated appliances must be certified by the manufacturer to the California Energy Commission.*
§ 110.2(a):	**HVAC Efficiency.** Equipment must meet the applicable efficiency requirements in Table 110.2-A through Table 110.2-K.*
§ 110.2(b):	**Controls for Heat Pumps with Supplementary Electric Resistance Heaters.** Heat pumps with supplementary electric resistance heaters must have controls that prevent supplementary heater operation when the heating load can be met by the heat pump alone; and in which the cut-on temperature for compression heating is higher than the cut-on temperature for supplementary heating, and the cut-off temperature for compression heating is higher than the cut-off temperature for supplementary heating.*
§ 110.2(c):	**Thermostats.** All heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat.*
§ 110.3(c)4:	**Water Heating Recirculation Loops Serving Multiple Dwelling Units.** Water heating recirculation loops serving multiple dwelling units must meet the air release valve, backflow prevention, pump priming, pump isolation valve, and recirculation loop connection requirements of § 110.3(c)4.
§ 110.3(c)6:	**Isolation Valves.** Instantaneous water heaters with an input rating greater than 6.8 kBtu per hour (2 kW) must have isolation valves with hose bibbs or other fittings on both cold and hot water lines to allow for flushing the water heater when the valves are closed.
§ 110.5:	**Pilot Lights.** Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces; household cooking appliances (except appliances without an electrical supply voltage connection with pilot lights that consume less than 150 Btu per hour); and pool and spa heaters.*
§ 150.0(h)1:	**Building Cooling and Heating Loads.** Heating and/or cooling loads are calculated in accordance with the ASHRAE Handbook, Equipment Volume, Applications Volume, and Fundamentals Volume; the SMACNA Residential Comfort System Installation Standards Manual; or the ACCA Manual J using design conditions specified in § 150.0(h)2.

2019 Low-Rise Residential Mandatory Measures Summary

§ 150.0(h)3A:	**Clearances.** Air conditioner and heat pump outdoor condensing units must have a clearance of at least five feet from the outlet of any dryer
§ 150.0(h)3B:	**Liquid Line Drier.** Air conditioners and heat pump systems must be equipped with liquid line filter driers if required, as specified by the manufacturer's instructions.
§ 150.0(j)1:	**Storage Tank Insulation.** Unfired hot water tanks, such as storage tanks and backup storage tanks for solar water-heating systems, must have a minimum of R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of the tank.
§ 150.0(j)2A:	**Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation.** All domestic hot water piping must be insulated as specified in Section 609.11 of the California Plumbing Code. In addition, the following piping conditions must have a minimum insulation wall thickness of one inch or a minimum insulation R-value of 7.7: the first five feet of cold water pipes from the storage tank; all hot water piping with a nominal diameter equal to or greater than 3/4 inch and less than one inch; all hot water piping with a nominal diameter less than 3/4 inch that is: associated with a domestic hot water recirculation system, from the heating source to storage tank or between tanks, buried below grade, and from the heating source to kitchen fixtures.*
§ 150.0(j)3:	**Insulation Protection.** Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by Section 120.3(b). Insulation exposed to weather must be water retardant and protected from UV light (no adhesive tapes). Insulation covering chilled water piping and refrigerant suction piping located outside the conditioned space must include, or be protected by, a Class I or Class II vapor retarder. Pipe insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve.
§ 150.0(n)1:	**Gas or Propane Water Heating Systems.** Systems using gas or propane water heaters to serve individual dwelling units must include all of the following: A dedicated 125 volt, 20 amp electrical receptacle connected to the electric panel with a 120/240 volt 3 conductor, 10 AWG copper branch circuit, within three feet of the water heater without obstruction. Both ends of the unused conductor must be labeled with the word "spare" and be electrically isolated. Have a reserved single pole circuit breaker space in the electrical panel adjacent to the circuit breaker for the branch circuit and labeled with the words "Future 240V Use"; a Category III or IV vent, or a Type B vent with straight pipe between the outside termination and the space where the water heater is installed; a condensate drain that is no more than two inches higher than the base of the water heater, and allows natural draining without pump assistance; and a gas supply line with a capacity of at least 200,000 Btu per hour.
§ 150.0(n)2:	**Recirculating Loops.** Recirculating loops serving multiple dwelling units must meet the requirements of § 110.3(c)5.
§ 150.0(n)3:	**Solar Water-heating Systems.** Solar water-heating systems and collectors must be certified and rated by the Solar Rating and Certification Corporation (SRCC), the International Association of Plumbing and Mechanical Officials, Research and Testing (IAPMO R&T), or by a listing agency that is approved by the Executive Director.
Ducts and Fans Measures:	
§ 110.8(d)3:	**Ducts.** Insulation installed on an existing space-conditioning duct must comply with § 604.0 of the California Mechanical Code (CMC). If a contractor installs the insulation, the contractor must certify to the customer, in writing, that the insulation meets this requirement.
§ 150.0(m)1:	**CMC Compliance.** All air-distribution system ducts and plenums must meet the requirements of the CMC §§ 601.0, 602.0, 603.0, 604.0, 605.0 and ANSI/SMACNA-006-2006 HVAC Duct Construction Standards Metal and Flexible 3rd Edition. Portions of supply-air and return-air ducts and plenums must be insulated to a minimum installed level of R-6.0 or a minimum installed level of R-4.2 when ducts are entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.8). Portions of the duct system completely exposed and surrounded by directly conditioned space are not required to be insulated. Connections of metal ducts and inner core of flexible ducts must be mechanically fastened. Openings must be sealed with mastic, tape, or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than ¼ inch, the combination of mastic and either mesh or tape must be used. Building cavities, support platforms for air handlers, and plenums designed or constructed with materials other than sealed sheet metal, duct board or flexible duct must not be used to convey conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms must not be compressed to cause reductions in the cross-sectional area.*
§ 150.0(m)2:	**Factory-Fabricated Duct Systems.** Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closures; joints and seams of duct systems and their components must not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.
§ 150.0(m)3:	**Field-Fabricated Duct Systems.** Field-fabricated duct systems must comply with applicable requirements for: pressure-sensitive tapes, mastics, sealants, and other requirements specified for duct construction.
§ 150.0(m)7:	**Backdraft Damper.** Fan systems that exchange air between the conditioned space and outdoors must have backdraft or automatic dampers.
§ 150.0(m)8:	**Gravity Ventilation Dampers.** Gravity ventilating systems serving conditioned space must have either automatic or readily accessible, manually operated dampers in all openings to the outside, except combustion inlet and outlet air openings and elevator shaft vents.
§ 150.0(m)9:	**Protection of Insulation.** Insulation must be protected from damage, sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service. For example, protected by aluminum, sheet metal, painted canvas, or plastic cover. Cellular foam insulation must be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation.
§ 150.0(m)10:	**Porous Inner Core Flex Duct.** Porous inner core flex ducts must have a non-porous layer between the inner core and outer vapor barrier.
§ 150.0(m)11:	**Duct System Sealing and Leakage Test.** When space conditioning systems use forced air duct systems to supply conditioned air to an occupiable space, the ducts must be sealed and duct leakage tested, as confirmed through field verification and diagnostic testing, in accordance with § 150.0(m)11 and Reference Residential Appendix RA3.
§ 150.0(m)12:	**Air Filtration.** Space conditioning systems with ducts exceeding 10 feet and the supply side of ventilation systems must have MERV 13 or equivalent filters. Filters for space conditioning systems must have a two inch depth or can be one inch if sized per Equation 150.0-A. Pressure drops and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service.*
§ 150.0(m)13:	**Space Conditioning System Airflow Rate and Fan Efficacy.** Space conditioning systems that use ducts to supply cooling must have a hole for the placement of a static pressure probe, or a permanently installed static pressure probe in the supply plenum. Airflow must be ≥ 350 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy ≤ 0.45 watts per CFM for gas furnace air handlers and ≤ 0.58 watts per CFM for all others. Small duct high velocity systems must provide an airflow ≥ 250 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy ≤ 0.62 watts per CFM. Field verification testing is required in accordance with Reference Residential Appendix RA3.3.*

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Requirements for Ventilation and Indoor Air Quality:	
§ 150.0(o)1:	**Requirements for Ventilation and Indoor Air Quality.** All dwelling units must meet the requirements of ASHRAE Standard 62.2, Ventilation and Acceptable Indoor Air Quality in Residential Buildings subject to the amendments specified in § 150.0(o)1.
§ 150.0(o)1C:	**Single Family Detached Dwelling Units.** Single family detached dwelling units, and attached dwelling units not sharing ceilings or floors with other dwelling units, occupiable spaces, public garages, or commercial spaces must have mechanical ventilation airflow provided at rates determined by ASHRAE 62.2 Sections 4.1.1 and 4.1.2 and as specified in § 150.0(o)1C.
§ 150.0(o)1E:	**Multifamily Attached Dwelling Units.** Multifamily attached dwelling units must have mechanical ventilation airflow provided at rates in accordance with Equation 150.0-B and must be either a balanced system or continuous supply or continuous exhaust system. If a balanced system is not used, all units in the building must use the same system type and the dwelling-unit envelope leakage must be ≤ 0.3 CFM at 50 Pa (0.2 inch water) per square foot of dwelling unit envelope surface area and verified in accordance with Reference Residential Appendix RA3.8.
§ 150.0(o)1F:	**Multifamily Building Central Ventilation Systems.** Central ventilation systems that serve multiple dwelling units must be balanced to provide ventilation airflow for each dwelling unit served at a rate equal to or greater than the rate specified by Equation 150.0-B. All unit airflows must be within 20 percent of the unit with the lowest airflow rate as it relates to the individual unit's minimum required airflow rate needed for compliance.
§ 150.0(o)1G:	**Kitchen Range Hoods.** Kitchen range hoods must be rated for sound in accordance with Section 7.2 of ASHRAE 62.2.
§ 150.0(o)2:	**Field Verification and Diagnostic Testing.** Dwelling unit ventilation airflow must be verified in accordance with Reference Residential Appendix RA3.7. A kitchen range hood must be verified in accordance with Reference Residential Appendix RA3.7.4.3 to confirm it is rated by HVI to comply with the airflow rates and sound requirements as specified in Section 5 and 7.2 of ASHRAE 62.2.
Pool and Spa Systems and Equipment Measures:	
§ 110.4(a):	**Certification by Manufacturers.** Any pool or spa heating system or equipment must be certified to have all of the following: a thermal efficiency that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater that allows shutting off the heater without adjusting the thermostat setting; a permanent weatherproof plate or card with operating instructions; and must not use electric resistance heating.*
§ 110.4(b)1:	**Piping.** Any pool or spa heating system or equipment must be installed with at least 36 inches of pipe between the filter and the heater, or dedicated suction and return lines, or built-in or built-up connections to allow for future solar heating.
§ 110.4(b)2:	**Covers.** Outdoor pools or spas that have a heat pump or gas heater must have a cover.
§ 110.4(b)3:	**Directional Inlets and Time Switches for Pools.** Pools must have directional inlets that adequately mix the pool water, and a time switch that will allow all pumps to be set or programmed to run only during off-peak electric demand periods.
§ 110.5:	**Pilot Light.** Natural gas pool and spa heaters must not have a continuously burning pilot light.
§ 150.0(p):	**Pool Systems and Equipment Installation.** Residential pool systems or equipment must meet the specified requirements for pump sizing, flow rate, piping, filters, and valves.*
Lighting Measures:	
§ 110.9:	**Lighting Controls and Components.** All lighting control devices and systems, ballasts, and luminaires must meet the applicable requirements of § 110.9.*
§ 150.0(k)1A:	**Luminaire Efficacy.** All installed luminaires must meet the requirements in Table 150.0-A.
§ 150.0(k)1B:	**Blank Electrical Boxes.** The number of electrical boxes that are more than five feet above the finished floor and do not contain a luminaire or other device must be no greater than the number of bedrooms. These electrical boxes must be served by a dimmer, vacancy sensor control, or fan speed control.
§ 150.0(k)1C:	**Recessed Downlight Luminaires in Ceilings.** Luminaires recessed into ceilings must meet all of the requirements for: insulation contact (IC) labeling; air leakage; sealing; maintenance; and socket and light source as described in § 150.0(k)1C.
§ 150.0(k)1D:	**Electronic Ballasts for Fluorescent Lamps.** Ballasts for fluorescent lamps rated 13 watts or greater must be electronic and must have an output frequency no less than 20 kHz.
§ 150.0(k)1E:	**Night Lights, Step Lights, and Path Lights.** Night lights, step lights and path lights are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided they are rated to consume no more than 5 watts of power and emit no more than 150 lumens.
§ 150.0(k)1F:	**Lighting Integral to Exhaust Fans.** Lighting integral to exhaust fans (except when installed by the manufacturer in kitchen exhaust hoods) must meet the applicable requirements of § 150.0(k).*
§ 150.0(k)1G:	**Screw based luminaires.** Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8.*
§ 150.0(k)1H:	**Light Sources in Enclosed or Recessed Luminaires.** Lamps and other separable light sources that are not compliant with the JA8 elevated temperature requirements, including marking requirements, must not be installed in enclosed or recessed luminaires.
§ 150.0(k)1I:	**Light Sources in Drawers, Cabinets, and Linen Closets.** Light sources internal to drawers, cabinetry or linen closets are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided that they are rated to consume no more than 5 watts of power, emit no more than 150 lumens, and are equipped with controls that automatically turn the lighting off when the drawer, cabinet or linen closet is closed.
§ 150.0(k)2A:	**Interior Switches and Controls.** All forward phase cut dimmers used with LED light sources must comply with NEMA SSL 7A.
§ 150.0(k)2B:	**Interior Switches and Controls.** Exhaust fans must be controlled separately from lighting systems.*
§ 150.0(k)2C:	**Interior Switches and Controls.** Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned ON and OFF.*
§ 150.0(k)2D:	**Interior Switches and Controls.** Controls and equipment must be installed in accordance with manufacturer's instructions.
§ 150.0(k)2E:	**Interior Switches and Controls.** Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the control is installed to comply with § 150.0(k).
§ 150.0(k)2F:	**Interior Switches and Controls.** Lighting controls must comply with the applicable requirements of § 110.9.

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§ 150.0(k)2G:	**Interior Switches and Controls.** An energy management control system (EMCS) may be used to comply with control requirements if it: provides functionality of the specified control according to § 110.9; meets the Installation Certificate requirements of § 130.4; meets the EMCS requirements of § 130.0(e); and meets all other requirements in § 150.0(k)2.
§ 150.0(k)2H:	**Interior Switches and Controls.** A multiscene programmable controller may be used to comply with dimmer requirements in § 150.0(k) if it provides the functionality of a dimmer according to § 110.9, and complies with all other applicable requirements in § 150.0(k)2.
§ 150.0(k)2I:	**Interior Switches and Controls.** In bathrooms, garages, laundry rooms, and utility rooms, at least one luminaire in each of these spaces must be controlled by an occupant sensor or a vacancy sensor providing automatic-off functionality. If an occupant sensor is installed, it must be initially configured to manual-on operation using the manual control required under Section 150.0(k)2C.
§ 150.0(k)2J:	**Interior Switches and Controls.** Luminaires that are or contain light sources that meet Reference Joint Appendix JA8 requirements for dimming, and that are not controlled by occupancy or vacancy sensors, must have dimming controls.*
§ 150.0(k)2K:	**Interior Switches and Controls.** Under cabinet lighting must be controlled separately from ceiling-installed lighting systems.
§ 150.0(k)3A:	**Residential Outdoor Lighting.** For single-family residential buildings, outdoor lighting permanently mounted to a residential building, or to other buildings on the same lot, must meet the requirement in item § 150.0(k)3Ai (ON and OFF switch) and the requirements in either § 150.0(k)3Aii (photocell and either a motion sensor or automatic time switch control) or § 150.0(k)3Aiii (astronomical time clock), or an EMCS.
§ 150.0(k)3B:	**Residential Outdoor Lighting.** For low-rise residential buildings with four or more dwelling units, outdoor lighting for private patios, entrances, balconies, and porches; and residential parking lots and carports with less than eight vehicles per site must comply with either § 150.0(k)3A or with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0.
§ 150.0(k)3C:	**Residential Outdoor Lighting.** For low-rise residential buildings with four or more dwelling units, any outdoor lighting for residential parking lots or carports with a total of eight or more vehicles per site and any outdoor lighting not regulated by § 150.0(k)3B or § 150.0(k)3D must comply with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0.
§ 150.0(k)4:	**Internally illuminated address signs.** Internally illuminated address signs must comply with § 140.8; or must consume no more than 5 watts of power as determined according to § 130.0(c).
§ 150.0(k)5:	**Residential Garages for Eight or More Vehicles.** Lighting for residential parking garages for eight or more vehicles must comply with the applicable requirements for nonresidential garages in Sections 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0.
§ 150.0(k)6A:	**Interior Common Areas of Low-rise Multifamily Residential Buildings.** In a low-rise multifamily residential building where the total interior common area in a single building equals 20 percent or less of the floor area, permanently installed lighting for the interior common areas in that building must be comply with Table 150.0-A and be controlled by an occupant sensor.
§ 150.0(k)6B:	**Interior Common Areas of Low-rise Multifamily Residential Buildings.** In a low-rise multifamily residential building where the total interior common area in a single building equals more than 20 percent of the floor area, permanently installed lighting for the interior common areas in that building must: i. Comply with the applicable requirements in Sections 110.9, 130.0, 130.1, 140.6 and 141.0; and ii. Lighting installed in corridors and stairwells must be controlled by occupant sensors that reduce the lighting power in each space by at least 50 percent. The occupant sensors must be capable of turning the light fully on and off from all designed paths of ingress and egress.
Solar Ready Buildings:	
§ 110.10(a)1:	**Single Family Residences.** Single family residences located in subdivisions with 10 or more single family residences and where the application for a tentative subdivision map for the residences has been deemed complete and approved by the enforcement agency, which do not have a photovoltaic system installed, must comply with the requirements of § 110.10(b) through § 110.10(e).
§ 110.10(a)2:	**Low-rise Multifamily Buildings.** Low-rise multi-family buildings that do not have a photovoltaic system installed must comply with the requirements of § 110.10(b) through § 110.10(d).
§ 110.10(b)1:	**Minimum Solar Zone Area.** The solar zone must have a minimum total area as described below. The solar zone must comply with access, pathway, smoke ventilation, and spacing requirements as specified in Title 24, Part 9 or other parts of Title 24 or in any requirements adopted by a local jurisdiction. The solar zone total area must be comprised of areas that have no dimension less than 5 feet and are no less than 80 square feet each for buildings with roof areas less than or equal to 10,000 square feet or no less than 160 square feet each for buildings with roof areas greater than 10,000 square feet. For single family residences, the solar zone must be located on the roof or overhang of the building and have a total area no less than 250 square feet. For low-rise multi-family buildings the solar zone must be located on the roof or overhang of the building, or on the roof or overhang of another structure located within 250 feet of the building, or on covered parking installed with the building project, and have a total area no less than 15 percent of the total roof area of the building excluding any skylight area. The solar zone requirement is applicable to the entire building, including mixed occupancy.*
§ 110.10(b)2:	**Azimuth.** All sections of the solar zone located on steep-sloped roofs must be oriented between 90 degrees and 300 degrees of true north.
§ 110.10(b)3A:	**Shading.** The solar zone must not contain any obstructions, including but not limited to: vents, chimneys, architectural features, and roof mounted equipment.*
§ 110.10(b)3B:	**Shading.** Any obstruction located on the roof or any other part of the building that projects above a solar zone must be located at least twice the distance, measured in the horizontal plane, of the height difference between the highest point of the obstruction and the horizontal projection of the nearest point of the solar zone, measured in the vertical plane.*
§ 110.10(b)4:	**Structural Design Loads on Construction Documents.** For areas of the roof designated as a solar zone, the structural design loads for roof dead load and roof live load must be clearly indicated on the construction documents.
§ 110.10(c):	**Interconnection Pathways.** The construction documents must indicate: a location reserved for inverters and metering equipment and a pathway reserved for routing of conduit from the solar zone to the point of interconnection with the electrical service; and for single family residences and central water-heating systems, a pathway reserved for routing plumbing from the solar zone to the water-heating system.
§ 110.10(d):	**Documentation.** A copy of the construction documents or a comparable document indicating the information from § 110.10(b) through § 110.10(c) must be provided to the occupant.
§ 110.10(e)1:	**Main Electrical Service Panel.** The main electrical service panel must have a minimum busbar rating of 200 amps.
§ 110.10(e)2:	**Main Electrical Service Panel.** The main electrical service panel must have a reserved space to allow for the installation of a double pole circuit breaker for a future solar electric installation. The reserved space must be permanently marked as "For Future Solar Electric".

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HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name: J.A. Russo Ent.(Lot 55) — Date: 1/18/2022
System Name: Res HVAC — Floor Area: 1,635

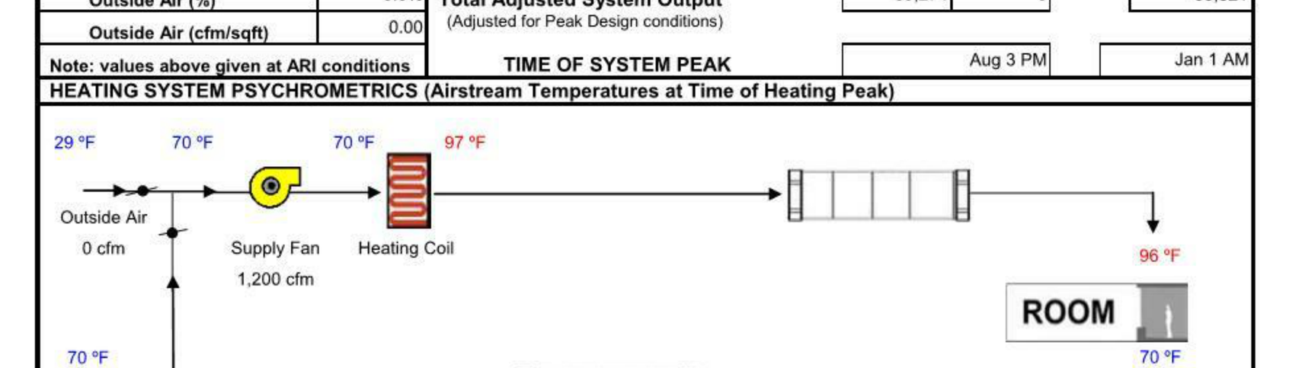
ENGINEERING CHECKS	
Number of Systems	1
Heating System	
Output per System	50,000
Total Output (Btuh)	50,000
Output (Btuh/sqft)	30.6
Cooling System	
Output per System	47,400
Total Output (Btuh)	47,400
Total Output (Tons)	4.0
Total Output (Btuh/sqft)	29.0
Total Output (sqft/Ton)	413.9
Air System	
CFM per System	1,200
Airflow (cfm)	1,200
Airflow (cfm/sqft)	0.73
Airflow (cfm/Ton)	303.8
Outside Air (%)	0.0%
Outside Air (cfm/sqft)	0.00

Note: values above given at ARI conditions

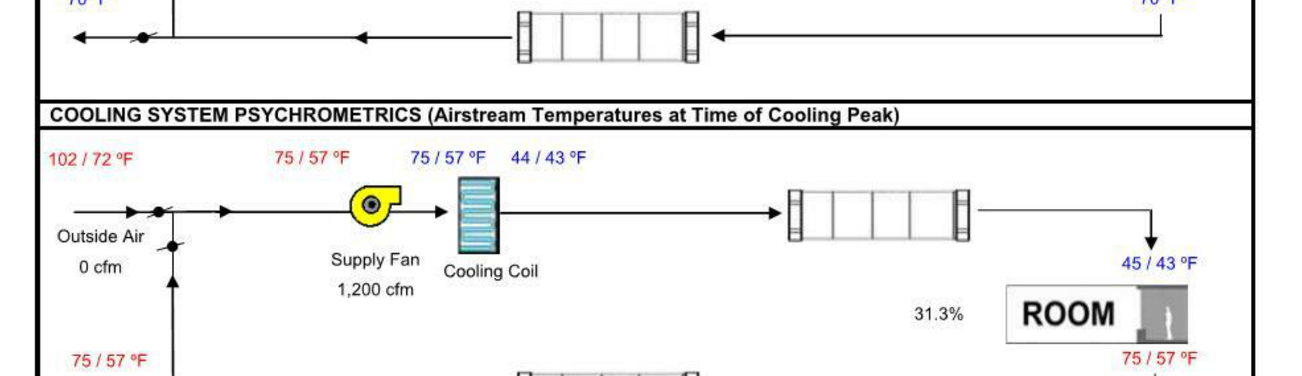
SYSTEM LOAD	COIL COOLING PEAK			COIL HTG. PEAK	
	CFM	Sensible	Latent	CFM	Sensible
Total Room Loads	520	16,489	1,055	609	16,662
Return Vented Lighting		0			
Return Air Ducts		594			486
Return Fan		0			0
Ventilation	0	0	0	0	0
Supply Fan		0			0
Supply Air Ducts		594			486
TOTAL SYSTEM LOAD		17,677	1,055		17,634

HVAC EQUIPMENT SELECTION			
BOSCH BVA-48WN1-M20	39,274	0	33,821
Total Adjusted System Output (Adjusted for Peak Design conditions)	39,274	0	33,821
TIME OF SYSTEM PEAK	Aug 3 PM		Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)



Proposed Single Family Residence For:
Parthenon Development, LLC
13024 Via Verrazano, Riverside, CA 92503

26 Apr. 2022
21-4372

LICENSED ARCHITECT — Douglas Andresen — C-14504 — 12-31-23 RENEWAL DATE — STATE OF CALIFORNIA

Title 24 Compliance

A-2.1

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE RESIDENTIAL MANDATORY MEASURES (January 2020, Includes August 2019 Supplement)

ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

Y = YES
N/A = NOT APPLICABLE
RESPON. PARTY = RESPONSIBLE PARTY (ie: ARCHITECT, ENGINEER, OWNER, CONTRACTOR, INSPECTOR ETC.)

Y	N/A	RESPON. PARTY

CHAPTER 3
GREEN BUILDING
SECTION 301 GENERAL

301.1 SCOPE. Buildings shall be designed to include the green building measures specified as mandatory in the application checklists contained in this code. Voluntary green building measures are also included in the application checklists and may be included in the design and construction of structures covered by this code, but are not required unless adopted by a city, county, or city and county as specified in Section 101.7.

301.1.1 Additions and alterations. [HCD] The mandatory provisions of Chapter 4 shall be applied to additions or alterations of existing residential buildings where the addition or alteration increases the building's conditioned area, volume, or size. The requirements shall apply only to and/or within the specific area of the addition or alteration.

Note: On and after January 1, 2014, residential buildings undergoing permitted alterations, additions, or improvements shall replace noncompliant plumbing fixtures with water-conserving plumbing fixtures. Plumbing fixture replacement is required prior to issuance of a certificate of final completion, certificate of occupancy or final permit approval by the local building department. See Civil Code Section 1101.1, et seq., for the definition of a noncompliant plumbing fixture, types of residential buildings affected and other important enactment dates.

301.2 LOW-RISE AND HIGH-RISE RESIDENTIAL BUILDINGS. [HCD] The provisions of individual sections of CALGreen may apply to either low-rise residential buildings high-rise residential buildings, or both. Individual sections will be designated by banners to indicate where the section applies specifically to low-rise only (LR) or high-rise only (HR). When the section applies to both low-rise and high-rise buildings, no banner will be used.

SECTION 302 MIXED OCCUPANCY BUILDINGS

302.1 MIXED OCCUPANCY BUILDINGS. In mixed occupancy buildings, each portion of a building shall comply with the specific green building measures applicable to each specific occupancy.

ABBREVIATION DEFINITIONS:

HCD	Department of Housing and Community Development
BSC	California Building Standards Commission
DSA-SS	Division of the State Architect, Structural Safety
OSHPD	Office of Statewide Health Planning and Development
LR	Low Rise
HR	High Rise
AA	Additions and Alterations
N	New

CHAPTER 4
RESIDENTIAL MANDATORY MEASURES
DIVISION 4.1 PLANNING AND DESIGN

SECTION 4.102 DEFINITIONS
4.102.1 DEFINITIONS
The following terms are defined in Chapter 2 *(and are included here for reference)*

FRENCH DRAIN. A trench, hole or other depressed area loosely filled with rock, gravel, fragments of brick or similar pervious material used to collect or channel drainage or runoff water.

WATTLES. Wattles are used to reduce sediment in runoff. Wattles are often constructed of natural plant materials such as hay, straw or similar material shaped in the form of tubes and placed on a downflow slope. Wattles are also used for perimeter and inlet controls.

4.106 SITE DEVELOPMENT
4.106.1 GENERAL. Preservation and use of available natural resources shall be accomplished through evaluation and careful planning to minimize negative effects on the site and adjacent areas. Preservation of slopes, management of storm water drainage and erosion controls shall comply with this section.

4.106.2 STORM WATER DRAINAGE AND RETENTION DURING CONSTRUCTION. Projects which disturb less than one acre of soil and are not part of a larger common plan of development which in total disturbs one acre or more, shall manage storm water drainage during construction. In order to manage storm water drainage during construction, one or more of the following measures shall be implemented to prevent flooding of adjacent property, prevent erosion and retain soil runoff on the site.

1. Retention basins of sufficient size shall be utilized to retain storm water on the site.
2. Where storm water is conveyed to a public drainage system, collection point, gutter or similar disposal method, water shall be filtered by use of a barrier system, wattle or other method approved by the enforcing agency.
3. Compliance with a lawfully enacted storm water management ordinance.

Note: Refer to the State Water Resources Control Board for projects which disturb one acre or more of soil, or are part of a larger common plan of development which in total disturbs one acre or more of soil.

(Website: https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html)

4.106.3 GRADING AND PAVING. Construction plans shall indicate how the site grading or drainage system will manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface water include, but are not limited to, the following:

1. Swales
2. Water collection and disposal systems
3. French drains
4. Water retention gardens
5. Other water measures which keep surface water away from buildings and aid in groundwater recharge.

Exception: Additions and alterations not altering the drainage path.

4.106.4 Electric vehicle (EV) charging for new construction. New construction shall comply with Sections 4.106.4.1, 4.106.4.2, or 4.106.4.3 to facilitate future installation and use of EV chargers. Electric vehicle supply equipment (EVSE) shall be installed in accordance with the *California Electrical Code,* Article 625.

Exceptions:
1. On a case-by-case basis, where the local enforcing agency has determined EV charging and infrastructure are not feasible based upon one or more of the following conditions:
   1.1 Where there is no commercial power supply.
   1.2 Where there is evidence substantiating that meeting the requirements will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the homeowner or the developer by more than $400.00 per dwelling unit.
2. Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) without additional parking facilities.

4.106.4.1 New one- and two-family dwellings and townhouses with attached private garages. For each dwelling unit, install a listed raceway to accommodate a dedicated 208/240-volt branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or other enclosure in close proximity to the proposed location of an EV charger. Raceways are required to be continuous at enclosed, inaccessible or concealed areas and spaces. The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device.

4.106.4.1.1 Identification. The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging as "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE".

4.106.4.2 New multifamily dwellings. If residential parking is available, ten (10) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, shall be electric vehicle charging spaces (EV spaces) capable of supporting future EVSE. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.

Notes:
1. Construction documents are intended to demonstrate the project's capability and capacity for facilitating future EV charging.
2. There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.

4.106.4.2.1 Electric vehicle charging space (EV space) locations. Construction documents shall indicate the location of proposed EV spaces. Where common use parking is provided at least one EV space shall be located in the common use parking area and shall be available for use by all residents.

4.106.4.2.1.1 Electric Vehicle Charging Stations (EVCS) When EV chargers are installed, EV spaces required by Section 4.106.2.2, Item 3, shall comply with at least one of the following options:

1. The EV space shall be located adjacent to an accessible parking space meeting the requirements of the *California Building Code,* Chapter 11A, to allow use of the EV charger from the accessible parking space.
2. The EV space shall be located on an accessible route, as defined in the *California Building Code,* Chapter 2, to the building.

Exception: Electric vehicle charging stations designed and constructed in compliance with the *California Building Code*, Chapter 11B, are not required to comply with Section 4.106.4.2.1.1 and Section 4.106.4.2.2, Item 3.

Note: Electric Vehicle charging stations serving public housing are required to comply with the *California Building Code*, Chapter 11B.

4.106.4.2.2 Electric vehicle charging space (EV space) dimensions. The EV space shall be designed to comply with the following:

1. The minimum length of each EV space shall be 18 feet (5486 mm).
2. The minimum width of each EV space shall be 9 feet (2743 mm).
3. One in every 25 EV spaces, but not less than one EV space, shall have an 8-foot (2438 mm) wide minimum aisle. A 5-foot (1524 mm) wide minimum aisle shall be permitted provided the minimum width of the EV space is 12 feet (3658 mm).
   a. Surface slope for this EV space and the aisle shall not exceed 1 unit vertical in 48 units horizontal (2.083 percent slope) in any direction.

4.106.4.2.3 Single EV space required. Install a listed raceway capable of accommodating a 208/240-volt dedicated branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or enclosure in close proximity to the proposed location of the EV space. Construction documents shall identify the raceway termination point. The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device.

4.106.4.2.4 Multiple EV spaces required. Construction documents shall indicate the raceway termination point and proposed location of future EV spaces and EV chargers. Construction documents shall also provide information on amperage of future EVSE, raceway method(s), wiring schematics and electrical load calculations to verify that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at the full rated amperage of the EVSE. Plan design shall be based upon a 40-ampere minimum branch circuit. Required raceways and related components that are planned to be installed underground, enclosed, inaccessible or in concealed areas and spaces shall be installed at the time of original construction.

4.106.4.2.5 Identification. The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging purposes as "EV CAPABLE" in accordance with the *California Electrical Code.*

4.106.4.3 New hotels and motels. All newly constructed hotels and motels shall provide EV spaces capable of supporting future installation of EVSE. The construction documents shall identify the location of the EV spaces.

Notes:

1. Construction documents are intended to demonstrate the project's capability and capacity or facilitating future EV charging.
2. There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.

4.106.4.3.1 Number of required EV spaces. The number of required EV spaces shall be based on the total number of parking spaces provided for all types of parking facilities in accordance with Table 4.106.4.3.1. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.

TABLE 4.106.4.3.1

TOTAL NUMBER OF PARKING SPACES	NUMBER OF REQUIRED EV SPACES
0-9	0
10-25	1
26-50	2
51-75	4
76-100	5
101-150	7
151-200	10
201 and over	6 percent of total

4.106.4.3.2 Electric vehicle charging space (EV space) dimensions. The EV spaces shall be designed to comply with the following:

1. The minimum length of each EV space shall be 18 feet (5486mm).
2. The minimum width of each EV space shall be 9 feet (2743mm)

4.106.4.3.3 Single EV space required. When a single EV space is required, the EV space shall be designed in accordance with Section 4.106.4.2.3.

4.106.4.3.4 Multiple EV spaces required. When multiple EV spaces are required, the EV spaces shall be designed in accordance with Section 4.106.4.2.4.

4.106.4.3.5 Identification. The service panels or sub-panels shall be identified in accordance with Section 4.106.4.2.5.

4.106.4.3.6 Accessible EV spaces. In addition to the requirements in Section 4.106.4.3, EV spaces for hotels/motels and all EVSE, when installed, shall comply with the accessibility provisions for the EV charging stations in the *California Building Code*, Chapter 11B.

DIVISION 4.2 ENERGY EFFICIENCY

4.201 GENERAL
4.201.1 SCOPE. For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory standards.

DIVISION 4.3 WATER EFFICIENCY AND CONSERVATION

4.303 INDOOR WATER USE
4.303.1 WATER CONSERVING PLUMBING FIXTURES AND FITTINGS. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the sections 4.303.1.1, 4.303.1.2, 4.303.1.3, and 4.303.4.4.

Note: All noncompliant plumbing fixtures in any residential real property shall be replaced with water-conserving plumbing fixtures. Plumbing fixture replacement is required prior to issuance of a certificate of final completion, certificate of occupancy, or final permit approval by the local building department. See Civil Code Section 1101.1, et seq., for the definition of a noncompliant plumbing fixture, types of residential buildings affected and other important enactment dates.

4.303.1.1 Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush. Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-type Toilets.

Note: The effective flush volume of dual flush toilets is defined as the composite, average flush volume of two reduced flushes and one full flush.

4.303.1.2 Urinals. The effective flush volume of wall mounted urinals shall not exceed 0.125 gallons per flush. The effective flush volume of all other urinals shall not exceed 0.5 gallons per flush.

4.303.1.3 Showerheads.

4.303.1.3.1 Single Showerhead. Showerheads shall have a maximum flow rate of not more than 1.8 gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads.

4.303.1.3.2 Multiple showerheads serving one shower. When a shower is served by more than one showerhead, the combined flow rate of all the showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 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.

Note: A hand-held shower shall be considered a showerhead.

4.303.1.4 Faucets.

4.303.1.4.1 Residential Lavatory Faucets. The maximum flow rate of residential lavatory faucets shall not exceed 1.2 gallons per minute at 60 psi. The minimum flow rate of residential lavatory faucets shall not be less than 0.8 gallons per minute at 20 psi.

4.303.1.4.2 Lavatory Faucets in Common and Public Use Areas. The maximum flow rate of lavatory faucets installed in common and public use areas (outside of dwellings or sleeping units) in residential buildings shall not exceed 0.5 gallons per minute at 60 psi.

4.303.1.4.3 Metering Faucets. Metering faucets when installed in residential buildings shall not deliver more than 0.2 gallons per cycle.

4.303.1.4.4 Kitchen Faucets. The maximum flow rate of kitchen faucets shall not exceed 1.8 gallons per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi, and must default to a maximum flow rate of 1.8 gallons per minute at 60 psi.

Note: Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.

4.303.2 STANDARDS FOR PLUMBING FIXTURES AND FITTINGS. Plumbing fixtures and fittings shall be installed in accordance with the *California Plumbing Code*, and shall meet the applicable standards referenced in Table 1701.1 of the *California Plumbing Code.*

NOTE:
THIS TABLE COMPILES THE DATA IN SECTION 4.303.1, AND IS INCLUDED AS A CONVENIENCE FOR THE USER.

TABLE - MAXIMUM FIXTURE WATER USE

FIXTURE TYPE	FLOW RATE
SHOWER HEADS (RESIDENTIAL)	1.8 GMP @ 80 PSI
LAVATORY FAUCETS (RESIDENTIAL)	MAX. 1.2 GPM @ 60 PSI MIN. 0.8 GPM @ 20 PSI
LAVATORY FAUCETS IN COMMON & PUBLIC USE AREAS	0.5 GPM @ 60 PSI
KITCHEN FAUCETS	1.8 GPM @ 60 PSI
METERING FAUCETS	0.2 GAL/CYCLE
WATER CLOSET	1.28 GAL/FLUSH
URINALS	0.125 GAL/FLUSH

4.304 OUTDOOR WATER USE
4.304.1 OUTDOOR POTABLE WATER USE IN LANDSCAPE AREAS. Residential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent.

NOTES:

1. The Model Water Efficient Landscape Ordinance (MWELO) is located in the *California Code Regulations,* Title 23, Chapter 2.7, Division 2. MWELO and supporting documents, including water budget calculator, are available at: https://www.water.ca.gov/

DIVISION 4.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

4.406 ENHANCED DURABILITY AND REDUCED MAINTENANCE
4.406.1 RODENT PROOFING. Annular spaces around pipes, electric cables, conduits or other openings in sole/bottom plates at exterior walls shall be protected against the passage of rodents by closing such openings with cement mortar, concrete masonry or a similar method acceptable to the enforcing agency.

4.408 CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING
4.408.1 CONSTRUCTION WASTE MANAGEMENT. Recycle and/or salvage for reuse a minimum of 65 percent of the non-hazardous 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.

Exceptions:

1. Excavated soil and land-clearing debris.
2. 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.
3. 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.

4.408.2 CONSTRUCTION WASTE MANAGEMENT PLAN. Submit a construction waste management plan in conformance with Items 1 through 5. The construction waste management plan shall be updated as necessary and shall be available during construction for examination by the enforcing agency.

1. 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.
2. Specify if construction and demolition waste materials will be sorted on-site (source separated) or bulk mixed (single stream).
3. Identify diversion facilities where the construction and demolition waste material collected will be taken.
4. Identify construction methods employed to reduce the amount of construction and demolition waste generated.
5. Specify that the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both.

4.408.3 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.

Note: The owner or contractor may make the determination if the construction and demolition waste materials will be diverted by a waste management company.

4.408.4 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 lbs./sq.ft. of the building area shall meet the minimum 65% construction waste reduction requirement in Section 4.408.1

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 minimum 65% construction waste reduction requirement in Section 4.408.1

4.408.5 DOCUMENTATION. Documentation shall be provided to the enforcing agency which demonstrates compliance with Section 4.408.2, items 1 through 5, Section 4.408.3 or Section 4.408.4..

Notes:

1. Sample forms found in "A Guide to the California Green Building Standards Code (Residential)" located at www.hcd.ca.gov/CALGreen.html may be used to assist in documenting compliance with this section.
2. Mixed construction and demolition debris (C & D) processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).

DIVISION 4.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

4.410 BUILDING MAINTENANCE AND OPERATION
4.410.1 OPERATION AND MAINTENANCE MANUAL. At the time of final inspection, a manual, compact disc, web-based reference or other media acceptable to the enforcing agency which includes all of the following shall be placed in the building:

1. Directions to the owner or occupant that the manual shall remain with the building throughout the life cycle of the structure.
2. Operation and maintenance instructions for the following:
   a. Equipment and appliances, including water-saving devices and systems, HVAC systems, photovoltaic systems, electric vehicle chargers, water-heating systems and other major appliances and equipment.
   b. Roof and yard drainage, including gutters and downspouts.
   c. Space conditioning systems, including condensers and air filters.
   d. Landscape irrigation systems.
   e. Water reuse systems.
3. Information from local utility, water and waste recovery providers on methods to further reduce resource consumption, including recycle programs and locations.
4. Public transportation and/or carpool options available in the area.
5. 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.
6. Information about water-conserving landscape and irrigation design and controllers which conserve water.
7. Instructions for maintaining gutters and downspouts and the importance of diverting water at least 5 feet away from the foundation.
8. Information on required routine maintenance measures, including, but not limited to, caulking, painting, grading around the building, etc.
9. Information about state solar energy and incentive programs available.
10. A copy of all special inspections verifications required by the enforcing agency or this code.

4.410.2 RECYCLING BY OCCUPANTS. Where 5 or more multifamily dwelling units are constructed on a building site, provide readily accessible area(s) that serves all buildings on the site and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waster, and metals, or meet a lawfully enacted local recycling ordinance, if more restrictive.

Exception: Rural jurisdictions that meet and apply for the exemption in Public Resources Code Section 42649.82 (a)(2)(A) et seq. are note required to comply with the organic waste portion of this section.

DIVISION 4.5 ENVIRONMENTAL QUALITY

SECTION 4.501 GENERAL
4.501.1 Scope
The provisions of this chapter shall outline means of reducing the quality of air contaminants that are odorous, irritating and/or harmful to the comfort and well being of a building's installers, occupants and neighbors.

SECTION 4.502 DEFINITIONS
5.102.1 DEFINITIONS
The following terms are defined in Chapter 2 *(and are included here for reference)*

AGRIFIBER PRODUCTS. Agrifiber products include wheatboard, strawboard, panel substrates and door cores, not including furniture, fixtures and equipment (FF&E) not considered base building elements.

COMPOSITE WOOD PRODUCTS. Composite wood products include hardwood plywood, particleboard and medium density fiberboard. "Composite wood products" does not include hardboard, structural plywood, structural panels, structural composite lumber, oriented strand board, glued laminated timber, prefabricated wood I-joists or finger-jointed lumber, all as specified in California Code of regulations (CCR), title 17, Section 93120.1.

DIRECT-VENT APPLIANCE. A fuel-burning appliance with a sealed combustion system that draws all air for combustion from the outside atmosphere and discharges all flue gases to the outside atmosphere.

MAXIMUM INCREMENTAL REACTIVITY (MIR). The maximum change in weight of ozone formed by adding a compound to the "Base Reactive Organic Gas (ROG) Mixture" per weight of compound added, expressed to hundredths of a gram ($g\ O^3/g$ ROC).
Note: MIR values for individual compounds and hydrocarbon solvents are specified in CCR, Title 17, Sections 94700 and 94701.

MOISTURE CONTENT. The weight of the water in wood expressed in percentage of the weight of the oven-dry wood.

PRODUCT-WEIGHTED MIR (PWMIR). The sum of all weighted-MIR for all ingredients in a product subject to this article. The PWMIR is the total product reactivity expressed to hundredths of a gram of ozone formed per gram of product (excluding container and packaging).
Note: PWMIR is calculated according to equations found in CCR, Title 17, Section 94521 (a).

REACTIVE ORGANIC COMPOUND (ROC). Any compound that has the potential, once emitted, to contribute to ozone formation in the troposphere.

VOC. A volatile organic compound (VOC) broadly defined as a chemical compound based on carbon chains or rings with vapor pressures greater than 0.1 millimeters of mercury at room temperature. These compounds typically contain hydrogen and may contain oxygen, nitrogen and other elements. See CCR Title 17, Section 94508(a).

4.503 FIREPLACES
4.503.1 GENERAL. Any installed gas fireplace shall be a direct-vent sealed-combustion type. Any installed woodstove or pellet stove shall comply with U.S. EPA New Source Performance Standards (NSPS) emission limits as applicable, and shall have a permanent label indicating they are certified to meet the emission limits. Woodstoves, pellet stoves and fireplaces shall also comply with applicable local ordinances.

4.504 POLLUTANT CONTROL
4.504.1 COVERING OF DUCT OPENINGS & PROTECTION OF MECHANICAL EQUIPMENT DURING CONSTRUCTION. At the time of rough installation, during storage on the construction site and until final startup of the heating, cooling and ventilating equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheet metal or other methods acceptable to the enforcing agency to reduce the amount of water, dust or debris which may enter the system.

4.504.2 FINISH MATERIAL POLLUTANT CONTROL. Finish materials shall comply with this section.

4.504.2.1 Adhesives, Sealants and Caulks. Adhesives, sealant and caulks used on the project shall meet the requirements of the following standards unless more stringent local or regional air pollution or air quality management district rules apply:

1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable or SCAQMD Rule 1168 VOC limits, as shown in Table 4.504.1 or 4.504.2, as applicable. Such products also shall comply with the Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and tricloroethylene), except for aerosol products, as specified in Subsection 2 below.
2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than 1 pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of *California Code of Regulations*, Title 17, commencing with section 94507.

4.504.2.2 Paints and Coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Suggested Control Measure, as shown in Table 4.504.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 4.504.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in subsections 4.21, 4.36, and 4.37 of the 2007 California Air Resources Board, Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 4.504.3 shall apply.

4.504.2.3 Aerosol Paints and Coatings. Aerosol paints and coatings shall meet the Product-weighted MIR Limits for ROC in Section 94522(a)(2) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(e)(1) and (f)(1) of *California Code of Regulations*, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8, Rule 49.

4.504.2.4 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:

1. Manufacturer's product specification.
2. Field verification of on-site product containers.

TABLE 4.504.1 - ADHESIVE VOC LIMIT[1,2]

(Less Water and Less Exempt Compounds in Grams per Liter)

ARCHITECTURAL APPLICATIONS	VOC LIMIT
INDOOR CARPET ADHESIVES	50
CARPET PAD ADHESIVES	50
OUTDOOR CARPET ADHESIVES	150
WOOD FLOORING ADHESIVES	100
RUBBER FLOOR ADHESIVES	60
SUBFLOOR ADHESIVES	50
CERAMIC TILE ADHESIVES	65
VCT & ASPHALT TILE ADHESIVES	50
DRYWALL & PANEL ADHESIVES	50
COVE BASE ADHESIVES	50
MULTIPURPOSE CONSTRUCTION ADHESIVE	70
STRUCTURAL GLAZING ADHESIVES	100
SINGLE-PLY ROOF MEMBRANE ADHESIVES	250
OTHER ADHESIVES NOT LISTED	50
SPECIALTY APPLICATIONS	
PVC WELDING	510
CPVC WELDING	490
ABS WELDING	325
PLASTIC CEMENT WELDING	250
ADHESIVE PRIMER FOR PLASTIC	550
CONTACT ADHESIVE	80
SPECIAL PURPOSE CONTACT ADHESIVE	250
STRUCTURAL WOOD MEMBER ADHESIVE	140
TOP & TRIM ADHESIVE	250
SUBSTRATE SPECIFIC APPLICATIONS	
METAL TO METAL	30
PLASTIC FOAMS	50
POROUS MATERIAL (EXCEPT WOOD)	50
WOOD	30
FIBERGLASS	80

1. IF AN ADHESIVE IS USED TO BOND DISSIMILAR SUBSTRATES TOGETHER, THE ADHESIVE WITH THE HIGHEST VOC CONTENT SHALL BE ALLOWED.
2. FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THIS TABLE, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168.

TABLE 4.504.2 - SEALANT VOC LIMIT

(Less Water and Less Exempt Compounds in Grams per Liter)

SEALANTS	VOC LIMIT
ARCHITECTURAL	250
MARINE DECK	760
NONMEMBRANE ROOF	300
ROADWAY	250
SINGLE-PLY ROOF MEMBRANE	450
OTHER	420
SEALANT PRIMERS	
ARCHITECTURAL	
NON-POROUS	250
POROUS	775
MODIFIED BITUMINOUS	500
MARINE DECK	760
OTHER	750

TABLE 4.504.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS[2,3]

GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS

COATING CATEGORY	VOC LIMIT
FLAT COATINGS	50
NON-FLAT COATINGS	100
NONFLAT-HIGH GLOSS COATINGS	150
SPECIALTY COATINGS	
ALUMINUM ROOF COATINGS	400
BASEMENT SPECIALTY COATINGS	400
BITUMINOUS ROOF COATINGS	50
BITUMINOUS ROOF PRIMERS	350
BOND BREAKERS	350
CONCRETE CURING COMPOUNDS	350
CONCRETE/MASONRY SEALERS	100
DRIVEWAY SEALERS	50
DRY FOG COATINGS	150
FAUX FINISHING COATINGS	350
FIRE RESISTIVE COATINGS	350
FLOOR COATINGS	100
FORM-RELEASE COMPOUNDS	250
GRAPHIC ARTS COATINGS (SIGN PAINTS)	500
HIGH TEMPERATURE COATINGS	420
INDUSTRIAL MAINTENANCE COATINGS	250
LOW SOLIDS COATINGS[1]	120
MAGNESITE CEMENT COATINGS	450
MASTIC TEXTURE COATINGS	100
METALLIC PIGMENTED COATINGS	500
MULTICOLOR COATINGS	250
PRETREATMENT WASH PRIMERS	420
PRIMERS, SEALERS, & UNDERCOATERS	100
REACTIVE PENETRATING SEALERS	350
RECYCLED COATINGS	250
ROOF COATINGS	50
RUST PREVENTATIVE COATINGS	250
SHELLACS	
CLEAR	730
OPAQUE	550
SPECIALTY PRIMERS, SEALERS & UNDERCOATERS	100
STAINS	250
STONE CONSOLIDANTS	450
SWIMMING POOL COATINGS	340
TRAFFIC MARKING COATINGS	100
TUB & TILE REFINISH COATINGS	420
WATERPROOFING MEMBRANES	250
WOOD COATINGS	275
WOOD PRESERVATIVES	350
ZINC-RICH PRIMERS	340

1. GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS

2. THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE.

3. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD.

TABLE 4.504.5 - FORMALDEHYDE LIMITS[1]

MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION

PRODUCT	CURRENT LIMIT
HARDWOOD PLYWOOD VENEER CORE	0.05
HARDWOOD PLYWOOD COMPOSITE CORE	0.05
PARTICLE BOARD	0.09
MEDIUM DENSITY FIBERBOARD	0.11
THIN MEDIUM DENSITY FIBERBOARD[2]	0.13

1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIF. AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIF. CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.

2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16" (8 MM).

DIVISION 4.5 ENVIRONMENTAL QUALITY (continued)
4.504.3 CARPET SYSTEMS. All carpet installed in the building interior shall meet the testing and product requirements of at least one of the following:

1. Carpet and Rug Institute's Green Label Plus Program.
2. California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers" Version 1.1, February 2010 (also known as Specification 01350).
3. NSF/ANSI 140 at the Gold level.
4. Scientific Certifications Systems Indoor Advantage™ Gold.

4.504.3.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute's Green Label program.

4.504.3.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 4.504.1.

4.504.4 RESILIENT FLOORING SYSTEMS. Where resilient flooring is installed , at least 80% of floor area receiving resilient flooring shall comply with one or more of the following:

1. Products compliant with the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.1, February 2010 (also known as Specification 01350), certified as a CHPS Low-Emitting Material in the Collaborative for High Performance Schools (CHPS) High Performance Products Database.
2. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children & Schools program).
3. Certification under the Resilient Floor Covering Institute (RFCI) FloorScore program.
4. Meet the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers", Version 1.1, February 2010 (also known as Specification 01350).

4.504.5 COMPOSITE WOOD PRODUCTS. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings 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 Table 4.504.5

4.504.5.1 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:

1. Product certifications and specifications.
2. Chain of custody certifications.
3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.).
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269, European 636 3S standards, and Canadian CSA 0121, CSA 0151, CSA 0153 and CSA 0325 standards.
5. Other methods acceptable to the enforcing agency.

4.505 INTERIOR MOISTURE CONTROL
4.505.1 General. Buildings shall meet or exceed the provisions of the *California Building Standards Code.*

4.505.2 CONCRETE SLAB FOUNDATIONS. Concrete slab foundations required to have a vapor retarder by California Building Code, Chapter 19, or concrete slab-on-ground floors required to have a vapor retarder by the California Residential Code, Chapter 5, shall also comply with this section.

4.505.2.1 Capillary break. A capillary break shall be installed in compliance with at least one of the following:

1. A 4-inch (101.6 mm) thick base of 1/2 inch (12.7mm) or larger clean aggregate shall be provided with a vapor barrier in direct contact with concrete and a concrete mix design, which will address bleeding, shrinkage, and curling, shall be used. For additional information, see American Concrete Institute, ACI 302.2R-06.
2. Other equivalent methods approved by the enforcing agency.
3. A slab design specified by a licensed design professional.

4.505.3 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:

1. Moisture content shall be determined with either a probe-type or contact-type moisture meter.Equivalent moisture verification methods may be approved by the enforcing agency and shall satisfy requirements found in Section 101.8 of this code.
2. Moisture readings shall be taken at a point 2 feet (610 mm) to 4 feet (1219 mm) from the grade stamped end of each piece verified.
3. 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 a 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.

4.506 INDOOR AIR QUALITY AND EXHAUST
4.506.1 Bathroom exhaust fans. Each bathroom shall be mechanically ventilated and shall comply with the following:

1. Fans shall be ENERGY STAR compliant and be ducted to terminate outside the building.
2. Unless functioning as a component of a whole house ventilation system, fans must be controlled by a humidity control.
   a. Humidity controls shall be capable of adjustment between a relative humidity range less than or equal to 50% to a maximum of 80%. A humidity control may utilize manual or automatic means of adjustment.
   b. A humidity control may be a separate component to the exhaust fan and is not required to be integral (i.e., built-in)

Notes:

1. For the purposes of this section, a bathroom is a room which contains a bathtub, shower or tub/shower combination.
2. Lighting integral to bathroom exhaust fans shall comply with the *California Energy Code.*

4.507 ENVIRONMENTAL COMFORT
4.507.2 HEATING AND AIR-CONDITIONING SYSTEM DESIGN. Heating and air conditioning systems 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 - 2011 (Residential Load Calculation), ASHRAE handbooks or other equivalent design software or methods.
2. Duct systems are sized according to ANSI/ACCA 1 Manual D - 2014 (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 - 2014 (Residential Equipment Selection), or other equivalent design software or methods.

Exception: Use of alternate design temperatures necessary to ensure the system functions are acceptable.

CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS

702 QUALIFICATIONS
702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition to other certifications or qualifications acceptable to the enforcing agency, the following certifications or education may be considered by the enforcing agency when evaluating the qualifications of a special inspector:

1. Certification by a national or regional green building program or standard publisher.
2. Certification by a statewide energy consulting or verification organization, such as HERS raters, building performance contractors, and home energy auditors.
3. Successful completion of a third party apprentice training program in the appropriate trade.
4. Other programs acceptable to the enforcing agency.

Notes:
1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

703 VERIFICATIONS
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist.

Proposed Single Family Residence For:
Parthenon Development, LLC
13024 Via Verrazano, Riverside, CA 92503

26 Apr. 2022
21-4372

LICENSED ARCHITECT
Douglas Andresen
C-14504
12-31-23
RENEWAL DATE
STATE OF CALIFORNIA

2019 CalGreen Code

A-2.2

HOMEOWNER: PARTHENON DEVELOPMENT, LLC

ADDRESS: VIA VERRANZANO
RIVERSIDE, CA 92503
APN: 269-201-055

PHOTOVOLTAIC SOLAR PROJECT INFORMATION:

SYSTEM SIZE: 2.730 kW (DC), 2.030 kW (AC)

MODULES: (7) CANADIAN SOLAR CS3U-390MS
PEAK POWER = 390 W
MAX OPERATING CURRENT = 9.66 A
MAX OPERATING VOLTAGE = 40.4 V
OPEN CIRCUIT VOLTAGE = 48.2 V
SHORT CIRCUIT CURRENT = 10.17 A
MAX SERIES FUSE RATING = 30 A
TEMP. COEFF. OF Voc = -0.29%/°C
DIMENSIONS = 78.7" X 39.1" X 1.4"
WEIGHT = 49.6 LBS

ARRAY: INSTALLED WEIGHT = 2.9 PSF
ROOF COVERAGE = 150 SF,
LESS THAN 50% OF TOTAL ROOF AREA

MOUNTING HARDWARE: IRONRIDGE XR10 LIGHT RAIL
IRONRIDGE FLASHED FOOT ATTACHMENTS
¼" STAINLESS STEEL LAG BOLTS @
48" OC OR LESS WITH A MINIMUM OF
2½" PENETRATION INTO ROOF RAFTERS

EXISTING ROOF INFO: 2 STORY, ASPHALT SHINGLE
2 X 4 TRUSSES @ 24" OC

INVERTER/DC DISCONNECT: (7) ENPHASE IQ7PLUS-72-2-US
MICROINVERTERS
MAX DC INPUT VOLTAGE = 60 V
START-UP VOLTAGE = 22 V
OPERATING VOLTAGE RANGE = 16 V - 60 V
MAX INPUT SHORT CIRCUIT CURRENT = 15.0 A
RATED AC POWER = 290 W
AC VOLTAGE = 240 V
MAX AC OUTPUT CURRENT = 1.21 A
MAX AC OVERCURRENT PROTECTION = 20.0 A
MAX NUMBER OF INVERTERS PER CIRCUIT = 13
NEMA TYPE 6 ENCLOSURE
DIMENSIONS = 8.4" X 6.9" X 1.2"
WEIGHT = 2.4 LBS

NOTICE:
ANY CHANGES TO OR USES OF THESE DOCUMENTS/DRAWINGS WITHOUT THE WRITTEN CONSENT OF JENNIFER KEMME OR SCOTT HARRIS ARE STRICTLY PROHIBITED.

VICINITY MAP
NTS

SHEET INDEX:

SHEET 1	PROJECT INFO, VICINITY MAP, NOTES, SCOPE OF WORK
SHEET 2	SITE/ROOF PLAN, ELEVATION DETAIL
SHEET 3	ELECTRIC LINE DRAWING, GROUNDING DETAIL
SHEET 4	CALCULATIONS, SIGNS
ATTACHED	MODULE, INVERTER, MOUNTING HARDWARE SPEC SHEETS

GENERAL NOTES:
1. THIS SYSTEM COMPLIES WITH THE 2019 CRC, 2019 CBC, 2019 CFC, AND THE 2019 CEC.
2. THE SYSTEM WILL NOT BE TURNED ON UNTIL THE SERVING UTILITY COMPANY HAS BEEN NOTIFIED.
3. THE INSTALLED SOLAR SYSTEM HAS A DISTRIBUTED WEIGHT LESS THAN 4 PSF.
4. THE CONCENTRATED LOAD FOR EACH VERTICAL SUPPORT IS LESS THAN 40 LBS.
5. ALL PV EQUIPMENT IS LISTED BY A RECOGNIZED TESTING LAB. INVERTERS ARE UL 1741 COMPLIANT.
6. THE BACKFED BREAKER WILL BE LOCATED AT THE OPPOSITE END OF THE BUS FROM THE MAIN BREAKER.
7. CONDUCTORS ARE 90°C RATED COPPER WIRE.
8. ANY CONDUCTORS EXPOSED TO SUNLIGHT ARE LISTED AS SUNLIGHT RESISTANT.
9. IF DC CONDUCTORS ARE RUN INSIDE THE BUILDING, THEY WILL BE CONTAINED IN A METAL RACEWAY.
10. ANY CONDUCTORS BETWEEN SEPARATE ARRAYS ON THE ROOF WILL BE PROTECTED IN CONDUIT.
11. THE EQUIPMENT GROUNDING CONDUCTOR ON THE ROOF WILL BE PROTECTED FROM PHYSICAL DAMAGE. IT WILL BE TUCKED NEATLY UNDER THE MODULES AND RAILS AND SECURED IN PLACE.
12. THE MODULES WILL BE ATTACHED TO THE EQUIPMENT GROUNDING CONDUCTOR IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
13. ALL EXTERIOR CONDUIT, FITTINGS AND BOXES ARE RAIN-TIGHT AND APPROVED FOR USE IN WET LOCATIONS.
14. CLEARANCES AROUND ALL ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH CEC 110.26.
15. SOLAR MODULES WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL OR BUILDING ROOF VENTS.
16. IF THE EXISTING MAIN SERVICE PANEL DOES NOT HAVE A VERIFIABLE GROUNDING ELECTRODE SYSTEM, A GROUNDING ELECTRODE SYSTEM WILL BE INSTALLED PER CEC 250.52. THE ELECTRICAL SERVICE WILL BE BONDED TO THE WATER AND GAS PIPING PER SECTION 250.104 OF THE CEC.
17. A LADDER WILL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH CAL-OSHA REGULATIONS.

AC CONSTRUCTION
385 HALBERTA CIRCLE
CALIMESA, CA 92320
PH: 909.809.9221

SCOPE OF WORK:
INSTALL (7) CANADIAN SOLAR CS3U-390MS SOLAR ELECTRIC MODULES AND (7) ENPHASE IQ7PLUS-72-2-US MICROINVERTERS ON THE EXISTING 2ND STORY COMPOSITION ROOF. INSTALL ASSOCIATED MOUNTING HARDWARE, JUNCTION BOXES, CONDUIT, CONDUCTORS AND GROUNDING. INSTALL (1) AC COMBINER, (1) AC DISCONNECT, AND INSTALL OCPD IN MAIN SERVICE PANEL.

AUSTIN MICHAEL CARRY B - 1065361
DATE: 2/22/22

PLANS PREPARED BY:
JENNIFER KEMME
PH: 909.748.5300

SHEET
1 OF 4

HOMEOWNER: PARTHENON DEVELOPMENT, LLC

ADDRESS: VIA VERRANZANO
RIVERSIDE, CA 92503
APN: 269-201-055

SYSTEM SIGNAGE
ALL SIGNAGE SHALL BE REFLECTIVE, UV RESISTANT PLASTIC, RED IN COLOR WITH WHITE LETTERING, AND ATTACHED WITH WEATHERPROOF ADHESIVE OR OTHER APPROVED METHOD. ALL LETTERS SHALL BE A MINIMUM OF ⅜" HEIGHT AND ALL CAPITALIZED.

ALL CONDUIT, JUNCTION BOXES AND OTHER ENCLOSURES SHALL BE MARKED AT 10' MAX INTERVALS AND AT ALL BENDS, TERMINATIONS, SPLICES OR CONNECTIONS WITH "WARNING: PHOTOVOLTAIC POWER SOURCE".

TO BE INSTALLED AT ALL SERVICEABLE PANELS OR BOXES AND AT ALL DISCONNECTS:

WARNING:
ELECTRIC SHOCK HAZARD
DO NOT TOUCH TERMINALS
TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

TO BE INSTALLED ON THE FRONT OF THE AC DISCONNECT:

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

RATED AC OUTPUT CURRENT = 10.59 A
NOMINAL OPERATING AC VOLTAGE = 240 V

TO BE INSTALLED AT THE BACKFED BREAKER SERVING THE PV SOLAR SYSTEM:

WARNING:
POWER SOURCE OUTPUT CONNECTION - DO NOT RELOCATE THIS OVERCURRENT DEVICE

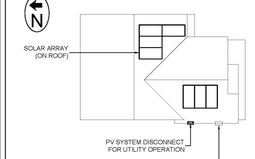
TO BE INSTALLED ON THE FRONT OF THE MAIN SERVICE DISCONNECT:
"SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN" SHALL BE BLACK LETTERING ON YELLOW BACKGROUND. THE REMAINDER OF THE SIGN SHALL BE BLACK LETTERING ON WHITE BACKGROUND.

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY

SOLAR ELECTRIC PV PANELS

CAUTION:
POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS AS SHOWN.



ADDRESS: VIA VERRANZANO, RIVERSIDE, CA 92503

TO BE INSTALLED ON THE OUTSIDE COVER OF THE MAIN SERVICE DISCONNECT:

SYSTEM CALCULATIONS:
MODULE SYSTEM CONFIGURATION CURRENT = 9.66 A
INVERTER MAX INPUT CURRENT = 15.00 A
9.66 A <15.00 A, OK

MODULE OPERATING VOLTAGE = 40.40 V
INVERTER INPUT OPERATING VOLTAGE RANGE = 16 V - 60 V
16 V < 40.40 V < 60 V, OK

MODULE Voc = 48.20 V
VOLTAGE CORRECTION FACTOR = 1.14
48.20 V*1.14 = 54.95 V
INVERTER MAX INPUT VOLTAGE = 60 V
54.95 V < 60 V, OK

MODULE Isc = 10.17 A
10.17 A (1.25)(1.25) = 15.89 A [Isc]

NUMBER OF MICROINVERTERS IN CIRCUIT = 7
INVERTER MAX OUTPUT CURRENT = 1.21 A
(7) (1.21 A) (1.25) = 10.59 A [I], USE 20 A BREAKER

MAIN SERVICE PANEL BUS RATING = 200 A
MAIN SERVICE PANEL MAIN OCPD = 200 A
200 A + 20 A SOLAR OCPD = 220 A
200 A BUS (1.2) = 240 A
220 A < 240 A, OK

WIRE CALCULATIONS:
FROM THE MICROINVERTERS TO THE AC COMBINER:
AMBIENT TEMPERATURE = 33°C
TEMPERATURE ADDER FOR CONDUIT NOT OFFSET FROM ROOF = 33°C
ADJUSTMENT FACTOR PER TABLE 310.15(B)(3)(A) FOR 90°C INSULATED CONDUCTOR AT 33°C + 33°C = 72°C = 0.50
Ic = 10.59 A
10.59 A/0.50 = 21.18 A
SELECT WIRE SIZE WITH AMPACITY GREATER THAN 21.18 A, USE 10 AWG THWN-2 COPPER WIRE WITH AN AMPACITY OF 40 A
SELECT CONDUIT FOR (2) 10 AWG THWN-2 & (1) 8 AWG GROUND = ¾" EMT CONDUIT

FROM THE AC COMBINER TO THE MAIN SERVICE PANEL:
ADJUSTMENT FACTOR PER TABLE 310.15(B)(3)(A) FOR 90°C INSULATED CONDUCTOR AT 33°C = 0.91
I = 10.59 A
10.59 A/0.91 = 11.63 A
SELECT WIRE SIZE WITH AMPACITY GREATER THAN 11.63 A, USE 10 AWG THWN-2 COPPER WIRE WITH AN AMPACITY OF 40 A
SELECT CONDUIT FOR (3) 10 AWG THWN-2 & (1) 8 AWG GROUND = ¾" EMT CONDUIT

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AC CONSTRUCTION
385 HALBERTA CIRCLE
CALIMESA, CA 92320
PH: 909.809.9221

SCOPE OF WORK:
INSTALL (7) CANADIAN SOLAR CS3U-390MS SOLAR ELECTRIC MODULES AND (7) ENPHASE IQ7PLUS-72-2-US MICROINVERTERS ON THE EXISTING 2ND STORY COMPOSITION ROOF. INSTALL ASSOCIATED MOUNTING HARDWARE, JUNCTION BOXES, CONDUIT, CONDUCTORS AND GROUNDING. INSTALL (1) AC COMBINER, (1) AC DISCONNECT, AND INSTALL OCPD IN MAIN SERVICE PANEL.

AUSTIN MICHAEL CARRY B - 1065361
DATE: 2/22/22

PLANS PREPARED BY:
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PH: 909.748.5300

SHEET
4 OF 4

HOMEOWNER: PARTHENON DEVELOPMENT, LLC

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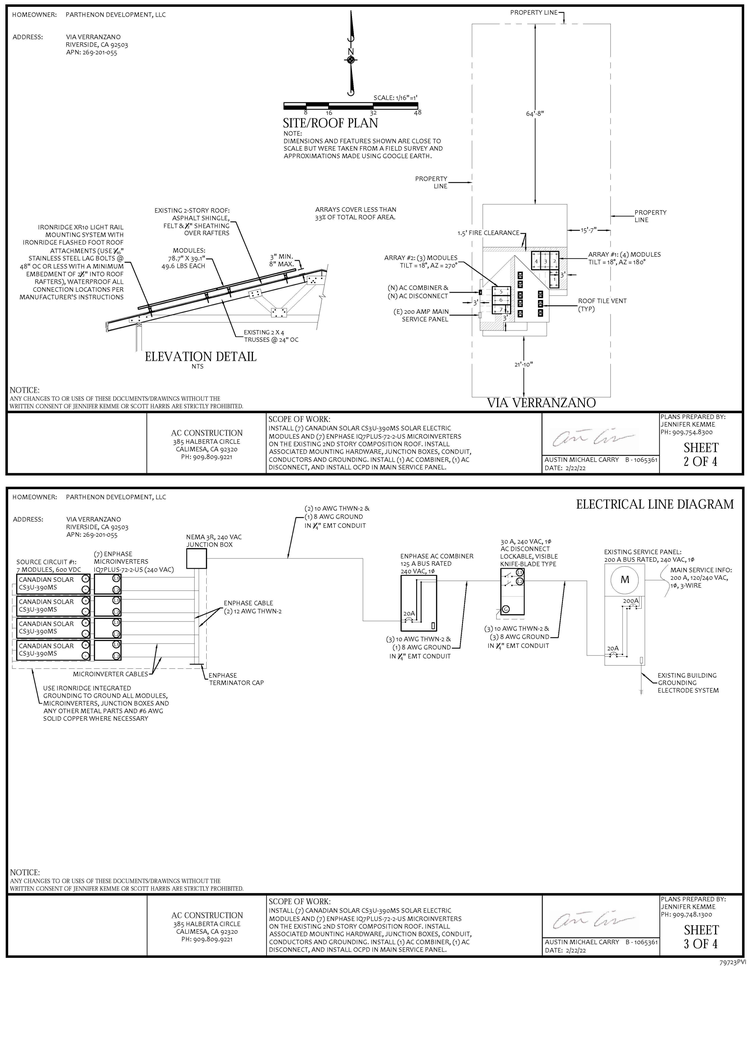

SITE/ROOF PLAN
NOTE:
DIMENSIONS AND FEATURES SHOWN ARE CLOSE TO SCALE BUT WERE TAKEN FROM A FIELD SURVEY AND APPROXIMATIONS MADE USING GOOGLE EARTH.

ELEVATION DETAIL
NTS

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AUSTIN MICHAEL CARRY B - 1065361
DATE: 2/22/22

PLANS PREPARED BY:
JENNIFER KEMME
PH: 909.748.5300

SHEET
2 OF 4

HOMEOWNER: PARTHENON DEVELOPMENT, LLC

ADDRESS: VIA VERRANZANO
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ELECTRICAL LINE DIAGRAM

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CALIMESA, CA 92320
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AUSTIN MICHAEL CARRY B - 1065361
DATE: 2/22/22

PLANS PREPARED BY:
JENNIFER KEMME
PH: 909.748.5300

SHEET
3 OF 4

79723PV1

CanadianSolar

KuMax
HIGH EFFICIENCY MONO PERC MODULE CS3U-380|385|390|395|400MS (1000 V / 1500 V)

MORE POWER
- Low power loss in cell connection
- Low NMOT: 42±3 °C; Low temperature coefficient (Pmax): -0.36 % / °C
- Better shading tolerance
- High PTC rating of up to: 93.24 %

MORE RELIABLE
- Lower hot spot temperature
- Minimizes micro-crack impacts
- Heavy snow load up to 5400 Pa, wind load up to 2400 Pa*

25 linear power output warranty*
12 enhanced product warranty on materials and workmanship*

*According to the applicable Canadian Solar Limited Warranty Statement.

MANAGEMENT SYSTEM CERTIFICATES
ISO 9001:2015 / Quality management system
ISO 14001:2015 / Standards for environmental management system
OHSAS 18001:2007 / International standards for occupational health & safety

PRODUCT CERTIFICATES*
IEC 61215 / IEC 61730: VDE / CE / CQC / MCS / KS / INMETRO
IEC 61701 ED2: salt mist corrosion testing
UL 1703: CSA / IEC 61701 ED2: VDE / FSEC
CEC listed (US)
UL 1703: CSA / IEC 61701 ED2: VDE / IEC 62716: VDE / IEC 60068-2-68: SGS
Take-e-way

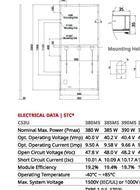
* As there are different certification requirements in different markets, please contact your local Canadian Solar sales representative for the certificates applicable to the products in the region in which the products are to be used.

CANADIAN SOLAR INC. is committed to providing high quality solar products, solar system solutions and services to customers around the world. No. 1 module supplier for quality and performance / price ratio in 2013 Module Customer Insight Survey. As a leading PV project developer and manufacturer of solar modules with over 60 GW deployed around the world since 2001.

* For detailed information, please refer to the Installation Manual.

CANADIAN SOLAR INC.
545 Speedvale Avenue West, Guelph, Ontario N1K 1E6, Canada, www.canadiansolar.com, support@canadiansolar.com

ENGINEERING DRAWING (mm)



ELECTRICAL DATA | STC*

CS3U	380MS	385MS	390MS	395MS	400MS
Nominal Max. Power (Pmax)	380 W	385 W	390 W	395 W	400 W
Opt. Operating Voltage (Vmp)	40.0 V	40.2 V	40.4 V	40.6 V	40.8 V
Opt. Operating Current (Imp)	9.50 A	9.58 V	9.66 A	9.73 A	9.81 A
Open Circuit Voltage (Voc)	47.8 V	48.0 V	48.2 V	48.4 V	48.6 V
Short Circuit Current (Isc)	10.01 A	10.09 A	10.17 A	10.25 A	10.33 A
Module Efficiency	19.2%	19.4%	19.7%	19.9%	20.2%
Operating Temperature	-40°C ~ +85°C				
Max. System Voltage	1500V (IEC/UL) or 1000V (IEC/UL)				
Module Fire Performance	TYPE 1 (UL 1703) or Class C (IEC 61730)				
Max. Series Fuse Rating	30 A				
Application Classification	Class A				
Power Tolerance	0 ~ +10 W				

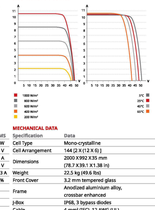
* Under Standard Test Conditions (STC) of irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C.

ELECTRICAL DATA | NMOT*

CS3U	380MS	385MS	390MS	395MS	400MS
Nominal Max. Power (Pmax)	283 W	287 W	290 W	294 W	298 W
Opt. Operating Voltage (Vmp)	37.2 V	37.4 V	37.6 V	37.8 V	38.0 V
Opt. Operating Current (Imp)	7.60 A	7.66 A	7.72 A	7.78 A	7.84 A
Open Circuit Voltage (Voc)	44.8 V	45.0 V	45.2 V	45.4 V	45.6 V
Short Circuit Current (Isc)	8.08 A	8.14 A	8.20 A	8.27 A	8.33 A

* Under Nominal Module Operating Temperature (NMOT), irradiance of 800 W/m², spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

CS3U-400MS / I-V CURVES



MECHANICAL DATA

Specification	Data
Cell Type	Mono-crystalline
Cell Arrangement	144 [2 X (12 X 6)]
Dimensions	2000 X 992 X 35 mm (78.7 X 39.1 X 1.38 in)
Weight	22.5 kg (49.6 lbs)
Front Cover	3.2 mm tempered glass
Frame	Anodized aluminium alloy, crossbar enhanced
J-Box	IP68, 3 bypass diodes
Cable	4 mm² (IEC), 12 AWG (UL)
Cable Length (Including Connector)	Portrait: 400 mm (15.7 in) +/- 280 mm (11.0 in); Landscape: 1250 mm (49.2 in) +/- 400 mm (15.7 in) (Note: Length tolerance: 10/10 mm (0.4/0.4 in) is available upon request.)
Connector	T4 series or H4 UTX or MC4-EVO2
Per Pallet	30 pieces
Per Container (40' HQ)	660 pieces

* For detailed information, please contact your local Canadian Solar sales and technical representatives.

TEMPERATURE CHARACTERISTICS

Specification	Data
Temperature Coefficient (Pmax)	-0.36 % / °C
Temperature Coefficient (Voc)	-0.29 % / °C
Temperature Coefficient (Isc)	0.05 % / °C
Nominal Module Operating Temperature	42 ± 3°C

PARTNER SECTION

* The specifications and key features contained in this datasheet may deviate slightly from our actual products due to the on-going innovation and product enhancement. Canadian Solar Inc. reserves the right to make necessary adjustments to the information described herein at any time without further notice. Please be kindly advised that PV modules should be handled and installed by qualified people who have professional skills and please carefully read the safety and installation instructions before using our PV modules.

CANADIAN SOLAR INC.
545 Speedvale Avenue West, Guelph, Ontario N1K 1E6, Canada, www.canadiansolar.com, support@canadiansolar.com

May, 2020. All rights reserved, PV Module Product Datasheet V5.61_EN

Data Sheet
Enphase Microinverters
Region: AMERICAS

Enphase IQ 7 and IQ 7+ Microinverters

The high-powered smart grid-ready Enphase IQ 7 Micro™ and Enphase IQ 7+ Micro™ dramatically simplify the installation process while achieving the highest system efficiency.

Part of the Enphase IQ System, the IQ 7 and IQ 7+ Microinverters integrate with the Enphase IQ Envoy™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.

Easy to Install
- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014 & 2017)

Productive and Reliable
- Optimized for high powered 60-cell and 72-cell* modules
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

Smart Grid Ready
- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

* The IQ 7+ Micro is required to support 72-cell modules.

To learn more about Enphase offerings, visit enphase.com

ENPHASE.

Enphase IQ 7 and IQ 7+ Microinverters

INPUT DATA (DC)	IQ7-60-2-US / IQ7-60-B-US	IQ7PLUS-72-2-US / IQ7PLUS-72-B-US
Commonly used module pairings*	235 W - 350 W +	235 W - 440 W +
Module compatibility	60-cell PV modules only	60-cell and 72-cell PV modules
Maximum input DC voltage	48 V	60 V
Peak power tracking voltage	27 V - 37 V	27 V - 45 V
Operating range	16 V - 48 V	16 V - 60 V
Min/Max start voltage	22 V / 48 V	22 V / 60 V
Max DC short circuit current (module Isc)	15 A	15 A
Overvoltage class DC port	II	II
DC port backfeed current	0 A	0 A
PV array configuration	1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	

OUTPUT DATA (AC)	IQ 7 Microinverter	IQ 7+ Microinverter
Peak output power	250 VA	295 VA
Maximum continuous output power	240 VA	290 VA
Nominal (L-L) voltage/range²	240 V / 211 - 264 V 208 V / 183 - 229 V	240 V / 211 - 264 V 208 V / 183-229 V
Maximum continuous output current	1.0 A (240 V) 1.15 A (208 V)	1.21 A (240 V) 1.39 A (208 V)
Nominal frequency	60 Hz	60 Hz
Extended frequency range	47 - 68 Hz	47 - 68 Hz
AC short circuit fault current over 3 cycles	5.8 Arms	5.8 Arms
Maximum units per 20 A (L-L) branch circuit³	16 (240 VAC) 13 (208 VAC)	13 (240 VAC) 11 (208 VAC)
Overvoltage class AC port	III	III
AC port backfeed current	0 A	0 A
Power factor setting	1.0	1.0
Power factor (adjustable)	0.7 leading ... 0.7 lagging	0.7 leading ... 0.7 lagging

EFFICIENCY	@240 V	@208 V	@240 V	@208 V
Peak CEC efficiency	97.0 %	97.0 %	97.5 %	97.3 %
CEC weighted efficiency	97.0 %	97.0 %	97.5 %	97.0 %

MECHANICAL DATA	
Ambient temperature range	-40°C to +65°C
Relative humidity range	4% to 100% (condensing)
Connector type (IQ7-60-2-US & IQ7PLUS-72-2-US)	MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)
Connector type (IQ7-60-B-US & IQ7PLUS-72-B-US)	Friends PV2 (MC4 intermateable); Friends PV2 to MC4: order ECA-S20-S22 - PV2 to MC4: order ECA-S20-S22 - PV2 to UTX: order ECA-S20-S25
Dimensions (WxHxD)	212 mm x 175 mm x 30.2 mm (without bracket)
Weight	1.08 kg (2.38 lbs)
Cooling	Natural convection - No fans
Approved for wet locations	Yes
Pollution degree	PD3
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure
Environmental category / UV exposure rating	NEMA Type 6 / outdoor

FEATURES	
Communication	Power Line Communication (PLC)
Monitoring	Enlighten Manager and MyEnlighten monitoring options. Both options require installation of an Enphase IQ Envoy.
Disconnecting means	The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690.
Compliance	CA Rule 21 (UL 1741-SA) UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014 and NEC 2017 section 690.12 and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer's instructions.

1. No enforced DC/AC ratio. See the compatibility calculator at https://enphase.com/en-us/support/module-compatibility
2. Nominal voltage range can be extended beyond nominal if required by the utility.
3. Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

To learn more about Enphase offerings, visit enphase.com

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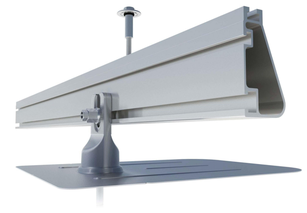
2018-10-04

ENPHASE.

Datasheet

IRONRIDGE

Flush Mount System



Built for solar's toughest roofs.

IronRidge builds the strongest mounting system for pitched roofs in solar. Every component has been tested to the limit and proven in extreme environments.

Our rigorous approach has led to unique structural features, such as curved rails and reinforced flashings, and is also why our products are fully certified, code compliant and backed by a 20-year warranty.

Strength Tested
All components evaluated for superior structural performance.

PE Certified
Pre-stamped engineering letters available in most states.

Class A Fire Rating
Certified to maintain the fire resistance rating of the existing roof.

Design Assistant
Online software makes it simple to create, share, and price projects.

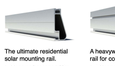
UL 2703 Listed System
Entire system and components meet newest effective UL 2703 standard.

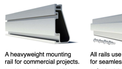
20-Year Warranty
Twice the protection offered by competitors.

XR Rails

XR10 Rail

A low-profile mounting rail for regions with light snow.
- 8' spanning capability
- Moderate load capability
- Clear and black finish

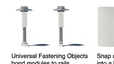
XR100 Rail

The ultimate residential solar mounting rail.
- 8' spanning capability
- Heavy load capability
- Clear and black finish

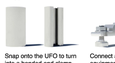
XR1000 Rail

A heavyweight mounting rail for commercial projects.
- 12' spanning capability
- Clear anodized finish

Bonded Splices

All rails use internal splices for seamless connections.
- Self-drilling screws
- Varying versions for rails
- Forms secure bonding

Clamps & Grounding

UFOs

Universal Fastening Objects bond modules to rails.
- Fully assembled & lubed
- Single, universal size
- Clear and black finish

Stopper Sleeves

Snap onto the UFO to turn into a bonded end clamp.
- Bonds modules to rails
- Clear and black finish

Grounding Lugs

Connect arrays to equipment ground.
- Low profile
- Single tool installation
- Mounts in any direction

Microinverter Kits

Mount Mis or PCIs to XR Rails.
- Bonds devices to rails
- Kit comes assembled
- Listed to UL 2703

Attachments

FlashFoot2

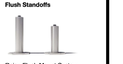
Flash and mount XR Rails with superior waterproofing.
- Twist-on Cap eases install
- Wind-driven rain tested
- Mill and black finish

Slotted L-Feet

Drop-in design for rapid rail attachment.
- Secure rail connections
- Slot for vertical adjusting
- Clear and black finish

Bonding Hardware

Bond and attach XR Rails to roof attachments.
- T & Square Bolt options
- Nut uses 7/16" socket
- Assembled and lubricated

Flush Standoffs

Raise Flush Mount System to various heights.
- Works with vent flashing
- 4" and 7" lengths
- Ships assembled

Resources

Design Assistant
Go from rough layout to fully engineered system. For free.
Go to IronRidge.com/design

NABCEP Certified Training
Earn free continuing education credits, while learning more about our systems.
Go to IronRidge.com/training

Proposed Single Family Residence For:
Parthenon Development, LLC
13024 Via Verrazano, Riverside, CA 92503

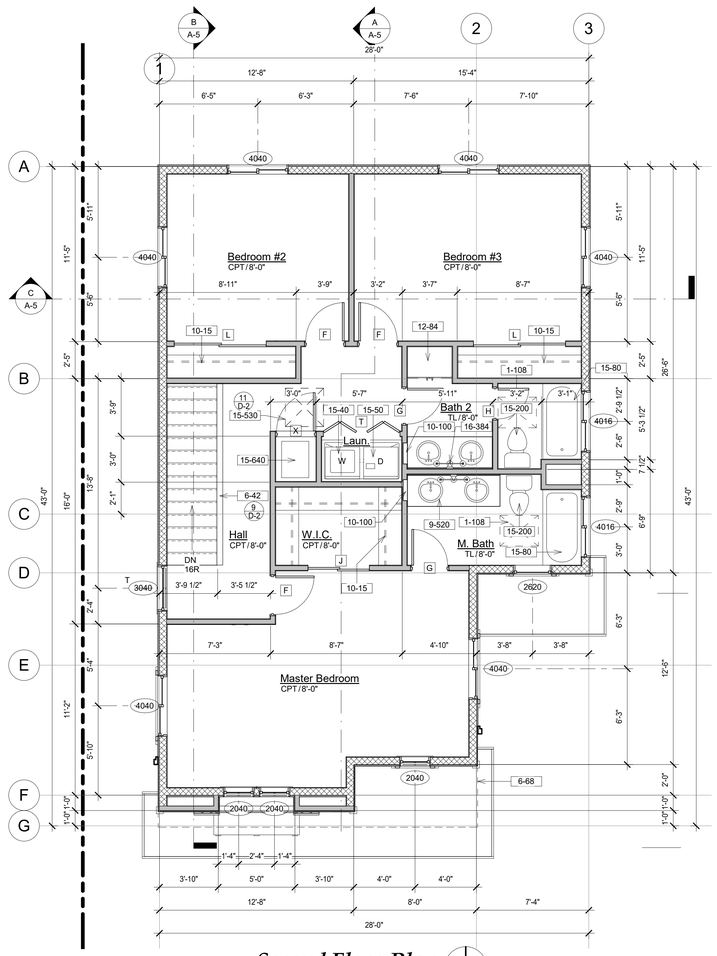
26 Apr. 2022
21-4372

ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

LICENSED ARCHITECT
Douglas Andresen
C-15561
12-31-23
RENEWAL DATE
STATE OF CALIFORNIA

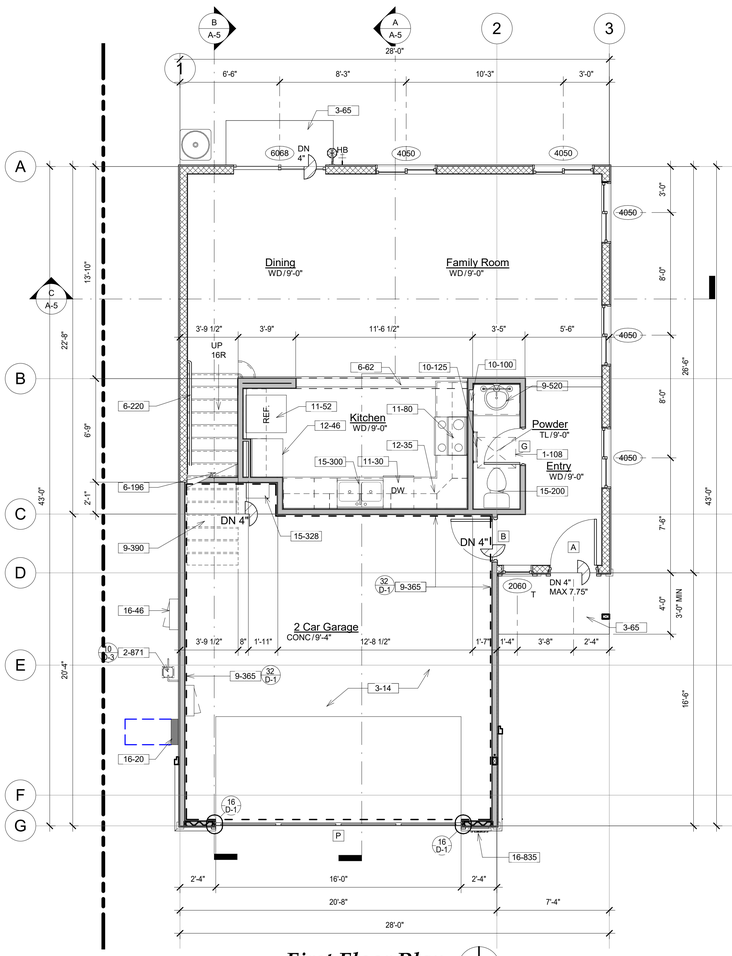
Solar Plans

A-2.3



Second Floor Plan

1/4" = 1'-0"



First Floor Plan

1/4" = 1'-0"

ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

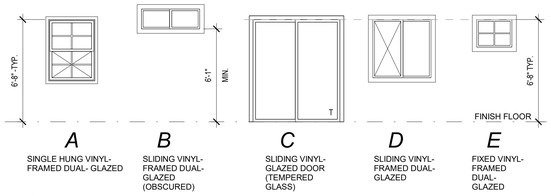
Plan Notes

1-108	24" x 30" CLEAR FLOOR SPACE IN FRONT OF WATER CLOSET PER CBC SEC. 2904.
2-871	NEW GAS METER LOCATION (BY UTILITY). (VERIFY EXACT LOCATION WITH UTILITY COMPANY)
3-14	4" THICK CONCRETE GARAGE SLAB ON 2" SAND BASE (2,500 PSI MIX) WITH SMOOTH TROWEL FINISH. SLOPE 2" TO DRAIN. SAWCUT WITHIN 24 HOURS WHERE INDICATED
3-65	3-1/2" THICK CONCRETE SLAB ON GRADE WITH MEDIUM BROOM FINISH. SLOPE 1/8" PER FOOT MINIMUM AWAY FROM BUILDING. PROVIDE A LANDING AT ALL DOORS A MINIMUM OF 2" BEYOND EACH SIDE OF DOOR AND A MINIMUM OF 3'-0" OUT FROM FACE OF DOOR.
6-42	42" HIGH WOOD STUD WALL WITH DRYWALL SIDES AND WOOD CAP.
6-62	LINE OF BEAM ABOVE (SEE FRAMING PLAN)
6-68	LINE OF WALL BELOW
6-196	VOID SPACE
6-220	WOOD HANDRAIL WITH METAL BRACKET SUPPORTS AT 5'-0" O/C CAPABLE OF SUPPORTING A 200 POUND LOAD AT ANY POINT IN ANY DIRECTION ON THE RAIL (34" - 38" ABOVE NOSING.) THE HANDGRIP PORTION OF THE HANDRAIL SHALL BE NOT LESS THAN 1-1/4" NOR MORE THAN 1-1/2" IN CROSS-SECTIONAL DIMENSION OR THE SHAPE SHALL PROVIDE AN EQUIVALENT GRIPPING SURFACE.
9-365	5/8" TYPE "X" GYPSUM BOARD GARAGE SIDE OF ALL WALLS AND CEILING ADJACENT TO HOUSE AND ALL WALLS SUPPORTING SECOND FLOOR. PROVIDE MINIMUM 24" HORIZONTAL SEPARATION BETWEEN OFFSET ELECTRICAL RECEPTACLES. (ELECTRICAL BOXES TO CONFORM TO ICC REPORT NO. ER 3686) GAS VENTS, METAL CHIMNEYS PENETRATING THE FINISH SHALL BE FIRE STOPPED WITH AN APPROVED ASSEMBLY. PLASTIC PIPE SHALL NOT PIERCE FINISH. DUCTS ON THE GARAGE SIDE SHALL BE A MINIMUM 26 GAUGE SHEET METAL.
9-390	PROVIDE ONE LAYER 5/8" TYPE "X" GYPSUM BOARD ON ALL WALLS AND CEILINGS OF USABLE SPACE UNDER STAIRS. ELECTRICAL BOXES INSTALLED IN THESE WALLS OR CEILING SHALL BE ONE-HOUR FIRE RATED.
9-520	SYNTHETIC MARBLE TOP, SPLASH AND END SPLASH WITH UNI-LAV.
10-15	12" WIDE WOOD SHELF AND POLE AT +67" ABOVE FLOOR WITH METAL BRACKET SUPPORTS AT 36" O/C MAX.
10-100	RECESSED MEDICINE CABINET (TOP AT +72" ABOVE FLOOR)
10-125	24" LONG TOWEL BAR (+54) PROVIDE 2 x 6 SOLID BACKING
11-30	DISHWASHER SPACE
11-52	REFRIGERATOR SPACE (PROVIDE RECESSED SHUT-OFF IN PLASTIC BOX FOR ICEMAKER)
11-80	SLIDE-IN GAS COOKTOP WITH OVEN BELOW AND MICROWAVE OVEN ABOVE WITH EXHAUST HOOD AND 7" DIAMETER GALVANIZED SHEET METAL DUCT TO OUTSIDE AIR HOOD ABOVE
12-35	LINE OF CABINETS ABOVE
12-46	BASE CABINET WITH GRANITE TOP AND 6" SPLASH
12-84	24" WIDE x 60" HIGH FACE FRAME DOOR
15-40	HOT AND COLD WATER SHUT-OFF IN RECESSED PLASTIC BOX FOR CLOTHES WASHER (CLOTHES WASHER IS NIC)
15-50	CLOTHES DRYER (NIC)
15-80	60" x 32" x 72" HIGH FIBERGLASS COMBINATION TUB/SHOWER UNIT. NO SLIP JOINT CONNECTIONS ARE PERMITTED IN WASTE LINE. SET SHOWER HEAD IN WALL AT +76" ABOVE FLOOR WITH METAL ESCUTCHEON. PROVIDE SHOWER CURTAIN ROD. SHOWERS & TUB/SHOWERS SHALL BE PROVIDED WITH INDIVIDUAL CONTROL VALVES OF THE PRESSURE BALANCE OR THERMOSTATIC MIXING VALVE TYPE PER SEC. 408.3 2013 CPC.
15-200	TANK-TYPE WATER CLOSET (1.28 GALLONS PER FLUSH MAXIMUM)
15-300	33" x 22" DOUBLE BOWL SELF-RIMMING ENAMELED STEEL KITCHEN SINK WITH 1/2 HP GARBAGE DISPOSER
15-328	RESIDENTIAL TANKLESS GAS-FIRED HOT WATER FIXTURE ON WALL WITH 3/4" GAS AND WATER CONNECTION AND 4" DIAMETER "B" VENT (SEE MECHANICAL SYSTEM NOTES FOR MANUFACTURER AND MODEL NUMBER). VERIFY REQUIRED INPUT BTU RATE WITH OWNER.
15-530	30" x 30" ATTIC ACCESS FOR ATTIC FAU. PROVIDE WEATHERSTRIP OR SEAL AT THE ATTIC ACCESS PANEL TO PREVENT DRAFTS. (ACCESS SHALL BE SIZED TO ACCOMMODATE REMOVAL OF LARGEST PIECE OF EQUIPMENT)
15-640	4 TON FAU WITH COOLING COIL, SET ON PLYWOOD PLATFORM WITH RETURN AIR BELOW. PROVIDE 4" DIAMETER "B" VENT TO OUTSIDE AIR. PROVIDE WATERTIGHT GALVANIZED PAN WITH 3/4" PVC CONDENSATE OVERFLOW TO DRAIN ABOVE WINDOW.
16-20	200 AMP RECESSED MAIN PANEL (UNDERGROUND FEED WITH TWO #3/0 AWG & ONE #2 GROUND) (VERIFY EXACT LOCATION WITH UTILITY COMPANY) (PROVIDE GAS AND WATER BONDING TO SERVICE) PROVIDE 3'-0" DEEP BY 2'-6" WIDE MINIMUM CLEARANCE IN FRONT OF PANEL PER ARTICLE 110-26a
16-46	SOLAR READY - FUTURE PANEL
16-384	WALL SCONCE LIGHT (+84" UON)
16-835	ILLUMINATED ADDRESS LIGHT AT +84" ABOVE FLOOR LINE (UON) PER CITY STANDARD WITH 4" HIGH MINIMUM HEIGHT NUMBERS ON CONTRASTING BACKGROUND AND ILLUMINATED AT ALL HOURS OF DARKNESS. WITH A MINIMUM STROKE WIDTH OF 1/2 INCH. THE TYPE LOCATION AND SIZE OF BUILDING ADDRESS WHICH MUST BE CLEARLY VISIBLE AND LEGIBLE FROM THE ADJACENT PUBLIC WAY OR STREET.

Window Types

NOTES:

1. WINDOW DIVIDERS AND TRIM OPTIONS VARY - SEE ELEVATIONS



A — SINGLE HUNG VINYL-FRAMED DUAL- GLAZED

B — SLIDING VINYL-FRAMED DUAL-GLAZED (OBSCURED)

C — SLIDING VINYL-GLAZED DOOR (TEMPERED GLASS)

D — SLIDING VINYL-FRAMED DUAL-GLAZED

E — FIXED VINYL-FRAMED DUAL-GLAZED

WINDOW GENERAL NOTES:

A. WINDOWS TO BE INSTALLED WITH MOISTOP 12" WIDE FLASHING AND CAULK WITH SILICONE SEALANT. WINDOW FRAMES TO HAVE WHITE FINISH.
B. HEADER HEIGHT IS 6'-10" ABOVE FLOOR (UON)
C. PROVIDE SAFETY GLAZING OR TEMPERED GLASS IN HAZAROUS LOCATIONS PER CBC 2406.3 SUCH AS GLAZING IN FIXED OR OPENABLE PANELS ADJACENT TO A DOOR WHERE THE NEAREST EXPOSED EDGE OF THE GLAZING IS WITHIN A 24" ARC OF EITHER VERTICAL EDGE OF THE DOOR IN THE CLOSED POSITION AND WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60" ABOVE THE WALKING SURFACE. A PERMANENT LABER PER CBC 2406.2 SHALL IDENTIFY EACH LIGHT OF SAFETY GLAZING.
D. ALL WINDOWS IN CONDITIONED ROOMS TO HAVE CLEAR DUAL GLAZING *(U=0.30 MAX. & SHGC=0.25 MILGARD VINYL OR EQUAL) (U.O.N.)* ALL WINDOWS IN UNCONDITIONED AREAS TO HAVE CLEAR SINGLE GLAZING.
E. PROVIDE BLINDS FOR ALL EXTERIOR AND INTERIOR WINDOWS
F. T = TEMPERED

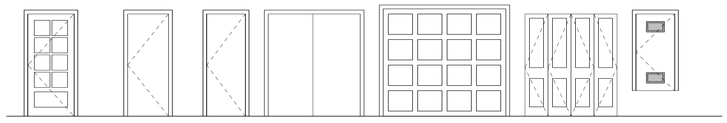
FIRE NOTES: (WINDOW & DOORS)
ACCORDING TO R337.8 ALL THE FOLLOWING EXTERIOR GLAZING MATERIALS AND/OR ASSEMBLIES ARE IN COMPLIANCE WITH THIS SECTION:EXTERIOR WINDOWS, EXTERIOR GLAZED DOORS, GLAZED OPENINGS WITHIN EXTERIOR DOORS, GLAZE OPENINGS WITHIN EXTERIOR GARAGE DOORS, EXTERIOR STRUCTURAL GLASS VENEER, SKYLIGHTS AND WEATHER STRIPPING. AS R337.8.2.1 STATES THE REQUIREMENT FOR EXTERIOR WINDOWS, SKYLIGHTS AND EXTERIOR GLAZED DOORS ASSEMBLIES SHALL COMPLY WITH ONE OF THE FOLLOWING REQUIREMENTS: 1. BE CONSTRUCTED OF MULTIPANE GLAZING WITH A MINIMUM OF ONE TEMPERED PANE MEETING THE REQUIREMENT OF SECTION R308 SAFETY GLAZING OR . BE CONSTRUCTED OF GLASS BLOCK UNITS, OR 2. HAVE A FIRE-RESISTANCE RATING OF NOT LESS THAN 20 MINUTES WHEN TESTED ACCORDING TO NFPA 257, OR 3. BE TESTED TO MEET THE PERFORMANCE REQUIREMENTS OF SFM STANDARD 12-7A-2. AS R337.8.3 STATES THE EXTSERIOR DOORS SHALL COMPLY WITH ONE OF THE FOLLOWING: 1. THE EXTERIOR SURFACE OR CLADDING SHALL BE OF NONCOMBUSTIBLE MATERIAL, OR 2. EXTERIOR SURFACE OR CLADDING SHALL BE OF IGNITIONRESISTANT MATERIAL, OR 3. THE EXTERIOR DOOR SHALL BE CONSTRUCTED OF SOLID CARE WOOD THAT COMPLIES WITH THE FOLLOWING REQUIREMENTS: 3.1. STILES AND RAILS SHALL NOT BE LESS THAN 1 3/8 INCHES THICK, 3.2. PANELS SHALL NOT BE LESS THAN 1 1/4 INCH THICK, EXCEPT FOR THE EXTERIOR PERIMETER OF THE PANEL THAT SHALL BE PERMITTED TO TAPER TO A TONGUE NOT LESS THAN 3/8 INCH THICK. 4.THE EXTERIOR DOOR ASSEMBLY SHALL HAVE A FIRE RESISTANCE RATING OF NOT LESS NAN 20 MINUTES WHEN TESTED ACCORDING TO NFPA 252. 5. THE EXTERIOR SURFACE OR CLADDING SHALL BE TESTED TO MEET THE PERFORMANCE REQUIREMENT OF SECTION R337.7.3.1 WHEN TESTED IN ACCORDANCE WITH ASTM E2707. 6. THE EXTERIOR SURFACE OR CLADDING SHALL BE TESTED TO MEET THE PERFORMANCE REQUIREMENTS OF SFM STANDARDS 12-7A-1. AS R337.8.3.1 STATES GLAZING IN EXTERIOR DOORS SHALL COMPLY WITH SECTION R337.8.2.1. AND ACCORDING TO R337.8.4 WEATHER STRIPING SECTION, EXTERIOR GARAGE DOORS SHALL BE PROVIDED WITH WEATHER STRIPPING TO RESIST THE INTRUSION OF EMBERS FROM ENTERING THROUGH GAPS BETWEEN DOORS AND DOOR OPENINGS WHEN VISIBLE GABS EXCEED 1/8 INCH (3.2 MM). WEATHER STRIPPING OR SEALS SHALL BE INSTALLED ON THE BOTTOM, SIDES, AND TOPS OF DOORS TO REDUCE GAPS BETWEEN DOORS AND DOOR OPENINGS TO 1/8 INCH (3.2 MM) OR LESS.

Window Schedule A

Type Mark	Type	Width	Height	Comments
2040	A	2'-0"	4'-0"	
2060	E	2'-0"	6'-0"	T
2620	E	2'-6"	2'-0"	
3040	A	3'-0"	4'-0"	T
4016	B	4'-0"	1'-6"	
4040	D	4'-0"	4'-0"	
4050	D	4'-0"	5'-0"	
6068	C	6'-0"	6'-8"	T

Door Legend

DOOR NOTES:
1. PROVIDE TWO (2) SPRING HINGES FOR SELF-CLOSING AND SELF LATCHING.
2. PROVIDED ENTRY LOCK AND DEADBOLT LOCK WITH 1" THROW AT ALL EXTERIOR DOORS INCLUDING THE GARAGE DOOR TO THE HOUSE.



A — PRE-HUNG SOLID CORE WOOD (OR OR FIBER GLASS COMPOSITE) DOOR WITH THRESHOLD, WEATHER STRIPING, AND 5/8" INSULATED TEMPERED GLASS

B — PRE-HUNG SOLID CORE WOOD DOOR WITH THRESHOLD AND WEATHER STRIPING, 2 SELF CLOSE SPRINGS

F,G,H — PRE_HUNG HOLLOW CORE SLAB (PROVIDE PRIVACY LOCK AT MASTER BEDROOM & BATHROOM DOORS)

J,L — 6'-8" HIGH HOLLOW CORE SLAB BI-PASS DOORS

P — 7'-0" HIGH SECTIONAL OVERHEAD GARAGE DOOR WITH 3/16" TEMPERED GLASS

T — 6'-8" HIGH LOUVERED BY-FOLD DOORS (PAINT GRADE)

X — SOLID CORE SLAB DOOR WITH (2) 14" WIDE x 8" HIGH SCREENED VENTS (ONE 6" FROM TOP OF DOOR AND ONE 6" FROM BOTTOM)

Door Finish Abbreviation

Abbrev.	Description
AL	ALUMINUM
AN	BRONZE ANODIZED
BA	BAKED ENAMEL
CA	CLEAR ANODIZED
GL	GLASS
HC	HOLLOW CORE WOOD
HM	HOLLOW METAL
HWD	HARD WOOD
INT	INTEGRAL
MR	MIRROR
PC	POWDER COAT
PF	PREFINISHED
PL	PLASTIC LAMINATE
PS	PRESSED STEEL (TIMELY)
PT	PRIME AND PAINT
RFP	READY FOR PAINT
SC	SOLID CORE
STL	STEEL
T	TEMPERED
WD	WOOD
WDF	WOOD FRAME

Door Schedule

Type Mark	Door Material	Door Finish	Door Width	Door Height	Door Thickness	Door Glass	Fire Rated	Frame Material	Frame Finish	Comments
1st Floor										
A	SC	PT	3'-0"	6'-8"	1 3/4"	TEMP		WDF	PT	2
B	SC	PT	2'-8"	6'-8"	1 3/4"		20 MIN.	WDF	PT	1, 2
G	HC	PT	2'-4"	6'-8"	1 3/8"			WDF	PT	
P	MTL	PT	16'-0"	7'-0"	2"	3/16"		WDF	PT	
2nd Floor										
F	HC	PT	2'-6"	6'-8"	1 3/8"			WDF	PT	
F	HC	PT	2'-6"	6'-8"	1 3/8"			WDF	PT	
F	HC	PT	2'-6"	6'-8"	1 3/8"			WDF	PT	
G	HC	PT	2'-4"	6'-8"	1 3/8"			WDF	PT	
G	HC	PT	2'-4"	6'-8"	1 3/8"			WDF	PT	
H	HC	PT	2'-0"	6'-8"	1 3/8"			WDF	PT	
J	HC	PT	4'-0"	6'-8"	1 3/8"			WDF	PT	
L	HC	PT	6'-0"	6'-8"	1 3/8"			WDF	PT	
L	HC	PT	6'-0"	6'-8"	1 3/8"			WDF	PT	
T	HC	PT	5'-0"	6'-8"	1 3/8"			WDF	PT	
X	HC	PT	2'-6"	5'-0"	1 3/8"			WDF	PT	

Room Finish Abbreviation

Abbreviation	Description
CON	CONCRETE
CONC	EXPOSED FINISHED CONC.
CPT	CARPET
E.C.	EXPOSED CONSTRUCTION
EPOX	EPOXY FLOORING
FRP	FIBER REINFORCED PANELS
GB	GYPSUM BOARD
INT	INTEGRAL
PLY	PLYWOOD
PT	PRIME AND PAINT
RES	RESILIENT FLOORING
RUB	RUBBER FLOORING
SEAL	CLEAR CONCRETE FLOOR SEALER
SV	SHEET VINYL
T-BAR	SUSPENDED ACOUSTICAL CEILING
TL	CERAMIC TILE
TSB	TOP SET BASE
V-T	VINYL COATED ACOUSTICAL CEILING
WBB	WOOD BASE BOARD
WD	WOOD FLOORING
WRGB	WATER RESISTANT GYPSUM BOARD (PROVIDE CEILING FRAMING AT 12" O.C. WHERE WATER RESISTANT GYPSUM WALL BOARD IS USED FOR CEILING APPLICATIONS)

Room Finish Legend

GENERAL NOTES:

1. 5/8" GYPSUM BOARD ON WALLS & 5/8" GYPSUM BOARD ON CEILINGS TO RECEIVE KNOCK-DOWN TEXTURE WITH TWO COATS LATEX FLAT ENAMEL
2. FLOOR MATERIAL CHANGES TO OCCUR IN CENTER OF DOOR WHEN IN A CLOSED POSITION
3. ALL CORNERS TO BE BULLNOSED
4. GYPSUM BOARD SHALL NOT BE USED WHERE THERE WILL BE DIRECT EXPOSURE TO WATER, OR IN AREAS SUBJECT TO CONTINOUS HIGH HUMIDITY.

Room Finish Schedule

Rooms	Base		Floor		Walls		Ceilings		
Name	Height	Material	Material	Finish	Material	Finish	Material	Finish	Height
1st Floor									
Family Room	4"	WBB	WD	INT	GB	PT	GB	PT	9'-0"
Dining	4"	WBB	WD	INT	GB	PT	GB	PT	9'-0"
2 Car Garage	-	-	CONC	INT	GB	PT	GB	PT	9'-4"
Kichen	4"	WBB	WD	INT	GB	PT	GB	PT	9'-0"
Entry	4"	WBB	WD	INT	GB	PT	GB	PT	9'-0"
Powder	6"	TL	TL	INT	WRGB	PT	WRGB	PT	9'-0"
2nd Floor									
Master Bedroom	4"	WBB	CPT	INT	GB	PT	GB	PT	8'-0"
Bedroom #2	4"	WBB	CPT	INT	GB	PT	GB	PT	8'-0"
Bedroom #3	4"	WBB	CPT	INT	GB	PT	GB	PT	8'-0"
Hall	4"	WBB	CPT	INT	GB	PPT	GB	PT	8'-0"
M. Bath	6"	TL	TL	INT	WRGB	PT	WRGB	PT	8'-0"
W.I.C.	4"	WBB	CPT	INT	GB	PT	GB	PT	8'-0"
Bath 2	6"	TL	TL	INT	WRGB	PT	WRGB	PT	8'-0"
Laun.	6"	TL	TL	INT	WRGB	PT	WRGB	PT	8'-0"

Wall Legend

- 2 x 6 WOOD STUDS @ 16" O/C (R-19 BATT INSULATION)
- 2 x 4 WOOD STUDS @ 16" O/C (R-15 BATT INSULATION AT GARAGE TO HOUSE FIREWALLS)
- 2" FURRING WALL, 2 x 4 LAID FLAT

Water Notes

1. "WATER PIPE AND FITTINGS WITH A LEAD CONTENT WHICH EXCEEDS 8% SHALL BE PROHIBITED IN SYSTEMS CONVEYING POTABLE WATER
2. ALL FIXTURES, EQUIPMENT, PIPING, AND MATERIALS SHALL BE LISTED
3. ALL PLUMBING FIXTURES SHALL MEET THE FLOW REQUIREMENTS SPECIFIED IN THE CALIFORNIA GREEN BUILDING CODE.
4. THE FLOW RATES FOR ALL PLUMBING FIXTURES SHALL COMPLY WITH THE MAXIMUM FLOW RATES SPECIFIED IN SECTION 4.303.1

Proposed Single Family Residence For:

Parthenon Development, LLC

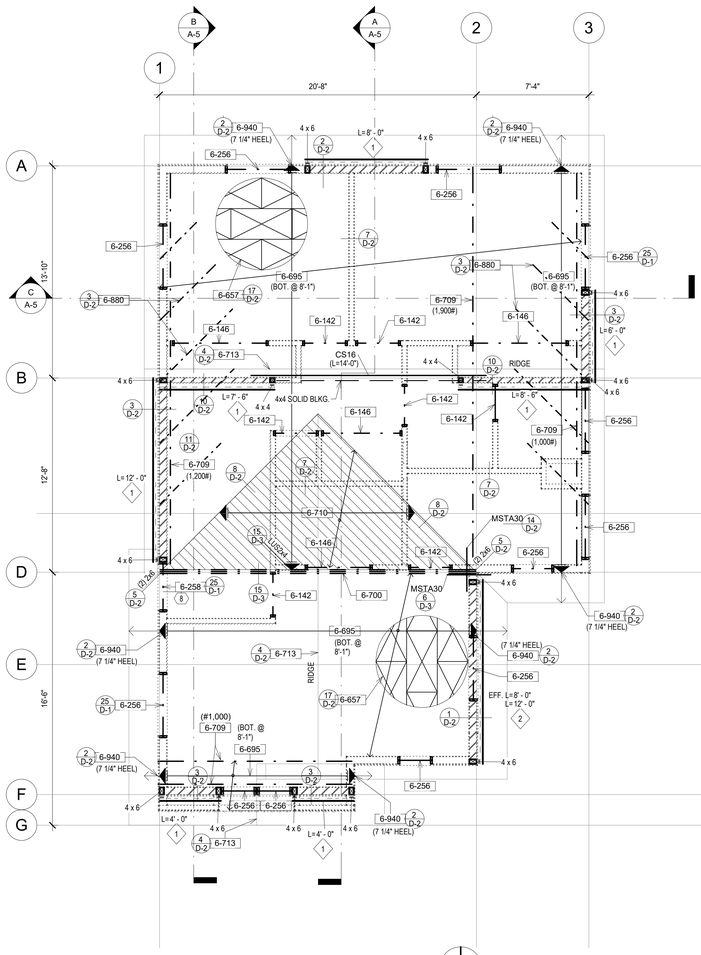
13024 Via Verrazano, Riverside, CA 92503

26 Apr. 2022	
21-4372	

LICENSED ARCHITECT — Douglas Andresen — C-14504 — 12-31-23 RENEWAL DATE — STATE OF CALIFORNIA

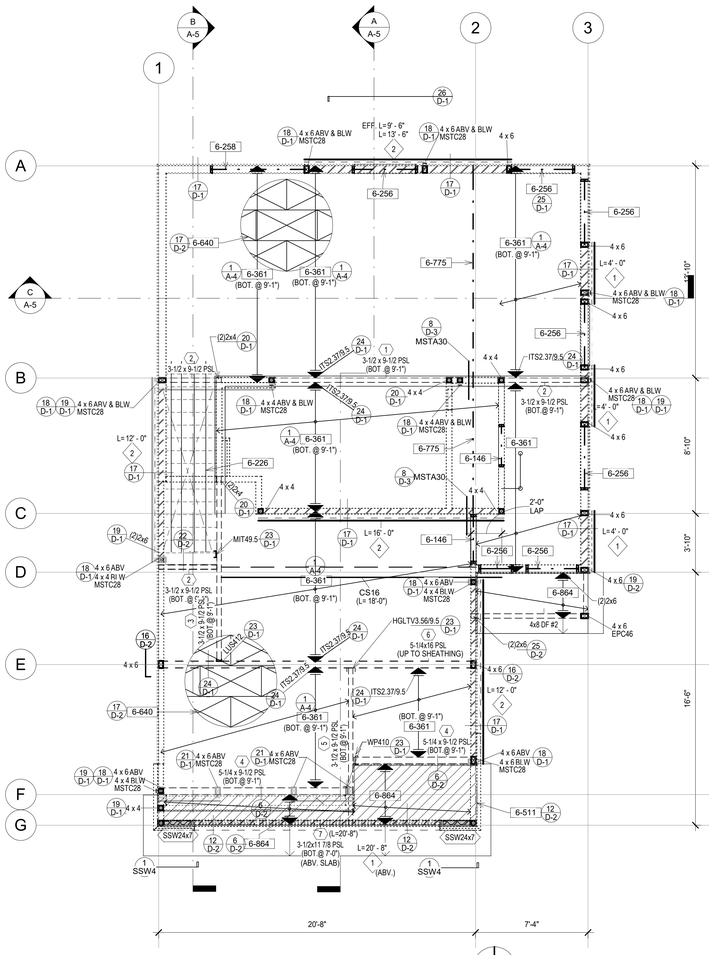
Floor Plans

A-3



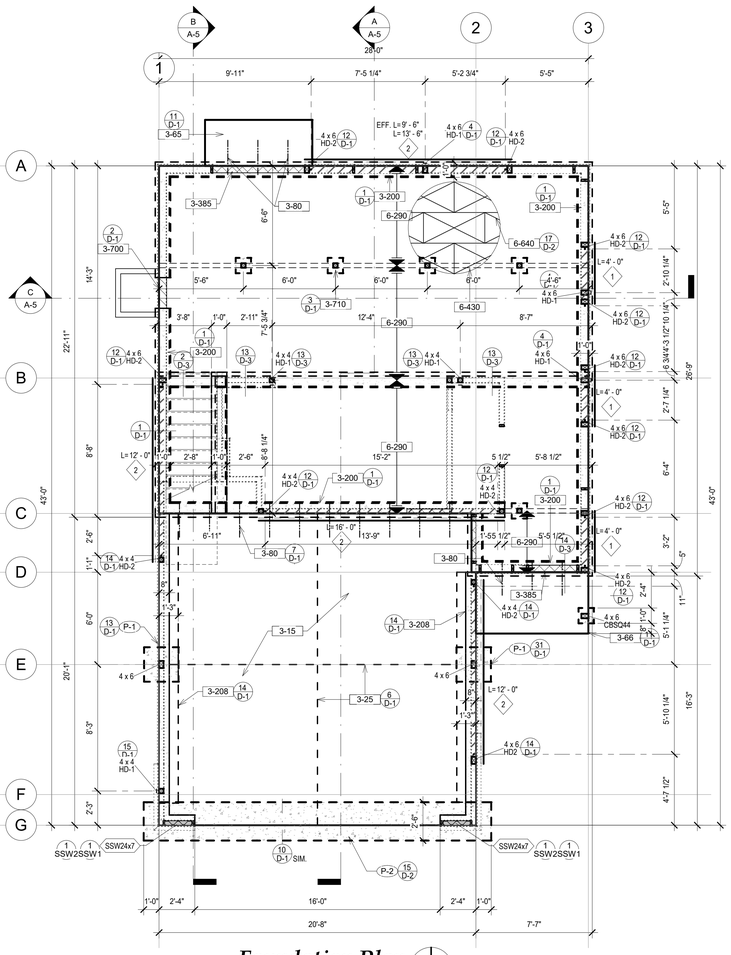
Roof Framing Plan

1/4" = 1'-0"



2nd Floor Framing Plan

1/4" = 1'-0"



Foundation Plan

1/4" = 1'-0"

1 Floor Joist Span Table

FLOOR SPAN TABLES

L/480 Live Load Deflection

Depth	TJI®	40 PSF Live Load / 10 PSF Dead Load 12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	40 PSF Live Load / 20 PSF Dead Load 12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
9½"	110	15'-0"	13'-9"	13'-0"	12'-0"	13'-11"	12'-9"	12'-0"	11'-2"
	210	15'-9"	14'-5"	13'-8"	12'-8"	14'-7"	13'-5"	12'-7"	11'-8"
	230	16'-0"	14'-8"	13'-11"	12'-10"	14'-10"	13'-7"	12'-10"	11'-10"
11¾"	117	17'-2"	15'-8"	14'-10"	13'-8"	15'-10"	14'-6"	13'-8"	12'-8"
	215	17'-11"	16'-5"	15'-6"	14'-4"	16'-7"	15'-2"	14'-4"	13'-3"
	235	18'-2"	16'-8"	15'-9"	14'-7"	16'-10"	15'-5"	14'-7"	13'-6"
14"	159	19'-3"	17'-7"	16'-7"	15'-4"	17'-9"	16'-3"	15'-4"	14'-2"
	213	19'-10"	18'-2"	17'-2"	15'-10"	18'-4"	16'-9"	15'-10"	14'-8"
	235	20'-1"	18'-4"	17'-3"	15'-11"	18'-6"	16'-11"	15'-11"	14'-9"
16"	360	20'-9"	19'-0"	17'-11"	16'-6"	19'-2"	17'-6"	16'-6"	15'-3"
	560	21'-6"	19'-8"	18'-6"	17'-0"	19'-10"	18'-2"	17'-0"	15'-9"
	158	19'-8"	17'-11"	16'-11"	15'-8"	18'-1"	16'-7"	15'-8"	14'-6"
18"	259	20'-6"	18'-8"	17'-7"	16'-3"	18'-10"	17'-2"	16'-3"	15'-0"
	233	21'-0"	19'-0"	17'-11"	16'-7"	19'-3"	17'-6"	16'-7"	15'-3"
	383	21'-9"	19'-10"	18'-8"	17'-3"	19'-11"	18'-3"	17'-3"	15'-11"
	583	22'-6"	20'-6"	19'-4"	17'-10"	20'-7"	18'-9"	17'-10"	16'-5"

L/360 Live Load Deflection (Minimum Criteria per Code)

Depth	TJI®	40 PSF Live Load / 10 PSF Dead Load 12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	40 PSF Live Load / 20 PSF Dead Load 12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
9½"	110	16'-9"	15'-3"	14'-5"	13'-4"	15'-5"	14'-1"	13'-4"	12'-4"
	210	17'-6"	15'-11"	15'-1"	14'-0"	16'-1"	14'-8"	13'-11"	12'-10"
	230	17'-9"	16'-2"	15'-4"	14'-2"	16'-4"	14'-11"	14'-2"	13'-1"
11¾"	117	19'-0"	17'-4"	16'-5"	15'-2"	17'-6"	16'-0"	15'-2"	14'-0"
	215	19'-10"	18'-1"	17'-2"	15'-10"	18'-3"	16'-8"	15'-10"	14'-8"
	235	20'-1"	18'-4"	17'-5"	16'-1"	18'-6"	16'-10"	16'-0"	14'-9"
14"	159	21'-3"	19'-5"	18'-5"	17'-0"	19'-7"	17'-10"	16'-11"	15'-8"
	213	21'-11"	20'-0"	19'-0"	17'-6"	20'-2"	18'-5"	17'-6"	16'-2"
	235	22'-3"	20'-3"	19'-3"	17'-8"	20'-5"	18'-8"	17'-8"	16'-3"
16"	360	23'-0"	21'-0"	19'-11"	18'-4"	21'-2"	19'-4"	18'-4"	16'-11"
	560	23'-10"	21'-9"	20'-8"	19'-0"	21'-11"	20'-0"	19'-0"	17'-5"
	158	21'-9"	19'-10"	18'-10"	17'-4"	19'-11"	18'-3"	17'-4"	16'-0"
18"	259	22'-8"	20'-8"	19'-7"	17'-11"	20'-9"	18'-11"	17'-11"	16'-6"
	233	23'-3"	21'-0"	19'-11"	18'-3"	21'-3"	19'-5"	18'-3"	16'-10"
	383	24'-0"	21'-11"	20'-9"	19'-0"	21'-11"	20'-1"	19'-0"	17'-6"
	583	24'-10"	22'-8"	21'-6"	19'-8"	22'-8"	20'-8"	19'-8"	18'-1"

(1) Web stiffeners are required at intermediate supports of continuous-span joists when the intermediate bearing length is less than 3¼" and that span on either side of the intermediate bearing is greater than the following total span:

TJI®	40 PSF Live Load / 10 PSF Dead Load 12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	40 PSF Live Load / 20 PSF Dead Load 12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
110			15'-0"	13'-4"		10'-2"	10'-2"	10'-2"
210			17'-4"	17'-4"		17'-4"	17'-3"	14'-2"
230	Not Req.	Not Req.	Not Req.	18'-0"	Not Req.	Not Req.	18'-0"	18'-0"
360			24'-0"	17'-8"		24'-0"	20'-4"	16'-4"
560			31'-10"	23'-6"		31'-10"	26'-10"	21'-10"

- Long-term deflection under dead load, which includes the effect of creep, has not been considered. Bold italic spans reflect initial dead load deflection exceeding 0.33".

How to Use These Tables

1. Determine the appropriate live load deflection criteria.
2. Identify the live and dead load condition.
3. Select on-center spacing.
4. Scan down the column until you meet or exceed the span of your application.
5. Select TJI® joist and depth.

General Notes

- Tables are based on:
  - Uniform loads.
  - More restrictive of simple or continuous span.
  - Clear distance between supports.
  - Minimum bearing length of 1¾" end (tie web stiffeners) and 3½" intermediate.
- Assumed composite action with a single layer of ¾" on-center span-rated, glue-nailed floor panels for deflection only. **When subfloor adhesive is not applied, spans shall be reduced 6" for nails and 12" for proprietary fasteners.**
- For continuous spans, ratio of short span to long span should be 0.4 or greater to prevent uplift.
- Spans governed from Weyerhaeuser software may exceed the spans shown in these tables because software reflects actual design conditions.
- For multi-family applications and other loading conditions not shown, refer to Weyerhaeuser software or to the load table on page 8.

Live load deflection is not the only factor that affects how a floor will perform. To more accurately predict floor performance, see our TrForm® Ratings.

Simpson Hardware Schedule

Hardware Number	Comments	Min. Stud/ Post Sized	Capacity	Note
HD1	STHD14	4 X 4	3,815#	HOLDOWN STRAP WITH (36) 16D SINKERS AS SHOWN
HD2	HDUS-SDS2.5	4 X 4	5,645#	HOLDOWN WITH "SIMPSON SSTB24" HOLDOWN BOLT AT EACH END AS SHOWN.

Beam Schedule

Beam Calc #	Type
1	3-1/2 x 9-1/2 PSL
2	3-1/2 x 9-1/2 PSL
3	3-1/2 x 9-1/2 PSL
4	5-1/4 x 9-1/2 PSL
5	3-1/2 x 9-1/2 PSL
6	5-1/4x16 PSL
7	3-1/2x11 7/8 PSL
8	6 x 8 DF #1

Pad Footing Schedule

Mark	Type	Rebar Condition	Count
P-1	2'-3" SQ X 18" DEEP	(3) #4 BAR E/W	2
P-2	2'-6" WIDE x 18" DEEP x 22'-8" LONG	(4) #5 BAR TOP & BOT.	1

Strong-Tie Steel Strong Wall Schedule

Part Number	Dimensions Height	Width	Thickness	Anchor Bolt Diameter	Anchor Bolt Count	Allowable Shear Load
SSW24x7	6'-8"	2'-0"	3 1/2"	SSWAB 1" STD ANCHOR BOLT (17,100# UPLIFT)	2	5,495# SEISMIC) 5,730# (WIND)

Foundation Notes

1. CEMENT TYPE II (MIN. f'c= 2,500 psi. 28 DAYS FOR FLATWORK, MIN.) MAXIMUM WATER-CEMENT RATIO IS 0.44 WITH MAXIMUM SLUMP OF 4".
2. SOIL ALLOWABLE BEARING PRESSURE OF 1,500 POUNDS PER SQUARE FOOT.
3. ANCHOR BOLTS AND FASTENERS IN CONTACT WITH PRESERVATIVE-TREATED WOOD SHALL BE HOT DIPPED ZINC-COATED GALVANIZED STEEL.
4. SHEAR WALL ANCHOR BOLTS AND HOLDOWN HARDWARE MUST BE SECURED IN PLACE PRIOR TO FOUNDATION INSPECTION.
5. **LINE, GRADE AND COMPACTION TEST RESULTS SHALL BE PRESENTED TO THE BUILDING INSPECTOR AT INITIAL FOUNDATION INSPECTION.**
6. FINAL COMPACTION REPORT SHALL BE SUBMITTED TO THE BUILDING DEPARTMENT TO VERIFY FOUNDATION PLANS PRIOR TO FOUNDATION INSPECTION.
7. PRIOR TO REQUESTING A BUILDING DEPARTMENT FOUNDATION INSPECTION, THE SOILS ENGINEER SHALL INSPECT AND APPROVE THE FOUNDATION EXCAVATIONS

Shear Wall Schedule Notes

1. *ABUTTING PANEL EDGES AT PANELS <1>, <2> & <3> TO HAVE 3x POSTS (OR BLOCKING). ABUTTING SHEAR EDGES AT <3A>, <4> & <4A> TO HAVE 4x POSTS (OR BLOCKING)*
2. *NO SHEAR PANEL WIDTHS LESS THAN 2'-0" ALLOWED (ie. 4'-6" WIDTH - USE 2'-0" AND 2'-6" PANELS). ALL EDGES SHALL BE BLOCKED.*
3. *ANCHOR BOLT SPACING AT SLAB AND A35 (OR LTP4) SPACING ON TOP OF SHEAR WALL ONLY OCCURS WHERE SHEAR PANELS OCCUR*
4. *(NON-SHEARED WALL AREAS TO RECEIVE A35 OR LTP4 CLIPS AT 24" ON CENTER).*
5. *NAILS SHALL BE COMMON OR GALVANIZED BOX. (GALVANIZED NAILS SHALL BE HOT-DIPPED OR TUMBLED). NAILING APPLIES TO ALL STUDS, PLATES AND BLOCKING. ALL EDGE NAILING AT TOP PLATES SHALL BE TO UPPER TOP PLATE. STAGGERING OF NAILS TO FRAMER'S PLATE IS NOT ACCEPTABLE.*
6. *NAILS SHALL BE SPACED NOT LESS THAN 1/2" FROM PANEL EDGES AND NOT LESS THAN 3/8" FROM EDGE OF STUDS*
7. *WOOD STRUCTURAL PANELS SHALL CONFORM TO C.B.C. SEC. 2303.1.4.*
8. *THE PLATE WASHER SHALL EXTEND TO WITHIN 1/2" OF THE BOTTOM PLATE ON THE SIDE (S) WITH SHEATHING (SDPWS 4.3.6.4.3)*
9. *SHEAR WALLS SHALL RUN CONTINUOUSLY FROM FOUNDATION TO ROOF/ FLOOR FRAMING.*

Shear Wall Schedule (2019 CBC)

Shear Wall Number	Extend Shear Panel From Floor to Floor or Floor to Roof Sheathing Above (Typical) Stud Spacing To Be 16" O/C (Typical)	Shear Value Per C.B.C. Table 2306.4.1	"Simpson A35 or LTP4" From Wall to Rim Joist or From Roof to Plates	5/8" Dia. Anchor Bolt Spacing	Sill Plate Nailing at Second Floor	Bolt Length	Sill Plate
1	3/8" WOOD STRUCTURAL PANEL (STRUCT I SHEATHING) WITH 8d NAILS AT 6" O/C EDGES AND 12" O/C IN FIELD (3x STUDS @ 48" O/C)	280 PLF (EARTHQUAKE) & 349 PLF (WIND)	12" O/C	16" O/C	16d STAGGERED AT 6" O/C	14"	2x
2	3/8" WOOD STRUCTURAL PANEL (STRUCT I SHEATHING) WITH 8d NAILS AT 4" O/C EDGES AND 12" O/C IN FIELD (3x STUDS @ 48" O/C)	430 PLF (EARTHQUAKE) & 602 PLF (WIND)	10" O/C	16" O/C	16d STAGGERED AT 4" O/C	14"	3x (2x @ 2nd FLR.)

Framing Plan Legend

- EFF. L=8'-0" / L=10'-0" — EFFECTIVE SHEAR WALL LENGTH/WALL LENGTH
- 3 — SHEAR WALL REF. (SEE SHEAR WALL SCHEDULES)
- 10 — BEAM TAG (SEE BEAM SCHEDULE)
- 3-1/2 x 14 PSL (Bot. @ 9'-0") — NUMBER = BEAM SIZE; LETTER = BEAM HEIGHT
- ? — PLAN NOTE TAG
- 1 — DETAIL REF. #
- 1 — DETAIL SHEET #
- 1 / S-2 — WALL ELEVATION REF. # / SHEET #
- 1t — FOOTING TAG

Plan Notes

3-15 4" THICK CONCRETE GARAGE SLAB ON GRADE (2,500 PSI MIX) WITH SMOOTH TROWEL FINISH. SLOPE 2" TO DRAIN. SAWCUT WITHIN 24 HOURS WHERE INDICATED

3-25 1" MINIMUM DEEP SAWCUT CONTROL JOINTS (TYPICAL). SAWCUT MAXIMUM OF 24 HOURS AFTER SLAB POUR

3-65 3-1/2" THICK CONCRETE SLAB ON GRADE WITH MEDIUM BROOM FINISH. SLOPE 1/8" PER FOOT MINIMUM AWAY FROM BUILDING. PROVIDE A LANDING AT ALL DOORS A MINIMUM OF 2" BEYOND EACH SIDE OF DOOR AND A MINIMUM OF 2'-0" OUT FROM FACE OF DOOR.

3-66 3-1/2" THICK CONCRETE SLAB ON GRADE WITH MEDIUM BROOM FINISH. SLOPE 1/8" PER FOOT MINIMUM AWAY FROM BUILDING.

3-80 30" LONG #3 BARS AT 24" O/C

3-200 CONTINUOUS CONCRETE FOOTING WITH STEM AND (1) #4 REINFORCING BAR TOP AND BOTTOM (SEE FOUNDATION PLAN FOR STEM WIDTH). PROVIDE 5/8" DIAMETER x 14" LONG ANCHOR BOLTS (ASTM A-307) AT 48" O/C AND 12" FROM CORNERS AND BREAKS IN SILL PLATE (7" MINIMUM EMBEDMENT INTO CONCRETE) WITH 3" x 3" x 0.229" SQUARE STEEL PLATE WASHERS TYPICAL. (CLOSER SPACING AND DEEPER FOOTING MAY BE REQUIRED AT SHEAR WALLS - SEE SCHEDULE)

3-208 CONTINUOUS CONCRETE FOOTING WITH 8" WIDE STEM AND (2) #4 REINFORCING BAR TOP AND BOTTOM. PROVIDE 5/8" DIAMETER x 14" LONG ANCHOR BOLTS (ASTM A-307) AT 48" O/C AND 12" FROM CORNERS AND BREAKS IN SILL PLATE (7" MINIMUM EMBEDMENT INTO CONCRETE) WITH 3" x 3" x 0.229" SQUARE STEEL PLATE WASHERS TYPICAL. (CLOSER SPACING AND DEEPER FOOTING MAY BE REQUIRED AT SHEAR WALLS - SEE SCHEDULE)

3-385 OMIT ANCHOR BOLTS AT OPENINGS (TYPICAL)

3-700 6" THICK CONCRETE CURB (2,500 PSI MIX) TO FORM WELL AROUND UNDERFLOOR ACCESS. PROVIDE MINIMUM CLEAR WIDE x 16" HIGH WITH SCREENED ACCESS PANEL ("HARLEN - AC-18" OR EQUAL), PIPES, DUCTS, ETC. SHALL NOT INTERFERE WITH ACCESS.

3-710 12" SQUARE x 12" DEEP x 6" HIGH (ABOVE GRADE) CONCRETE PAD FOOTING WITH "SIMPSON CBSQ44" POST BASE IN CENTER

6-142 ALL INTERIOR NON-BEARING HEADERS BENEATH TRUSSES MAY BE 2 x 4 FLAT WITH (1) 2 x 4 TRIMMER EACH END. PROVIDE 1x TOP PLATE AND 2x PLATE AT INTERIOR NON-BEARING WALLS WITH "SIMPSON DTC" TRUSS CLIPS AT 48" O/C

6-146 4 x 6 DOUG FIR #2 OR BETTER HEADER WITH (1) 2 x 4 TRIMMER EACH END

6-226 FOUR (4) 2 x 14 DOUG FIR #2 OR BETTER STAIR STRINGERS WITH 2 x 4 CONTINUOUS SPACER AGAINST WALL

6-256 6 x 6 DOUG FIR #1 OR BETTER HEADER WITH (1) 2 x 6 TRIMMER EACH END

6-258 6 x 8 DOUG FIR #1 OR BETTER HEADER WITH (1) 2 x 6 TRIMMER EACH END

6-290 2 x 6 FLOOR JOISTS AT 16" O/C (9'-1" MAXIMUM SPAN PER C.B.C. TABLE 2308.8(2))

Plan Notes

6-361 9-1/2" DEEP ENGINEERED WOOD "I" JOISTS AT 16" O/C. (TRUS-JOIST MACMILLAN TJI 230 (2-5/16" x 1.6E FLANGE) OR EQUAL). SEE MANUFACTURER'S SPECIFICATIONS FOR NOTCHING, BLOCKING AND SHEAR REQUIREMENTS. (ICC ESR-1153)

6-430 4 x 6 FLOOR GIRDER. MAINTAIN 12" MINIMUM CLEAR ABOVE GRADE BELOW

6-511 PROVIDE 3/8" SHEAR DIAPHRAGM AT NOOK CEILING FROM SHEAR WALL BACK TO BEAM (NAILING PER SHEAR TYPE <2>)

6-640 19/32" EXPOSURE 1 TONGUE AND GROOVE PLYWOOD (OR APA RATED OSB). FLOOR SHEATHING (PANEL INDEX 32/16). GLUE-NAIL WITH 10d DEFORMED SHANK NAILS AT 6" O/C EDGES AND 10" O/C FIELD. FLOOR DIAPHRAGM TO BE UNBLOCKED WITH NAILS SPACED 6" MAXIMUM AT SUPPORTED EDGES

6-657 15/32" APA RATED OSB FOIL-FACED ("LUMINOX", OR EQUAL. FOIL SIDE DOWN) ROOF SHEATHING 32/16 SPAN RATING EXTERIOR GLUE LAY PERPENDICULAR WITH RAFTERS AND NAIL WITH 8d NAILS AT 6" O/C EDGES AND BOUNDARY AND 12" O/C IN FIELD. INCLUDE FOIL-FACED SHEATHING AT ALL VERTICAL WALLS AT GABLED ENDS

6-695 FLAT BOTTOM ENGINEERED ROOF TRUSSES AT 24" O/C

6-700 GIRDER TRUSS (PROVIDE DOUBLE 2 x 4 STUDS EACH END - TYPICAL UON) (DOUBLE TRUSS IF REQUIRED - SEE TRUSS MANUFACTURER'S CALCULATIONS FOR EXACT REQUIREMENTS)

6-709 DRAG TRUSS (SEE PLAN FOR LOADING). PROVIDE BOUNDARY NAILING (8d NAILS AT 6" ON CENTER) ALONG ENTIRE LENGTH OF DRAG TRUSS

6-710 SHADING INDICATES "CALIFORNIA" FILL FRAMING BY TRUSS COMPANY (REFER TO TRUSS DRAWINGS). CONTINUE MAIN ROOF SHEATHING BELOW FILL.

6-775 DRAG STRAP TO BEAM (OR JOIST OR BLOCKING) SEE PLAN FOR TYPE AND LENGTH OF STRAP. PROVIDE BOUNDARY NAILING ALONG ENTIRE LENGTH OF DRAG MEMBER. PROVIDE DOUBLE 2x MEMBERS WHERE STRAP WIDTH REQUIRES.

6-864 2 x 6 DOUG FIR #2 OR BETTER ROOF RAFTERS AT 16" O/C (12'-5" MAXIMUM SPAN PER C.B.C. TABLE 2308.10.3(1) CONCRETE TILE).

6-880 2 x 4 BRACING TO SUPPORT HIP, RIDGE OR VALLEY BEAMS

6-940 SOLID 2x EAVE BLOCKING WITH "SIMPSON H1" CLIPS AT 24" ON CENTER FROM EACH ROOF TRUSS OR RAFTER) TO DOUBLE TOP PLATES (OR BEAM). PROVIDE "SIMPSON A35" CLIPS TO EAVE BLOCKING AT SHEAR WALLS. SEE SHEAR PANEL SCHEDULE FOR ADDITIONAL "SIMPSON A35" CLIPS TO EAVE BLOCKING. ("H1 SPACING AT 24" ON CENTER STILL OCCURS AT SHEAR WALLS IN ADDITION TO A35'S)

ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

Proposed Single Family Residence For:

Parthenon Development, LLC

13024 Via Verrazano, Riverside, CA 92503

26 Apr. 2022	2 26 Apr. 2022 P.C.C.
21-4372	1
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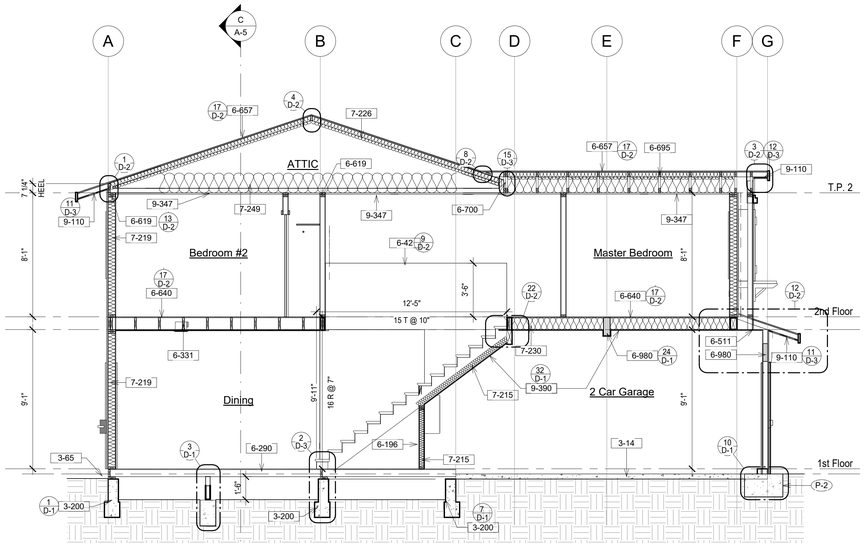
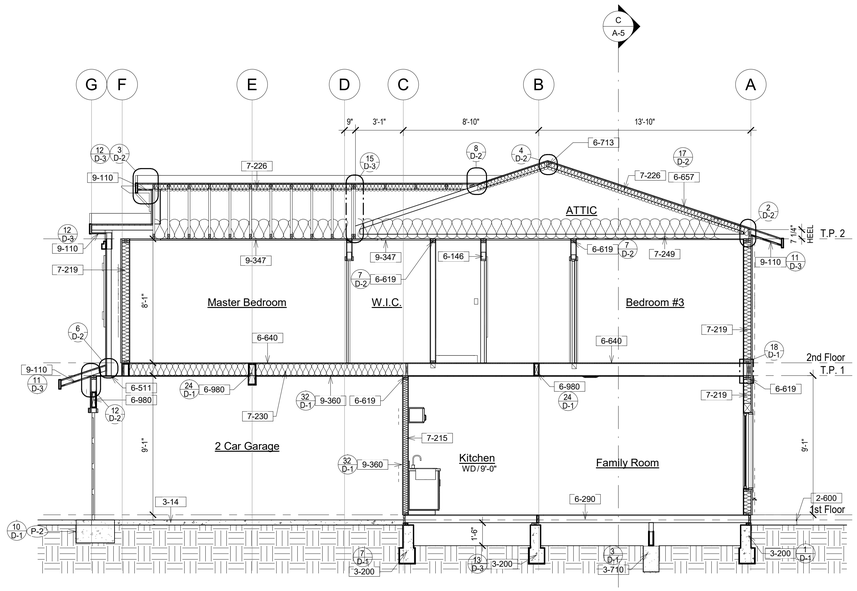
LICENSED ARCHITECT — DOUGLAS A. ANDRESEN — C-14504 — 12-31-23 RENEWAL DATE — STATE OF CALIFORNIA

Foundation & Framing

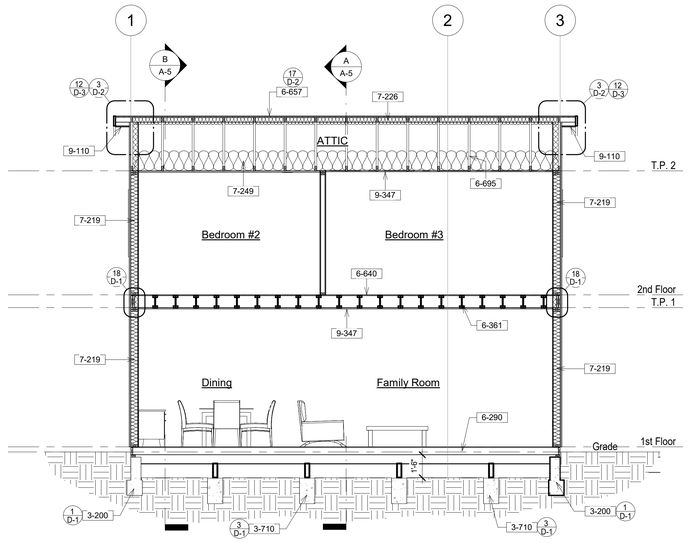
A-4



B **Section B**
1/4" = 1'-0"



A **Section A**
1/4" = 1'-0"



C **Section C**
1/4" = 1'-0"

Plan Notes

2-600	FINISH GRADE
3-14	4" THICK CONCRETE GARAGE SLAB ON 2" SAND BASE (2,500 PSI MIX) WITH SMOOTH TROWEL FINISH. SLOPE 2" TO DRAIN. SAWCUT WITHIN 24 HOURS WHERE INDICATED
3-65	3-1/2" THICK CONCRETE SLAB ON GRADE WITH MEDIUM BROOM FINISH. SLOPE 1/8" PER FOOT MINIMUM AWAY FROM BUILDING. PROVIDE A LANDING AT ALL DOORS A MINIMUM OF 2" BEYOND EACH SIDE OF DOOR AND A MINIMUM OF 3'-0" OUT FROM FACE OF DOOR.
3-200	CONTINUOUS CONCRETE FOOTING WITH STEM AND (1) #4 REINFORCING BAR TOP AND BOTTOM (SEE FOUNDATION PLAN FOR STEM WIDTH). PROVIDE 5/8" DIAMETER x 14" LONG ANCHOR BOLTS (ASTM A-307) AT 48" O/C AND 12" FROM CORNERS AND BREAKS IN SILL PLATE (7" MINIMUM EMBEDMENT INTO CONCRETE) WITH 3" x 3" x 0.229" SQUARE STEEL PLATE WASHERS TYPICAL. (CLOSER SPACING AND DEEPER FOOTING MAY BE REQUIRED AT SHEAR WALLS - SEE SCHEDULE)
3-710	12" SQUARE x 12" DEEP x 6" HIGH (ABOVE GRADE) CONCRETE PAD FOOTING WITH "SIMPSON CBSQ44" POST BASE IN CENTER
6-42	42" HIGH WOOD STUD WALL WITH DRYWALL SIDES AND WOOD CAP.
6-146	4 x 6 DOUG FIR #2 OR BETTER HEADER WITH (1) 2 x 4 TRIMMER EACH END
6-196	VOID SPACE
6-290	2 x 6 FLOOR JOISTS AT 16" O/C (9'-1" MAXIMUM SPAN PER C.B.C. TABLE 2308.8(2))
6-331	2 x 10 DOUG FIR #2 OR BETTER FLOOR JOISTS AT 16" O/C
6-361	9-1/2" DEEP ENGINEERED WOOD "I" JOISTS AT 16" O/C. (TRUS-JOIST MACMILLAN TJI 230 (2-5/16" x 1.6E FLANGE) OR EQUAL). SEE MANUFACTURER'S SPECIFICATIONS FOR NOTCHING, BLOCKING AND SHEAR REQUIREMENTS. (ICC ESR-1153)
6-511	PROVIDE 3/8" SHEAR DIAPHRAGM AT NOOK CEILING FROM SHEAR WALL BACK TO BEAM (NAILING PER SHEAR TYPE <2>)
6-619	LAP DOUBLE TOP PLATES ALONG THIS WALL 4'-0" MINIMUM WITH TWENTY (20) - 16d NAILS OR WITH "SIMPSON MST48" STRAP
6-640	19/32" EXPOSURE I TONGUE AND GROOVE PLYWOOD (OR APA RATED OSB) FLOOR SHEATHING (PANEL INDEX 32/16). GLUE-NAIL WITH 10d DEFORMED SHANK NAILS AT 6" O/C EDGES AND 10" O/C FIELD. FLOOR DIAPHRAGM TO BE UNBLOCKED WITH NAILS SPACED 6" MAXIMUM AT SUPPORTED EDGES
6-657	15/32" APA RATED OSB FOIL-FACED ("LUMINOX", OR EQUAL. FOIL SIDE DOWN) ROOF SHEATHING 32/16 SPAN RATING EXTERIOR GLUE LAY PERPENDICULAR WITH RAFTERS AND NAIL WITH 8d NAILS AT 6" O/C EDGES AND BOUNDARY AND 12" O/C IN FIELD. INCLUDE FOIL-FACED SHEATHING AT ALL VERTICAL WALLS AT GABLED ENDS
6-695	FLAT BOTTOM ENGINEERED ROOF TRUSSES AT 24" O/C
6-700	GIRDER TRUSS (PROVIDE DOUBLE 2 x 4 STUDS EACH END - TYPICAL UON) (DOUBLE TRUSS IF REQUIRED - SEE TRUSS MANUFACTURER'S CALCULATIONS FOR EXACT REQUIREMENTS)
6-713	2 x 4 SOLID RIDGE BLOCKING BETWEEN TRUSSES
6-980	BEAM (SEE FRAMING PLAN)
7-215	R-15 FIBERGLASS BATT INSULATION TYPICAL AT WALLS
7-219	R-19 FIBERGLASS BATT INSULATION
7-226	R-19 FIBERGLASS BATT INSULATION (PROVIDE WIRE SUPPORTS AT TRUSS TOP CHORD INSTALLATION)
7-230	R-30 FIBERGLASS BATT INSULATION
7-249	R-49 FIBERGLASS BATT INSULATION AT ALL NEW ATTIC AREAS.
9-110	STUCCO SOFFIT (USE HIGH-RIB METAL LATH AT ALL HORIZONTAL APPLICATIONS)
9-347	LINE OF CEILING (SEE PLAN FOR CEILING HEIGHTS)
9-360	5/8" TYPE "X" GYPSUM BOARD ON GARAGE SIDE OF THIS WALL FROM SLAB TO ROOF SHEATHING (OR FROM SLAB TO GARAGE CEILING WHERE OCCURS). SECURE WITH 6d COOLER NAILS AT 7" ON CENTER WITH END JOINTS ON NAILING MEMBERS. PROVIDE MINIMUM 24" HORIZONTAL SEPARATION BETWEEN OFFSET ELECTRICAL RECEPTACLES. (ELECTRICAL BOXES TO CONFORM TO ICC REPORT NO. ER 3686) GAS VENTS, METAL CHIMNEYS PENETRATING THE FINISH SHALL BE FIRE STOPPED WITH AN APPROVED ASSEMBLY. PLASTIC PIPE SHALL NOT PIERCE FINISH. DUCTS ON THE GARAGE SIDE SHALL BE A MINIMUM 26 GAUGE SHEET METAL.
9-390	PROVIDE ONE LAYER 5/8" TYPE "X" GYPSUM BOARD ON ALL WALLS AND CEILINGS OF USABLE SPACE UNDER STAIRS. ELECTRICAL BOXES INSTALLED IN THESE WALLS OR CEILING SHALL BE ONE-HOUR FIRE RATED.

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Proposed Single Family Residence For:
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13024 Via Verrazano, Riverside, CA 92503

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21-4372	2
	3
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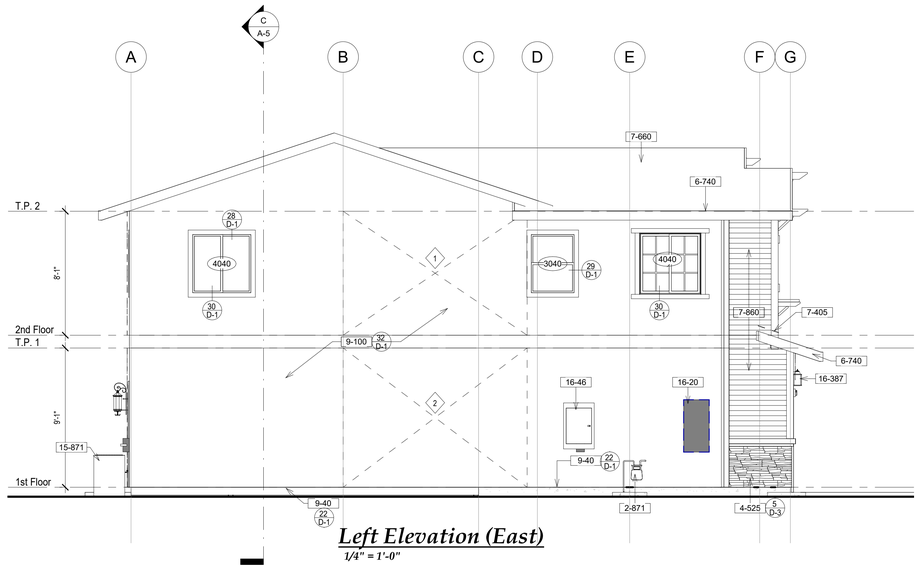
LICENSED ARCHITECT Douglas Andresen C-14504 12-31-23 RENEWAL STATE OF CALIFORNIA

Sections

A-5

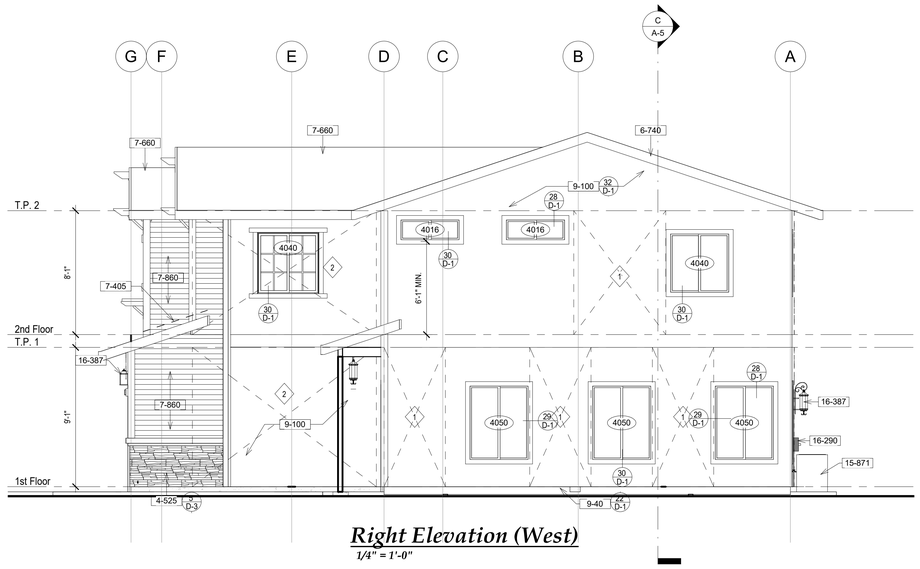


Left Elevation (East)

1/4" = 1'-0"

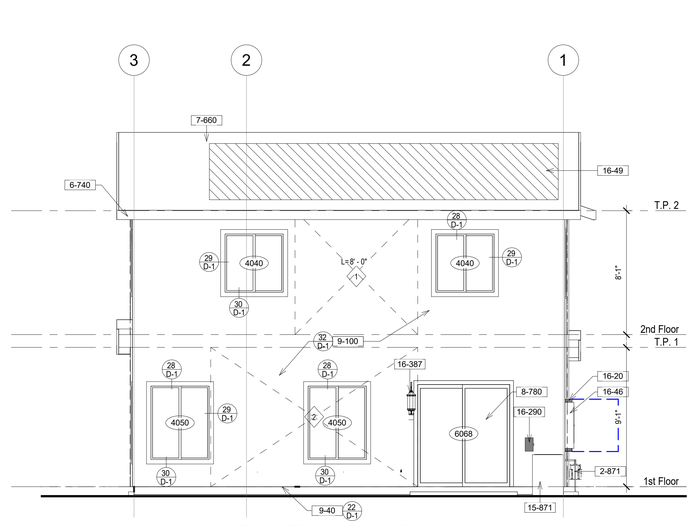
Front Elevation (North)

1/4" = 1'-0"



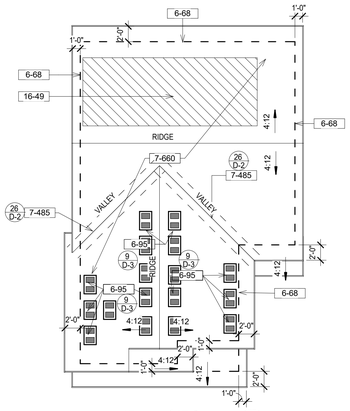
Right Elevation (West)

1/4" = 1'-0"



Rear Elevation (South)

1/4" = 1'-0"



Roof Plan

1/8" = 1'-0"

Attic Ventilation Summary

ATTIC AREA : 1,026 SQ. FT.

TOTAL VENTILATED ATTIC AREA = 1,026 SQ. FT. / 150 = 6.84 SQ. FT.
x 144 SQ. IN.
SUB-TOTAL VENTILATION REQUIRED = 985 SQ. IN.

100,000 BTUH INPUT ATTIC FAU (1 SQ. IN PER 2,000 BTUH x 2 (HIGH & LOW)
X 2 (50% AREA LOST DUE TO MESH)) 200.00 SQ. IN
TOTAL VENTILATION ***REQUIRED = 1,185.00 SQ. IN***

(17) O'HAGIN CLOAKED VENTS (SHINGLES) AT 72 SQ. IN. EACH = 360.00 SQ. IN.
TOTAL VENTILATION **PROVIDED= 1,224.00 SQ. IN.**

ANDRESEN ARCHITECTURE INC.
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Plan Notes

2-871	NEW GAS METER LOCATION (BY UTILITY). (VERIFY EXACT LOCATION WITH UTILITY COMPANY)
4-525	SYNTHETIC STONE VENEER ("SOUTHWEST BLENDPRO-FIT LEDGESTONE" PF-8019 BY "STONE PRODUCTS CORP.") I.C.C. REPORT NO. NER-358
6-68	LINE OF WALL BELOW
6-95	O'HAGIN CLOAKED VENT TILE (MODEL "S" FOR "S" TILE, MODEL "M" FOR LOW PROFILE, AND MODEL "FLAT" FOR FLAT CONCRETE TILE.) WITH 1/4" GALVANIZED MESH SCREEN AT OPENING (O'HAGINS 1 (800) 394-3864)
6-125	18" x 48" DECORATIVE LOUVERED POLYPROPYLENE SHUTTER PLANT-ON WITH MOLDED THROUGH COLOR www.castleshutters.com
6-740	2 x 6 RESAWN FASCIA (HOLD UP AT EAVES FOR STARTER COURSE OF CONCRETE TILE)
7-400	CONTINUOUS 24 GAUGE ROOF/WALL FLASHING (TYPICAL). ROOF FLASHING MATERIALS AND INSTALLATION MUST COMPLY WITH THE PROVISIONS OF CBC SECTIONS 1508 & 1509.
7-405	CONTINUOUS 24 GAUGE GALVANIZED RAKE / WALL FLASHING (TYPICAL)
7-485	24" WIDE GALVANIZED VALLEY METAL (26 GAUGE) WITH 1" HIGH SPLASH DIVERTER RIB AT CENTER FLOW LINE. INSTALL OVER ONE LAYER 72lb FELT NON-PERFORATED CAP SHEET COMPLYING WITH ASTM 3909.
7-660	NEW CLASS "A" 25 YEAR COMPOSITION ROOF SHINGLES (ICC ER-5546) OVER ONE LAYER 72 LB. FELT. NON-PERFORATED CAP SHEET COMPLYING WITH ASTM D 3909. CRC 337.5.2. WHERE VALLEY FLASHING IS INSTALLED, THE FLASHING SHALL NOT BE LESS THAN 0.019" NO 26-GAGE GALVANIZED SHEET CORROSION-RESISTANT METAL INSTALLED OVER NOT LESS THAN ONE LAYER OF MINIMUM 72-POUND MINERAL-SURFACED NON-PERFORATED CAP SHEET COMPLYING WITH ASTM D 3909. CRC 337.5.3(ROOF SHALL BE INSTALLED WITH WIND TABS TO RESIST 80 MPH WINDS)
7-860	FIBER-CEMENT SIDING (HARDIEPLANK LAP SIDING, OR EQUAL) OVER ONE LAYER 15 LB. FELT WITH HARDIETRIM XLD BOARDS AT CORNERS AND OPENINGS (FRAMER TO PROVIDE ADEQUATE BACKING FOR TRIM – INSTALL PER MANUFACTURER'S INSTRUCTIONS) www.jameshardie.com
8-780	T INDICATES TEMPERED GLASS
9-40	CONTINUOUS GALVANIZED SHEET METAL WEEP SCREED
9-100	7/8" EXTERIOR CEMENT PLASTER WITH PAPER-BACKED WOVEN WIRE FABRIC LATH (3 COATS MINIMUM). PROVIDE TWO LAYERS OF GRADE "D" PAPER OVER ALL PLYWOOD SHEAR PANEL (USE HIGH RIB LATH AT HORIZONTAL APPLICATIONS) (USE EXTERIOR STUCCO PLASTER CONTROL JOINTS NO GREATER THAN 144 SQUARE FEET VERTICAL AND 100 SQUARE FEET FOR HORIZONTAL APPLICATIONS. THE DISTANCE BETWEEN CONTROL JOINTS SHALL NOT EXCEED 18 LINEAR FEET IN EITHER DIRECTION WITH A LENGTH TO WIDTH RATIO OF 2.5: 1, PER ASTM C 1063 AND CH. R703.6.1 OF THE 2013 CRC.)
15-871	CONDENSING UNIT. PROVIDE 3-1/2" THICK POLYETHYLENE PAD EXTENDED 3" MINIMUM ABOVE GROUND PER C.M.C.
16-20	200 AMP RECESSED MAIN PANEL (UNDERGROUND FEED WITH TWO #3/0 AWG & ONE #2 GROUND) (VERIFY EXACT LOCATION WITH UTILITY COMPANY) (PROVIDE GAS AND WATER BONDING TO SERVICE) PROVIDE 3'-0" DEEP BY 2'-6" WIDE MINIMUM CLEARANCE IN FRONT OF PANEL PER ARTICLE 110-26a
16-46	SOLAR READY - FUTURE PANEL
16-49	PV SYSTEM WITH STANDARD DESIGN PV CAPACITY PER TITLE 24 (AREA SHALL BE COMPRISED OF AREAS THAT HAVE NO DIMENSION LESS THAN FIVE FEET AND ARE NO LESS THAN 80 SQ. FT. EACH) PER ENERGY CODE, SECTION 110.10(b). SOLAR PANELS CONTRACTOR TO VERIFY BEST DIRECTION TO FACE THE PANELS AT TIME OF INSTALLATION.
16-290	220 V. DISCONNECT SWITCH (VERIFY CONDUCTOR SIZE AND FUSING WITH LOCAL CODES)
16-387	SURFACE MOUNTED ADJUSTABLE FLOOD LIGHTS (+84" UON) WITH MOTION SENSOR
16-835	ILLUMINATED ADDRESS LIGHT AT +84" ABOVE FLOOR LINE (UON) PER CITY STANDARD WITH 4" HIGH MINIMUM HEIGHT NUMBERS ON CONTRASTING BACKGROUND AND ILLUMINATED AT ALL HOURS OF DARKNESS. WITH A MINIMUM STROKE WIDTH OF 1/2 INCH. THE TYPE LOCATION AND SIZE OF BUILDING ADDRESS WHICH MUST BE CLEARLY VISIBLE AND LEGIBLE FROM THE ADJACENT PUBLIC WAY OR STREET.

NOTE: ROOF GUTTERS SHALL BE SCREENED TO PREVENT THE ACCUMULATION OF LEAVES AND DEBRIS. CRC R337.5.4.

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21-4372	

LICENSED ARCHITECT Douglas Andresen C-14504 12-31-23 RENEWAL DATE STATE OF CALIFORNIA

Elevations & Roof Plan

A-6

Electrical Legend

LIGHTING REQUIREMENTS:

1. ALL INSTALLED LUMINARIES MUST BE HIGH EFFICACY IN ACCORDANCE WITH CALIFORNIA ENERGY CODE TABLE 150.0 A.
2. LIGHTING IN BATHROOM, GARAGE, LAUNDRY ROOMS AND UTILITY ROOMS MUST BE CONTROLLED BY A OCCUPANT SENSOR.
3. ANY OTHER ROOM MUST BE SWITCHED BY A OCCUPANT SENSOR OR DIMMER SWITCH. (CLOSETS UNDER 70 SQ FT ARE EXEMPT.)
4. ALL PERMANENTLY INSTALLED OUTDOOR LIGHTING MUST BE HIGH EFFICACY AND MUST BE CONTROLLED BY A MANUAL ON AND OFF SWITCH AND USE OF THESE AUTOMATIC CONTROL TYPES AS PER CALIFORNIA ENERGY CODE 150.0 (3) AND TABLE 150.0-A
   A. PHOTOCONTROL AND MOTION SENSOR, OR
   B. PHOTOCONTROL AND AUTOMATIC TIME SWITCH CONTROL, OR
   C. ASTRONOMICAL TIME CLOCK THAT AUTOMATICALLY TURN OUTDOOR LIGHTING OFF DURING DAYLIGHT HOURS, OR ENERGY MANAGEMENT CONTROL SYSTEM (EMCS) THAT PROVIDES THE FUNCTIONALLY OF AN ASTROMONICAL TIME CLOCK. EMCS DOES NOT HAVE AN OVERRIDE OR BYPASS THAT ALLOWS THE LUMINARIES TO ALWAYS ON, AND IS PROGRAMMED TO AUTOMATICALLY TURN THE OUTDOOR LIGHTING OFF DURING DAYLIGHT HOURS.
5. OCCUPANCY FIXTURE SHALL HAVE NO MANUAL OVERRIDE AND HAVE A 30 MIN. MAX TIMER AND BE A MICROWAVE/ULTRASONIC OR PASSIVE INFA-RED TYPE
6. HIGH EFFICACY LUMINARIES MUST BE PIN BASED
7. RECESSED DOWNLIGHT LUMINARIES IN CEILING, FOR INSTANCE, PIN-BASED CFLs MUST BE JA8 CERTIFIED TO BE INSTALLED IN CEILING RECESSED DOWNLIGHTS. ALL CEILING RECESSED DOWNLIGHTS AND ENCLOSED LUMINARIES MUST BE CONTROLLED BY A DIMMER OR VACANCY SENSOR AS PER CALIFORNIA ENERGY CODE 150.0 (K)(C)

NOTES:

1. ALL WIRE SIZING AND INSTALLATION FOR ALL OUTLET, FIXTURES AND SWITCHES TO BE DETERMINED AND THE SOLE RESPONSIBLY OF LICENSED ELECTRICIAN ON THE JOB.
2. IF ANY FIELD CHANGES NEED TO BE MADE THE LICENSED ELECTRICIAN HAS SOLE RESPONSIBILITY FOR ALL CHANGES. ALL CHANGES MUST BE APPROVED BY GENERAL CONTRACTOR AND MUST FOLLOW THE 2005 NEC.

LEGEND:

DUPLEX RECEPTACLE: 20A-125V-2P, 3-WIRE GROUNDING TYPE. TO BE INSTALLED 12" OFF SLAB AND 8" OFF FINISHED COUNTERTOP

GFI/WP GFI — DUPLEX RECEPTACLE: 20A-125V-2P, 3-WIRE GROUND FAULT INTERRUPTION TYPE. TO BE INSTALLED 12" OFF SLAB AND 8" OFF FINISHED COUNTERTOP. WEATHERPROOF COVER W/ GROUND FAULT INTERRUPTION FOR ALL OUT SIDE OUTLETS

AFCI — DUPLEX RECEPTACLE: 20A-125V-2P, 3-WIRE ARC FAULT INTERRUPTION TYPE. TO BE INSTALLED 12" OFF SLAB AND 8" OFF FINISHED COUNTERTOP

220 — RECEPTACLE: 20A-220V-2P, 3-WIRE GROUNDING TYPE. TO BE INSTALLED 3' FLOOR FINISHED SLAB U.N.O.

HALF HOT RECEPTACLE

CAN LIGHT. ALL CAN LIGHTS ARE TO BE THERMALLY PROTECTED ALL LIGHT TO BE HIGH EFFICIENCY (FLUORESCENT.) U.N.O.

WALL MOUNTED FIXTURE HIGH EFFICIENCY (FLUORESCENT.) U.N.O.
MS - MOTION SENSOR BUILT IN SWITCH

CEILING MOUNTED FIXTURE OR FAN BOX ALL LIGHTS TO BE HIGH EFFICIENCY (FLUORESCENT.) U.N.O.

FLORESCENT LIGHT, ALL LIGHTS TO BE HIGH EFFICIENCY (FLUORESCENT.)

SD — SMOKE DETECTORS HARD WIRE TO POWER AND SECURITY SYSTEM W/ BATTERY BACK UP

TOGGLE SWITCH, 20A-125V. FLUSH MOUNT AT +48" OR AS NOTED SUBSCRIPT AT SYMBOL INDICATES THE FOLLOWING:
3 - THREE WAY
4 - FOUR WAY
D - DIMMER
OS - OCCUPANCY SENSOR
VS - VACANCY SENSOR
T - TIMER
P - PHOTOCELL / MOTION SENSOR COMBINATION

THERMOSTAT SEE FAU AND A/C UNIT INSTALLATION MANUAL FOR DETAIL

TV — CABLE TELEVISION

PHONE

FIREPLACE GAS KEY

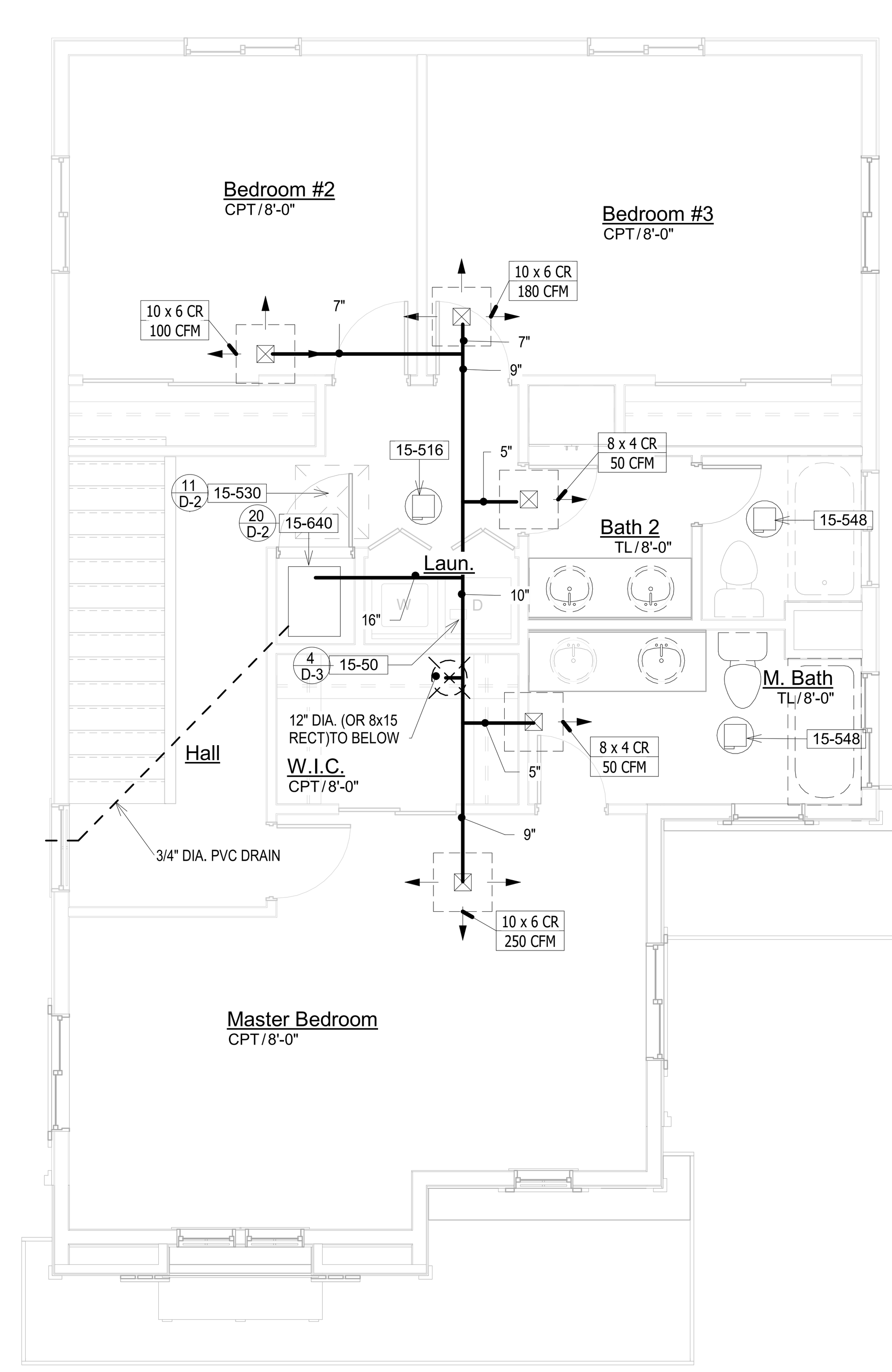
EXHAUST FAN:
- ALL BATHROOMS TO HAVE LIGHT THAT IS TO HAVE AT LEAST 40 LUMEN PER WATT.
- ALL BATHROOMS W/ TUBS OR SHOWERS, WATER CLOSETS AND LAUNDRY ROOMS SHALL BE PROVIDED AN ENERGY STAR COMPLIANT MECHANICAL VENTILATION SYSTEM THAT PROVIDE A MINIMUM OF 50 CFM DIRECTLY VENTED TO THE OUTSIDE.
- THE DISCHARGE POINT FOR THE EXHAUST AIR SHALL BE AT LEAST 3' FROM ALL EXTERIOR OPENINGS WHICH ALLOWS AIR ENTRY INTO THE OCCUPIED AREAS.
- UNLESS FUNCTIONING AS A COMPONENT OF A WHOLE HOUSE VENTILATION SYSTEM, THE FAN MUST BE CONTROLLED BY A HUMIDISTAT WHICH SHALL BE READILY ACCESSIBLE. HUMIDISTAT CONTROLS SHALL BE CAPABLE OF ADJUSTMENT BETWEEN RELATIVE HUMIDITY RANGES OF 50% TO 80%

ABBREVIATIONS:

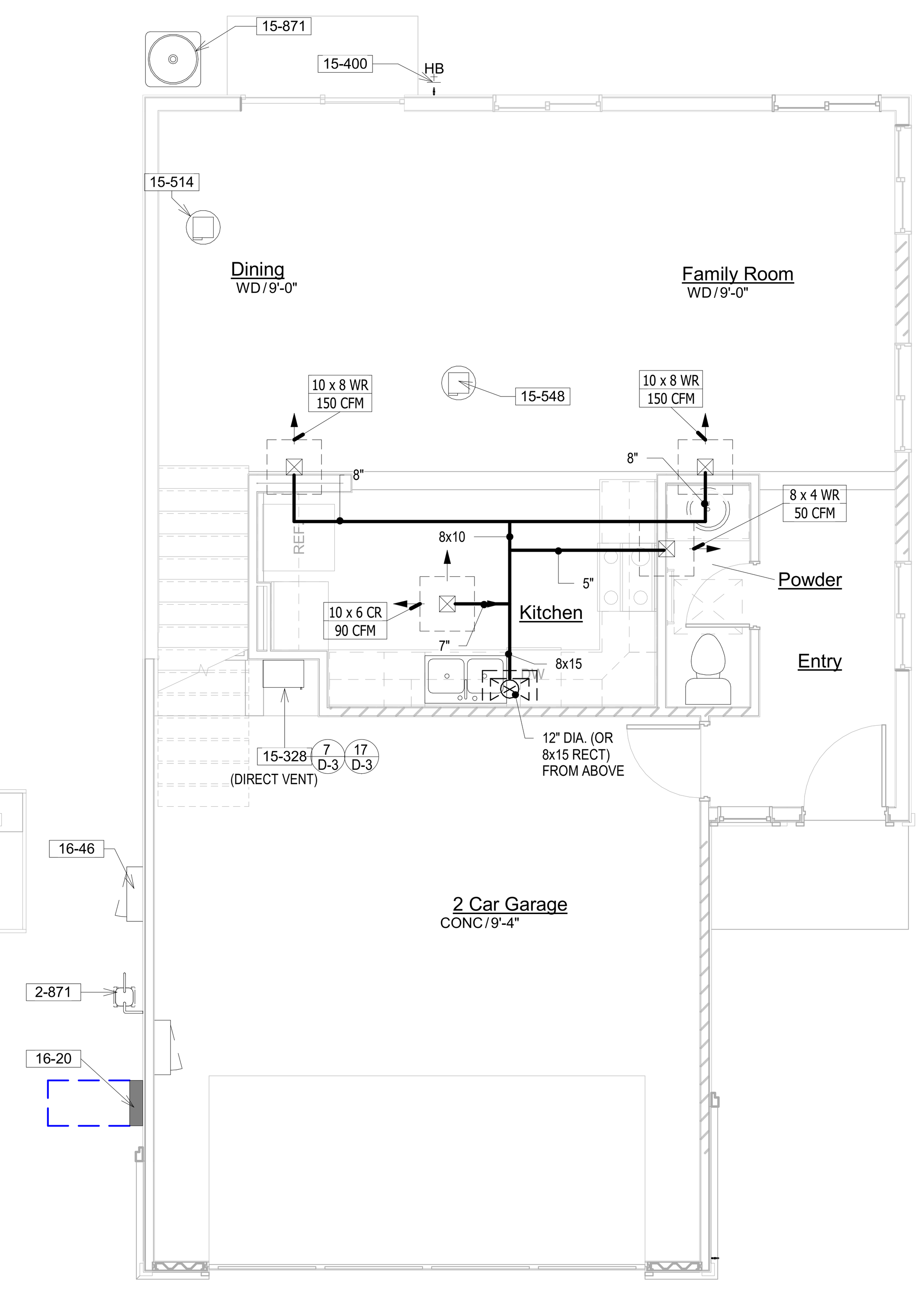
F = FLUORESCENT
V = VAPOR RESISTANT

GENERAL ELECTRICAL NOTES:

1. THE ELECTRICAL SYSTEM SHALL BE GROUNDED BY UFER W/ BONDS TO GAS & WATER PIPING.
2. ALL125-VOLT, 15- AND 20- AMPERE RECEPTACLE OUTLETS SHALL BE LISTED TAMPER-RESISTANT RECEPTACLES PER 406.12. EXCEPT RECEPTACLES LOCATED MORE THAN 5-1/2" FEET ABOVE THE FLOOR AND RECEPTACLES THAT ARE PART OF A LUMINAIRE OR APPLIANCE.
3. PROVIDE ONE MINIMUM SEPARATE 20 AMP CIRCUIT TO LAUNDRY APPLIANCES. NO OTHER OUTLETS SHALL BE ON LAUNDRY CIRCUIT.
4. WHERE MOTOR LOADS, APPLIANCE, LIGHTING ARE IN COMBINATION, NO MORE THAN 50% OF CONDUCTOR RATING MAY BE USED.
5. GROUNDING ELECTRODE CONDUCTOR SHALL BE #6 COPPER FOR 100A & #4 FOR 200A AND #2 COPPER OF 400A.
6. EACH ROOM CONTAINING A WATER CLOSET SHALL HAVE AT LEAST ONE FIXTURE PROVIDING A MINIMUM OF 40 LUMENS PER WATT
7. FLUORESCENT FIXTURES SHALL NOT CONTAIN MEDIUM BASE LAMP SOCKETS (MUST BE PIN BASED) AND SHALL BE ON SEPARATE SWITCHES FROM ANY INCANDESCENT LIGHTING.
8. ALL PROPOSED LIGHT FIXTURES SHALL BE LISTED FOR THE PROPOSED LOCATION. LIGHTING FIXTURES IN TUB OR SHOWER ENCLOSURES SHALL BE LABELED "SUITABLE FOR DAMP LOCATIONS"
9. OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE RESISTIVE RATED WALLS, PARTITIONS, FLOORS, OR CEILINGS SHALL BE FIRE STOPPED USING APPROVED METHODS TO MAINTAIN THE FIRE RESISTIVE RATING.
10. PROVIDE TWO MINIMUM SEPARATE 20 AMP CIRCUITS TO KITCHEN APPLIANCES.
11. ELECTRICAL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS OF MORE THAN 50 AMPS SHALL HAVE A POSITIVE MEANS OF DISCONNECT ADJACENT TO AND IN SIGHT FROM THE EQUIPMENT SERVED. PROVIDE DISCONNECT(S) AT A/C. DO NOT INSTALL DISCONNECTS BEHIND EQUIPMENT.
12. ALL LIGHTS IN BATHROOMS AND KITCHEN SHALL BE FLUORESCENT, COMPACT FLUORESCENT, OR APPROVED EQUAL.
13. SMOKE ALARM/DETECTORS SHALL SOUND AUDIBLE IN ALL SLEEPING AREAS (SECTION 907.2.10)
14. PRODUCTS OF COMBUSTION DETECTORS ARE REQUIRED AT ALL OR CEILING OF CORRIDOR OR ROOM WHICH PROVIDES ACCESS TO SLEEPING ROOMS/CEILING ABOVE STAIRWAY TO SLEEPING ROOMS. USE GENERAL ELECTRIC NO8201 OR NO 8202 SINGLE STATION OR EQUAL. FIRE WARNING SYSTEM-SMOKE DETECTORS TO COMPLY WITH SECTION 907.2 OF THE C.B.C. HARD WIRE TYPICAL W/BATTERY BACK UP AND INTERCONNECTED SO THAT WHEN ONE SOUNDS, THEY ALL SOUND.
15. APPROVAL OF THESE PLANS BY THE BUILDING DEPARTMENT DOES NOT INCLUDE APPROVAL FOR ANY TYPE OF ALARM SYSTEM THAT MAY BE SHOWN OR REQUIRED. SEPARATE APPROVALS FOR ANY ALARM SYSTEM MUST BE OBTAINED.
16. ALL BEDROOM BRANCH CIRCUITS SHALL BE ARC FAULT CIRCUIT PROTECTED
17. ALL BATHROOM CIRCUITS SHALL CONFORM TO CEC. THE REQUIREMENTS ARE AS FOLLOWS:
    A. A 20 AMPERE CIRCUIT DEDICATED TO EACH BATHROOM OR AT LEAST ONE 20 AMPERE CIRCUIT SUPPLYING ONLY BATHROOM RECEPTACLE OUTLETS.
    B. AT LEAST ON 20 AMP CIRCUIT FOR ALL BATHROOMS.
    C. ALL OUTLETS @ KIT., BATH, GARAGE, & EXTERIOR. TO BE G.F.I.
18. ELECTRICAL BOXES SHALL BE RATED & APPROVED AT FIREWALLS
19. ALL EXHAUST AIR FANS SHALL BE PROVIDED WITH BACK DRAFT DAMPERS.
20. ALL APPLIANCES MUST MEET THE MINIMUM STANDARDS SET FORTH BY THE STATE ENERGY COMMISSION.
21. OCCUPANCY FIXTURE SHALL HAVE NO MANUAL OVERRIDE AND HAVE A 30 MIN. MAX TIMER AND BE A MICROWAVE/ULTRASONIC OR PASSIVE INFRA-RED TYPE
22. WIRING SHALL BE SHEATHED WITH MIN. 26 GA. MATERIALS AND TIGHTLY SEALED; VENTS AND DUCTS SHALL BE MIN. 26 GA. MATERIAL AND FIRE STOP AT FLOOR/CEILING LINES.
23. ALL CAN LIGHTS ARE TO BE THERMALLY PROTECTED AND ALL LIGHTING ABOVE TUBS AND SHOWERS MUST BE APPROVED FOR WET PLACES.
24. THE MAIN ELECTRICAL SERVICE PANEL SHALL INCLUDE RESERVED SPACE ALLOWING FOR INSTALLATION OF A CIRCUIT BREAKER FOR A FUTURE ELECTRIC VEHICLE CHARGING SYSTEM. THE RESERVED SPACE SHALL BE PERMANENTLY AND VISIBLY MARKED AS 'EV CAPABLE,
    A. APPROVED MINIMUM 4-INCH-SQUARE ELECTRICAL JUNCTION BOX LOCATED ON THE INTERIOR OF THE GARAGE AT MINIMUM 30 INCHES AND MAXIMUM 48 INCHES ABOVE THE GARAGE FLOOR,
    B. INSTALL A LISTED RACEWAY CAPABLE OF ACCOMMODATING A 208/240-VOLT DEDICATED BRANCH CIRCUIT
    C. MINIMUM 1-INCH-DIAMETER LISTED ELECTRICAL METALLIC RACEWAY ORIGINATING AT THE MAIN ELECTRICAL SERVICE PANEL AND TERMINATING AT THE REQUIRED ELECTRICAL JUNCTION BOX. THE SERVICE PANEL AND/OR SUBPANEL SHALL PROVIDE CAPACITY TO INSTALL A 40-AMPERE MINIMUM DEDICATED BRANCH CIRCUIT AND SPACE(S) RESERVED TO PERMIT INSTALLATION OF A BRANCH CIRCUIT OVERCURRENT PROTECTIVE DEVICE.
25. ELECTRICAL JUNCTION BOX SHALL BE PERMANENTLY AND VISIBLY MARKED AS "FOR FUTURE ELECTRIC VEHICLE CHARGING"
26. COMBUSTIBLE INSULATION SHALL BE SEPARATED NOT LESS THAN 3 INCHES (76 MM) FROM RECESSED LUMINARIES, FAN MOTORS AND OTHER HEAT-PRODUCING DEVICES. [R302.14]



Second Floor Mechanical Floor Plan
1/4" = 1'-0"



First Floor Mechanical Floor Plan
1/4" = 1'-0"

Water Notes

1. "WATER PIPE AND FITTINGS WITH A LEAD CONTENT WHICH EXCEEDS 8% SHALL BE PROHIBITED IN SYSTEMS CONVEYING POTABLE WATER
2. ALL FIXTURES, EQUIPMENT, PIPING, AND MATERIALS SHALL BE LISTED
3. ALL PLUMBING FIXTURES SHALL MEET THE FLOW REQUIREMENTS SPECIFIED IN THE CALIFORNIA GREEN BUILDING CODE.
4. THE FLOW RATES FOR ALL PLUMBING FIXTURES SHALL COMPLY WITH THE MAXIMUM FLOW RATES SPECIFIED IN SECTION 4.303.1

General Notes

1. HEATING SYSTEMS SHALL BE EQUIPPED WITH THERMOSTATS THAT HAVE A CLOCK MECHANISM WITH SET POINTS FOR AT LEAST FOUR PERIODS WITHIN 24 HOURS.
2. ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, OR SHEET METAL UNTIL THE FINAL STARTUP OF THE HEATING, COOLING AND VENTILATING EQUIPMENT. (4.504.1)

EV NOTES:

1. FOR A SINGLE EV SPACE, A LISTED RACEWAY SHALL BE INSTALLED TO ACCOMMODATE A DEDICATED 208/204-VOLT BRANCH CIRCUIT. THE RACEWAY SHALL NOT BE LESS THAN TRADE SIZE 1 (NOMINAL 1 INCH INSIDE DIAMETER). THE RACEWAY SHALL ORIGINATE AT THE MAIN SERVICE OR SUBPANEL AND SHALL TERMINATE INTO A LISTED CABINET BOX OR OTHER ENCLOSURE IN CLOSE PROXIMITY TO THE PROPOSED LOCATION OF AN EV CHARGER.
2. THE SERVICE PANEL AND/OR SUBPANEL SHALL PROVIDE CAPACITY TO INSTALL A 40 AMPERE MINIMUM DEDICATED BRANCH CIRCUIT AND SPACE(S) RESERVED TO PERMIT INSTALLATION OF A BRANCH CIRCUIT OVERCURRENT PROTECTIVE DEVICE. 2016 CGBSC SECTION 4.106.4.1
3. NEW CONSTRUCTION SHALL COMPLY WITH SECTION 4.106.4 AND 4.106.4.2 TO FACILITATE FUTURE INSTALLATION AND USE OF EV CHARGERS. 2016 CGBSC SEC. 4.106.4.
4. THE ELECTRICAL VEHICLE CHARGING SYSTEM SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (I.E., UL) IN COMPLIANCE WITH UL 2202 "STANDARD FOR ELECTRICAL VEHICLE (EV) CHARGING SYSTEM EQUIPMENT. CEC 90.7.
5. IN ANY BUILDING OR INTERIOR AREA USED FOR CHARGING ELECTRICAL VEHICLES, ELECTRICAL EQUIPMENT SHALL BE INSTALLED ACCORDANCE WITH THE CALIFORNIA ELECTRICAL CODE.
6. THE ELECTRICAL VEHICLE CHARGING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINE AND SHALL BE SUITABLE FOR THE ENVIRONMENT (INDOOR/ OUTDOOR). IF INSTALLED INDOORS, THE CHARGING STATION SHALL BE LABELED "VENTILATION NOT REQUIRED" IN LOCATION CLEARLY VISIBLE AFTER INSTALLATION. CEC 625.15.

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Plan Notes

2-871	NEW GAS METER LOCATION (BY UTILITY). (VERIFY EXACT LOCATION WITH UTILITY COMPANY)
11-30	DISHWASHER SPACE
11-52	REFRIGERATOR SPACE (PROVIDE RECESSED SHUT-OFF IN PLASTIC BOX FOR ICEMAKER)
15-50	CLOTHES DRYER (NIC)
15-300	33" x 22" DOUBLE BOWL SELF-RIMMING ENAMELED STEEL KITCHEN SINK WITH 1/2 HP GARBAGE DISPOSER
15-328	RESIDENTIAL TANKLESS GAS-FIRED HOT WATER FIXTURE ON WALL WITH 3/4" GAS AND WATER CONNECTION AND 4" DIAMETER "B" VENT (SEE MECHANICAL SYSTEM NOTES FOR MANUFACTURER AND MODEL NUMBER). VERIFY REQUIRED INPUT BTU RATE WITH OWNER.
15-400	HOSE BIB WITH BACKFLOW PREVENTER
15-513	STANDARD ON/OFF SWITCH FOR WHOLE HOUSE VENTILATION. (MAXIMUM SOUND LEVEL - 1 SONE). SWITCH TO BE LABELED "OPERATE WHEN HOUSE IS IN USE. KEEP ON EXCEPT WHEN GONE FOR OVER 7 DAYS"
15-514	WHOLE HOUSE VENTILATION FOR INDOOR AIR QUALITY (SEE MECHANICAL NOTES FOR MANUFACTURER AND MODEL NUMBER)
15-516	WHOLE HOUSE FAN (SEE MECHANICAL SYSTEM NOTES)
15-530	30" x 30" ATTIC ACCESS FOR ATTIC FAU. PROVIDE WEATHERSTRIP OR SEAL AT THE ATTIC ACCESS PANEL TO PREVENT DRAFTS. (ACCESS SHALL BE SIZED TO ACCOMMODATE REMOVAL OF LARGEST PIECE OF EQUIPMENT)
15-548	EXHAUST FAN CAPABLE OF FIVE COMPLETE AIR CHANGES EVERY HOUR. DISCHARGE AIR TO OUTSIDE WITH POINT OF DISCHARGE A MINIMUM OF 3'-0" FROM ANY OPENING WHICH ALLOWS OUTSIDE AIR INTO THE BUILDING.
15-640	4 TON FAU WITH COOLING COIL. SET ON PLYWOOD PLATFORM WITH RETURN AIR BELOW. PROVIDE 4" DIAMETER "B" VENT TO OUTSIDE AIR. PROVIDE WATERTIGHT GALVANIZED PAN WITH 3/4" PVC CONDENSATE OVERFLOW TO DRAIN ABOVE WINDOW.
15-871	CONDENSING UNIT. PROVIDE 3-1/2" THICK POLYETHYLENE PAD EXTENDED 3" MINIMUM ABOVE GROUND PER C.M.C.
16-20	200 AMP RECESSED MAIN PANEL (UNDERGROUND FEED WITH TWO #3/0 AWG & ONE #2 GROUND) (VERIFY EXACT LOCATION WITH UTILITY COMPANY) (PROVIDE GAS AND WATER BONDING TO SERVICE) PROVIDE 3'-0" DEEP BY 2'-6" WIDE MINIMUM CLEARANCE IN FRONT OF PANEL PER ARTICLE 110-26a
16-46	SOLAR READY - FUTURE PANEL
16-140	OUTLET FOR GARAGE DOOR OPENER WITH REMOTE SAFETY CONTROLS PER FEDERAL REQUIREMENTS
16-290	220 V. DISCONNECT SWITCH (VERIFY CONDUCTOR SIZE AND FUSING WITH LOCAL CODES)
16-310	CABLE TELEVISION OUTLET AT +12" ABOVE FLOOR (UON)
16-340	PHONE JACK AT +15" ABOVE FLOOR (UON)
16-380	RECESSED INCANDESCENT (UON) "CAN" LIGHT FIXTURE ("V" = VAPOR RESISTANT, "F" = FLUORESCENT, "P" = HARDWIRE TO PHOTOCELL", WHERE OCCURS) USE "TYPE IC" FOR FIXTURES IN DIRECT CONTACT WITH INSULATION.
16-384	WALL SCONCE LIGHT (+84" UON)
16-387	SURFACE MOUNTED ADJUSTABLE FLOOD LIGHTS (+84" UON) WITH MOTION SENSOR
16-414	4'-0" LONG TWO-LAMP FLUORESCENT STRIP FIXTURE
16-602	BROAN MODEL 744LED EXHAUST FAN/LED LIGHT COMBO TO OUTSIDE AIR WITH "BROAN" TWO-FUNCTION CONTROL. PROVIDE MINIMUM 50 CFM (PROVIDE BACKDRAFT DAMPER) ENERGY STAR CERTIFIED
16-674	ALL NEW COMBINATION SMOKE / CARBON MONOXIDE ALARMS SHALL: RECEIVE PRIMARY POWER FROM THE BUILDING WIRING, HAVE A BATTERY BACK-UP, EMIT A SIGNAL WHEN THE BATTERIES ARE LOW, HAVE PERMANENT WIRING WITHOUT A DISCONNECTING SWITCH OTHER THAN THOSE REQUIRED FOR OVERCURRENT PROTECTION, BE WIRED SO THAT WHEN ONE IS ACTIVATED, ALL ARE ACTIVATED AND THE DETECTOR SHALL SOUND AN ALARM THAT IS AUDIBLE IN ALL SLEEPING AREAS. ("FIRST ALERT" MODEL NO. SC9120B, OR EQUAL)
16-675	ALL NEW SMOKE DETECTORS SHALL: RECEIVE PRIMARY POWER FROM THE BUILDING WIRING, HAVE A BATTERY BACK-UP, EMIT A SIGNAL WHEN THE BATTERIES ARE LOW, HAVE PERMANENT WIRING WITHOUT A DISCONNECTING SWITCH OTHER THAN THOSE REQUIRED FOR OVERCURRENT PROTECTION, BE WIRED SO THAT WHEN ONE IS ACTIVATED, ALL ARE ACTIVATED AND THE DETECTOR SHALL SOUND AN ALARM THAT IS AUDIBLE IN ALL SLEEPING AREAS.
16-711	EV PANEL "READY" - SEE NOTE 1 TO 6 ON EV NOTES

PANEL A (NEW)

MOUNTING: SURFACE — FED FROM: — NEMA: Type 3R — AIC RATING: 10,000 AIC
VOLTAGE: 120/240V 1PH 3W — 1 PH 3 W — BUS: 200 A — MAIN: 200 A — FEEDER: (3)#4, (1)#8... G...

NOTE	DESCRIPTION	CKT	AMP	POLES	A	A	B	B	POLES	AMP	CKT	DESCRIPTION	NOTE
	Lighting - Stairs	1	15 A	1	0 VA	1219 VA			1	20 A	2	Lighting - Powder, Entry, Living &...	
	Lighting - Hall, Bed2 & Bed 3	3	20 A	1			700 VA	1900 VA	1	20 A	4	Receptacle - Frig. & Stove	
	Lighting - Garage & Ext	5	20 A	1	200 VA	1600 VA			1	20 A	6	Receptacle - Master Bath & Bath	
	Receptacle - Hall, Bed2 & Bed3	7	20 A	1			1440 VA	1200 VA	1	20 A	8	Receptacle - Garage Dr. Opener	
	Lighting - Bath, W.I.C & Master Bath	9	20 A	1	228 VA	2000 VA			2	20 A	10	Power - Condensing Unit	
	Lighting - Master Bed & Stairs	11	20 A	1			820 VA	2000 VA	--	--	12	--	
	Receptacle - Master Bed.	13	20 A	1	900 VA	400 VA			1	20 A	14	Lighting - Kitchen	
	Receptacle - Kitchen	15	20 A	1			5600 VA	280 VA	1	20 A	16	Lighting - Patio	
		17				900 VA			1	20 A	18	Receptacle - Garage & Ext.	
	Receptacle - Dryer	19	30 A	1			1200 VA	180 VA	1	20 A	20	Receptacle - Washer M.	
	Receptacle - Powder	21	20 A	1	800 VA	1620 VA			1	20 A	22	Receptacle - Dining, Living & Entry	
	SOLAR READY	23									24	EV PANEL	
	SOLAR READY	25									26	EV PANEL	
		27									28		
		29									30		
		31									32		
		33									34		
		35									36		
		37									38		
		39									40		
		41									42		
	PHASE SUBTOTALS:				8187 VA		13479 VA						
	TOTAL:				68 A		112 A						

NOTES:

Panel Totals	
SUBTOTAL=	21623 VA
TOTAL=	18068 VA
TOTAL CONNECTED=	90 A
CONNECTED LOAD W/ LCL=	75 A

Mechanical Notes

VENT NOTES

GC 4.506.1 - BATHROOM EXHAUST FANS: MECHANICAL EXHAUST FANS WHICH EXHAUST DIRECTLY FROM BATHROOMS SHALL COMPLY WITH THE FOLLOWING:

A. FANS SHALL BE ENERGY STAR COMPLIANT AND BE DUCTED TO TERMINATE OUTSIDE THE BUILDING.
B. 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 ADJUSTMENT BETWEEN RELATIVE HUMIDITY RANGES OF 50% TO 80%.

WHOLE BUILDING VENTILATION REQUIREMENTS AND ASHRAE 62.2

AT LEAST ONE MECHANICAL VENTILATION SYSTEM IN THE BUILDING MUST BE DESIGNATED FOR USE IN COMPLIANCE WITH THE WHOLE-BUILDING VENTILATION REQUIREMENT. ALTERNATIVELY, THE SUM OF THE RATED AIRFLOWS FROM MULTIPLE FANS CAN BE UTILIZED TO MEET THE REQUIRED WHOLE-BUILDING VENTILATION AIRFLOW. THE SYSTEM(S) MUST DELIVER CONTINUOUS VENTILATION AIRFLOW AT A RATE GREATER THAN OR EQUAL TO THE RATE SPECIFIED IN EQUATION 4.1A, AND FAN SONE RATINGS MUST NOT EXCEED 1.0, FOR DWELLING OCCUPANT DENSITIES KNOWN TO BE GREATER THAN (Nbr + 1). THE RATE SHALL BE INCREASED BY 7.5 CFM FOR EACH ADDITIONAL PERSON.

CALCULATION:
1,635 SF HOME WITH 3 BEDROOMS
Qfan = 77 CFM REQUIRED

USE (1) PANASONIC WHISPER CEILING FAN
TOTAL CFM: 100.00, EDL:140.00
MODEL LIST: WHISPER CEILING FV-15VQ5

MECHANICAL SYSTEM NOTES

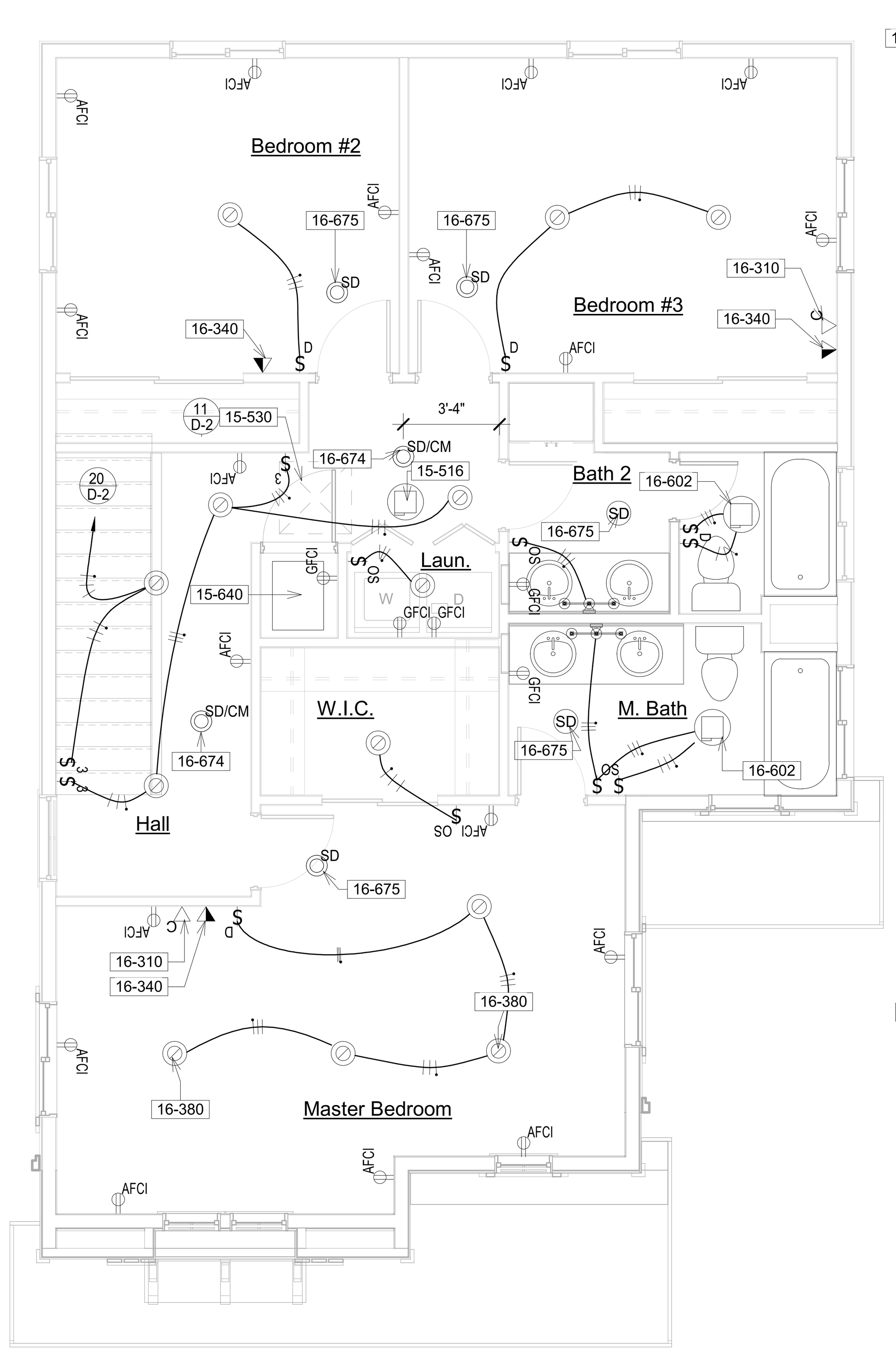
1. GAS FURNACE (IN ATTIC)
   50 KBTU/H OUTPUT, 10.5 HSPF/COP. VERIFIED HSPF, VERIFIED HEAT PUMP RATED HEATING CAPACITY (HERS VERIFICATION)
2. 4 TON AC UNIT
   20 SEER, 13.5 EER, 47.4 KBTU TOTAL OUTPUT. MINIMUM AIRFLOW, VERIFIED EER, VERIFFIED SEER, FAN EFFICACY WATTS/CFM (HERS VERIFICATION)
3. DISTRIBUTION SYSTEM
   R-8 INSULATION. DUCTS LEAKAGE TESTING (HERS VERIFICATION)
4. TANKLESS GAS WATER HEATER. MODEL: NAVIEN NPE-210S
   0.97 UEF, LESS THAN 200 KBTUH.
5. WHOLE HOUSE FAN
   1.5 x CFA = 1.5 x 1,635 SF = 2,452 CFM
   PROVIDE 2,542 CFM, 343.45 WATTS MINIMUM
6. INDOOR AIR QUALITY FAN
   SEE CALCULATION ABOVE FOR WHOLE BUIDLING VENTILATION REQUIREMENTS. (HERS VERIFICATION)
7. PV SYSTEM
   STANDARD DESIGN PV CAPACITY OF 2.51 kWdc

MECHANICAL SYSTEM NOTES

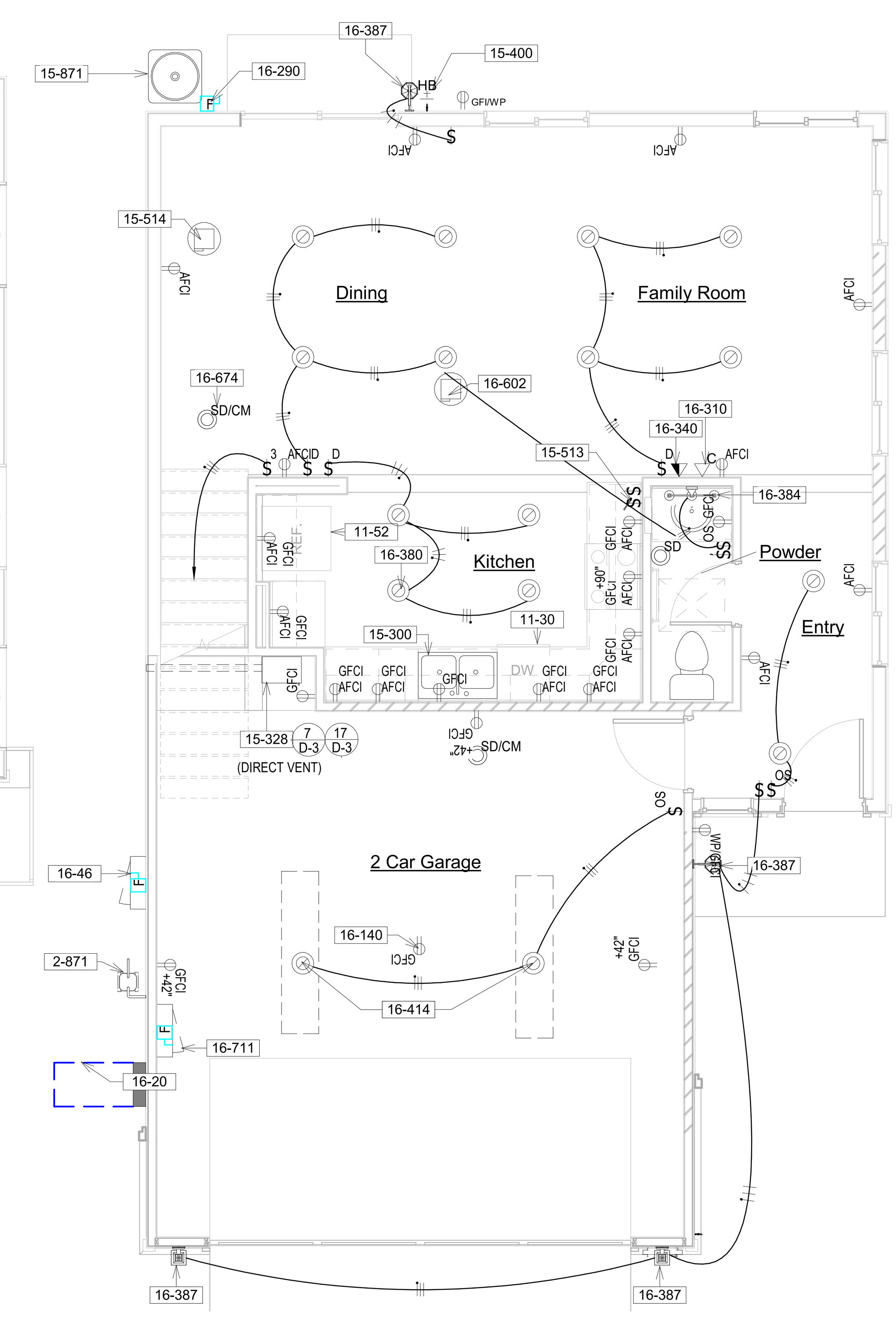
1. ROOF INSULATION R-49 & R-19
2. HEEL TRUSS: YES HEIGHT: 7 3/4" - 2"x8"
3. WALLS 2x6 WITH R-19
4. FLOOR INSULATION OVER GARAGE R-30
5. WHOLE HOUSE FAN (15-516): YES
6. WHOLE HOUSE VENTILATION (IAQ) (15-513 & 15-514): YES
7. RADIANT BARRIER (6-657): YES
8. COOL ROOF: YES
9. WINDOWS: U-VALUE 0.30/SHGC 0.25

MECHANICAL NOTES

1. MECHANICAL EXHAUST FANS FROM BATHROOMS SHALL COMPLY WITH THE FOLLOWING (CALGREEN 4.506.1): 1) ENERGY STAR COMPLIANT AND DUCTED TO TERMINATE OUTSIDE BUILDING , 2) CONTROLLED BY READILY ACCESSIBLE HUMIDISTAT.
2. INTERMITTENT LOCAL VENTILATION EXHAUST AIRFLOW RATES SHALL 100 CFM IN KITCHENS (ASHRAE STANDARD 62.2-2007)
3. PROVIDE VERTICAL/HORIZONTAL CHASES ON MECHANICAL AND PLUMBING PLANS TO ACCOMMODATE DUCTS AND VENTS AS REQUIRED
4. PROVIDE THE FOLLOWING IN EACH BATHROOM, POWDER ROOM, AND WATER CLOSET COMPARTMENT (CRC R303.3):
   * LOCAL EXHAUST FAN TO EXTERIOR PROVIDING MINIMUM 50 CFM INTERMITTENT VENTILATION OR 20 CFM CONTINUOUS
   * ARTIFICIAL LIGHTING OR MINIMUM 3 SQUARE FEET OF WINDOW GLAZING
5. THE PASSAGEWAY SHALL BE UNOBSTRUCTED AND SHALL HAVE SOLID FLOORING NOT LESS THAN TWENTY-FOUR (24) INCHES WIDE FROM THE ENTRANCE OPENING TO THE APPLIANCE. (CMC 904. 10.2).
6. A LEVEL WORKING PLATFORM NOT LESS THAN THIRTY (30) INCHES BY THIRTY (30) INCHES SHALL BE PROVIDED IN FRONT OF THE SERVICE SIDE OF THE APPLIANCE. (CMC 904. 10.3).
7. A PERMANENT 120-VOLT RECEPTACLE OUTLET AND A LIGHTING FIXTURE SHALL BE INSTALLED NEAR THE APPLIANCE. THE SWITCH CONTROLLING THE LIGHTING FIXTURE SHALL BE LOCATED AT THE ENTRANCE TO THE PASSAGEWAY. (CMC 904. 10.4).
8. COMBUSTION AIR OPENINGS FOR FURNACE (IN ATTIC):
   - PER CMC SECTION 701.6.1 TWO PERMANENT OPENING METHOD, ONE COMMENCING WITHIN 12 INCHES OF THE TOP AND ONE COMMENCING WITHIN 12 INCHES OF THE BOTTOM.
   - EACH OPENING SHALL HAVE A FREE AREA OF NOT LESS THAN 1 SQ. IN PER 2,000 BTU/H OF TOTAL INPUT RATING OF APPLIANCES IN THE ENCLOSURE: 100,000 BTU/H / 2,000 BTU/H = 50 SQ. IN.
   - SEE ATTIC VENTILATION SUMMARY ON ROOF PLAN SHEET
9. EXHAUST DUCTS SHALL TERMINATE OUTSIDE THE BUILDING AND SHALL BE EQUIPPED WITH BACKDRAFT DAMPERS OR WITH MOTORIZED DAMPERS THAT AUTOMATICALLY SHUT WHERE THE SYSTEM OR SPACE SERVED ARE NOT IN USE. CMC 504.1.1.
10. EXHAUST OPENINGS TERMINATING TO THE OUTSIDE SHALL BE COVERED WITH A CORROSION RESISTANT SCREEN HAVING NOT LESS THAN 1/4 OF AN INCH OPENINGS AND SHALL HAVE NOT MORE THAN 1/2 INCH OF AN OPENINGS. CMC 502.1.
11. EXHAUST DUCT TERMINATION SHALL BE 3 FEET FROM OPENINGS INTO THE BUILDING PER CMC 502.2



Second Floor Electrical Floor Plan
1/4" = 1'-0"



First Floor Electrical Floor Plan
1/4" = 1'-0"

PLUMBING PIPE INSULATION SCHEDULE

SERVICE	TEMERATURE RANGE (F)	PIPE SIZE (IN. DIA.) RUNOUTS UP TO 2	1 AND LESS	1.25 THRU 2	2.5 THRU 4
		REQUIRED INSULATION THICKNESS (IN.)			
DOMESIC HOT WATER RECIRCULATING LOOPS	ABOVE 105°	0.5	1.0	1.0	1.5
FIRST 8 FEET OF PIPING FROM STPRAGE & ELECTRIC TRACE TAPE SYSTEMS (NON-RECIRCULATING)	ABOVE 105°	0.5	1.0	1.0	1.5

PIPE MATERIAL SCHEDULE

SERVICE	PIPE MATERIAL & WEIGHT	TYPE OF JOINTS	PRESSURE FITTINGS MATERIAL	SHUT-OFF RATINGS PSI - SwP	VALVE
COLD WATER ABV. GROUND	COPPER L TUBE	SOLDERED	CAST BRONZE/ WROUGHT COPPER	125	BALL GATE CHECK
COLD WATER BELOW GROUND TO 5' OUTSIDE BUILDING	COPPER K TUBE	BRAZED	CAST BRONZE/ WROUGHT COPPER	125	BALL GATE
COLD WATER BELOW GROUND BEYOND 5'-0"	SCHEDULE 80 PVC	SOLVENT-WELD	PVC	125	GATE
HOT WATER ABV. GROUND	COPPER L TUBE	SOLDERED	CAST BRONZE/ WROUGHT COPPER	125	BALL CHECK
FUEL GAS	STEEL 40, BLACK	SCREWED WELDED	MALL. IRON STEEL WELD	150 150	SQR HEAD COCK
	POLYETHYLENE PIPING STAINLESS STEEL TUBING	PER MANF.	STAINLESS STEEL TUBING	PER MANF.	PER MANF.
VENT	NO-HUB CAST IRON	NO-HUB	N/A	N/A	N/A
WASTE & SOIL DRAINS BELOW GRADE	SCHEDULE 40 ABS	SALVENT-WELD	ABS	N/A	N/A
	No-hub Cast Iron	No-hub	N/A	N/A	N/A
WASTE & SOIL DRAINS ABOVE GRADE	Copper L Tube	Soldered	Bronze	125	N/A
	NO-HUB CAST IRON	NO-HUB	N/A	N/A	N/A
	Schedule 40 ABS	Solvent-Weld	ABS	N/A	N/A
CONDENSATE	COPPER M TUBE	SOLDERED	BRONZE	125	N/A

Proposed Single Family Residence For:
Parthenon Development, LLC
13024 Via Verrazano, Riverside, CA 92503

26 Apr. 2022
21-4372

LICENSED ARCHITECT — Douglas Andresen — C-14504 — 12-31-23 RENEWAL DATE — STATE OF CALIFORNIA

Mechanical & Electrical Plans

A-7

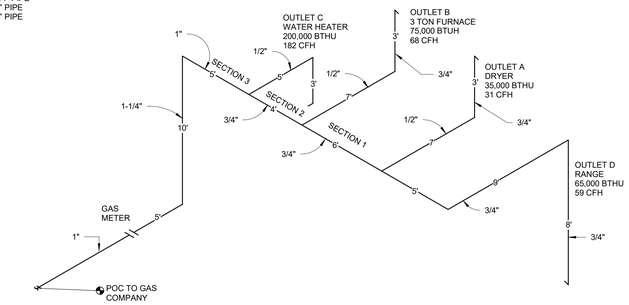
ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

CHECK GAS SUPPLY LINES FROM GAS METER:

DRYER	35,000 BTUH / 1,100 = 31 CFH	OUTLET A
FURNACE	75,000 BTUH / 1,100 = 68 CFH	OUTLET B
WATER HTR.	200,000 BTUH / 1,100 = 182 CFH	OUTLET C
GAS OVEN	65,000 BTUH / 1,100 = 59 CFH	OUTLET D

TOTAL LENGTH OF PIPE TO THE MOST REMOTE OUTLET=45' (USE 50'-TABLE 12-8)

OUTLET A	59 CFH	1/2" PIPE (3/4" MIN. FOR RANGE)
SECTION 1 (FROM GAS MTR. SUPLYING OUTLET A,D)	90 CFH	3/4" PIPE
SECTION 2 (FROM GAS MTR. SUPLYING OUTLET A,B,D)	158 CFH	1" PIPE
SECTION 3 (FROM GAS MTR. SUPLYING OUTLET A,B,C,D)	340 CFH	1" PIPE
TOTAL LENGTH TO OUTLET B 10' (USE 20')	68 CFH	3/4" PIPE
TOTAL LENGTH TO OUTLET C 10' (USE 20')	45 CFH	1/2" PIPE
TOTAL LENGTH TO OUTLET D 17' (USE 20')	59 CFH	3/4" PIPE



Gas Isometric

1/4" = 1'-0"

Proposed Single Family Residence For:
Parthenon Development, LLC
13024 Via Verrazano, Riverside, CA 92503

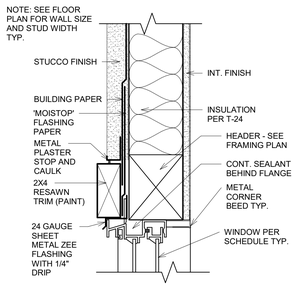
26 Apr. 2022	
21-4372	

LICENSED ARCHITECT Douglas Andresen C-14504 12-31-23 RENEWAL DATE STATE OF CALIFORNIA

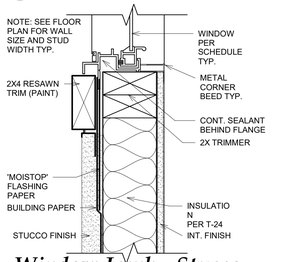
Gas Isometrics

A-8

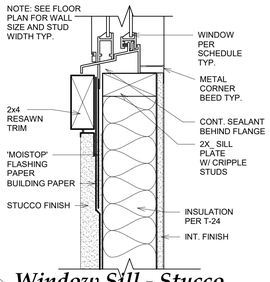
ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688



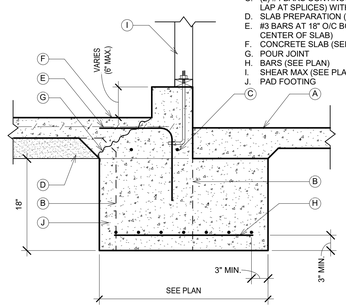
28 Window Head - Stucco
3" = 1'-0"



29 Window Jamb - Stucco
3" = 1'-0"



30 Window Sill - Stucco
3" = 1'-0"



31 Footing at Garage
1" = 1'-0"

ROOF-CEILING SYSTEMS

GA FILE NO. RC 2601	GENERIC	1 HOUR FIRE

GYPSUM WALLBOARD, WOOD JOISTS, ROOF COVERING

Base layer 5/8" type X gypsum wallboard applied at right angles to 2 X 10 wood joists 24" o.c. with 1 1/4" Type W or S drywall screws 24" o.c. Face layer 5/8" type X gypsum wallboard or gypsum veneer base applied at right angles to joists with 1 7/8" Type W or S drywall screws 12" o.c. at joints and intermediate joists and 1 1/2" Type G drywall screws 12" o.c. placed 2" back on either side of end joints. Joints offset 24" from base layer joints. Wood joists supporting 1/2" plywood with exterior glue applied at right angles to joists with 8d nails. Appropriate roof covering. Ceiling provides one hour fire resistance protection for wood framing, including trusses.

Approx. Ceiling Weight: 5 psf
Fire Test: FM FC 172, 2-25-72; ITS, 8-6-98

GA FILE NO. WP 3240	PROPRIETARY*	1 HOUR FIRE	50 to 54 FSTC SOUND

GYPSUM WALLBOARD, RESILIENT CHANNELS, MINERAL FIBER INSULATION, WOOD STUDS

Resilien: channels 24" o.c. attached at right angles to ONE SIDE of 2 x 4 wood studs 16" or 24" o.c. with 1¼" Type S drywall screws. One layer ⅝" proprietary type X gypsum wallboard or gypsum veneer base applied parallel to channels with 1" Type S drywall screws 12" o.c. End joints sackblocked with resiliest channels. 3" mineral fiber insulation, 2.0 or 2.3 pcf, in stud space.

OPPOSITE SIDE: One layer ⅝" proprietary type X gypsum wallboard or gypsum veneer base applied at right angles to studs with 1¼" Type W drywall screws 12" o.c.

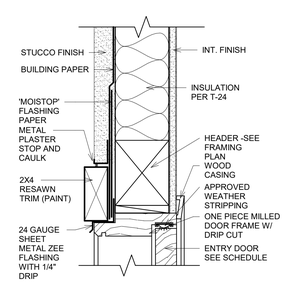
Vertical joints staggered 48"on opposite sides. Sound tested with studs 16" o.c. and open face of mineral fiber insulation blankets toward resiliert channel-side of stud space. **(LOAD-BEARING)**

Thickness: 5¼"
Approx. Weight: 7 psf
Fire Test: UL R1319-93, 94, 129; 8-10-66; UL Design U311; ULC Design U311
Field Sound Test:BBN 760603, 9-17-76

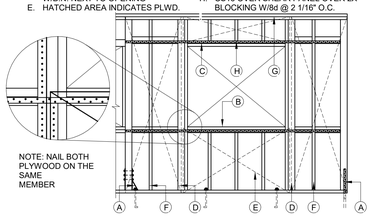
PROPRIETARY GYPSUM BOARD

United States Gypsum Company - ⅝" SHEETROCK® Brand FIRECODE® C Core Gypsum Panels

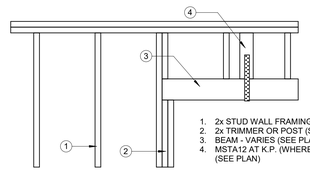
32 1 Hr. Fire Rated
1" = 1'-0"



27 Door Head
3" = 1'-0"

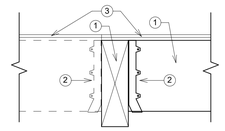


26 Opening At Shear Wall
3/8" = 1'-0"



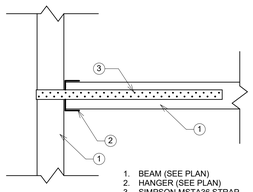
1. 2x STUD WALL FRAMING
2. 2x TRIMMER OR POST (SEE PLAN)
3. BEAM - VARIES (SEE PLAN)
4. MSTA12 AT K.P. (WHERE OCCURS) (SEE PLAN)

25 Header Detail
3/4" = 1'-0"



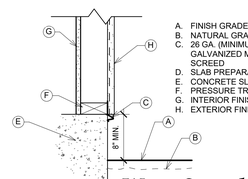
1. BEAM (SEE PLAN)
2. HANGER (SEE PLAN)
3. FLOOR SHEATHING (SEE PLAN)

24 Beam To Beam
1 1/2" = 1'-0"

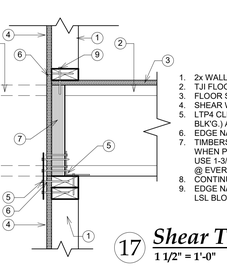


1. BEAM (SEE PLAN)
2. HANGER (SEE PLAN)
3. SIMPSON MSTA36 STRAP

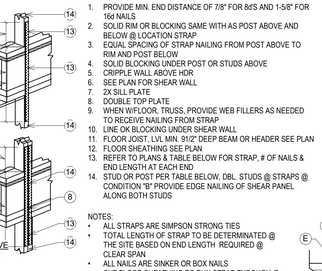
23 Beam to Beam
1 1/2" = 1'-0"



22 Weep Screed
1 1/2" = 1'-0"

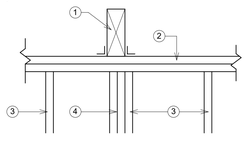


17 Shear Transfer
1 1/2" = 1'-0"


WALL ABOVE TO BELOW
1. PROVIDE MIN. END DISTANCE OF 7/8" FOR 8d'S AND 1-5/8" FOR 16d NAILS
2. SOLID RIM OR BLOCKING SAME WITH AS POST ABOVE AND BELOW @ LOCATION STRAP
3. EQUAL SPACING OF STRAP NAILING FROM POST ABOVE TO RIM AND POST BELOW
4. SOLID BLOCKING UNDER POST OR STUDS ABOVE
5. CRIPPLE WALL ABOVE HDR
6. SEE PLAN FOR SHEAR WALL
7. 2X SILL PLATE
8. DOUBLE TOP PLATE
9. WHEN W/FLOOR, TRUSS, PROVIDE WEB FILLERS AS NEEDED TO RECEIVE NAILING FROM STRAP
10. LINE OK BLOCKING UNDER SHEAR WALL
11. FLOOR JOIST, LVL MIN. 9½2" DEEP BEAM OR HEADER SEE PLAN
12. FLOOR SHEATHING SEE PLAN
13. REFER TO PLANS & TABLE BELOW FOR STRAP, # OF NAILS & END LENGTH AT EACH END
14. STUD OR POST PER TABLE BELOW, DBL. STUDS @ STRAPS @ CONDITION "B" PROVIDE EDGE NAILING OF SHEAR PANEL ALONG BOTH STUDS
NOTES:
- ALL STRAPS ARE SIMPSON STRONG TIES
- TOTAL LENGTH OF STRAP TO BE DETERMINATED @ THE SITE BASED ON END LENGTH REQUIRED @ CLEAR SPAN
- ALL NAILS ARE SINKER OR BOX NAILS
- CUT FLOOR SHEATHING TO RUN STRAP THROUGH @ INTERIOR CONDITION NO OVER CUT
- WRAP STRAP AROUND BOTTOM OF THE BEAM BELOW WHEN END LENGTH EXCEEDS THE BEAM DEPTH PROVIDE ADEQUATE FRAMING MEMBERS OR BLOCKING TO RECEIVE STRAP
- LOCATE STRAP OVER PLYWOOD SHEAR PANEL @ PROVIDE SHIM AS NECESSARY TO AVOID BENDING THE STRAP

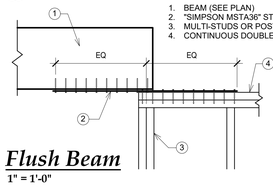
STRAP	STUD/POST # OF NAILS @ EA. END LENGTH	CAPACITY	END LENGTH
A (1)CS16	4X4	(18) 8d	1800#	18"
B MSTC28	4X4	(36) .0148 x 3-1/4"	3460#	14"
C MST72	4X4	(37) 16d SINKER	5900#	34"
D CMST12	4X6	(50) 16d SINKER	8000#	50"
E (2)CMST12	6X8	(50) 16d SINKER	16000#	50"

18 Stapled Post Shear Transfer
3/4" = 1'-0"



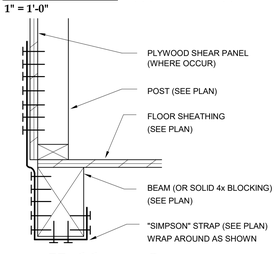
1. BEAM (SEE PLAN) W/ A35 EACH SIDE
2. DOUBLE TOP PLATE
3. 2x STUD AT 16" O/C
4. DOUBLE STUD OR POST (SEE PLAN)

19 Beam to Wall Detail
1" = 1'-0"

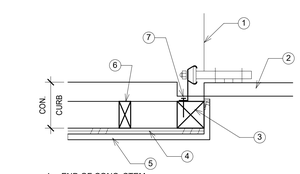


1. BEAM (SEE PLAN)
2. "SIMPSON MSTA36" STRAP
3. MULTI-STUDS OR POST (SEE PLAN)
4. CONTINUOUS DOUBLE TOP PLATES

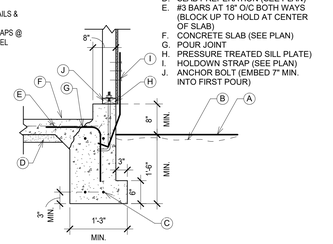
20 Flush Beam
1" = 1'-0"



21 Holdown Strap
1 1/2" = 1'-0"

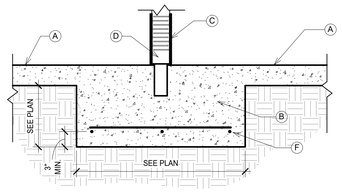


16 Garage Door Jamb
1 1/2" = 1'-0"



15 Holdown Strap at Garage Curb
3/4" = 1'-0"

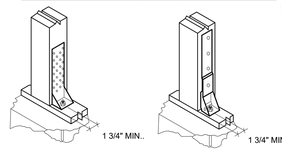
14 Holdown Bolt at Garage Curb
3/4" = 1'-0"



13 Pad Footing
1" = 1'-0"

1. PROVIDE MIN. #4 BAR 6'-0" LONG. 3" TO 5" FROM THE CENTERED AT "HD" (BEND REBAR AT CORNER)
2. SSTB BOLT

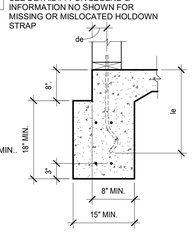
SIMPSON HOLDDOWN	de	le	NO. OF NAILS EACH STRAP
HDU5-SDS2.5	1"	SSTB24 24"	(14) - SDS SCREWS 1/4" x 2 1/2"

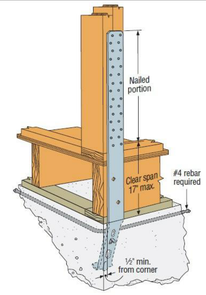


12 Holdown Bolt
1" = 1'-0"

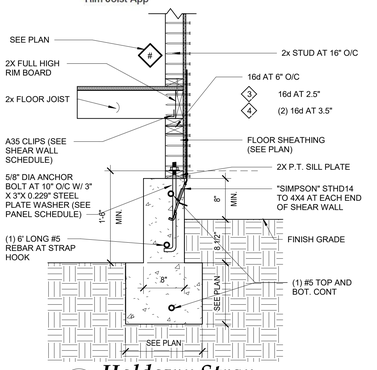
NOTES:
DEEPEN FOOTING AS REQUIRED TO ARCHIEVE le + 4"
REFER TO MANUFACTURER SPECS. FOR INSTALLATION TO WOOD MEMBER
MIN. DIST. TO CORNER SHOULD BE 5"
MIN. F'C=2,500 PSI
SEE PLANS FOR HOLDOWN TYPES

SEE DETAIL #1 FOR LEGEND & INFORMATION NO SHOWN FOR MISSING OR MISLOCATED HOLDOWN STRAP



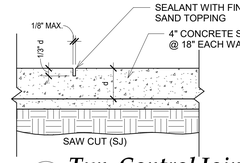


Typical STHD14RJ Rim Joist App



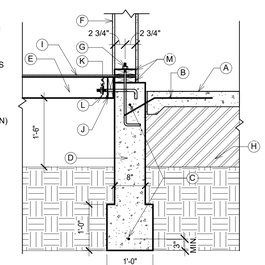
5 Holdown Strap
1" = 1'-0"

NOTE:
PROVIDE CONTROL JOINTS AT 15'-0" MAX. EACH WAY (U.O.N.)
PROVIDE SAW CUT WITHIN 24 HOURS OF POUR

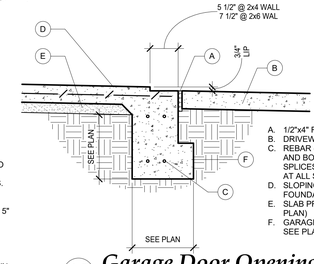


6 Typ. Control Joint
1" = 1'-0"

A. CONCRETE SLAB (SEE PLAN)
B. #4 DOWELS (6" EMBEDMENT INTO STEM WALL)
C. (1) #4 BAR CONTINUOUS TOP AND BOTTOM (MINIMUM 20" LAP AT SPLICES) WITH 3" CONCRETE COVER AT ALL SIDES
D. 8" STEM WALL
E. 2x6 FLOOR JOISTS @ 16" O/C
F. INTERIOR FINISH (SEE PLAN)
G. 5/8" x 14" ANCHOR BOLTS AT 48" O/C
H. CLEAN FILL
I. PLYWOOD FLOOR SHEATHING (SEE PLAN)
J. 2x6 LEDGER
K. 5/8" x 6" ANCHOR BOLT AT 12" O/C
L. SIMPSON LUS26 HANGER
M. 2 x 6 PRESSURE TREATED SILL PLATE

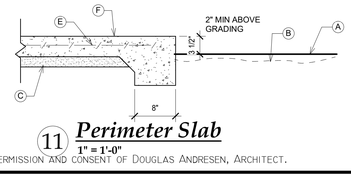


7 Floor Joists Perpendicular To Garage Footing
3/4" = 1'-0"

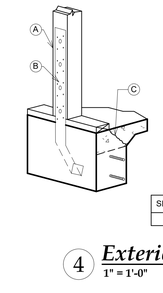


10 Garage Door Opening Footing
1" = 1'-0"

A. FINISH GRADE
B. NATURAL GRADE
C. SLAB PREPARATION (SEE PLAN)
D. #3 BARS AT 18" O/C BOTH WAYS(BLOCK UP TO HOLD AT CENTER OF SLAB)
E. CONCRETE SLAB (SEE PLAN)

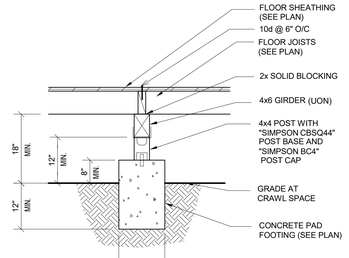


11 Perimeter Slab
1" = 1'-0"

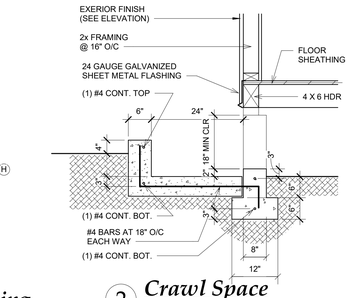


SIMPSON HOLDDOWN	le	NO. OF NAILS EACH STRAP
STHD14	14"	(38) - 16d SINKER

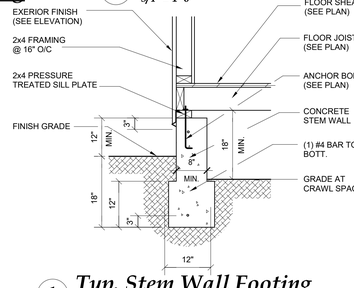
4 Exterior Holdown Strap
1" = 1'-0"



Piers Footing
3/4" = 1'-0"



2 Crawl Space
3/4" = 1'-0"



1 Typ. Stem Wall Footing
3/4" = 1'-0"

Proposed Single Family Residence For:
Parthenon Development, LLC
13024 Via Verrazano, Riverside, CA 92503

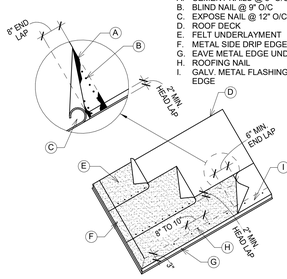
26 Apr. 2022	1 26 Apr. 2022 P.C.C.
21-4372	2
	3

LICENSED ARCHITECT Douglas Andresen C-14504 12-31-23 RENEWAL DATE STATE OF CALIFORNIA

Details

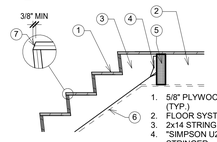
D-1

ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688



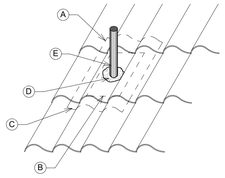
A. CEMENT NAILS @ 3" O/C (STAGGERED)
B. BLIND NAIL @ 9" O/C
C. EXPOSE NAIL @ 12" O/C
D. ROOF DECK
E. FELT UNDERLAYMENT
F. METAL SIDE DRIP EDGE OVER FELT
G. EAVE METAL EDGE UNDER FELT
H. ROOFING NAIL
I. GALV. METAL FLASHING WITH DRIP EDGE

21 Felt Underlayment
1/2" = 1'-0"



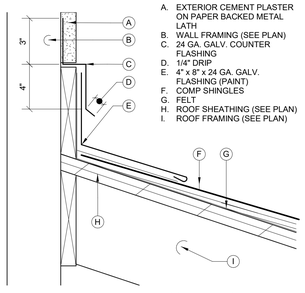
1. 5/8" PLYWOOD TREADS AND RISERS (TYP.)
2. FLOOR SYSTEM PER PLAN.
3. 2x14 STRINGER (UON-SEE PLAN)
4. "SIMPSON U210" HANGER AT EACH STRINGER
5. BM. PER PLAN
6. 5/8" TYPE "X" GYPSUM BOARD AT ALL USEABLE SPACE UNDER STAIRS
7. 3/8" CHAMFER TYP.

22 Stair To Second Floor
1/2" = 1'-0"



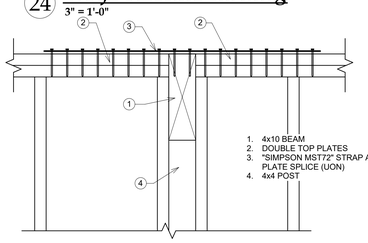
A. FLEXIBLE GALV. METAL FLASHING. BEND AS REQUIRED TO CONFORM TO ROOFING SHAPE
B. STANDARD G.I. BASE FLASHING UNDER FELT TO MAKE WATER TIGHT
C. BOTTOM OF FLASHING OVER TILE COURSE
D. MORTAR
E. SEAL PIPE VENT AND FLASHING JUNCTION

23 Plumbing Vent
1/4" = 1'-0"



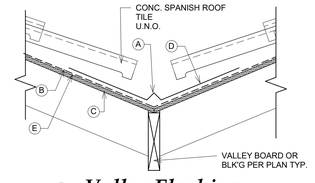
A. EXTERIOR CEMENT PLASTER ON PAPER BACKED METAL LATH
B. WALL FRAMING (SEE PLAN)
C. 24 GA. GALV. COUNTER FLASHING
D. 1/4" DRIP
E. 4" x 8" x 24 GA. GALV. FLASHING (PAINT)
F. COMP SHINGLES
G. FELT
H. ROOF SHEATHING (SEE PLAN)
I. ROOF FRAMING (SEE PLAN)

24 Roof To Wall Flashing
3" = 1'-0"



1. 4x10 BEAM
2. DOUBLE TOP PLATES
3. "SIMPSON MST72" STRAP AT PLATE SPLICE (UON)
4. 4x4 POST

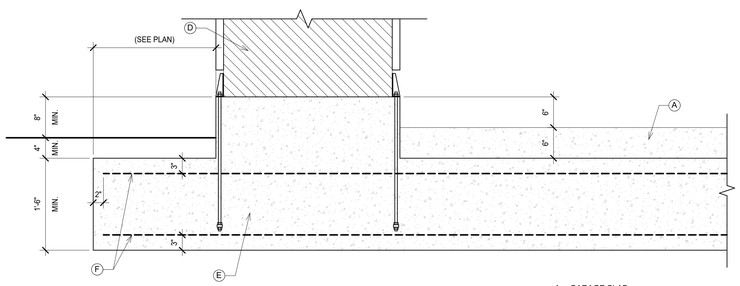
25 Dropped Beam
1 1/2" = 1'-0"



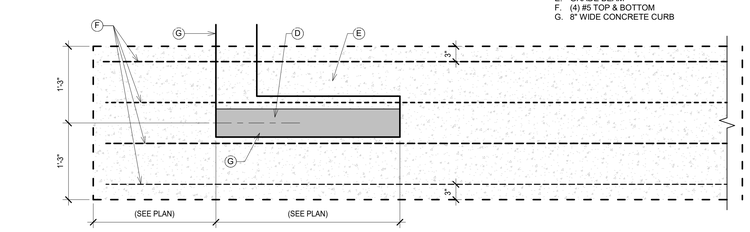
A. CLEAT
B. FELT
C. SHEATHING
D. 26 GA. MIN. VALLEY FLASHING
E. 36" WIDE MINIMUM UNDERLAYMENT CONSISTING OF NO. 72 ASTM CAP SHEET RUNNING THE FULL LENGTH OF THE VALLEY

NOTE:
- FOR A CLOSED VALLEY, CUT TILE AT VALLEY SECTION AS CLOSE AS POSSIBLE. USE: MIN. 26 GA. 22" WIDE VALLEY FLASHING

26 Valley Flashing
1 1/2" = 1'-0"



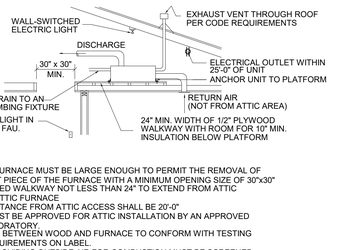
SECTION VIEW



PLAN VIEW

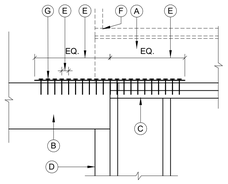
A. GARAGE SLAB
B. ---
C. ---
D. SHEAR MAX (SEE PLAN)
E. GRADE BEAM
F. (4) #5 TOP & BOTTOM
G. 8" WIDE CONCRETE CURB

15 Grade Beam
1" = 1'-0"



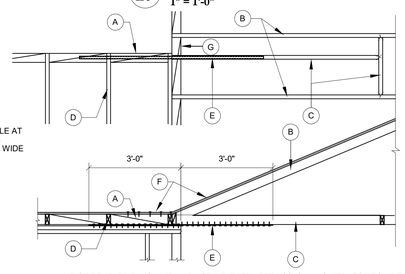
NOTE:
1. ACCESS TO FURNACE MUST BE LARGE ENOUGH TO PERMIT THE REMOVAL OF THE LARGEST PIECE OF THE FURNACE WITH A MINIMUM OPENING SIZE OF 30"x30"
2. SOLID FLOORED WALKWAY NOT LESS THAN 24" TO EXTEND FROM ATTIC ACCESS TO ATTIC FURNACE
3. MAXIMUM DISTANCE FROM ATTIC ACCESS SHALL BE 20'-0"
4. FURNACE MUST BE APPROVED FOR ATTIC INSTALLATION BY AN APPROVED TESTING LABORATORY.
5. CLEARANCES BETWEEN WOOD AND FURNACE TO CONFORM WITH TESTING AGENCY REQUIREMENTS ON LABEL.
6. OPENINGS PROVIDING OUTSIDE AIR FOR COMBUSTION MUST BE SCREENED WITH GALVANIZED WITH MESH.
7. FRESH AIR FOR COMBUSTION SHALL BE SUPPLIED IN QUANTITY SUFFICIENT FOR FURNACE DEMAND.
8. PROVIDE 30" MINIMUM WORKING SPACE IN FRONT FIREBOX

20 Fau In Attic
3/4" = 1'-0"

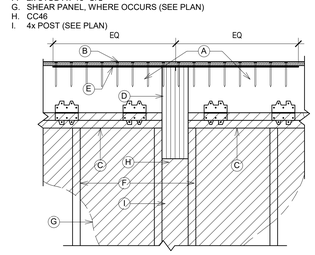


A. CONT. JOIST OR BLOCKING, SEE FRAMING PLAN.
B. BEAM (SEE PLAN)
C. DBL. TOP PLATES
D. POST OR MULTI STUD, SEE PLAN.
E. SPACING AND END LENGTH PER TABLE BELOW
F. WALL ABOVE (SEE PLAN)
G. SIMPSON STRAP PER TABLE

19 Drag Detail
1" = 1'-0"

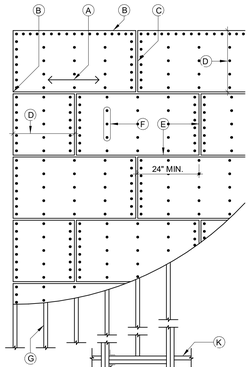


18 Drag Detail
1/2" = 1'-0"

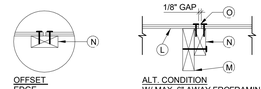


A. FLOOR JOIST (SEE PLAN)
B. FLOOR SHEATHING (SEE PLAN)
C. DOUBLE TOP PLATES
D. BEAM (SEE PLAN)
E. MST48 STRAP
F. 2x STUD AT 16" O/C
G. SHEAR PANEL, WHERE OCCURS (SEE PLAN)
H. CC46
I. 4x POST (SEE PLAN)

16 Beam Connection
1" = 1'-0"



A. DIRECTION OF FACE GRAIN
B. DIAPHRAGM BOUNDARY NAILING (B.N). 10D @ 6" O/C.
C. DISCONTINUOUS PANEL EDGE, EDGE NAILING 10D @ 6" O/C.
D. 24" MIN. UNLESS FULLY BLOCKED @ ALL EDGES.
E. 1/8" GAP U.N.O.
F. FIELD NAILING (10d AT 12" O/C)
G. FRAMING MEMBERS
H. TYP. APPROVED HANGERS USE (3) 16d TOE NAILS IF LENGTH OF TOE JOIST IS GREATER THAN 6'-0".
I. BLOCK OUT EDGES OF THE OPENING W/ DBL. STRUCTURAL MEMBERS/BEAM (PER PLAN) & PROVIDE B.N. @ ALL EDGES.
J. TYP. 2-BAYS OF BLKG. W/ CS16 W/ NAILS @ 2 1/16" O.C.
K. 2X4 FLAT CONNECT TO FRAMING MEMBER W/ (2) 10d COMMON NAILS @ EA. END SHEATHING
L. ---
M. ROOF OR FLOOR FRAMING MEMBER.
N. 2X4 W/ NAILS TO BE MATCHED W/ EDGE NAILING
O. PANEL JOINT

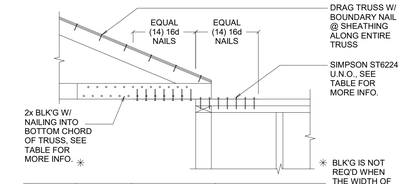


OFFSET EDGE SUPPORT

ALT. CONDITION W/ MAX. 6" AWAY FROFRAMING MEMBER

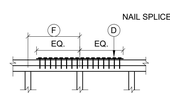
NOTES:
- STAGGERED JOINTS AS SHOWN.
- MIN. SIZE OF SHEET SHALL BE 2'X2'.
NAILS SHALL BE DRIVEN TIGHT BUT SHALL NOT FRACTURE SURFACE OF SHEATHING.
- SEE GENERAL NOTES FOR PLYWOOD TYPE, THICKNESS, SPACING, & NAILS SIZE.
- PROVIDE MIN. 3/8" EDGE DIST. @ FRAMING MEMBER & 5/16" TO EDGE OF PLYWOOD DIAPHRAGM.
- ALL DIAPHRAGM BOUNDARIES SHOULD BE FULLY SUPPORTED BY FRAMING MEMBERS W/ BOUNDARY NAILING.
- MAX. UNSUPPORTED SHEATHING TO BE 24". PROVIDE ADEQUATE FRAMING MEMBERS TO LIMIT SPAN.

17 Sheathing Layout
1/2" = 1'-0"



MODEL	LENGTH OF STRAP	NAILING @ EACH SIDE OF STRAP	LENGTH OF BLOCKING & NAILING ✳
ST6236	34"	(20) 16d NAILS	2x4 BLK'G W/ (20) 16d NAILS, L=24"
MST48	48"	(23) 16d NAILS	2x4 BLK'G W/ (23) 16d NAILS, L=30"
MSTA30	30"	(22) 0.148 x 2-1/2"	2x4 BLK'G W/ (22) .0148 x 2-1/2" , L=15"
MST72	72"	(32) 16d NAILS	2x4 BLK'G W/ (32) 16d NAILS, L=36"

14 Drag Truss
1/4" = 1'-0"

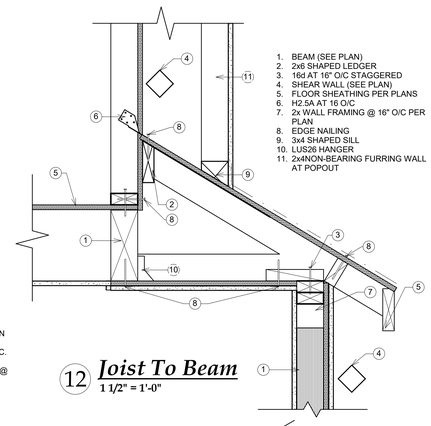


A. ST22 STRAP.
B. EXTERIOR WALL.
C. CONT. LOWER PLATE @ WALL.
D. SIMPSON MSTA36 STRAP
E. NUMBER OF NAILS SPECIFIED BETWEEN SPLICING POINTS PER TABLE BELOW.
F. LOCATE STUD UNDER SPLICE.
G. TYP. STUDS AT 16" O.C.
H. 16d SINKER NAILS AT 16" O.C.

NOTE:
FULLY NAIL STRAP W/ 16d SINKER OF 10d COMMON NAILS SHALL BE STAGGERED & AT LEAST 2" APART

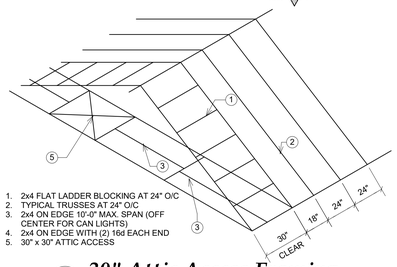
TYPICAL SPLICE TOP PLATE

13 Typical Splice Top Plate
3/4" = 1'-0"



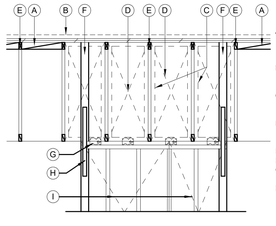
1. BEAM (SEE PLAN)
2. 2x6 SHAPED LEDGER
3. 16d AT 16" O/C STAGGERED
4. SHEAR WALL (SEE PLAN)
5. FLOOR SHEATHING PER PLANS
6. H2.5A AT 16 O/C
7. 2x WALL FRAMING @ 16" O/C PER PLAN
8. EDGE NAILING
9. 3x4 SHAPED SILL
10. LUS26 HANGER
11. 2x4NON-BEARING FURRING WALL AT POPOUT

12 Joist To Beam
1 1/2" = 1'-0"



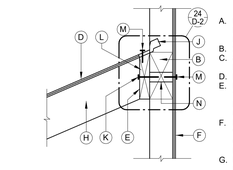
1. 2x4 FLAT LADDER BLOCKING AT 24" O/C
2. TYPICAL TRUSSES AT 24" O/C
3. 2x4 ON EDGE 10'-0" MAX. SPAN (OFF CENTER FOR CAN LIGHTS)
4. 2x4 ON EDGE WITH (2) 16d EACH END
5. 30" x 30" ATTIC ACCESS

11 30" Attic Access Framing
3/4" = 1'-0"

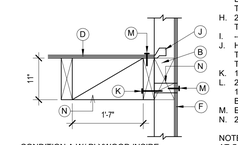


A. 4X4 SOLID BLOCKING FOR TWO BAYS BEYOND SHEAR WALL EACH SIDE AS SHOWN
B. "SIMPSON CS150" STRAP NAIL TO SOLID BLOCKING
C. 2X4 FILLER BETWEEN PANELS WITH NAILS AT 4" O/C
D. PLYWOOD SHEAR PANEL ON 2X4 FRAME BETWEEN TRUSSES
E. TRUSSES AT 24" O/C
F. POST (SEE PLAN)
G. "SIMPSON A35F" OVER PLYWOOD (SEE PLAN)
H. STRAP (SEE PLAN) NAIL OVER PLYWOOD
I. PLYWOOD SHEAR PANEL (SEE PLAN)

10 Shear Wall To Roof
3/8" = 1'-0"

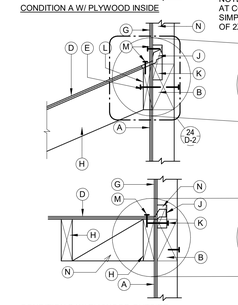


A. PLYWD. WHERE OCCURS PER PLAN. APPLY PRIOR TO LOW ROOF INSTALLATION
B. 2X STUD OR BM. PER PLAN
C. 8d COMMON AT 4" O.C. (U.N.O.) PER SHEAR WALL SCHEDULE
D. ROOF SHEATHING
E. MIN. (3) 16d TOE NAILS TOLEDGER. IF SPAN OF ROOF MEMBER IS MORE THAN 8'-0", USE JOIST HANGER
F. FULL HEIGHT SHEAR PANEL WHERE OCCURS. WHEN OUTSIDE, TO BE INSTALLED PRIOR TO ROOF FRAMING
G. PLYWOOD SHEAR PANEL TYPE 2 ENTIRE WALL FROM LOW ROOF TO HIGH ROOF U.N.O.
H. 2X R/R OR TOP CHORD OF TRUSS
I. ---
J. H2.5 AT 24" O.C. FROM LEDGER TO STUDS. SLIT THE PLYWOOD TO INSTALL H2.5
K. 16d's AT 6" O.C. (U.N.O.)
L. 2X BEVELED LEDGER W/ (4) 16d's PER STUD U.N.O. (IF NOT BEVELED, SEE DETAIL 13/SD2.
M. EDGE NAILING
N. 2X BLOCKING



CONDITION A W/ PLYWOOD INSIDE

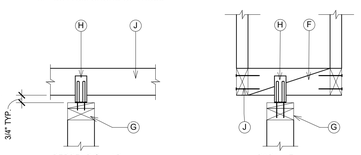
NOTE:
AT CONDITION B LOCATE SIMP. H2.5 PRIOR TO INSTALLATION OF 2X BLK'G.



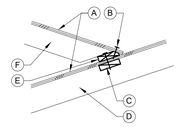
CONDITION B W/ PLYWOOD OUTSIDE

6 Rafter To Wall
3/4" = 1'-0"

A. 2X CEILING JOIST OR BOT. CHORD OF TRUSS
B. TYP. GYP. BD. EDGE NAILING
C. (2) 16d's @ 12" O.C.
D. (2) 2X TOP PLATE
E. 2X6 BACKING
F. 2X BLK'G. @ 24" O.C. W/ (2) 16d's TO EACH MEMBER
G. 1X OVER 2X PLATE OR (2) 2X TOP PLATE WHEN TRUSS BOT. CHORD IS BEARING
H. SIMP. DTC @ EACH CONNECT
I. ---
J. BOTTOM CHORD OF TRUSS

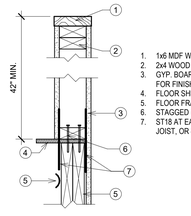


7 Non-bearing Wall Framing
1 1/2" = 1'-0"



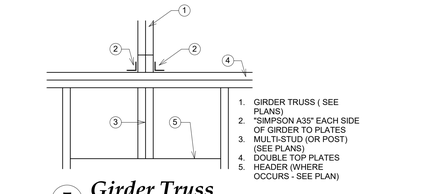
A. ROOF SHEATHING
B. EDGE NAILING 8d AT 6" O/C (U.O.N.)
C. SOLID 2x BLOCKING
D. ROOF FRAMING (SEE PLAN)
E. CONT. SHAPED 2x6 "SLEEPER" WITH 16d NAILS @ 12" O/C TO BLOCKING BELOW
F. RAFTERS WITH (2) 16d TOE-NAILS TO SLEEPER

8 California Framing
3/4" = 1'-0"

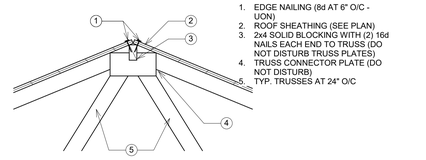


1. 1x6 MDF WOOD CAP (PAINT)
2. 2x4 WOOD STUDS AT 16" O/C
3. GYP. BOARD (SEE FINISH SCHEDULE FOR FINISHING)
4. FLOOR SHEATHING (SEE PLAN)
5. FLOOR FRAMING (SEE PLAN)
6. STAGGED 16d NAILS AT 12" O/C
7. ST18 AT EACH STUD TO BOUBLE 2x JOIST, OR 4x BEAM BELOW

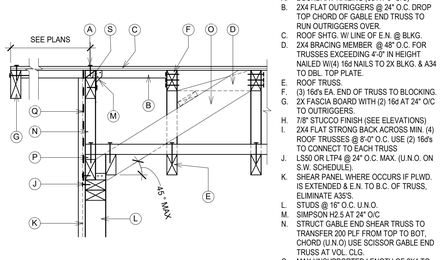
9 Guardrail
1 1/2" = 1'-0"



5 Girder Truss
3/4" = 1'-0"

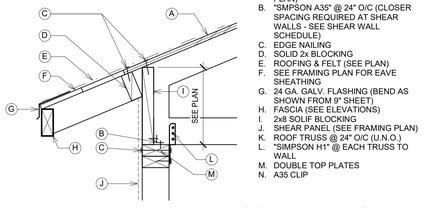


4 Ridge Blocking
3/4" = 1'-0"



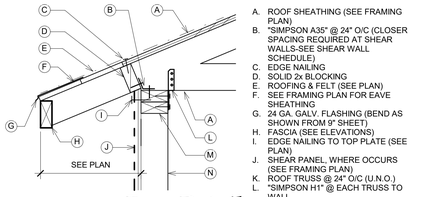
A. BOUNDARY NAILING (8d AT 6" O/C)
B. 2X4 FLAT OUTRIGGERS @ 24" O.C. DROP TOP CHORD OF GABLE END TRUSS TO RUN OUTRIGGERS OVER.
C. ROOF SHTG. W/ LINE OF E.N. @ BLKG.
D. 2X4 BRACING MEMBER. @ 48" O.C. FOR TRUSSES EXCEEDING 4'-0" IN HEIGHT NAILED W/(4) 16d NAILS TO 2X BLKG. & A34 TO DBL. TOP PLATE.
E. ROOF TRUSS.
F. (3) 16d's EA. END OF TRUSS TO BLOCKING.
G. 2X FASCIA BOARD WITH (2) 16d AT 24" O/C TO OUTRIGGERS.
H. 7/8" STUCCO FINISH (SEE ELEVATIONS)
I. 2X4 FLAT STRONG BACK ACROSS MIN. (4) ROOF TRUSSES @ 8'-0" O.C. USE (2) 16d's TO CONNECT TO EACH TRUSS
J. LSS0 OR LTP4 @ 24" O.C. MAX. (U.N.O. ON S.W. SCHEDULE).
K. SHEAR PANEL WHERE OCCURS IF PLWD. IS EXTENDED & E.N. TO B.C. OF TRUSS, ELIMINATE A35'S.
L. STUDS @ 16" O.C. U.N.O.
M. SIMPSON H2.5 AT 24" O/C
N. STRUCT GABLE END SHEAR TRUSS TO TRANSFER 200 PLF FROM TOP TO BOT. CHORD (U.N.O) USE SCISSOR GABLE END TRUSS AT VOL. CLG.
O. MAX UNSUPPORTED LENGTH OF 2X4 TO BE 6'-0". USE LATERAL BRACING FOR LENGTH GREATER THAN 6'-0".
P. SHIM AS REQUIRED
Q. FOIL-FACED SHEATHING AT GABLE END (TYP.)

3 Gable Eave Detail
1" = 1'-0"



A. ROOF SHEATHING (SEE FRAMING PLAN)
B. "SIMPSON A35" @ 24" O/C (CLOSER SPACING REQUIRED AT SHEAR WALLS - SEE SHEAR WALL SCHEDULE)
C. EDGE NAILING
D. SOLID 2x BLOCKING
E. ROOFING & FELT (SEE PLAN)
F. SEE FRAMING PLAN FOR EAVE SHEATHING
G. 24 GA. GALV. FLASHING (BEND AS SHOWN FROM 9" SHEET)
H. FASCIA (SEE ELEVATIONS)
I. 2x8 SOLIF BLOCKING
J. SHEAR PANEL (SEE FRAMING PLAN)
K. ROOF TRUSS @ 24" O.C (U.N.O.)
L. "SIMPSON H1" @ EACH TRUSS TO WALL
M. DOUBLE TOP PLATES
N. A35 CLIP

2 Eave Detail (Truss Heel)
1 1/2" = 1'-0"



A. ROOF SHEATHING (SEE FRAMING PLAN)
B. "SIMPSON A35" @ 24" O/C (CLOSER SPACING REQUIRED AT SHEAR WALLS-SEE SHEAR WALL SCHEDULE)
C. EDGE NAILING
D. SOLID 2x BLOCKING
E. ROOFING & FELT (SEE PLAN)
F. SEE FRAMING PLAN FOR EAVE SHEATHING
G. 24 GA. GALV. FLASHING (BEND AS SHOWN FROM 9" SHEET)
H. FASCIA (SEE ELEVATIONS)
I. EDGE NAILING TO TOP PLATE (SEE PLAN)
J. SHEAR PANEL WHERE OCCURS (SEE FRAMING PLAN)
K. ROOF TRUSS @ 24" O/C (U.N.O.)
L. "SIMPSON H1" @ EACH TRUSS TO WALL
M. CONTINUOUS DOUBLE TOP PLATES
N. 2x STUDS @ 16" O/C

1 Eave Detail
1 1/2" = 1'-0"

Proposed Single Family Residence For:
Parthenon Development, LLC
13024 Via Verrazano, Riverside, CA 92503

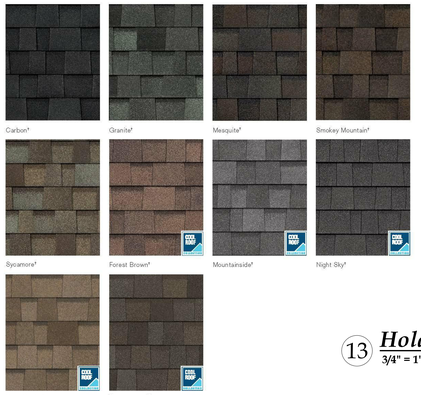
26 Apr. 2022	26 Apr. 2022 P.C.C.
21-4372	

LICENSED ARCHITECT Douglas Andresen C-14504 12-31-23 RENEWAL DATE STATE OF CALIFORNIA

Details

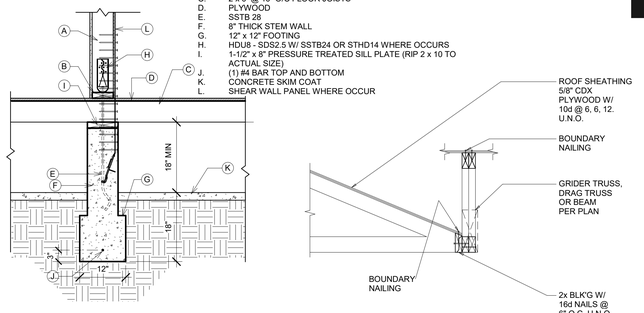
D-2

TruDefinition® Duration *MAX*® Shingle Colors



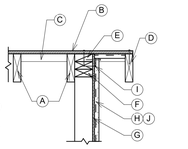
COOL ROOF COLLECTION

Owens Corning® COOL Roof Shingles	CRRC Product ID	Warranty Length	Solar Reflectance	Thermal Emittance	Solar Reflectance Index (SRI)
TruDefinition® Duration *MAX*® Forest Brown	0890-0018A	Limited Lifetime*/† (for as long as you own your home)	0.18‡§	0.91‡§§	17‡‡
TruDefinition® Duration *MAX*® Mountainside	0890-0018A	Limited Lifetime*/† (for as long as you own your home)	0.18‡§	0.92‡§§	18‡‡
TruDefinition® Duration *MAX*® Night Sky	0890-0026	Limited Lifetime*/† (for as long as you own your home)	0.18‡§	0.90‡§§	16‡‡
TruDefinition® Duration *MAX*® Sand Castle®	0890-0026	Limited Lifetime*/† (for as long as you own your home)	0.18‡§	0.90‡§§	16‡‡
TruDefinition® Duration *MAX*® Summerwood®	0890-0018A	Limited Lifetime*/† (for as long as you own your home)	0.18‡§	0.91‡§§	18‡‡



13 *Holdown Anchor Bolts @ Shear Walls/ Interior*
3/4" = 1'-0"

15 *Truss To GT*
1/4" = 1'-0"



16 *Cool Roof*

NPE-Advanced **NPE-Standard**

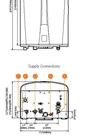
NAVIEN PREMIUM EFFICIENCY CONDENSING TANKLESS WATER HEATERS

NPE Series

Specifications

Item		Model						
		NPE-150S	NPE-180A	NPE-180S	NPE-210A	NPE-210S	NPE-240A	NPE-240S
Heat capacity (input)	Natural gas	18,000~150,000 (BTU/h)	15,000~180,000 (BTU/h)	19,000~180,000 (BTU/h)	19,000~210,000 (BTU/h)		19,000~199,900 (BTU/h)	
	Propane gas							
Efficiency ratings	UEF (NG & LP)	0.96	0.95	0.97	0.95	0.97	0.95	0.97
Flow rate (DHW)	35°F (20°C) temp rise	6.8 GPM (26 L/m)	8.4 GPM (32 L/m)		10.1 GPM (38 L/m)		11.2 GPM (42 L/m)	
	45°F (25°C) temp rise	5.3 GPM (20 L/m)	6.5 GPM (25 L/m)		7.8 GPM (30 L/m)		8.7 GPM (33 L/m)	
	77°F (25°C) temp rise	3.2 GPM (12 L/m)	4.3 GPM (16 L/m)	4.2 GPM (16 L/m)	5.0 GPM (19 L/m)	5.2 GPM (20 L/m)	5.6 GPM (21 L/m)	5.7 GPM (22 L/m)
Dimensions		17.3"W x 27.4"H x 13.2"D						
Weight		55lbs (25kg)	75lbs (34kg)	67lbs (30kg)	82lbs (37kg)	75lbs (34kg)	82lbs (37kg)	75lbs (34kg)
Installation type		Indoor or outdoor wall-hung						
Venting type		Forced draft direct vent						
Ignition		Electronic ignition						
Water pressure		15~150 PSI						
Natural gas supply pressure (from source)		3.5"~10.5" WC						
Propane gas supply pressure (from source)		8"~13" WC						
Natural gas manifold pressure (min~max)		-0.04" WC to -0.38" WC.	-0.04" WC to -0.84" WC.	-0.05" WC to -0.36" WC.	-0.05" WC to -0.50" WC.		-0.05" WC to -0.56" WC.	
Propane gas manifold pressure (min~max)		-0.04" WC to -0.42" WC.	-0.05" WC to -0.50" WC.	-0.05" WC to -0.66" WC.	-0.05" WC to -0.78" WC.		-0.12" WC to -0.78" WC.	
Minimum flow rate		0.5 GPM (1.9 L/m), <0.05 GPM (0.04 L/m) option for "A" models*						
Connection sizes	Cold water inlet	3/4" NPT						
	Hot water outlet	3/4" NPT						
	Gas inlet	3/4" NPT						
Power supply	Main supply	120V AC, 60 Hz						
	Maximum power consumption	200W (max 2A), 350W (max 4A) with external pump connected						
Materials	Casing	Cold rolled carbon steel						
	Heat exchangers	Primary heat exchangers: stainless steel, secondary heat exchangers: stainless steel						
Venting	Exhaust	2" or 3" PVC, CPVC, PP, SS / 2" or 3" special gas vent type BH (Class IL A/B/C)						
	Intake	2" or 3" PVC, CPVC, PP, SS / 2" or 3" special gas vent type BH (Class IL A/B/C)						
	Vent clearances	0" to combustibles						
Safety devices		Flame rod, APS ignition operation detector, water temperature high limit switch, exhaust temperature high limit sensor, power surge fuse						

*Available for "A" models configured in an optional Central Flow recirculation mode. Additional energy use will occur when using recirculation.
Navien reserves the right to change specifications at any time without prior notice.
Please refer to Navieninc.com to verify you have the most current information.



A WORLD LEADER IN TANKLESS WATER HEATERS, COMBI-BOILERS AND BOILERS

8

Navien certification summary (Note: all NPE models are field convertible from NG to LP gas)

Model	Product Approvals: CSA	NSF (Standard 5)	Low Lead (<0.25%)	SCAQMD 1146.2 (NOx, <20ppm)	AHRI Number	Energy Star	Efficiency Ratings*: Uniform Energy Factor (UEF)	Max GPM (67°F Rise)	Natural Gas (Therms/Year)	Annual Energy Consumption** (Residential): Propane (Gallons/Year)	Estimated Operating Cost**
NPE-180A-NG	Yes	Yes	Yes	Yes	6678380	Yes	0.96	4.3		193	$192
NPE-180A-LPG	Yes	Yes	Yes	Yes	6678380	Yes	0.96	4.3		193	$465
NPE-210A-NG	Yes	Yes	Yes	Yes	6678381	Yes	0.96	5.0	176		$192
NPE-210A-LPG	Yes	Yes	Yes	Yes	6678381	Yes	0.96	5.0		193	$465
NPE-240A-NG	Yes	Yes	Yes	Yes	6678382	Yes	0.96	5.6	176		$192
NPE-240A-LPG	Yes	Yes	Yes	Yes	6678382	Yes	0.96	5.6		193	$465
NPE-150S-NG	Yes	Yes	Yes	Yes	8236610	Yes	0.96	3.2	115		$125
NPE-150S-LPG	Yes	Yes	Yes	Yes	8236610	Yes	0.96	3.2		125	$304
NPE-180S-NG	Yes	Yes	Yes	Yes	6478771	Yes	0.97	4.2	175		$191
NPE-180S-LPG	Yes	Yes	Yes	Yes	6478771	Yes	0.97	4.2		192	$463
NPE-210S-NG	Yes	Yes	Yes	Yes	6478772	Yes	0.97	5.2	175		$191
NPE-210S-LPG	Yes	Yes	Yes	Yes	6478772	Yes	0.97	5.2		192	$463
NPE-240S-NG	Yes	Yes	Yes	Yes	6478773	Yes	0.97	5.7	175		$191
NPE-240S-LPG	Yes	Yes	Yes	Yes	6478773	Yes	0.97	5.7		193	$463

*Based on U.S. Department of Energy (DOE) test procedures.
**Based on a national average natural gas cost of $1.09/therm, propane cost of $2.41/gallon.

Temperature rise (maximum output)

Temp rise (°F)	150S GPM	180 Series GPM	210 Series GPM	240 Series GPM
35	6.8	8.4	10.1	11.2
40	5.9	7.4	8.8	9.8
45	5.3	6.5	7.8	8.7
50	4.8	5.9	7.1	7.8
55	4.3	5.3	6.4	7.1
60	4.0	4.9	5.9	6.5
65	3.7	4.5	5.4	6.0
70	3.4	4.2	5.0	5.6
75	3.2	3.9	4.7	5.2
80	3.0	3.7	4.4	4.9
85	2.8	3.5	4.2	4.6
90	2.6	3.3	3.9	4.4
100	2.4	2.9	3.5	3.9
110	2.2	2.7	3.2	3.6
120	2.0	2.5	2.9	3.3
130	1.8	2.3	2.7	3.0
140	1.7	2.1	2.5	2.8

*Max temperature setting is 180°F (83°C).

DHW capacity

Models	Natural gas (BTU/h)	Propane Gas (BTU/h)
NPE-150S	18,000~120,000	18,000~120,000
NPE-180 A/S Series	15,000~150,000	15,000~150,000
NPE-210 A/S Series	19,000~180,000	19,000~180,000
NPE-240 A/S Series	19,900~199,900	19,900~199,900

Operating cost

Navien Tankless	20+ Years	$521*
Other tankless	1000 therms	$229*
50 gallon tank	1000 therms	$293*

*Based on Energy Guide cost estimates using $1.09 per therm of natural gas. Cost is in US dollars.

U.S. Green Building Council LEED points

Water heater	Location	Recirculation
1 Point	2 Points	3 Points

Warranty

Application		Labor	Parts	Heat Exchanger
Residential	Standard or controlled recirculation*	1 year	5 years	10 years
	Uncontrolled recirculation*	1 year	3 years	5 years
	Standard or controlled recirculation* for units produced on or after Jan. 1, 2016	1 year	5 years	8 years
Commercial or Combi*	Standard or controlled recirculation* for units produced before Jan. 1, 2016	1 year	3 years	10 years
	Uncontrolled recirculation*	1 year	3 years	3 years

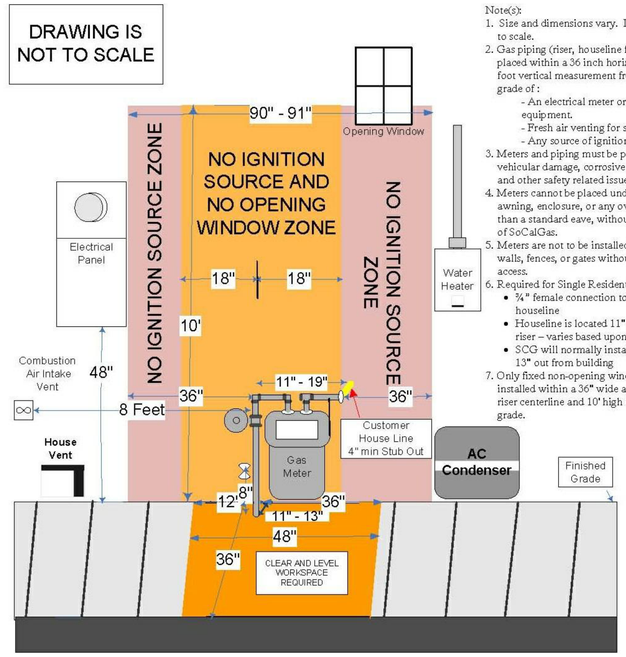
*Combi refers to a combination potable water and space heating application. Water heaters cannot be used in space heating only applications.
The standard recirculation warranty applies when the water heater is controlled by either the water heater, a timer or an external aquastat.
*Uncontrolled Recirculation: External pumps configured to circulate continuously through the water heater are subject to the uncontrolled recirculation warranty terms. An aquastat is the minimum pump control requirement for DHW or storage tank recirculation in order to maintain the full controlled recirculation warranty.
For complete details please refer to the full warranty at Navieninc.com.

Lower HERS home index score

NAVIEN

9

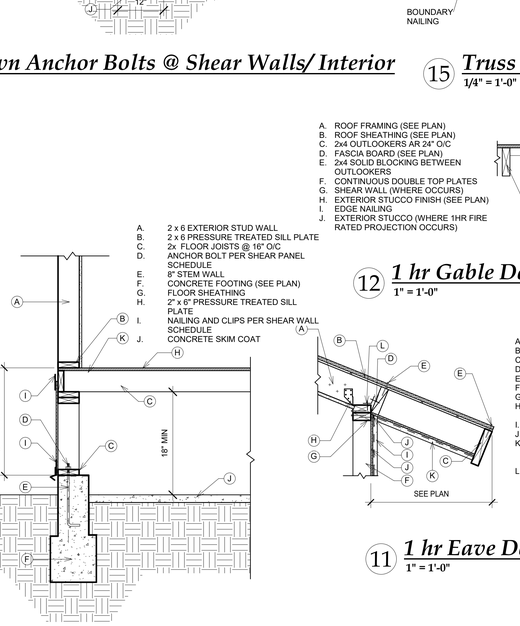
17 *Water Heater Specs.*



Note(s):
1. Size and dimensions vary. Drawings are not to scale.
2. Gas piping (riser, houseline fitting) cannot be placed within a 36 inch horizontal and 10 foot vertical measurement from finished grade of :
   - An electrical meter or other electrical equipment.
   - Fresh air venting for structure
   - Any source of ignition
3. Meters and piping must be protected from vehicular damage, corrosive environments, and other safety related issues.
4. Meters cannot be placed under a carport roof, awning, enclosure, or any overhang larger than a standard eave, without prior approval of SoCalGas.
5. Meters are not to be installed behind solid walls, fences, or gates without SoCalGas access.
6. Required for Single Residential Meters,
   - ¾" female connection to the customer houseline
   - Houseline is located 11" to 19" from gas riser – varies based upon load
   - SCG will normally install a riser 11" to 13" out from building
7. Only fixed non-opening windows can be installed within a 36" wide area from the riser centerline and 10' high from finished grade.

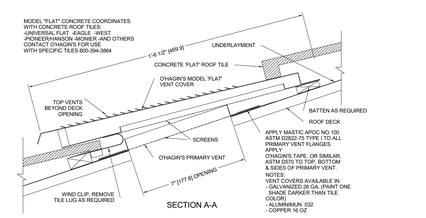
10 *Typ. Utility Location*
12" = 1'-0"

NEW SINGLE METER RESIDENTIAL CONSTRUCTION (< 1 MM BTU/HR)



14 *Perimeter Footing / Wood Joist to Wall*
3/4" = 1'-0"

12 *1 hr Gable Detail*
1" = 1'-0"



11 *1 hr Eave Detail*
1" = 1'-0"

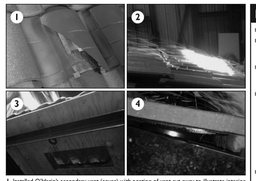
9 *O'Hagin Vents Detail*
1" = 1'-0"

FIRE & ICE® – Flame & Ember Resistant Attic Vents NEW!

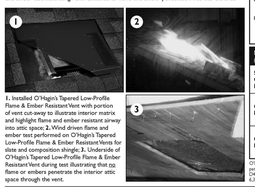
O'HAGIN'S ATTIC VENTS NOW AVAILABLE WITH OPTIONAL FLAME & EMBER RESISTANT INTERIOR MATRIX DESIGN

O'Hagin's, Inc.'s industry-leading technical design team has developed a Class-A rated Flame & Ember Resistant Vent to meet the requirements of 2007 California Building Code, Chapters 15 and 7A for resistance of flame and ember intrusion. This Flame & Ember Resistant Vent retains all the unique features, materials and quality construction of our standard line of vents for clay and concrete roof tile, as well as for composition shingle and slate – but with the added optional feature of a patent-pending, stainless-steel flame and ember resistant interior matrix design.

In addition to following all Installation Instructions and Installation Bulletins for O'Hagin's patent-pending, Flame & Ember Resistant Vents, O'Hagin's recommends using additional best practices in building design and construction as set forth by local ordinance, code and/or wildfire management plans. There are many causes of structural damage due to wildfire. O'Hagin's, Inc. does not guarantee, nor warrant that its products will prevent damage from wildfire.



1. Installed O'Hagin's secondary vent (cover) with portion of vent cut-away to illustrate interior matrix and highlight flame and ember resistant airway into attic space; **2.** Wind driven flame and ember test performed on all O'Hagin's Flame & Ember Resistant Vent profiles for tile; **3.** Underside of O'Hagin's Flame & Ember Resistant Vent during test illustrating wind driven flame and ember properties that protect the interior attic space; **4.** Interior view of vent during flame and ember test illustrating vent resistance to flame and ember penetration into sub-tile area.



1. Installed O'Hagin's Tapered Low-Profile Flame & Ember Resistant Vent with portion of vent cut-away to illustrate interior matrix and highlight flame and ember resistant airway into attic space; **2.** Wind driven flame and ember test performed on O'Hagin's Tapered Low-Profile Flame & Ember Resistant Vents for slate and composition shingle; **3.** Underside of O'Hagin's Tapered Low-Profile Flame & Ember Resistant Vent during test illustrating that no flame or embers penetrate the interior attic space through the vent.

FEATURES INCLUDE:

- Class-A fire rating
- Complies with Wildland Urban Interface code requirements and accepted for use by State of California, Office of the State Fire Marshal
- Patent-pending, flame and ember resistant ventilation system for clay/concrete tile and for composition shingle and slate applications
- Patent-pending internal stainless steel flame and ember resistant interior matrix system:
  - provides interior matrix to "trap" and resist flame and ember intrusion into sub-tile and attic areas
  - allows superior airflow for net free ventilation area (NFVA) requirements
  - interior matrix withstands sustained temperatures of 1292° F and peak temperatures of 1472° F, exhaust acids and high vibration
- Easy retrofit for existing O'Hagin's or other field vent installations
- Optional 1/8-inch mesh throughout vent
- Installation **does not require** tile cutting like dormer-style vents
- Installation **does not require** use of lead flashings or other hazardous materials like dormer-style vents
- O'Hagin's ventilation system **requires no under-eave or soffit vents** to provide code-required amount of NFVA

NET FREE VENTILATION AREA
(Figures based on independent evaluation reports)

Slate and Composition Roofs	MODEL: Tapered Low-Profile NFVA: 72.0 sq. in. (464.5 sq. cms.)		
Clay Tile Roofs	MODEL: Flat NFVA: 98.75 sq. in. (637.1 sq. cms.)	MODEL: S NFVA: 97.50 sq. in. (629.0 sq. cms.)	MODEL: M NFVA: 86.25 sq. in. (556.5 sq. cms.)
Concrete Tile Roofs	MODEL: Flat NFVA: 98.75 sq. in. (637.1 sq. cms.)	MODEL: S NFVA: 97.50 sq. in. (629.0 sq. cms.)	MODEL: M NFVA: 86.25 sq. in. (556.5 sq. cms.)

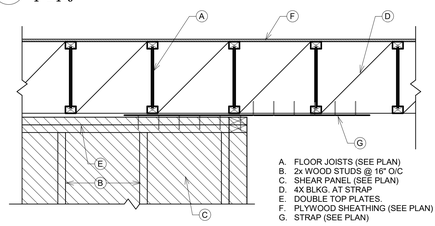
O'Hagin's vents are manufactured and protected under one or more of the following patents (other U.S. and foreign patents are pending): D456,531 | D457,234 | D458,351 | D458,352 | D469,889 | D479,882 | D504,172 | D512,774 | D549,316 | 6,550,039 | 6,129,628 | 6,354,051 | 6,363,674 | 6,447,390 | 6,491,579

O'HAGIN'S, INC.
America's Leading Attic Ventilation Company

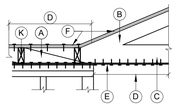
Corporate Office
210 Classic Court
Rohnert Park, CA 94928
Phone (800) 394-3864
Fax (707) 588-5772
www.ohagin vent.com

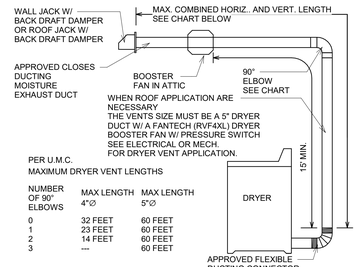
Manufacturing/Distribution Facilities
Rohnert Park, CA 94928
Omaha, NE 68128
Dallas/Fort Worth, TX 76133
Lakeland, FL 33803

8 *Drag Strap*
1" = 1'-0"



6 *Drag Truss*
3/4" = 1'-0"

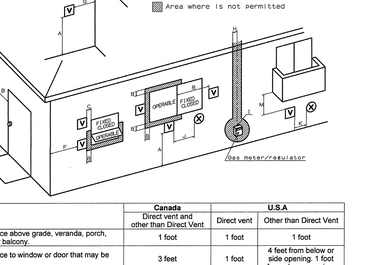




PER U.M.C.
MAXIMUM DRYER VENT LENGTHS

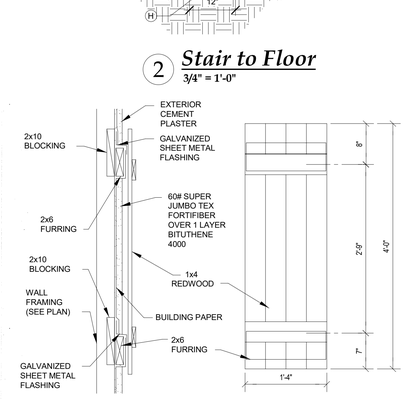
NUMBER OF 90° ELBOWS	MAX LENGTH 4"∅	MAX LENGTH 5"∅
0	32 FEET	60 FEET
1	23 FEET	60 FEET
2	14 FEET	60 FEET
3	---	60 FEET

4 *Dryer Detail*
1" = 1'-0"



5 *Wall Base (stone Veneer)*
1 1/2" = 1'-0"

	STRAP	END LENGTH	NAIL SIZE AND SPACING	CAPACITY
A	CS16	3'-6"	8d AT 1/16"	1650#
B	MSTA30	15"	(22) 0.148 x 2-1/2"	2.050#



3 *Grounding*
3/4" = 1'-0"

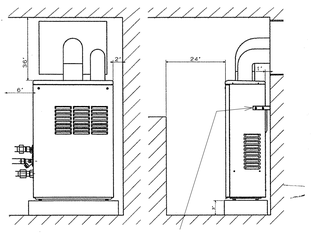
2 *Stair to Floor*
3/4" = 1'-0"

1 *Wood Shutter*
1" = 1'-0"

Indoor Installation Service Clearances

Left side of heater	6"
Front (Maintenance space)	24"
Back of heater	1"
Right side of heater	2"
Top of heater	12"

The diagram below details the required clearances around the unit:



		Canada: Direct vent and other than Direct Vent	U.S.A: Direct vent	U.S.A: Other than Direct Vent
A	Clearance above grade, veranda, porch, deck, or balcony.	1 foot	1 foot	1 foot
B	Clearance to window or door that may be opened.	3 feet	1 foot	4 feet from below or side opening. 1 foot from above opening.
C	Clearance to permanently closed window	*	*	*
D	Vertical clearance to ventilated soffit located above the vent terminator within a horizontal distance of 2 feet (61cm) from the center line of the terminator.	*	*	*
E	Clearance to unventilated soffit	*	*	*
F	Clearance to outside corner	*	*	*
G	Clearance to inside corner	*	*	*
H	Clearance to each side of center line extended above meter/regulator assembly	3 feet	*	*
I	Clearance to service regulator vent outlet.	3 feet	*	*
J	Clearance to non-mechanical air supply inlet to building or the combustion air inlet to any other application	3 feet	1 foot	4 feet from below or side opening. 1 foot from above opening.
K	Clearance to mechanical air supply inlet.	6 feet	3 feet	3 feet
L	Clearance above paved sidewalk or paved driveway located on public property.	7 feet	*	7 feet
M	Clearance under veranda, porch deck, or balcony.	1 foot	*	*

*For clearances not specified in ANSI Z223.1 / NFPA 54 or CAN/CSA-B149.1, please use clearances in accordance with local installation codes and the requirement of the gas supplier.

7 *Tankless Water Heater*
1/4" = 1'-0"

8

ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

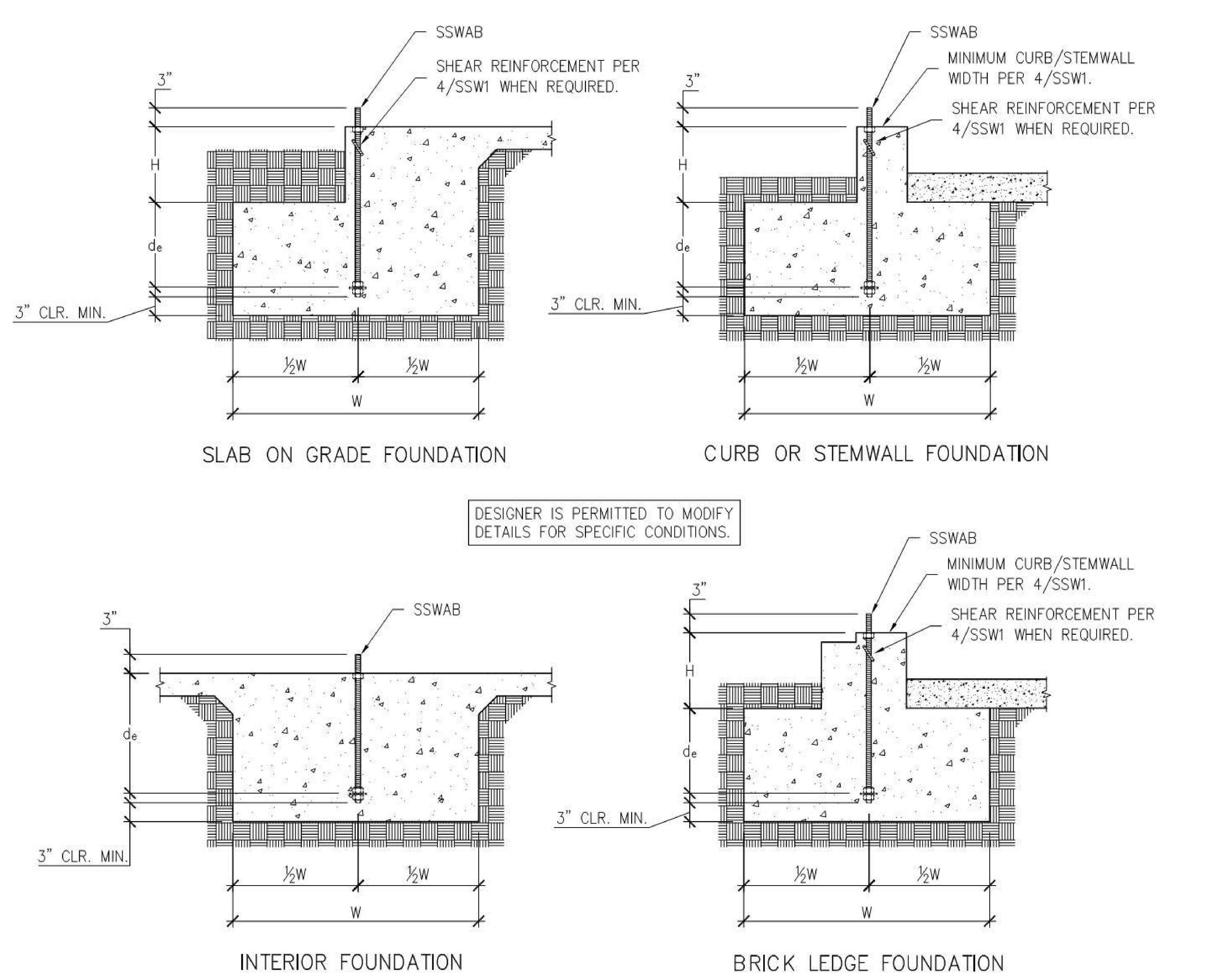
Proposed Single Family Residence For:
Parthenon Development, LLC
13024 Via Verrazano, Riverside, CA 92503

26 Apr. 2022	26 Apr. 2022 P.C.C.
21-4372	

LICENSED ARCHITECT Douglas Andresen C-14504 12-31-23 RENEWAL DATE STATE OF CALIFORNIA

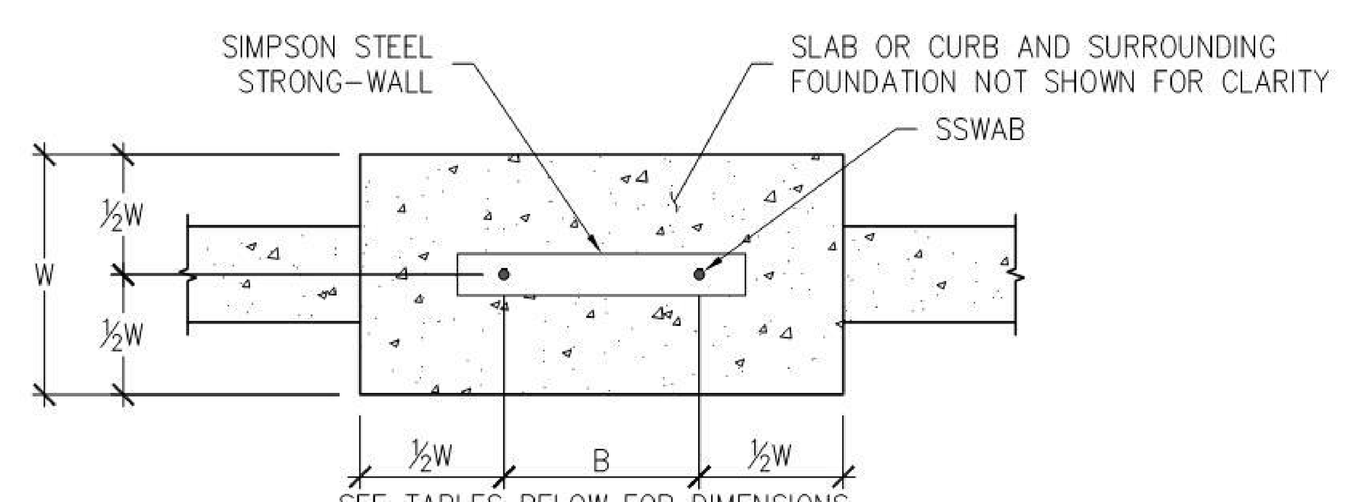
Details

D-3



NOTES :
1. SEE 2/SSW1 AND 3/SSW1 FOR DIMENSIONS AND ADDITIONAL NOTES.
2. SEE 4/SSW1 FOR SHEAR REINFORCEMENT WHEN REQUIRED.
3. MAXIMUM H = l_e − d_e. SEE 5/SSW1 AND 6/SSW1 FOR l_e.

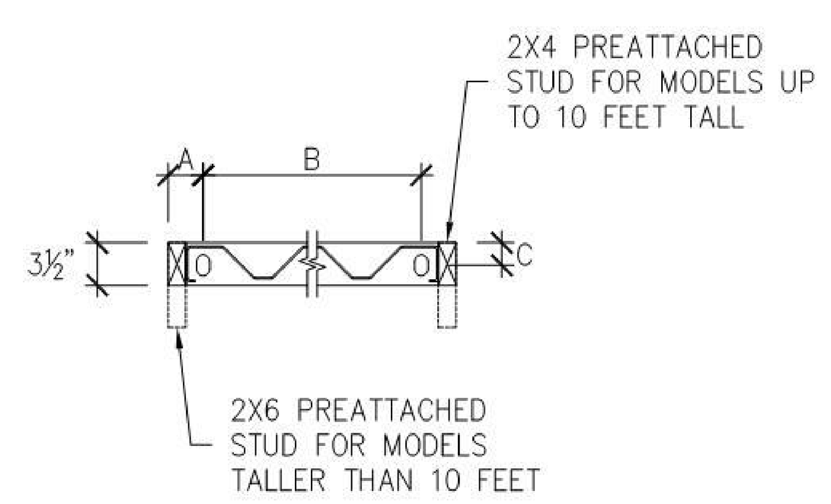
STEEL STRONG-WALL ANCHORAGE – TYPICAL SECTIONS 1



FOUNDATION PLAN VIEW

DESIGN CRITERIA	CONCRETE CONDITION	ANCHOR STRENGTH	SSWAB ¾" ANCHOR BOLT: ASD ALLOWABLE UPLIFT (lbs)	W (in)	d_e (in)	SSWAB 1" ANCHOR BOLT: ASD ALLOWABLE UPLIFT (lbs)	W (in)	d_e (in)
SEISMIC	CRACKED	STANDARD	8,800	22	8	16,100	33	11
			9,600	24	8	17,100	35	12
		HIGH STRENGTH	18,500	36	12	33,000	51	17
			19,900	38	13	35,300	54	18
	UNCRACKED	STANDARD	8,800	19	7	15,700	28	10
			9,600	21	7	17,100	30	10
		HIGH STRENGTH	18,300	31	11	32,300	44	15
			19,900	33	11	35,300	47	16
WIND	CRACKED	STANDARD	5,100	14	6	6,200	16	6
			7,400	18	6	11,400	24	8
			9,600	22	8	17,100	32	11
		HIGH STRENGTH	11,400	24	8	21,100	36	12
			13,600	27	9	27,300	42	14
			15,900	30	10	31,800	46	16
			19,900	35	12	35,300	50	17
	UNCRACKED	STANDARD	5,000	12	6	6,400	14	6
			7,800	16	6	12,500	22	8
			9,600	19	7	17,100	28	10
		HIGH STRENGTH	12,500	22	8	21,900	32	11
			14,300	24	8	26,400	36	12
			17,000	27	9	31,500	40	14
			19,900	30	10	35,300	43	15

STEEL STRONG-WALL ANCHORAGE SOLUTIONS FOR 2500 PSI CONCRETE



STEEL STRONG-WALL® ANCHOR BOLT LAYOUT

WALL MODEL	DISTANCE FROM END OF WALL TO CENTER OF SSWABs (A) (in.)	DISTANCE FROM CENTER TO CENTER OF SSWABs (B) (in.)	DISTANCE FROM EXTERIOR FACE OF WALL TO CENTER OF ALL SSWABs (C) (in.)
SSW12	2 9/16	6 7/8	2
SSW15	2 7/8	9 1/4	1 7/8
SSW18	2 7/8	12 1/4	1 7/8
SSW21	2 7/8	15 1/4	1 7/8
SSW24	2 7/8	18 1/4	1 7/8

NOTES :
1. ANCHORAGE DESIGNS CONFORM TO ACI 318–19, ACI 318–14 AND ACI 318–11 APPENDIX D WITH NO SUPPLEMENTARY REINFORCEMENT FOR CRACKED OR UNCRACKED CONCRETE AS NOTED.
2. ANCHOR STRENGTH INDICATES REQUIRED GRADE OF SSWAB ANCHOR BOLT. STANDARD (ASTM F1554 GRADE 36) OR HIGH STRENGTH (HS) (ASTM A449).
3. SEISMIC INDICATES SEISMIC DESIGN CATEGORY C THROUGH F. DETACHED 1 AND 2 FAMILY DWELLINGS IN SDC C MAY USE WIND ANCHORAGE SOLUTIONS. SEISMIC ANCHORAGE DESIGNS CONFORM 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.
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/SSW1 FOR d_e.

SSWAB TENSION ANCHORAGE SCHEDULE 2500 PSI 2

STEEL STRONG-WALL ANCHORAGE SOLUTIONS FOR 3500 PSI CONCRETE

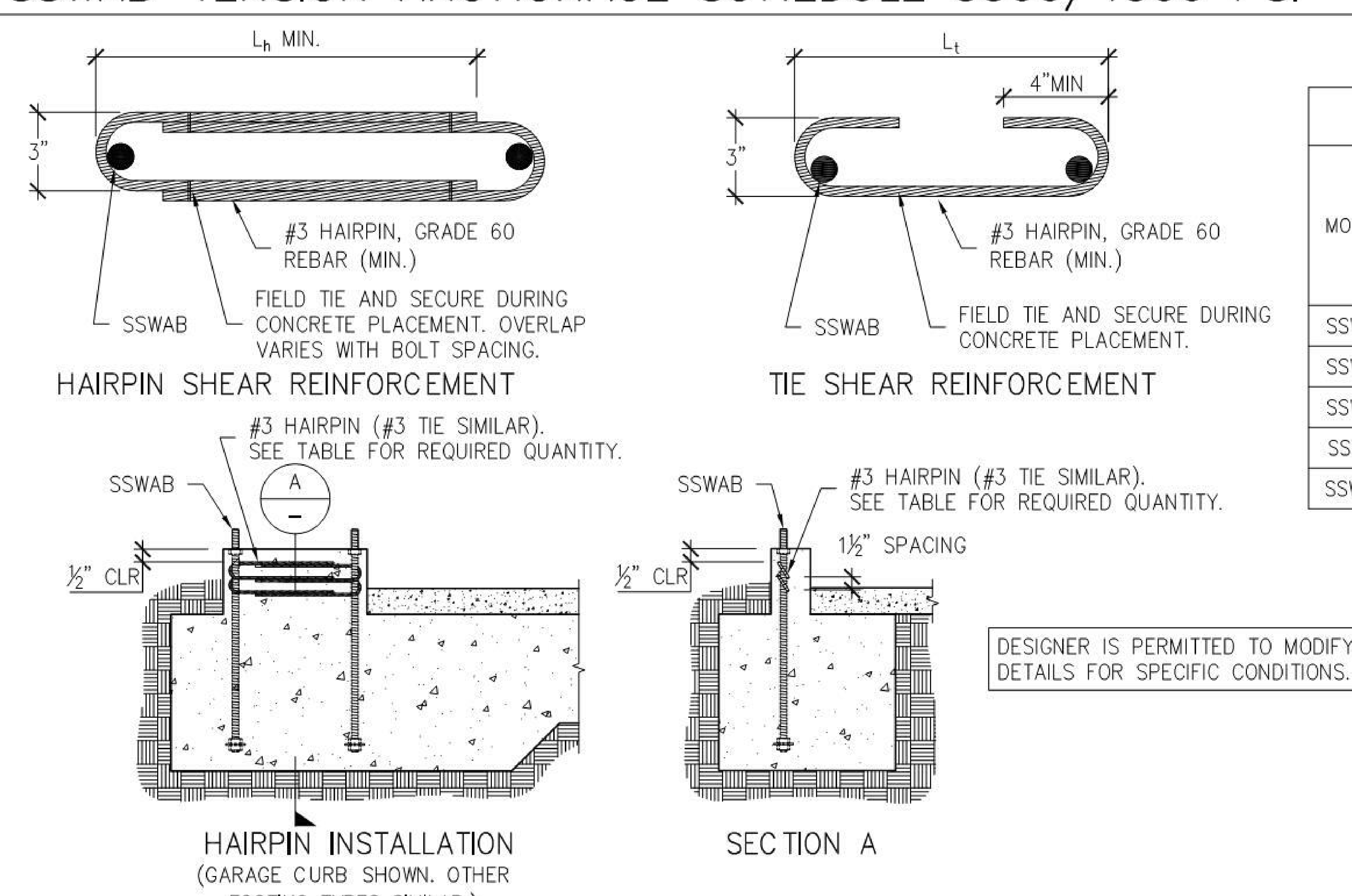
DESIGN CRITERIA	CONCRETE CONDITION	ANCHOR STRENGTH	SSWAB 3/4" ANCHOR BOLT: ASD ALLOWABLE UPLIFT (lbs)	W (in)	d_e (in)	SSWAB 1" ANCHOR BOLT: ASD ALLOWABLE UPLIFT (lbs)	W (in)	d_e (in)
SEISMIC	CRACKED	STANDARD	9,000	20	7	15,700	29	10
			9,600	21	7	17,100	31	11
		HIGH STRENGTH	18,200	32	11	33,000	46	16
			19,900	34	12	35,300	48	16
	UNCRACKED	STANDARD	8,800	17	6	15,700	25	9
			9,600	19	7	17,100	27	9
		HIGH STRENGTH	18,600	28	10	32,600	40	14
			19,900	30	10	35,300	42	14
WIND	CRACKED	STANDARD	6,000	14	6	7,300	16	6
			7,300	16	6	13,500	24	8
			9,600	20	7	17,100	29	10
		HIGH STRENGTH	11,800	22	8	22,700	34	12
			13,500	24	8	27,400	38	13
			17,000	28	10	32,300	42	14
			19,900	32	11	35,300	45	15
	UNCRACKED	STANDARD	6,000	12	6	7,500	14	6
			7,500	14	6	12,800	20	7
			9,600	17	6	17,100	25	9
		HIGH STRENGTH	12,800	20	7	21,300	28	10
			14,800	22	8	26,000	32	11
			16,900	24	8	31,300	36	12
			19,900	27	9	35,300	39	13

STEEL STRONG-WALL ANCHORAGE SOLUTIONS FOR 4500 PSI CONCRETE

DESIGN CRITERIA	CONCRETE CONDITION	ANCHOR STRENGTH	SSWAB 3/4" ANCHOR BOLT: ASD ALLOWABLE UPLIFT (lbs)	W (in)	d_e (in)	SSWAB 1" ANCHOR BOLT: ASD ALLOWABLE UPLIFT (lbs)	W (in)	d_e (in)
SEISMIC	CRACKED	STANDARD	8,700	18	6	16,000	27	9
			9,600	20	7	17,100	29	10
		HIGH STRENGTH	17,800	29	10	32,100	42	14
			19,900	32	11	35,300	45	15
	UNCRACKED	STANDARD	9,100	16	6	15,700	23	8
			9,600	17	6	17,100	25	9
		HIGH STRENGTH	17,800	25	9	32,500	37	13
			19,900	27	9	35,300	39	13
WIND	CRACKED	STANDARD	5,400	12	6	6,800	14	6
			8,300	16	6	11,600	20	7
			9,600	18	6	17,100	26	9
		HIGH STRENGTH	11,600	20	7	21,400	30	10
			13,400	22	8	25,800	34	12
			17,300	26	9	31,000	38	13
			19,900	29	10	35,300	42	14
	UNCRACKED	STANDARD	6,800	12	6	6,800	12	6
			8,500	14	6	12,400	18	6
			9,600	16	6	17,100	23	8
		HIGH STRENGTH	12,400	18	6	21,600	26	9
			14,500	20	7	26,700	30	10
			16,800	22	8	32,200	34	12
			19,900	25	9	35,300	36	12

NOTES :
1. ANCHORAGE DESIGNS CONFORM TO ACI 318–19, ACI 318–14 AND ACI 318–11 APPENDIX D WITH NO SUPPLEMENTARY REINFORCEMENT FOR CRACKED OR UNCRACKED CONCRETE AS NOTED.
2. ANCHOR STRENGTH INDICATES REQUIRED GRADE OF SSWAB ANCHOR BOLT. STANDARD (ASTM FI554 GRADE 36) OR HIGH STRENGTH (HS) (ASTM A449).
3. SEISMIC INDICATES SEISMIC DESIGN CATEGORY C THROUGH F. DETACHED 1 AND 2 FAMILY DWELLINGS IN SDC C MAY USE WIND ANCHORAGE SOLUTIONS. SEISMIC ANCHORAGE DESIGNS CONFORM 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.
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. SEE 1/SSW1 AND 2/SSW1 FOR W AND d_e.

SSWAB TENSION ANCHORAGE SCHEDULE 3500/4500 PSI 3

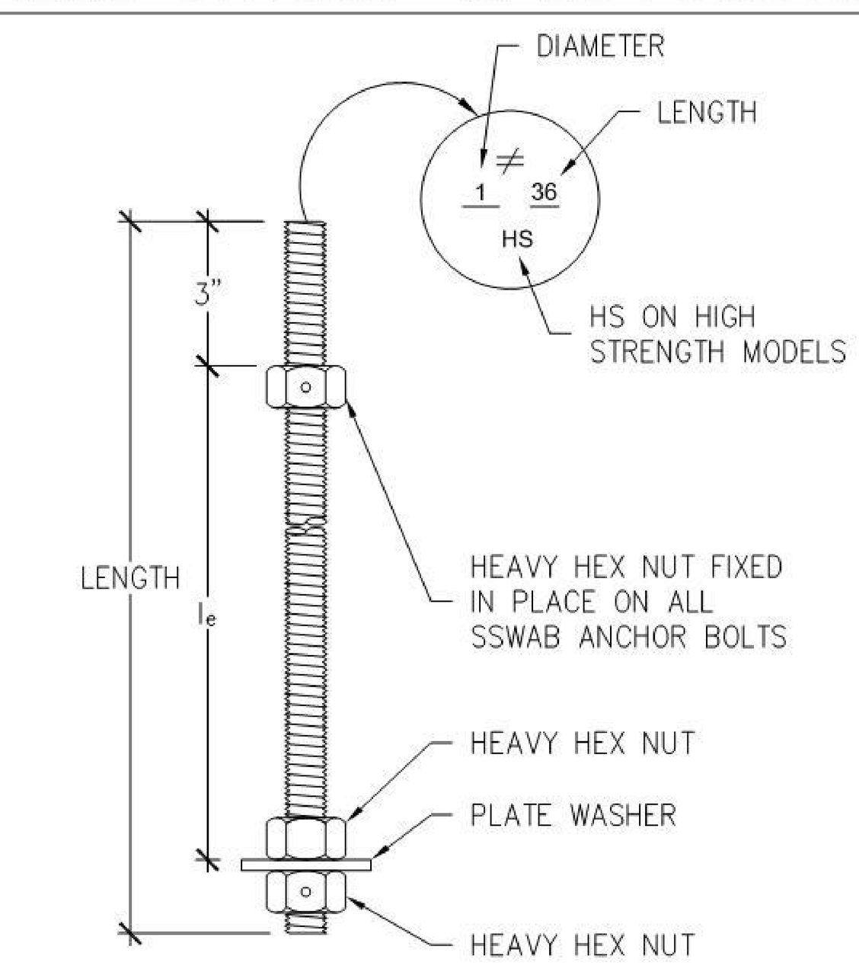


STEEL STRONG-WALL SHEAR ANCHORAGE

MODEL	SEISMIC[3]: L_t OR L_h (in.)	SEISMIC[3]: SHEAR REINFORCEMENT	SEISMIC[3]: MIN. CURB/ STEMWALL WIDTH (in.)	WIND[4]: SHEAR REINFORCEMENT	WIND[4]: MIN. CURB/ STEMWALL WIDTH (in.)	ASD ALLOWABLE SHEAR LOAD V (lbs.)[6]: 6" MIN CURB/STEMWALL UNCRACKED	6" MIN CURB/STEMWALL CRACKED	8" MIN CURB / STEMWALL UNCRACKED	8" MIN CURB / STEMWALL CRACKED
SSW12	9	(1) #3 TIE	6	NONE REQUIRED	–	1230	880	1440	1030
SSW15	12	(2) #3 TIES	6	NONE REQUIRED	–	1590	1135	1810	1295
SSW18	14	(1) #3 HAIRPIN	8[5]	(1) #3 HAIRPIN	6	HAIRPIN REINFORCEMENT ACHIEVES MAXIMUM ALLOWABLE SHEAR LOAD OF THE STEEL STRONG–WALL PANEL			
SSW21	15	(2) #3 HAIRPIN	8[5]	(1) #3 HAIRPIN	6				
SSW24	17	(2) #3 HAIRPIN	8[5]	(1) #3 HAIRPIN	6				

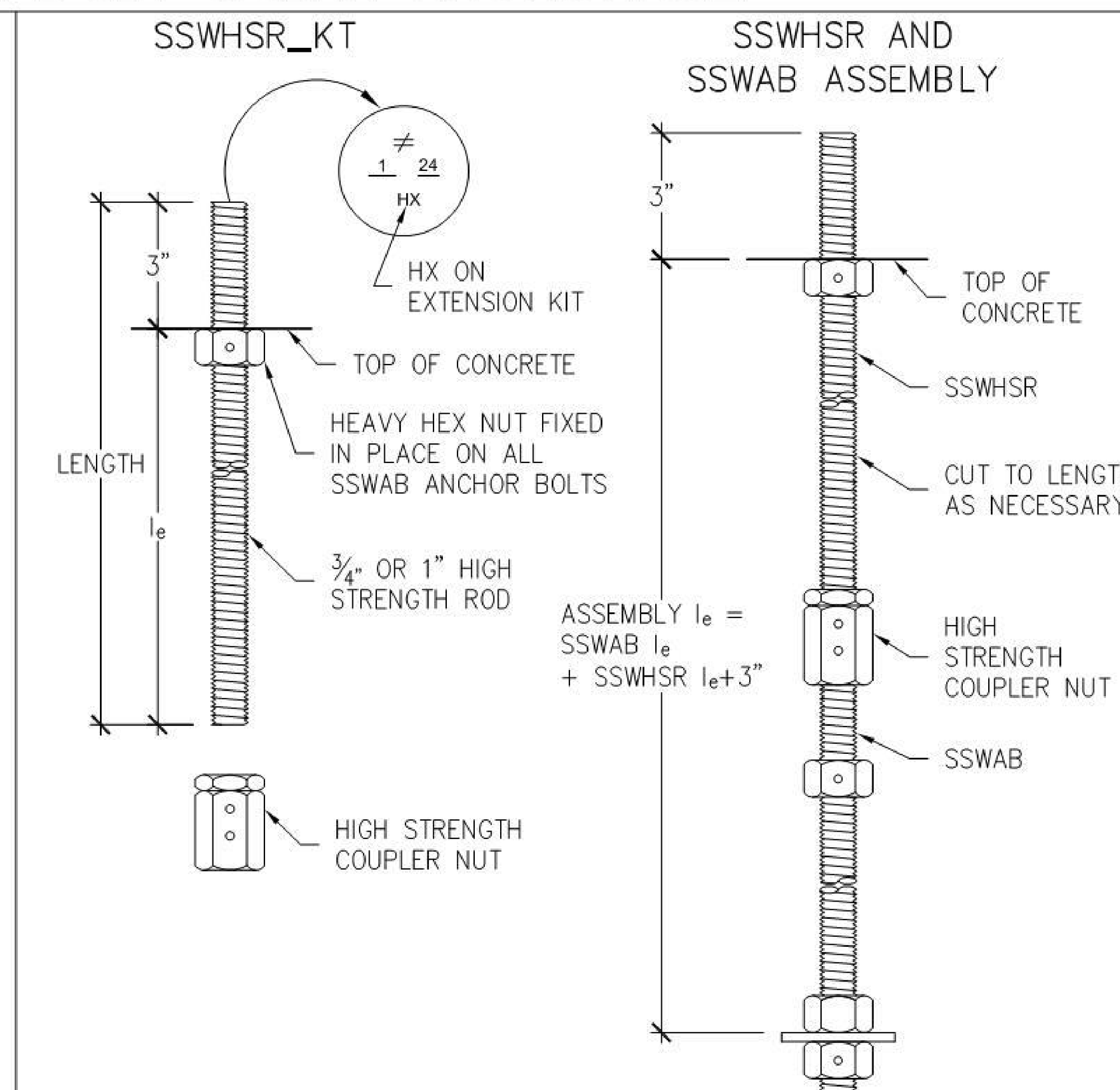
NOTES :
1. SHEAR ANCHORAGE DESIGNS CONFORM TO ACI 318–19, ACI 318–14 AND ACI 318–11 AND ASSUME MINIMUM f'_c=2,500 PSI CONCRETE. SEE DETAILS 1/SSW1 TO 3/SSW1 FOR TENSION ANCHORAGE.
2. SHEAR REINFORCEMENT IS NOT REQUIRED FOR PANELS INSTALLED ON A WOOD FLOOR, INTERIOR FOUNDATION APPLICATIONS (PANEL INSTALLED 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.
4. WIND INCLUDES SEISMIC DESIGN CATEGORY A AND B.
5. MINIMUM CURB/STEMWALL WIDTH IS 6" WHEN STANDARD STRENGTH SSWAB IS USED.
6. USE (1) #3 TIE FOR SSW12 AND SSW15 WHEN THE STEEL STRONG–WALL PANEL DESIGN SHEAR FORCE EXCEEDS THE TABULATED ANCHORAGE ALLOWABLE SHEAR LOAD.
7. 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 D.8.2.

STEEL STRONG–WALL ANCHOR BOLT SHEAR ANCHORAGE 4



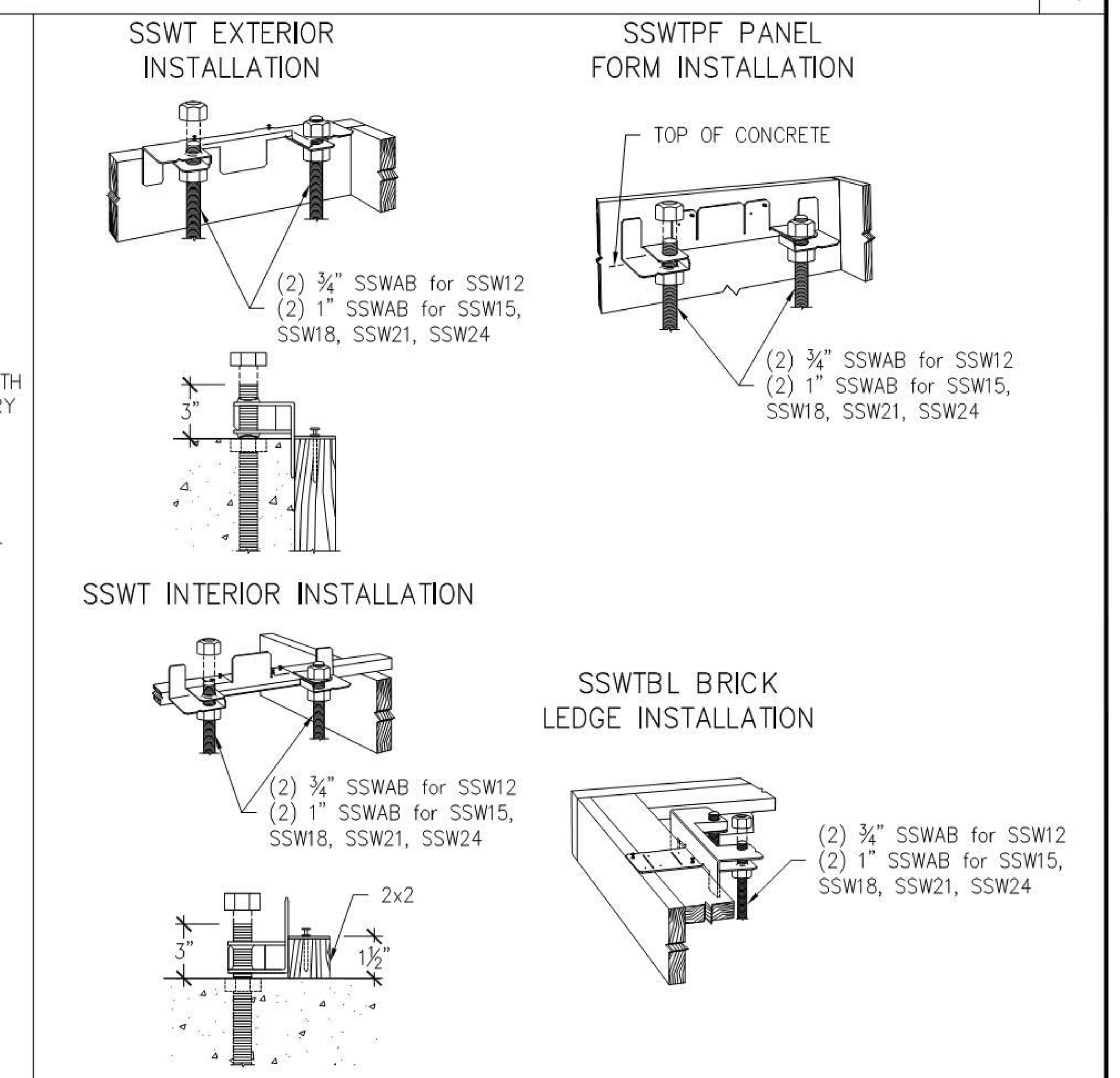
STEEL STRONG–WALL WIDTH	MODEL NO.	DIAMETER	LENGTH	l_e
12" MODEL	SSWAB3/4x24	¾"	24"	19"
	SSWAB3/4x24HS	¾"	24"	19"
	SSWAB3/4x30	¾"	30"	25"
	SSWAB3/4x30HS	¾"	30"	25"
	SSWAB3/4x36HS	¾"	36"	31"
15", 18", 21" AND 24" MODELS	SSWAB1x24	1"	24"	19"
	SSWAB1x24HS	1"	24"	19"
	SSWAB1x30	1"	30"	25"
	SSWAB1x30HS	1"	30"	25"
	SSWAB1x36HS	1"	36"	31"

SSW ANCHOR BOLTS 5



SSW WIDTH	MODEL NO.	DIAMETER	TOTAL LENGTH	l_e
12" MODEL	SSWHSR3/4–2KT	¾"	24"	21"
	SSWHSR3/4–3KT	¾"	36"	33"
15", 18", 21" AND 24" MODELS	SSWHSR1–2KT	1"	24"	21"
	SSWHSR1–3KT	1"	36"	33"

SSW ANCHOR BOLT EXTENSION 6



SSW ANCHOR BOLT TEMPLATES 7

NO.	DATE	REVISIONS
1	09-21-2009	2006 IBC REVISIONS
2	04-18-2014	2012 IBC REVISIONS
3	09-09-2016	2015 IBC REVISIONS
4	09-16-2020	2018 IBC REVISIONS
5	03-16-2021	2021 IBC REVISIONS

SIMPSON Strong-Tie THERE IS NO EQUAL

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

STEEL STRONG-WALL
ANCHORAGE DETAILS
ENGINEERED DESIGNS

NAME
DATE 03-16-2021
SCALE N.T.S.
CHECKED
SHEET SSW1
OF SHEETS
JOB NO.

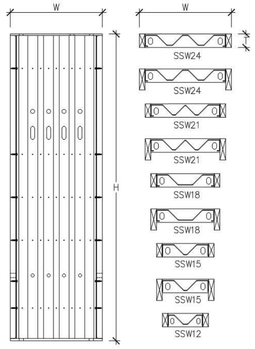
ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

Proposed Single Family Residence For:
Parthenon Development, LLC
13024 Via Verrazano, Riverside, CA 92503
26 Apr. 2022
21-4372

LICENSED ARCHITECT · STATE OF CALIFORNIA · C-13564 · 12-31-22 RENEWAL DATE

Steel Strong Wall
SW1

STEEL STRONG-WALL MODELS

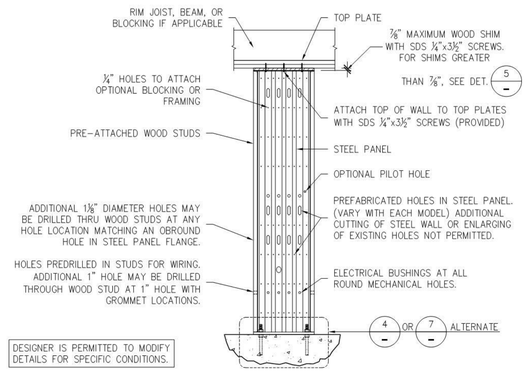


WALL PROFILES

STD. WALL MODEL NO.	–STK WALL MODEL NO.	H(in)	T(in)	HOLDOWN ANCHOR BOLTS[2]	QTY.OF TOP OF WALL SCREWS[1]
SSW12x7	––	80	3½	2–¾"	4
SSW15x7	––	80	3½	2–1"	6
SSW18x7	––	80	3½	2–1"	9
SSW21x7	––	80	3½	2–1"	12
SSW24x7	––	80	3½	2–1"	14
SSW12x7.4	––	85½	3½	2–¾"	4
SSW15x7.4	––	85½	3½	2–1"	6
SSW18x7.4	––	85½	3½	2–1"	9
SSW21x7.4	––	85½	3½	2–1"	12
SSW24x7.4	––	85½	3½	2–1"	14
SSW12x8	––	93¾	3½	2–¾"	4
SSW15x8	SSW15x8–STK	93¾	3½	2–1"	6
SSW18x8	SSW18x8–STK	93¾	3½	2–1"	9
SSW21x8	SSW21x8–STK	93¾	3½	2–1"	12
SSW24x8	SSW24x8–STK	93¾	3½	2–1"	14
SSW12x9	––	105¾	3½	2–¾"	4
SSW15x9	SSW15x9–STK	105¾	3½	2–1"	6
SSW18x9	SSW18x9–STK	105¾	3½	2–1"	9
SSW21x9	SSW21x9–STK	105¾	3½	2–1"	12
SSW24x9	SSW24x9–STK	105¾	3½	2–1"	14
SSW12x10	––	117¾	3½	2–¾"	4
SSW15x10	SSW15x10–STK	117¾	3½	2–1"	6
SSW18x10	SSW18x10–STK	117¾	3½	2–1"	9
SSW21x10	SSW21x10–STK	117¾	3½	2–1"	12
SSW24x10	SSW24x10–STK	117¾	3½	2–1"	14
SSW15x11	SSW15x11–STK	129¾	5½	2–1"	6
SSW18x11	SSW18x11–STK	129¾	5½	2–1"	9
SSW21x11	SSW21x11–STK	129¾	5½	2–1"	12
SSW24x11	SSW24x11–STK	129¾	5½	2–1"	14
SSW15x12	SSW15x12–STK	141¾	5½	2–1"	6
SSW18x12	SSW18x12–STK	141¾	5½	2–1"	9
SSW21x12	SSW21x12–STK	141¾	5½	2–1"	12
SSW24x12	SSW24x12–STK	141¾	5½	2–1"	14
SSW18x13	SSW18x13–STK	153¾	5½	2–1"	9
SSW21x13	SSW21x13–STK	153¾	5½	2–1"	12
SSW24x13	SSW24x13–STK	153¾	5½	2–1"	14

TABLE NOTES :
1. SDS ¼"x3½" SCREWS PROVIDED WITH WALL.
2. SEE SHEET SSW1 FOR ANCHORAGE SOLUTIONS.

STEEL STRONG-WALL MODELS | 1



DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

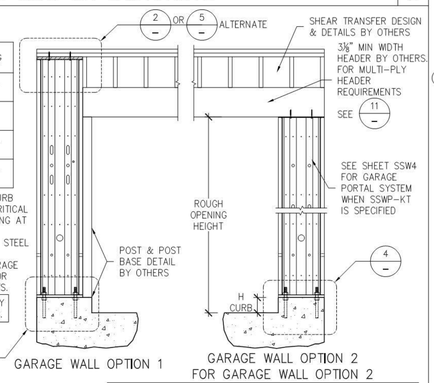
SINGLE-STORY SSW ON CONCRETE | 2

GARAGE HEADER ROUGH OPENING HEIGHT

MODEL NO.	H CURB	ROUGH OPENING HEIGHT
SSW12X7 SSW15X7 SSW18X7 SSW21X7 SSW24X7	5½"	7'–1½"
	6"	7'–2"
SSW12X7 SSW15X7 SSW18X7 SSW21X7 SSW24X7	5½"	8'–2¾"
	6"	8'–3¼"

1. THE HEIGHT OF THE GARAGE CURB ABOVE THE GARAGE SLAB IS CRITICAL FOR THE ROUGH HEADER OPENING AT GARAGE RETURN WALLS.
2. SHIMS ARE NOT PROVIDED WITH STEEL STRONG-WALL.
3. FURRING ON UNDERSIDE OF GARAGE HEADER MAY BE NECESSARY FOR LESSER ROUGH OPENING HEIGHTS.

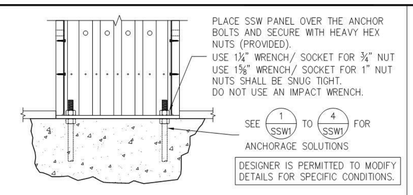
DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.



NOTE:
7–FT. HIGH STEEL STRONG–WALL MODELS ARE 80", 2" TALLER THAN 7–FT. HIGH WOOD STRONG–WALL SHEARWALLS

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

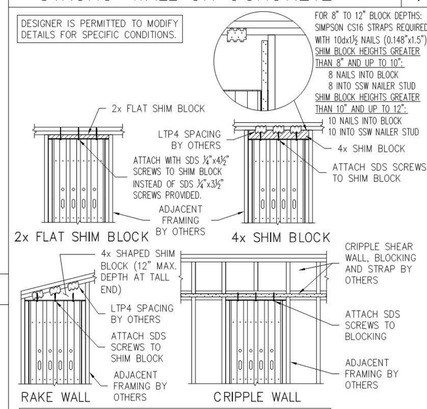
ALTERNATE GARAGE WALL OPTIONS | 3



DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

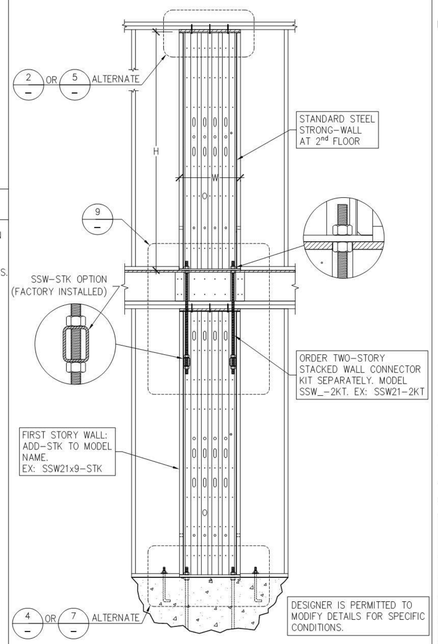
STRONG-WALL ON CONCRETE | 4

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.



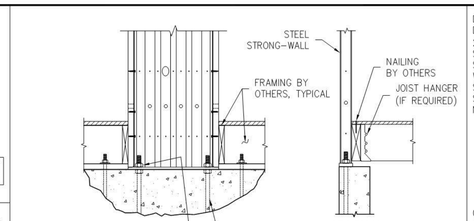
DESIGNER SHALL DESIGN FOR:
1. SHEAR TRANSFER
2. OUT OF PLANE LOADING EFFECT
3. INCREASED OVERTURNING AND DRIFT DUE TO ADDITIONAL HEIGHT

TOP OF WALL HEIGHT ADJUSTMENTS | 5



DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

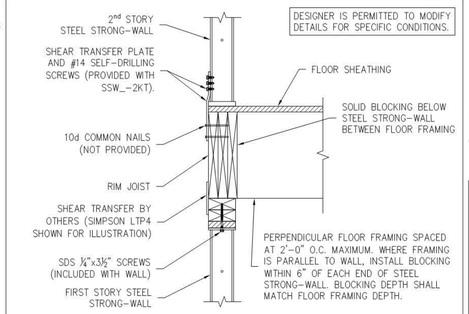
TWO-STORY STACKED | 6



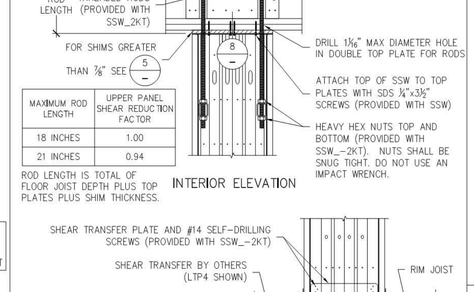
DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

ALTERNATE 1ST FLOOR WOOD FRAMING | 7

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

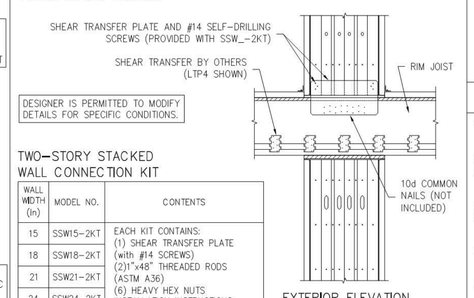


TWO-STORY STACKED FLOOR SECTION | 8



MAXIMUM ROD LENGTH	UPPER PANEL SHEAR REDUCTION FACTOR
18 INCHES	1.00
21 INCHES	0.94

ROD LENGTH IS TOTAL OF FLOOR JOIST DEPTH PLUS TOP PLATES PLUS SHIM THICKNESS.

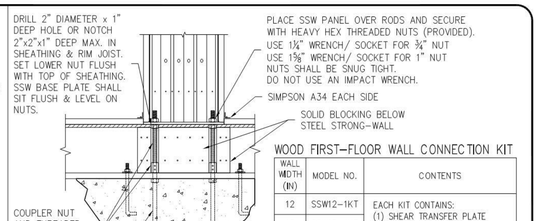


DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

TWO–STORY STACKED WALL CONNECTION KIT

WALL WIDTH (in)	MODEL NO.	CONTENTS
15	SSW15–2KT	EACH KIT CONTAINS: (1) SHEAR TRANSFER PLATE (with #14 SCREWS) (2)1"x48" THREADED RODS (ASTM A36) (6) HEAVY HEX NUTS INSTALLATION INSTRUCTIONS
18	SSW18–2KT	
21	SSW21–2KT	
24	SSW24–2KT	

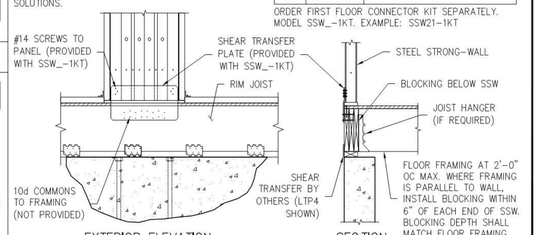
TWO–STORY STACKED FLOOR FRAMING | 9



WOOD FIRST–FLOOR WALL CONNECTION KIT

WALL WIDTH (IN)	MODEL NO.	CONTENTS
12	SSW12–1KT	EACH KIT CONTAINS: (1) SHEAR TRANSFER PLATE (with #14 SCREWS) (2) ¾"x18" or 1"x18" THREADED RODS (ASTM A36) (2) COUPLER NUTS (2) HEAVY HEX NUTS INSTALLATION INSTRUCTIONS
15	SSW15–1KT	
18	SSW18–1KT	
21	SSW21–1KT	
24	SSW24–1KT	

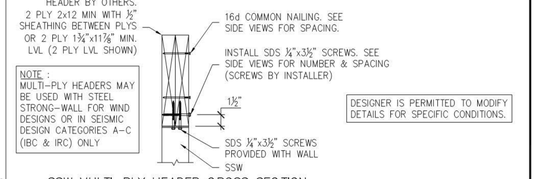
ORDER FIRST FLOOR CONNECTOR KIT SEPARATELY. MODEL SSW_–1KT. EXAMPLE: SSW21–1KT



FIRST FLOOR AT WOOD FRAMING NOTES :
1. USE WOOD FIRST–FLOOR ALLOWABLE LOAD TABLES FROM THE STRONG–WALL CATALOG FOR THIS INSTALLATION.
2. USE ALTERNATE DETAIL 7 TO ACHIEVE MAXIMUM ON–CONCRETE ALLOWABLE LOADS.
3. FOR TWO–STORY STACKED STEEL STRONG–WALLS WITH WOOD FIRST FLOOR, USE ALTERNATE DETAIL 7
4. DESIGNER SHALL DESIGN FOR SHEAR TRANSFER FROM RIM JOIST TO SILL PLATE AND SILL PLATE TO FOUNDATION.

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

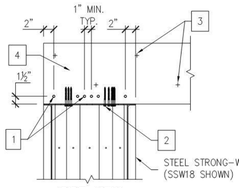
FIRST FLOOR AT WOOD FRAMING | 10



NOTE :
MULTI–PLY HEADERS MAY BE USED WITH STEEL STRONG–WALL FOR WIND DESIGNS OR IN SEISMIC DESIGN CATEGORIES A–C (IBC & IRC) ONLY

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

SSW MULTI–PLY HEADER CROSS SECTION



1. INSTALL SDS ¼"x3½" SCREWS HORIZONTALLY THROUGH LVL OR 2x LUMBER HEADER PLYS. 4 SCREWS TOTAL FOR SSW12, 6 SCREWS TOTAL FOR SSW15, SSW18, SSW21 AND SSW24.
2. SDS ¼"x3½" SCREWS PROVIDED WITH WALL
3. FASTEN PLYS TOGETHER WITH 16d COMMON NAILS AT 16" O.C. ALONG EACH EDGE OF BEAM.
4. 1⅝₃₂" SHEATHING BETWEEN 2x HEADER PLYS SHALL MATCH HEADER DEPTH AND EXTEND FULL WIDTH OF SSW, MINIMUM.

MULTI–PLY HEADERS | 11

NOTES | 12

1. STEEL STRONG–WALL 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 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 SPECIFIER.
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 STEEL STRONG–WALL SYSTEM. IF ANY DISCREPANCIES ARE FOUND, THEY SHALL BE BROUGHT TO THE ATTENTION OF THE SPECIFIER 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 SPECIFIER.
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.

NO.	DATE	REVISIONS
1	04-21-2009	2006 IBC REVISIONS
2	04-16-2014	2012 IBC REVISIONS
3	08-08-2016	2015 IBC REVISIONS
4	04-16-2020	2018 IBC REVISIONS
5	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

STEEL STRONG-WALL
FRAMING DETAILS & DETAILS
ENGINEERED DESIGNS

SIMPSON Strong-Tie THERE IS NO EQUAL

NAME	
DATE	03-16-2021
SCALE	N.T.S.
CHECKED	
SHEET	SSW2
	OF SHEETS
JOB NO.	

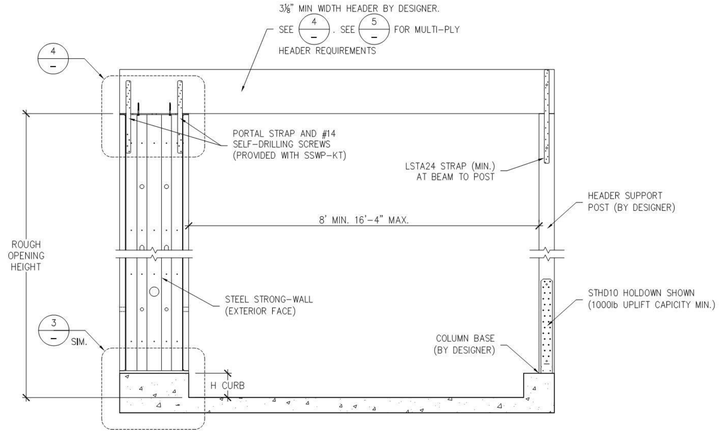
ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

Proposed Single Family Residence For:
Parthenon Development, LLC
13024 Via Verrazano, Riverside, CA 92503

26 Apr. 2022	
21-4372	

LICENSED ARCHITECT DOUGLAS ANDRESEN C-34500 12-31-23 RENEWAL DATE STATE OF CALIFORNIA

Steel Strong Wall SW2

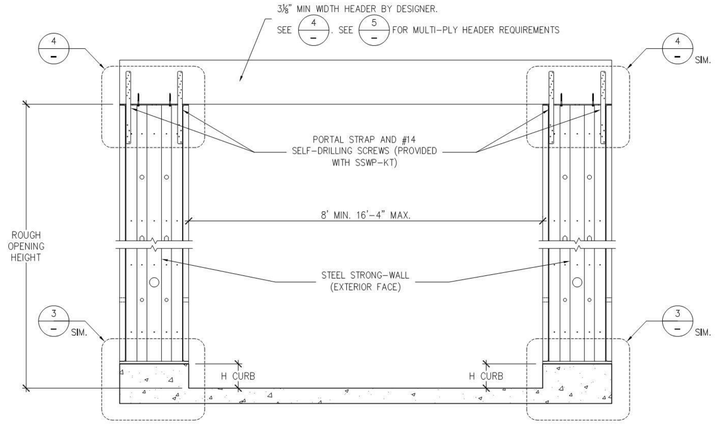


GARAGE HEADER
ROUGH OPENING HEIGHT

MODEL NO.	H CURB	ROUGH OPENING HEIGHT
SSW12X7 SSW15X7 SSW18X7	5½"	7'-1½"
	6"	7'-2"
SSW12X7.4 SSW15X7.4 SSW18X7.4	0"	7'-1½"
SSW12X8 SSW15X8 SSW18X8	5½"	8'-2¾"
	6"	8'-3¼"

1. THE HEIGHT OF THE GARAGE CURB ABOVE THE GARAGE SLAB IS CRITICAL FOR THE ROUGH HEADER OPENING AT GARAGE RETURN WALLS.
2. SHIMS ARE NOT PROVIDED WITH STEEL STRONG-WALL.
3. FURRING DOWN GARAGE HEADER MAY BE NECESSARY FOR CORRECT ROUGH OPENING HEIGHT.

STEEL STRONG-WALL SINGLE WALL PORTAL | 1

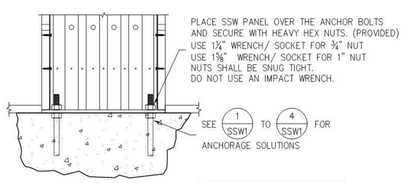


GARAGE HEADER
ROUGH OPENING HEIGHT

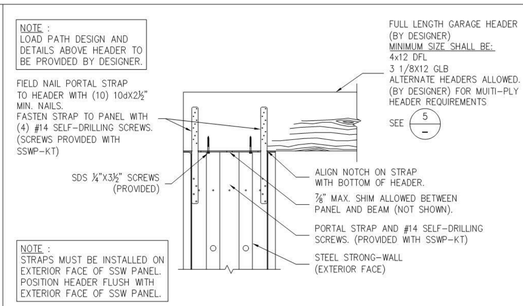
MODEL NO.	H CURB	ROUGH OPENING HEIGHT
SSW12X7 SSW15X7 SSW18X7	5½"	7'-1½"
	6"	7'-2"
SSW12X7.4 SSW15X7.4 SSW18X7.4	0"	7'-1½"
SSW12X8 SSW15X8 SSW18X8	5½"	8'-2¾"
	6"	8'-3¼"

1. THE HEIGHT OF THE GARAGE CURB ABOVE THE GARAGE SLAB IS CRITICAL FOR THE ROUGH HEADER OPENING AT GARAGE RETURN WALLS.
2. SHIMS ARE NOT PROVIDED WITH STEEL STRONG-WALL.
3. FURRING DOWN GARAGE HEADER MAY BE NECESSARY FOR CORRECT ROUGH OPENING HEIGHT.

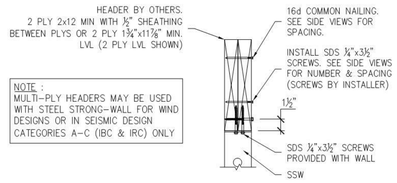
STEEL STRONG-WALL DOUBLE WALL PORTAL | 2



BASE PLATE CONNECTION | 3



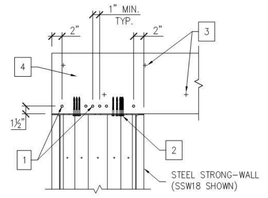
TOP OF WALL CONNECTION | 4



SSW MULTI-PLY HEADER CROSS SECTION

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

NOTE :
PORTAL STRAP NOT SHOWN FOR CLARITY. REFER TO DETAIL 4/SSW4 FOR PORTAL STRAP INSTALLATION.



SIDE VIEW
SSW WITH MULTI-PLY HEADER

1. INSTALL SDS ¼"x3½" SCREWS HORIZONTALLY THROUGH LVL OR 2x LUMBER HEADER PLYS. 4 SCREWS TOTAL FOR SSW12.6 SCREWS TOTAL FOR SSW15, SSW18, SSW21 AND SSW24.
2. SDS ¼"x3½" SCREWS PROVIDED WITH WALL
3. FASTEN PLYS TOGETHER WITH 16d COMMON NAILS AT 16" O.C. ALONG EACH EDGE OF BEAM.
4. 15/32" SHEATHING BETWEEN 2x HEADER PLYS SHALL MATCH HEADER DEPTH AND EXTEND FULL WIDTH OF SSW, MINIMUM.

MULTI-PLY HEADERS | 5

NOTES | 6

1. STEEL STRONG-WALL 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 REGISTERED COMPANY.
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NO.	DATE	REVISIONS
0	09-21-2009	FIRST RELEASE
1	04-15-2014	2012 IBC REVISIONS
2	06-06-2016	2015 IBC REVISIONS
3	04-14-2020	2018 IBC REVISIONS
5	03-14-2021	2021 IBC REVISIONS

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Tel: (800) 999-5099
• Website: www.strongtie.com
THERE IS NO EQUAL

STEEL STRONG-WALL
PORTAL SYSTEM FRAMING DETAILS
ENGINEERED DESIGNS

SIMPSON Strong-Tie THERE IS NO EQUAL

NAME
DATE 03-16-2021
SCALE N.T.S.
CHECKED
SHEET SSW4
OF SHEETS
JOB NO.

ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

Proposed Single Family Residence For:
Parthenon Development, LLC
13024 Via Verrazano, Riverside, CA 92503

26 Apr. 2022	
21-4372	

LICENSED ARCHITECT Douglas Andresen C-34854 12-31-22 RENEWAL DATE STATE OF CALIFORNIA

Steel Strong Wall **SW4**

Division 1
General Requirements

Work performed shall comply with the following:

1. Compliance: These General Notes apply unless otherwise stated on plans or specifications.
2. Codes: California modified version (2019 Edition) of the International Building Code, Uniform Plumbing Code, Uniform Mechanical Code, International Fire Code, National Electrical Code, 2019 Edition of the California Energy Standards and all other applicable laws and regulations governing the site of the work.
3. ASTM: Standard Specifications (In case of conflict, the more expensive requirements shall govern.
4. Quality of Work: All work needs to be performed by qualified and experienced contractors familiar with this type of work.
5. Quality of Materials: All materials furnished shall be new and of first quality. No used materials or seconds will be permitted.
6. "Or equal": The contractor shall submit for the Architect's or Builder's acceptance all materials or equipment which is considered "or equal" to that specified.
7. On Site Verification of all dimensions and conditions shall be the responsibility of the Contractor and the Sub-Contractors. Noted dimensions take precedent over scale. Each Contractor or Sub-Contractor shall report to Project Superintendent all conditions which prevent the proper execution of their work.
8. Project Superintendent: The on-site construction superintendent shall provide on site supervision to the extent necessary to assure that the improvements are being constructed in conformance with the construction documents and the performance standards of the industry trades. He/she shall inspect all structural framing members, concrete anchors, tie-downs, flashing framing members, roof materials and underlayment for each building. The inspection is to assure that all materials and applications meet the manufacturer's specifications and installation guidelines or A.S.T.M. requirements, whichever is more stringent, and to notify the Architect and Owner in sufficient time to prevent any defective materials from being incorporated into the work.
9. Client's Architect and Project Superintendent to be notified immediately by the Contractor should any question arise or any discrepancies be found pertaining to the working drawings and/or specifications. The Contractor shall be held responsible for any errors, discrepancies, or omissions which the Contractor failed to notify the Architect of before construction or fabrication of the work.
10. The Builder has requested, contracted with, and is compensating Andresen Architecture, Inc. for the limited services of providing the minimum structural engineering drawing required, when combined with the other builders consultants drawings, to obtain a building permit for this project. These drawing are not intended to, nor do they, detail all conditions, identify all materials, or define or limit the scope of work required to complete the project. The builder has requested, accepts, and represents that he/she will select all materials and manufactures, qualify and select all sub-contractors and installers, direct all ways and means of construction, and provide all additional information, above and beyond these drawings, required to complete the project in conformance with all governing agencies and the work will meet or exceed accepted industry standards.
11. Sub-Contractor shall: insure that all work is done in a professional and workmanlike manner by skilled mechanics and shall replace any materials or items damaged by Sub-Contractor's performance and no additional cost to Builder. Sub-Contractors and Suppliers are hereby notified that they are to confer and to cooperate fully with each other during the course of construction to determine the exact extent and overlap of each other's work and to successfully complete the execution of the work. All Sub-Contractors shall be of quality to pass inspections by local authorities, lending institutions, Architect, or Builder. Any one or all of the above mentioned inspectors may inspect workmanship at any time and and corrections needed to enhance the quality of the building will be done immediately . Each Sub-Contractor, unless specifically exempted by his Sub-Contract Agreement, shall be responsible for cleaning up and removing from the job site all trash and debris not left by other Sub-Contractors. Builder will determine how soon after each Sub-Contractor completes each phase of his work that trash and debris will be removed from the site.
12. Drawings and Specifications represent the finished structure. All bracing, temporary supports, shoring, etc. is the sole responsibility of the Contractor. Observation visits to the job site by the Architect do not include inspection of Construction procedures. The Contractor is solely responsible for all construction methods and for safety conditions of the worksite. These visits shall not be construed as continuous and detailed inspections.
13. Intent: It is the intent of the construction documents that all work be performed in a sound manner providing a completed project with all materials, assemblies, and systems correctly installed and performing in a manner consistent with the standards of the industry for this type of project.
14. Construction documents include, but are not limited to, working drawings, specifications, structural calculations, state mandated energy calculations and notes, soil report, geology report, acoustical engineer's report, addendum and change orders, and these general notes unless otherwise noted on plans or specifications.
15. Details: Contractors and Sub-Contractors recognize that the Architect cannot prepare plans and drawings that cover all conceivable construction details or site conditions.
16. Interpretation: Contractor and Sub-Contractor shall inform the Architect of any missing details or corrections which are believed by them to be necesary or appropriate for the proper construction of the project and which would not normally be their responsibility under standard industry practices and techniques.
17. Terminology, abbreviations, and symbols used on the construction documents are those recognized in the construction industry for the purposes indicated by the context in which used. In the event that industry publications do not adequately define any given term, the definitions found in Webster's unabridged dictionary of the American language will govern. Refer uncertainties to Architect before proceeding.
18. Testing & Inspections: Arrange for all testing and inspections required by the construction documents, local building department, health department, and other agencies having jurisdiction over the project.
19. Manufacturer's name: Products specified on the construction documents by manufacturer's name or other designation are a project requirement, unless specifically noted otherwise. Substitutions are permitted only with prior written approval of the Architect and Owner. Selection of products which comply with requirements including applicable standards is Contractor's option where no product names are indicated by the contract documents. Contractor/Sub-Contractor shall bear all responsibility for products which he/she selects and installs.
20. Substitution: No substitutions shall be made without Owner's written authorization. Any substitution shall be made known to Builder and Architect in advance to avoid any delay in the project schedule. The General Contractor and any Sub-Contractors shall not make structural substitutions or changes without prior written authorization from the Structural Engineer and written notification to the Architect.
21. Conflicts: Where construction documents conflict with codes, the more stringent shall apply.
22. Changes: No changes are to be made on these plans without the prior knowledge and consent of the Architect whose signature appears hereon. Approval by city or county inspector does not constitute authority to deviate from plans or specifications.
23. Builder Set: This set of drawings is a "builder set". It is sufficient to obtain a building permit, however, all materials and methods of construction necessary to complete the project are not necessarily described in this "builder set". The implementation of the plans requires a Client/Contractor (General Contractor and Sub-Contractors) thoroughly knowledgeable with the applicable building codes and methods of construction. The plans and general notes delineate and describe only locations, dimensions, types of materials and general methods of assembling or fastening.
24. Structural Analysis for this project is done per applicable Building Code at the time of design considering standard of care.
25. Upon Completion of the above by the Architect and prior to the start of construction, the Contractor is responsible to check all dimensions, coordinate with the work or architectural, mechanical and other trades to ensure compliance with his/her requirements.

Structural Engineering:

1. Refer to the current calculations for any question regarding lumber grades, beam and header sizes, footing and shear requirements.
2. No deviations from structural details shall be made without the written approval of Andresen Architecture, Inc. Approval by the City Inspector does not constitute authority to deviate from plans or specifications. Contractor is to comply with manufacturer's instruction and recommendation to the extent that printed information is more detailed or stringent than requirements contained directly in construction documents.

Division 2
Sitework

1. All footings shall rest on firm natural soil or approved compacted fill. All filling, backfilling, recompaction, etc., is to be accomplished only under the supervision of a Soils Engineer.
2. No Soils Report (Assumed soil bearing value 1,000 PSF).
3. All finish grade to drain away from the building footings.
4. Termite Control: Soil shall be treated as per H.U.D./M.P.S. 602-3.2 for termite control.
5. Utilities: Contractor is responsible for locating all existing utilities whether shown hereon or not and to protect them from damage. The Contractor shall bear all expenses for repair or replacement necessary in the prosecution of this work.
6. Protection: Protect structures, utilities, sidewalks, pavements, and other facilities in areas of work. Barricade open excavations and provide warning lights. Comply with regulations of authorities having jurisdiction.
7. Retaining Walls: Furnish foundation drainage pipe complete with bends, reducers, adapters, couplings, collars, and joint materials per plans.
8. Backfill: Use evenly graded mixture of gravel or crushed stone, and natural sand with 100% passing a 1-1/2" sieve and 0-5% passing a No. 50 sieve for filtering material.
9. Grading: Grade ground surface to conform to required contours and to provide surface drainage minimum 1% away from building for a minimum of 10 feet.
10. Pipe Backfill: Place supporting layer of filtering material over compacted subgrade where drainage pipe is to be laid to a compacted depth of not less than 4" after testing drain lines, place additional filtering material to a 4" depth around sides and top of drains. Lay drain pipe solidly bedded in filtering material. Provide full bearing for each pipe section throughout its length, to true grades and alignment.
11. Test or check lines before backfilling to assure free flow. Remove obstructions, replace damaged components, and retest system until satisfactory.
12. Backfill shall not be placed until supporting foundations, walls, and/or slabs have attained sufficient strength to support lateral soil pressures.

Division 3
Concrete

General:

1. All reinforced concrete materials and construction shall conform to Building Code, Chapter 19.
2. Comply with the following:
   A. ACI 301 "Specification of Structural Concrete Buildings".
   B. ACI 318 "Building Code Requirements for Reinforced Concrete".
3. Mix designs may be adjusted when material characteristics, job conditions, weather, test results or other circumstances warrant. Do not use revised concrete mixes until submitted to and accepted by Architect.
4. Minimum design mix parameters: Use design mix that will provide a stable durable concrete surface free of pocks, spalls and other defects resulting from chemical incompatibility of constituent materials or adjacent conditions. Maximum 7-1/2 gallons of water per sack of cement. Maximum slump 4".

Materials:

1. Cement shall conform to Section 1903.2 of Building Code and shall be Portland Cement conforming to ASTM C-150, Type i or ii, low alkali. Use Type V cement for soil containing a sulfate concentration of 0.2% or more (min. f'c=2,500 psi, 28 days).
2. Aggregates shall conform to Building Code 1903A.2 and shall be natural sand and rock conforming to ASTM C33, except local aggregates of proven suitability may be used when acceptable to Architect.
3. Water shall be drinkable
4. Air-entraining admixture, when required, shall be ASTM C-260.
5. Underslab vapor barrier shall be polyethylene vapor barrier under all house slabs with sand fill above and below (see plans). Install vapor barrier with 12" minimum laps. Do not puncture with stakes or screened pins. Use blocking to support and level screeds and remove all blocking after screeding.
6. Formwork shall be of materials with sufficient stability to withstand pressure of placed concrete without deflection.
7. Special Exposure: Refer to Table 1904A.2.2 of Building Code for special exposure condition as required by soils engineer.

Reinforcing Steel

1. All reinforcing shall be ASTM A-615-40 for #4 bars and smaller. All reinforcing shall be ASTM A-615-60 for #5 bars and larger. Welded wire fabric is to be ASTM-185, lap 1-1/2 spaces, 9" min. for structural slabs, all reinforcing #5 and larger to be ASTM A-615-60. Unless otherwise noted or shown on plans, the minimum clear distance or reinforcement to face of concrete slab shall be:

Slab on grade	2" (center of slab)
Concrete against earth:	
Formed	2"
Without Form	3"
Concrete Exposed to weather.....	1-1/2"

2. All bars shall be deformed as per ASTM A-305.
3. All bars shall be clean of loose flakey rust, grease, or other materials likely to impair bond.
4. All bends shall be made cold for #8 and smaller.
5. Splicing of bars shall have lapping of 30 dia. or 2'-0" min. in all continuous reinforcement of footings and concrete walls, except as noted on plans. Masonry reinforcement shall have lappings of 40 dia. or 2'-0" whichever is greater.
6. All reinforcing bars shall be accurately and securely placed before pouring concrete.
7. Welding and reinforcing steel shall conform to AWS D1.4 using low hydrogen electrodes & A706 rebar.
8. Splices of horizontal rebar in walls and footings shall be staggered 4'-0" min.
9. Dowels for walls and columns shall be the same size and spacing as the wall/column reinforcing unless noted otherwise.

Concrete

1. Drypack shall be composed of one part Portland cement to not more than three parts sand & shall be non-shrink.

Construction

1. All continuous exterior footing shall have 5/8" dia. x min. 12" anchor bolts with 3"x3"x.229" plate washer, min. 7" embedment into concrete, at 48" O/C unless noted otherwise on plans. One anchor bolt should be located max. 12" away from the end of the sill plates. min. (2) A.B.'s per sill plate per shear panel.
2. Sill fastening:
   All Continuous Footings: Embed 5/8" diameter x 12" anchor bolts 7" into concrete. per sec. 2308.6
   Monolithic Pour System: Embed anchor bolts 7" into concrete.
   Two-Pour System: Embed anchor bolts 4" past cold joint into footing. Use 5/8" diameter x 14" long anchor bolts at all sill plate locations.
3x
3. All interior non-shear walls shall have HILTI X-DNI (with a minimum penetration of 1-1/4" into slab) at 24" O/C unless noted otherwise to be installed in accordance with I.C.C. ESR-1663 March 2014. Actual slab thickness to be minimum 4".

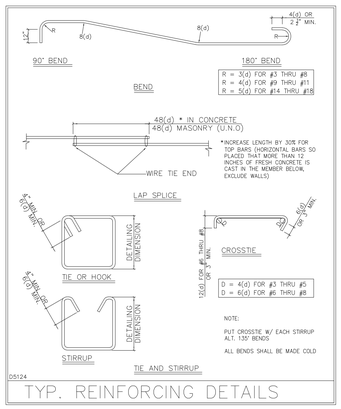
Strength

1. Concrete shall be proportioned to provide a minimum compressive strength, f'c, equal to 3,000 psi (after 28 days), unless noted otherwise per Building Code Sections 1805. All reinforcing, dowels, holdowns and other inserts shall be secured in position and approved by the local building official prior to the pouring of any concrete.

Execution

1. Position, support and secure reinforcement against displacement with metal chairs, runners, bolsters, spacers and hangers, as required. Direct wire ties into concrete, not toward exposed concrete surfaces. Maintain minimum clear distance between soil and reinforcing of 3" at bottom and 2" at sides of excavation.
2. Lap reinforcing bars a minimum of 40 bar diameters.
3. Provide construction, isolation, and control joints as required. Locate joints so as to not impair strength and appearance of structure. Place isolation and control joints in slab-on-grade to minimize random cracking.
4. Use ICC-ES approved shot pins with cadmium washers, 3'-0" O.C. max., 6" from corners and splices in interior bearing walls unless otherwise noted. Use same at 4'-0" max. for interior non-bearing walls. Slab to be thickened to 3 times pin penetration for 8" min. width where shot pins are to be used. Verify required thickness prior to placing concrete.
5. Consolidate placed concrete using mechanical vibrating equipment with hand, rodding, and tamping, so that concrete is worked around reinforcement and other embedded items and into forms.
6. Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placement and curing.
   A. In cold weather comply with ACI 306.
   B. In hot weather comply with ACI 305.

Division 3 (continued)
Concrete



TYP. REINFORCING DETAILS

7. Prior to placing concrete, remove all water, mud, loose earth, and debris from excavations.
8. Foundation (widths and depths) and reinforcing as shown on plans are superseded by any local codes or ordinances which require increases in same.
9. All load-bearing footings shall be on-level, undisturbed soil to depth shown on drawings and shall conform to the Soils Report.
10. Do not place concrete until all reinforcement, conduit, outlet, boxes, anchors, hangers, sleeves, bolts and other embedded materials and items are securely and properly fastened in their proper places and positions. Sub-Contractor shall verify installation of hold-down and anchor bolts, "PA" straps and other anchorage material and items prior to placement of concrete. Holddowns to be installed in accordance with ICC-ES Report #ESR-2604.
11. Pipes may pass through structural steel in sleeves, but shall not be embedded therein. Pipes or ducts exceeding one-third the slab or wall thickness shall not be placed in the structural concrete unless specifically detailed. For residential construction: The Concrete Sub-Contractor shall install a minimum of (1) 3/4" plastic pipe under the driveway, located at the street side of the entry walk, for future sprinkler system (verify with Landscape Sub-Contractor). Concrete Sub-Contractor shall also install plastic conduits in garage stem wall for power, telephone, CATV, and irrigation controller. Plastic pipe shall be provided by the Plumbing Contractor and the conduits by the Electrical Contractor.
12. Refer to architectural drawings and details for reveals, areas of textured concrete or special finishes, items required to be cast into the concrete, curbs, and slab depressions.
13. Finish of slabs shall be trowelled smooth and level around all plumbing pipes, electrical conduit, and miscellaneous iron straps protruding therefrom.
14. Repairs shall be made promptly by the Concrete Sub-Contractor to remove any anchor bolts or any items inadvertently misplaced in or at openings and shall patch any surface damaged by the removal thereof.
15. Blocking shall occur after completion of pouring each slab. Concrete sub-contractor shall remove all form lumber, miscellaneous lumber and cement debris, leaving the job-site clean and graded smooth for other workmen.
16. Trenches for footings shall be cleaned before concrete is poured. An imaginary line from the bottom corner of any footing, extending downward at 45° from the horizontal shall not intersect any excavation for gas, sewer, or drainage purposes.

Foundation

1. All holdowns and post anchors to be installed according to most current Simpson Strong-Tie specifications and requirements of ICC-ES Report #ESR-2604 shall be tied in place prior to foundation inspection.
2. Min. concrete width to be 8" for receiving STHD's. Verify locations of holdowns and anchor bolts with rough framing to assure prior and accurate installation.
3. Provide #3 x 24" dowel at 24 O.C. and 12" from the corner at all concrete stoops and porches.
4. Provide min. (1) #4 earn reinforcing for electrical ground, location to be verified with the electrical contractor.
5. Verify min. foundation depth, width, reinforcing steel and additional expansive soil requirements with valid soils report and if any more stringent they shall supersede the above minimum restrictions.
6. See Division 3, Section "Strength" for concrete strength
7. Admixtures in concrete mixture containing calcium chlorides shall not be used.
8. Footing shall be examined and certified in writing by the project Soil/Geology Engineer prior to inspection and placement of concrete.
9. Concrete shall be of the strength and slump as specified per structural design and consist of Portland cement ASTM C150 Type V per Soils Engineer's recommendations and Building Code Table 1904.2.2 when concrete is exposed to sulfate containing solutions and aggregates per ASTM C33, water to be clean and potable.
10. Placement shall be in one continuous operation unless otherwise specified and slab surface shall be cured with Hunts compound or equal or other methods in accordance with good construction practices at Contractor's option.
11. Contractor shall dampen slab underlayment of sand/membrane just prior to concrete placement to assist uniform curing.
12. The bottoms of footing excavations shall be level, clean, and free of loose material or water when concrete is placed. Over excavation shall be filled with concrete or properly compacted fill that has been tested and approved by the Soils Engineer. Backfill shall not be placed until supporting foundations, walls, and slab have attained sufficient strength to support lateral soil pressure.
13. Floor slab shall be poured level to 1/8" in 10'-0".
14. Requirements for pre-saturation of sub grade soil and daylight setback of footing from any descending slope shall comply with current soils report.
15. Finish grade around the perimeter of slab shall be constructed such that rain and irrigation water is drained away from the slab. All site and pad preparation, such as but not limited to shading compacting of the fill, pre-saturation, and concrete slab base preparation, shall be performed in accordance with the Soils Engineer's recommendation and soil report.
17. Foundations drawings prepared by Andresen Architecture, Inc. reflect the structural requirements, refer to architectural plans for dimensions depressions, slope shelves patios, stoops, and porches not shown. Accuracy of the dimensions and final fit of the building shall be reviewed by the Architect and the Contractor prior to construction.
18. Waiting period for concrete slabs-on-grade prior to start of construction as follow:
    a) Walk on slab 24 hours after concrete has been poured.
    b) Begin wall framing 4-5 days after concrete poured.
    c) Begin roof/floor framing 7-10 days after concrete poured.
    d) Do not load roof prior to 14 days after concrete poured.
19. The Contractor shall arrange for observation of the work by the Soils Engineer. The following are req's of the Soils Engineer:
    a) All footing excavations shall be inspected and certified in compliance with the soils report by the Soils Engineer prior to placing of concrete or steel.
    b) Soil conditions, including compactions and moisture content, shall be inspected and certified in compliance with the soils report by the Soils Engineer prior to placing of concrete or steel.
    c) A certificate of compliance shall be submitted to the Building Official prior to his foundation inspection, and to the Architect and Structural Engineer.
23. Prior to the Contractor requesting a Building Department foundation inspection, the Soil Engineer shall advise the Building Official in writing that:
    a. The building pad was prepared in accordance with the soil report.
    b. The utility trenches have been properly backfilled and compacted.
    c. The foundation excavations, the soils expansive characteristics and bearing capacity conform to the soils report.
24. The Concrete Contractor is to verify location of holdowns and anchor bolts with rough framing to assure proper and accurate installation, with framing contractor.

Division 4
Masonry

General

1. All Concrete masonry materials and construction shall be in accordance with Building Code, Chapter 21.
2. Water used in mix shall be potable.
3. Sand shall meet the requirements for "Aggregate For Masonry Mortar," ASTM C144.
4. Portland Cement shall meet the requirements for "Portland Cement" ASTM C150.
5. Plastic Cement shall comply with the latest adopted edition of the Code.
6. Lime putty shall be made of high calcium lime and aged to ensure complete slacking.
7. Hydrated lime to meet the requirements for "Hydrated Lime For Masonry Purposes" ASTM C207, Type "S".
8. Steel reinforcing to be deformed bars to meet ASTM A615, Grade 40 for sizes #3 and #4 and Grade 60 for sizes #5 and larger.
9. Lightweight concrete precision block to conform to standars for hallow load concrete masonry units and to conform to ASTM C90, Grade "N-1" (tab color).
10. Mortar to conform to Code and to the following:
    1 part Portland cement
    4-1/2 parts dry loose sand
    1/3 to 1/2 lime putty or hydrated lime
    or,
    may be composed of the following:
    1 part plastic cement
    3 parts dry loose sand
    1/10 parts lime
11. Grout shall be 2,500 psi concrete. Solid grout all cells.
12. Ultimate compressive strength of foundation concrete shall be 2,500 psi at 28 days.
13. Brick shall be medium weight (MW) grade in accordance with ASTM C62, with an allowable compressive strength of 2,000 psi.
14. Aggregate shall conform to ASTM C144 (Mortar) and ASTM C404 (Grout).
15. Samples: Masonry Sub-Contractor shall submit samples of veneer to Builder for written approval prior to proceeding with installation.

Materials

1. All materials making up finished concrete masonry construction shall conform to standards required by Building Code Sec. 2103.
2. Lumber: Dimensional lumber shall be of Douglas Fir-Larch of the following product classification in grade indicated.
3. Alignment of vertical cells: Masonry shall be built to preserve the unobstructed vertical continuity of the cells. The vertical alignment shall be sufficient to maintain a clear, unobstructed vertical opening not less than 2" x 3". Lay units clean and dry.
4. Cleanouts: Cleanout opening shall be provided at the bottoms of all cells to be filled at each lift or pour of grout, when such lift or pour of grout is in excess of 4'-0" in height. Cleanouts shall be sealed after inspection and before grouting.
5. Grout solid all cells which contain rebar, bolts, etc. Grout solid all cells below grade. All reinforcements shall have a minimum grout coverage of 3/4". All brick shall have a minimum of 2" grout space.
6. Nonexpansive fill shall be used in backfilling behind walls. All walls shall be adequately shored during the backfill operation.
7. When absolutely necessary for construction purposes to stop off longitudinal runs of masonry, stop off only by racking back one half unit length in each course. Toothing shall not be permitted.
8. Masonry shall comply with 2019 C.B.C.
9. Reinforcing shall be accurately placed, and held in position top and bottom.
10. Masonry veneer: Provide 1" mortar between masonry veneer and "Aqua Lath" as manufactured by Tree Island Steel ICC-ES Report #ESR-2267 or equal.

Strength

1. The specified compressive strength of masonry, f'm, shall be 1500 psi, unless noted otherwise. If higher f'm is noted, it shall be verified by prism tests as required in Building Code, Section 2105.2.1

Concrete Unit Masonry

1. Concrete masonry units for load bearing systems may be brick as specified by ASTM C55. Specifications for Concrete Building Brick.
   Grade N concrete bricks are for use as architectural veneer and facing limits in exterior walls.
   Grade S concrete bricks are for general use where moderate strength and resistance to frost action and moisture penetration is required.
2. Grout: Mix one part Portland cement, 1/10 hydrated lime, not more than 3 parts sand and not more than 2 parts 3/8" maximum size pea gravel by volume, and shall have a minimum compressive strength of 2000 PSI at 28 days of age, aggregates per ASTM C476.
3. Mortar-Mix: Type S ASTM C270 and consisting of one part Portland cement, 1/10 hydrated lime, not more than 3 parts sand, all by volume. Type S mortar shall have a minimum compressive strength of 1800 PSI at 28 days of age. No fire clay permitted in mortar used for structural units. All materials for mortars shall be measured by volume, sand and cement mixed dry, lime added, and then water added to bring to the proper consistency for use. No mortars that have stood for more than one hour shall be used.

Construction (General)

1. Walls shall be straight, plumb, and true, with all courses true to line and level, built to dimensions shown. Cells shall be filled solid with grout as indicated. Blocks shall be laid up with waterproof type S mortar. Clean units before placing. Use masonry saw for cutting.

Special Inspection

For concrete masonry construction which is noted as requiring special inspection per drawings, such inspection shall be carried out in accordance with Building Code, Section 1704. Concrete masonry construction which requires special inspection also is required to have masonry prism testing prior to and during construction as described in Building Code, Section 2105A.3

Division 5
Metals

General:

1. Comply with the following:
   A. AISC "Code of Standard Practice for Steel Buildings and Bridges."
   B. AISC "Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings" including "Commentary."
   C. AWS "Structural Welding Code," comply with applicable provisions except as otherwise indicated.
   D. All structural steel materials and construction shall conform to the req't's specified in Building Code, Ch. 22.

Materials:

1. Structural Steel and miscellaneous iron shall be primed with a rust resistance primer & should conform to ASTM A36 as a minimum, unless otherwise noted. All W shapes to be ASTM A992.
2. Cold-formed steel tubing shall conform to ASTM A500, grade B (Fy=46 ksi).
3. Steel pipes shall conform to ASTM A53, Type E or S, Grade B (Fy=36 ksi).
4. Fasteners such as bolts, nuts, and screws shall conform to ASTM A325N, unless otherwise noted. Provide bolts, nuts, lag bolts, machine screws, wood screws, toggle bolts, masonry anchorage devices, lock washers as required for application indicated. Hot-dip galvanized fasteners for exterior applications to comply with ASTM A153.
5. Holes for bolts should be drilled or punched & shall be 1/16" larger than bolt diameter.
6. Shop paint: SSPC-Paint 13, shop prime structural steel except portions to be embedded in concrete or mortar.
7. Galvanizing shall conform to ASTM A386 for assembly products; ASTM A123 for rolled, pressed and forged steel shaped, plates, bars and strip 1/8" and thicker; galvanizing repair paint: MIL-P-21035 or SSPC-Paint-20 or "Galvaloy" paint.
8. Welding rods shall conform to AWS for intended use.
9. All structural welding procedures and materials shall conform to Building Code, Section 2204.1 All welding shall be by the submerged arc process using E70XX-low hydrogen electrodes, u.n.o.

Execution:

1. Comply with AWS D1.1 code for procedure, appearance, and quality of welds.
2. Set base plates on cleaned bearing surfaces, using wedges or other adjustments as required. Solidly pack open spaces.
3. Fabricate steel pipe railings to dimensions shown, with smooth bends and welded joints using 1-1/2 steel pipe, u.n.o.
4. Touch-up shop paint after installation and welds, bolted connections and abraded areas, and apply same type paint as used in shop. Use galvanizing repair paint on damaged galvanized surfaces.

Welds:

1. All shop welding and fabrication must be done in a shop certified by AISC Quality Certification Program and approved by the Building Official. All field welding must be performed by a certified welder and a special inspector shall continuously inspect all structural field welding. Both shall be approved by the Building Official.
2. Weld corners and seam continuously, grind exposed welds smooth and flush. Weld cap on exposed ends of pipes and tubes.

Division 6
Wood

ROUGH CARPENTRY
General:

1. All reference specifications are the latest edition adopted or approved by the enacting authority.
   A. CBC Chapter 23.
   B. NDS "National Design Specifications for Wood Construction"
   C. PS 20 "Softwood Lumber Standards."
   D. WWPA "Standard Grading Rules for Western Lumber"
   E. RIS "Standard Specification for Grades of California Redwood Lumber"
2. Manufactured lumber, S4S and grade stamped, to comply with PS20 and applicable framing rules of inspection agencies certified by ALSC's board of review.
3. Moisture Content: Provide seasoned lumber with 19% or less moisture content at time of dressing and shipment (for sizes 6" or greater in thickness).
4. Refer to structural calculations for any questions regarding lumber grades, beams, and header sizes.
5. Construction materials shall be spread out if placed on framed floors or roof. Load shall not exceed the design live load per square foot. Provide adequate shoring and/or bracing where structure has not attained design strength.

Materials:

1. Framing:
   A. Light-framing and Studs: (2"-4" thick, 2"-6" wide): Stud or standard grade
   B. Joists and Rafters: (2"-4" thick, 5" and wider): No. 1 grade or better.
   C. Posts, Beams, Headers, and Timbers: (4" and thicker): No. 1 Grade, free of heart center.
   D. Redwood Foundation Grade: all heart u.n.o. (if lumber species other than Douglas Fir-Larch is to be used, Contractor shall request in writing, approval from Architect and Structural Engineer prior to construction).
   E. Top Plates: All top plates to be Hem-Fir or Doug-Fir, standard grade or better.
   F. Resawn: All exterior fascias, trims, posts and beams shall be re-sawn lumber.
2. Wood Panels:
   A. Particleboard underlayment: ANSI A208.1, Grade 1-M-1 in thickness indicated.
   B. Wall Sheathing: American Plywood Association approved Oriented Strand Board (O.S.B.) Waferboard (Grade 2-M-W) may be used instead of Structural 11 plywood as indicated on shear panel schedule.
3. Typical Floor Sheathing:
   A. 23/32" APA rated Sturd-1-Floor T&G EXP 1 with min. a panel
      index of 32/16".
   B. Refer to NER 108 for installation and conditions of use
      B.N.: 10d common nails at 6" O.C.
      E.N.: 10d common nails at 6" O.C.
      F.N.: 10d common nails at 12" O.C
   C. Use ring or screw shank nails and glue sheathing to framing using adhesives meeting APA specification AFG-01 or ASTM D3498.
   D. Apply glue in accordance with manufacturer's recommendations.
   E. Use Grabber plywood screw min. 2" long at 6" O.C. B.N., 6" O.C. E.N., and 12" O.C. field nailing (ICC-ES Report #ESR-1271, Dated January 1, 2002, ANSI, ASME B 18.6.1)
4. Typical Roof Sheathing
   A. 15/32" APA rated sheathing Exp 1 with a min. panel index of 24/0. refer to NER 108 for installation and condition of use.
      B.N.: 8d common nails at 6" O.C.
      E.N.: 8d common nails at 6" O.C.
      F.N.: 8d common nails at 12" O.C.
      *Note: All structural rated panel must be stamped by one of the following agencies: APA, PFS/TECO, or Pittsburg.
5. Metal hangers and framing anchors of size and type recommended for intended use by manufacturer. Hot-dip galvanize fasteners and anchorages for work exposed to weather, in ground contact and high relative humidity.
6. Preservative pressure-treated products:
   A. Preservatives: Lumber and plywood with water-borne preservatives to comply with AWPA C2 and C9 respectively, and 2019 CBC SEC. 2303.1.8
   B. Above Ground: Wood for above-ground use: AWPB LP-2.
   C. Roofing: Treat cants, nailers, blocking, stripping, and similar items in conjunction with roofing, flashing, vapor barriers, and waterproofing, or use Redwood.
   D. Concrete Contact: Treat sills. sleepers, blocking, furring, stripping and similar items in direct contact with masonry or concrete, or use Redwood.
   E. Sill Caulking: Apply a bead of mastic caulking under sill plates of all exterior walls at interior bottom of sill plate.

Shop Drawings

1. Sufficient copies of shop drawings for any member or product designed by an entity other than Andresen Architecture, Inc. shall be submitted to Andresen Architecture, Inc. prior to fabrication for review, to be reviewed and returned in 3 to 5 working days.
2. Review of shop drawings by Andresen Architecture, Inc. does not relieve the Engineer responsible for the design or the Contractor from compliance with Building Code.
3. Andresen Architecture, Inc. review of the shop drawing consists of checking general conformance with structural drawings. Design accuracy of such product, dimensions, and quantity of the project is not reviewed by Andresen Architecture, Inc.
4. Trusses shall be designed in accordance with the latest local Building Code for all loads imposed, including lateral loads and mechanical equipment loads.
5. Wood truss manufacturer shall supply to the Architect and the building department calculations and shop drawings for approval of design loads, configuration (2 or 3 point bearing), and shear transfer, prior to fabrication. It shall be the responsibility of the manufacturer to obtain building department approval of calculations and shop drawings prior to fabrication.
6. Trusses shall be designed in accordance with the latest local Building Code for all loads imposed, including lateral loads and mech. equipment loads.
7. All connections involving trusses shall be ICC-ES approved and of adequate strength to resist stresses due to the loadings involved and shall be designed and specified by the truss manufacturer.
8. Dead load and live load deflections shall be limited to min. L/240, live load deflection min. L/360.
9. Cross bridging and/or bracing shall be provided and detailed by truss manufacturer as required to adequately brace all trusses.
10. Truss manufacturer to provide details which allow for normal deflection without imposing lateral loads on their supports (i.e., scissors trusses).
11. Truss manufacturer is responsible for providing additional shear and drag trusses as shown on the framing plan.
12. Truss manufacturer is responsible for reviewing framing plans and structural details prior to fabrication of trusses and specifying hangers.
13. All trusses designed by truss manufacturer shall be design to sustain all vertical, lateral, and other pertinent loads, including bracing of top and bottom chords, in addition to any connections related to trusses. Contractor is to coordinate with truss manufacturer.
14. The truss manufacturer is responsible to meet the profile as indicated in the drawings.
15. All truss lumber shall be Douglas Fir-Larch (u.n.o.).
16. Each truss shall be legibly branded, marked, or otherwise have permanently affixed thereto the following information located within 2'-0" of the center of span on the face of the bottom chord:
    a. Identity of the company manufacturing the truss
    b. The design load.
    c. The spacing of the trusses.

Execution

1. Bracing: All members shall be framed, anchored, tied and braced so as to develop the strength and rigidity necessary for the purposes for which they are used. Framing Sub-Contractor shall adequately brace floor joists to prevent sagging where materials are stockpiled prior to erection.
2. Let-in bracing: Provide 1 x 6 diagonal (at approx. 45 degrees) every 25'-0" maximum in stud walls not sheathed. Bracing shall run continuous from sill plate to top plate. Nail with two 8d per stud and three 8d each end to plates.
3. All metal connectors shall be "Simpson Strong-Tie Connectors" or ICC-ES approved equivalent in structural design and load values. The nails for these connectors shall be joist hanger nails as manufactured by the Simpson Company (or equal).
4. Top plates of all stud walls shall be two pieces the same size as studs. Splices to lap 4'-0" minimum and be nailed with 16 - 16d nails minimum.
5. Bolting: Bolt holes in wood shall be 1/32" to 1/16" larger than the nominal bolt diameter. All bolts shall have standard cut washer under head and nut unless otherwise noted. All bolts shall be retightened prior to application of sheathing, gypsum board, plaster, etc.
6. Structural members shall not be cut for pipes, etc. unless specifically detailed.
7. Predrill for nailing when nail spacing results in the wood splitting.

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17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

LICENSED ARCHITECT DOUGLAS ANDRESEN No. C 18504 Reg. 12-31-21 STATE OF CALIFORNIA

General Notes

N-1

Division 6 (continued)

Wood

8. Beams and girders
   A. Bearing on masonry: The ends of beams or girders supported on masonry or concrete shall have not less than 3" of bearing.
   B. Bearing on wood: All beams or girders supported on wood shall have full bearing and bearing shall be comprised of one (1) solid post (or multi-stud) constructed in an approved manner unless otherwise specified on plans.
   C. Bracing: Provide 2 x 4 temporary bracing to all beams projecting 3'-0" beyond building line to prevent warpage.
9. Roof and Ceiling Framing
   A. Framing Rafters shall be framed directly opposite each other at the ridge. There shall be a ridge board at least 2" nominal thickness at all ridges and not less in depth than the cut end of the rafter. At all valleys or hips there shall be a single valley or hip rafter not less than 2" nominal thickness and not less than the cut end of the rafters.
   B. Rafters shall be nailed to an adjacent ceiling joist to form a continuous tie between exterior walls when such joists are parallel to the rafters. Where not parallel, rafters shall be tied to 2" by 4" (nominal) minimum size cross ties. Rafters ties shall be spaced not more than 4' on center.
   C. Purlins to support roof loads may be installed to reduce the span of rafters within allowable limits and shall be supported by struts to bearing walls. The maximum span of a 2" by 8" purlin shall be 8'. In no case shall a purlin be smaller than the supported rafter. The unbraced length of the 2 x 4 struts shall not exceed 8' (10"-0" for 2 x 6 struts) and the minimum slope of the struts shall not be less than 45 degrees above the horizontal.
   D. Blocking: Rafters more than 8" in depth shall be supported laterally at the ends and at each support by solid blocking not less than 2" in thickness and the full depth of the rafter unless nailed to a header, band or rim joist or to an adjoining stud and as required by Code. Provide 2x solid blocking at 10'-0" intervals for all rafters more than 8" deep.
   E. Fascia and Barge Boards shall be resawn materials, free of splinters and shall have a texture not so rough so as to be injurious or irritating to the skin if located where it can be touched under normal living conditions. If there are any questions regarding the acceptability of any material, contact the Project Superintendent.
   F. California Framing to be 2 x 6 Douglas Fir #2 or better rafters at 24" o.c., with a maximum span of 10'-0" typical.
10. Standards: For sheathing, underlayment and other products not covered in above standards, comply with recommendations of manufacturer of product involved for use intended.
11. Bearing: Cut, shape, cope, plumb, level and turn all framing members to provide full bearing.
12. Protection from deterioration:
   A. Separation: Where wood is nearer than 8" to earth, use treated or natural decay resistant wood unless separated by a 3" concrete slab with an impervious membrane between earth and concrete.
   B. Embedded: Wood shall not be embedded in the ground or in direct contact with the earth and used for the support of permanent structures.
   C. Sills: All foundation plates, sills and sleepers on a concrete or masonry slab, which is in direct contact with earth shall be treated wood of the same species and should be marked or branded by an approved agency. As an alternate, use a layer of 22 gauge sheet metal between the sill and concrete/masonry.
   D. Exposed: Columns and posts located on concrete floors or decks exposed to weather or to water splash and which support permanent structures shall be supported by metal pedestals projecting at least 6" above exposed earth and at least 1" above such floors.
13. Provide Fire-Stopping to cut off all concealed draft openings (both vertical and horizontal) and to form an effective barrier in specific locations, as follows:
   A. Walls At Floor/Ceilings: In exterior or interior stud walls, at ceilings and floor levels.
   B. Stud spaces: In all stud walls and partitions, including furred spaces, so placed that the maximum dimensions of any concealed space is not over 10'-0".
   C. Stringers: Between stair stringers at top & bottom, between studs in line with run of stair if wall below stair is unfinished.
   D. Pocket Doors: Around top, bottom, sides and ends of sliding door pockets.
   E. Vents: In openings around vents, ducts, chimneys, fireplaces and similar openings with non-combustible fire stop material only. A metal collar tightly fitted to the chimney and nailed to the wood framing may be used.
   F. Other: Any other locations not specifically mentioned above, such as holes for pipes, shafting, behind furring strips and similar places which could afford a passage for flames.
   G. Thickness: Firestops of wood shall be 2" nominal thickness. If the width of the opening is such that more than one piece of lumber is necessary, there shall be 2 thickness of 1" nominal material with joints broken or one thickness of 3/4" Plywood.
   H. Gypsum Board: Firestops may also be of Gypsum wall board.
14. Openings in floor or roof structures: Where header span exceeds 4-feet, double header and trimmer members and support with metal hangers.
15. Notching and drilling of joists, rafters, and studs are permitted as detailed in standard details.
16. Vertical Assemblies
   A. Provide 2 x 4 studs at 16" O.C. for bearing and exterior walls on the top two stories and either 2 x 6 or 3 x 4 studs at 16" O.C. for bearing and exterior walls on floor below the top two stories.
   B. Cutting, notching, and boring of studs is permitted in accordance with #15 above. Minimum distance between hole and edge of stud 5/8".
   C. Place studs with wide dimension perpendicular to wall. Frame corners with 3 studs or where walls intersect back up cleats may be used when adequate backing is provided for finish material. Minimum stud length for foundation wall is 14", provide solid blocking where this length does not occur. Where foundation cripple wall exceeds 4" high frame as required for additional story.
   D. At all walls provide double top plates lap corners and stagger splices minimum 4'-0". At all walls, provide single bottom plate except where lightweight concrete floor fill is used . Provide double bottom plated where plates are cut or bored to pass other work. Provide 1/8" x 1-1/2" metal strap each side with 4-16d nails. All plates size 2x stud width min.
   E. Brace all exterior walls and main cross walls at or near ends and at max. 25'-0" intervals by an approved method. Brace cripple walls as required for full height walls. Framer is responsible for installing temporary bracing to adequately support framing during construction. This bracing is to remain in place until structural integrity has been achieved.
   F. Cripple walls shall be framed of studs not less in size than the studding above with a min. length of 24" or shall be framed of solid blocking. When exceeding 4'-0" in height, such walls shall be framed of studs having the size req'd for an add'l story.
   G. Stud partitions containing plumbing, heating, or other pipes shall be so framed and the joists underneath it so spaced as to give proper clearance for the piping.
   H. Blocking (2 x 6 min) to be provided at all handrails and at all bath accessories.
   I. Timber: Douglas Fir-Larch 19% moisture content
   J. Lumber shall be free of heart center.
   K. Bridging: All stud partitions or walls with studs having a height-to-a-least-thickness ratio exceeding 50 shall have blocking not less than 2" in thickness and of the same width as the studs fitted snugly and nailed to provide adequate lateral support.
   L. Window sills 8'-0" in length or longer shall be doubled. All windows shall have a gypsum board stool u.n.o.
17. Connections
   A. Post/Beam: Provide positive connection between posts and beams to prevent up lift or lateral displacement and at beam splices to prevent separation.
   B. Nails may be common, box or vinyl coated sinkers unless specifically noted otherwise or required otherwise by the governing codes. Where necessary to prevent splitting, predrill pilot holes smaller than nail; provide maximum nailing per CBC 2304.9.1.
18. Attic Ventilation:
   Enclosed attics and enclosed rafter spaces shall have cross-ventilation for each separate space by ventilating openings protected against entrance of rain. The net free ventilating area shall not be less than 1/150 of the area of the space ventilated. The openings shall be covered with corrosion resistant metal mesh openings of 1/4" in dimension. Do not block vents with insulation.
19. Framing
   A. Stud walls perpendicular to a concrete or masonry wall shall be bolted to the concrete or masonry wall with 5/8" diameter x 8" A307 bolts at top, mid-height and bottom.
   B. Structural information shown on framing plans is for the main structural elements. Non-structural elements shall be constructed per approved code requirements.
   C. Weight of the roof tile is considered as 10 psf max. (total roof dead load of 20 psf). If roofing material exceeds this load, the Framing Contractor should notify Andresen Architecture, Inc. in writing prior to construction.
   D. All shear panels shall have continuous sheathing material from one end to the other and from plate to plate as specified on the drawings. Contractor shall coordinate framing such that continuity of shear panels is assured.
   E. All ledgers shall be spliced with ST22 strap, u.n.o.

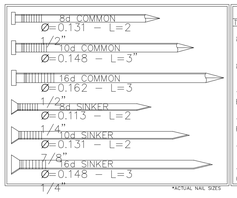
Division 6 (continued)

Wood

   F. All shear transfer nailing shall be per drawings. Contractor shall provide proper notification for inspections to review the same.
   G. Provide posts at lower floor under posts or multiple studs above. Provide full width and depth compression block between floors at such locations.
   H. All joist hangers shall be Simpson U hanger, all beam hangers shall be Simpson HU hangers u.n.o. on plan or detail. Follow manufacturer's recommendations for installation.
   I. If a double sill plate is used at light-weight concrete flooring, then the framing contractor shall apply sill plate nailing to both sill plates, at 16" O.C. max. or as specified per schedule.
   J. Building Code 2308.9.1 balloon framed walls (non-bearing) stud heights:
      2x4's @ 16" O.C. maximum 14'-0" height
      2x6's @ 16" O.C. maximum 20'-0"height
      No multiples of 2x4's are allowed to span more than 14'-0" bearing walls, exceeding 10'-0" must be designed case by case.
   K. Use 4x4 header for openings less than 16" at bearing walls without point loads, or at openings less than 4'-0" at non-bearing walls. Use 2x framing @ medicine cabinet and garage vent (u.n.o.).
20. Ceiling Joists
   Use this span table for ceiling joists given the following conditions, unless noted otherwise on plan.
   a. dead load = 6.0 psf
   b. live load = 10.0 psf
   c. total deflection = L/240
   d. with ceiling drywall
   e. use #2 Douglas Fir Larch

SIZE	SPACING	MAX. SPAN
2x4	12"	10'-6"
	16"	9'-7"
	24"	8'-4"
2x6	12"	16'-7"
	16"	15'-1"
	24"	13'-2"
2x8	12"	21'-11"
	16"	19'-11"
	24"	17'-4"

21. Minimum Quality
   E. All machine bolts shall conform to ASTM A307. Holes for bolts should be drilled 1/16" larger than bolt dia.
   F. Square washers shall be mild steel. Use min. 2" sq. x 3/16" thick washers for bolts with 5/8" dia., use 3-1/2" sq. x 3/8" thick washers for bolts with 1" dia.
   G. Adhesive used to attach floor sheathing to framing elements shall conform with APA specification AFG-01.
   H. Manufactured hardware specified on the drawings are to be Simpson Strong Tie (unless specifically authorized in writing by Andresen Architecture, Inc.). Follow all manufacturer's requirements & recommendations for installation & handling of the product.
   I. Do not bend the Simpson PA straps.
   J. Sheet rock on framing:
      Stacked sheet rock loading shall be limited to the following quantities in any one room:
      5/8": 16 individual 4x10 sheets (8 pairs of sheets)
      1/2": 20 individual 4x10 sheets (10 pairs of sheets)
      The shoring of the 2nd floor is required if the number of sheet rock exceeds the quantities listed above.
   K. Fasteners specified on the drawings may be colored using manufacturer's brands that utilize the Trackers color coded system. Follow all manufacturer's requirements and recommendations for installation and handling of the products.



*ACTUAL NAIL SIZES

COLOR CHART FOR STRUCTURAL NAILS		
TYPE OF FASTENER	SIZE & DIAMETER	COLORS
8d Cooler	2 3/8 X .113	YELLOW
8d Common	2 1/2 X .131	BLUE
16d Short BLACK	3 1/4 X .131	
10d Common PURPLE	2 1/8-3X.148	
12d Common (16d Sinker)	3 1/4 X .148	GREEN
16d Common ORANGE	2 1/2x .162 3 1/2	

STRUCTURAL GLUE-LAMINATED UNITS
General:
1. All fabrication and workmanship shall conform to the current edition of the Standard Specifications for Structural Glued Laminated Douglas Fir. (Coast Region) Lumber by the West Coast Lumbermen's Association and the current edition of Timber Construction.
2. All glued-laminated members shall be Douglas Fir Larch, with 1-1/2" outer and core laminations, combination 24F with waterproof resorcinol or phenol resorcinal glue conforming to Federal Specification MIL-A-397-B. Use Combination 24F-V4 or 24F-V5 for simply supported beams, and Combination 24F-V8 or 24F-V10 for cantilevered beams.
3. Comply with ANSI/AITC A190.1 "Structural guide laminated timber."
4. Provide factory-glued structural units, produced by AITC-licensed firm, qualified to apply the AITC "Quality inspected" mark.
5. Factory mark each piece of glued-laminated structural units with AITC quality inspected mark.
6. Design: Where portions of final design for glued-laminated timber members are indicated as manufacturer's responsibility (any element of design consideration), comply with applicable provisions of AITC 117- "Designing, Standard specifications for structural glued-laminated timber of softwood species."
7. A certificate of inspection for each Glu-lam beam from an approved Testing Agency shall be submitted to, and approved by the local Building Department and the Architect.

Materials:
1. Provide glued-laminated timber members sized as shown on drawings that meet or exceed the following stress values for normal loading duration and condition of use:
   Bending (Fb), 2400 psi.
   Horizontal shear (Fv), 165 psi.
   Compression perpendicular to grain (Fc-Tension Face), 560 psi.
   Compression perpendicular to grain (Fc-Compression Face), 560 psi.
   Modules of elasticity (E), 1,800,000 psi.
   Tension parallel to grain (Ft-Axially loaded), 1150 psi.
   Compression parallel to grain (Fc-Axially loaded), 1650 psi.
2. ASTM D 2559 "Wet-use" adhesive, unless otherwise indicated.
3. Use manufacturer's standard transparent, colorless wood sealer, effective in retarding transmission of moisture at cross grain cuts.
4. Use manufacturer's standard translucent penetrating wood sealer, which will not interfere with application of wood stain and transparent finish, or paint finish as indicated.
5. Moisture content of the lumber at the time of gluing shall not be more than 16% with a maximum variation of 5% in any board.

Execution
1. Required camber for fabrication of each member is shown on drawings, and may be either circular or parabolic, at manufacturer's option. If not shown, use standard camber per manufacturer.
2. Immediately after end-cutting each member to final length, and after wood treatment, if any, apply a saturation coat of end sealer to ends and other cross-cut surfaces, keeping surfaces "flood coated" for not less than 10 minutes. Beams shall be load wrapped for protection during shipping.
3. After fabrication and sanding of each unit, and end coat sealing, apply a heavy saturation coat of penetration sealer on surfaces of each unit, except for treated wood where treatment has included a water repellent.
4. Finish of the members shall be industrial appearance grade (unless otherwise noted) in conformance with Standard Appearance Grades of the A.I.T.C.

Division 7

Thermal & Moisture Protection

ATTIC ACCESS
1. Provide attic access with insulation where indicated on plans.

EXTERIOR WALL COVERINGS
1. Weather-Resistive Barrier provide one (1) layer of 60 pound asphalt saturated felt minimum under all exterior finishes.
2. Shear Walls and Horizontal Applications require a minimum of two (2) layers of grade "D" building paper.

Materials
1. All exterior materials shall conform to the requirements of the Uniform Building Code, applicable edition, and all State and Local codes.

ROOFING AND MEMBRANES
1. Scope: Furnish and install roofing and waterproofing work complete, including cant strips and incorporating other trades flashing, sleeves and jacks.
2. Installation: Install roofing and wall corrosion resistant metal flashing per manufacturer's recommendations including the use of fasteners and anchoring devices for high wind areas, and per C.B.C. Chapter 1503, carefully incorporating flashing, scuppers, jacks, sleeves, roof drains, skylights, etc. supplied by others.
3. Inspection: Owner shall provide a waterproofing specialist to review built-up roofing, waterproof decking, foundation wall waterproofing , and flashing details and provide continuous inspection during field installation of all waterproof and flashing surfaces and materials to insure adherence to manufacturer's specifications and the highest standards of construction practice.

Special Conditions
1. Provide cant strips at all vertical surfaces.
2. Provide crickets as indicated, and as necessary, for proper water drainage and to redirect channeled or runoff water away from vertical surfaces.

Materials: Refer to plans for type and manufacturer of roofing.

BUILT-UP ROOFING
General:
1. Plywood Deck: This specification is applicable to built-up roofing systems applied directly to plywood substrates. Should any other substrate be encountered submit a written list of required modifications recommended by standard reference specifications to the Architect for approval.
2. Standard reference specifications:
   A. NRCA: "Roofing & Waterproofing Manual".
   B. Published specifications, recommendations and instructions by manufacturer of products used.
   C. CBC Chapter 15.
3. Coordinate with other trades to insure proper sequencing of each installation.
4. Manufacturer's guarantee/warranty: MFR's Standard 10-year guarantee.
5. Roofing warranty: Provide "Roofing Contractor's" standard 2-year roofing guarantee; NRCA Form 1970A or equivalent form.
6. Testing Lab: Each package of felts, cements, and base-, ply-, combination or cap sheets shall bear the label of an approved testing laboratory having a service for the inspection of materials and finished products during manufacture for such built-up roofing material.
7. Roof Deck: Built-up roofing shall be applied to solid roof sheathings as specified in Division 6 of these general notes.

Materials:
1. Provide materials complying with governing regulations and NRCA roofing and waterproofing manual specifications #31, NADA diagram A, as follows:
   A. Sheathing paper: single ply 5 lb. rosin sized sheathing paper.
   B. Base plies: 2 plies #15 perforated asphalt-saturated organic felt complying with ASTM D-226.
   C. Ply felts: 3 plies #15 perforated asphalt-saturated organic felt complying with ASTM D-226.
   or
   A. Base plies: 3 plies #15 asphalt impregnated glass fiber mat or complying with ASTM D-2178, Type IV.
   B. Interply: bituminos roofing asphalt complying with ASTM D-312, Type II.

Execution:
1. Weather: Proceed with roofing work only when existing and forecasted weather conditions will permit work to be performed in accordance with recommendations.
2. Substrate Corrections: Examine substrate surfaces to receive built-up roofing systems and associated work; and conditions under which roofing will be installed. Do not proceed with roofing until unsatisfactory conditions have been corrected in a manner acceptable to installer.
3. Substrate Surface: Verify that substrate is securely fastened with no projecting fasteners and no adjacent units in excess of 1/16" out of plane.
4. Protection: Protect other work from spillage of built-up roofing materials.
5. Heat and apply bitumen in accordance with equiciscos temperature (EVT) method as recommended by NRCA.
6. Base sheets shall be nailed, using not less than one nailer each 1-1/3 square feet with nails of the type required by the manufacturer for the type of deck. Successive layers shall be cemented to the base sheets using 20 pounds of hot asphalt for solid mopping (10 pounds for spot or strip-mopping), or not less than two gallons of cold bituminous compound in accordance with manufacturer's published specifications, or 30 pounds of hot coal tar pitch per roofing square.
7. Minimum Weight: Mineral aggregate surfaced roofs shall be surfaced with not less than 60 pounds of hot asphalt or other cementing material in which is embedded not less than 400 pounds of gravel or other approved surfacing materials or other 350 pounds of crushed slag per roofing square.
8. Cap sheets shall be cemented to the base sheets using no less cementing material than that specified for solidly cemented base sheets.
9. Tape joints of substrate to prevent penetration by roofing materials.
10. Shingle multiple plies of roofing unless otherwise required by felt manufacturer's instructions.
11. On sloping substrates (sloping more than 3/8" for coaltar bitumen, 3/4" for asphalt with asbestos felts, or 1" for asphalt with other felts) comply with NRCA "roofing manual" for nailing plies of B.U.R. to substrate or to nailers in the substrate and comply with composition roofing manufacturer's instructions for nailing composition roofing.
12. Nail edges of roofing where possible (without causing leaks), and nail composition flashing to vertical surfaces at edges and penetrations of roofing.

INSULATION:
General:
1. Certificate: After installing insulation, the Installer shall post in a conspicuous location in the building a certificate signed by the Installer that the installation conforms with the requirements of Title 24, Part 6, and that the materials installed conform with the requirements of Title 20, Chapter 2. The certificate shall state the Manufacturer's name and material identification, the installed R-value, and weight per square foot.

Materials:
1. Mineral fiber blanket/batt insulation of inorganic non-asbestos fibers formed into resilient batts. Semi-rigid type where required for self support.

Execution:
1. Provide insulation at all exterior walls, walls between living space and unheated garage or storage room, between jambs and framing, ceilings with cold areas above, attic access panel, knee walls adjacent to heated space, between combination rafter and ceiling joist (leave open space above for ventilation) to receive (batt) insulation.
2. Walls to be minimum of R-13 unless otherwise noted.
3. Ceilings to be minimum of R-30 unless otherwise noted.
4. Floors Over Unconditioned: to be minimum of R-19 unless otherwise noted.
5. See Energy Compliance Sheet for California Energy Title 24 Requirements.
6. Infiltration: the following openings in the building envelope must be caulked, sealed, or weather stripped.
   A. Exterior joints around window and door frames, between wall panels, wall and sill plates.
   B. Openings for plumbing, electrical and gas lines in exterior and interior walls, ceilings, and floors.
   C. Openings in attic floor (such as where ceiling panels meet interior and exterior walls, and masonry fireplaces)
   D. All other such openings in building envelope. (No gaps or voids will be accepted).
7. Alternative approved techniques may be used to meet the standard caulking req'ts for exterior walls, including but not limited to, continuous stucco, building wraps, or rigid wall insulation.

Balcony and Deck Coating:
1. Elastomeric or membrane deck coatings shall be installed per manufacturer's specifications. Color and finish and detailing to be approved byAarchitect and/or Owner.

Division 7 (continued)

Thermal & Moisture Protection

Exterior Decks:
1. Decks, balconies, landings, exterior stairways and similar surfaces exposed to the weather and sealed underneath shall be waterproofed.
2. All exterior decks and balconies exposed to weather shall be constructed with sufficient slope (minimum 1/4 inch per foot) to ensure adequate drainage.
3. Unless designed to drain over deck edges, drains and overflows of adequate size shall be installed at the low points of the deck.
4. Provide minimum 2 inch drop from finished interior floor to the highest floor level on any adjoining deck or balcony.

JOINT SEALERS
General:
1. Compatibility: Provide materials selected for compatibility with each other and with substrates in each joint system; confirm with manufacturer.
2. General characteristics: Provide type, grade, class, hardness and similar characteristics or material to comply with manufacturer's recommendations relative to exposures, traffic, weather conditions and other factors of the joint system for best possible overall performance. Joint sealers are required to permanently maintain airtight and waterproof seals, without failures in joint movement accommodation, cohesion, adhesion (where applicable), migrations, staining and other performances as specified.

Execution:
1. Weather conditions: Install exterior elastomeric sealants when temperature is in lower third of temperature range recommended by manufacturer for installation.
2. Clean joint surfaces and prime or seal as recommended by sealant manufacturer.
3. Support sealants from back with construction as shown or with joint filler or back rod.
4. Install liquid sealants by proven methods which will ensure "wetting" of joint bond surfaces, without gaps or air pockets in beads, slightly concave on surface and slightly below adjoining surfaces, except form slight cove with sealant at inverted corner joints.

FLASHING AND SHEET METAL
General:
1. General reference specifications:
   A. Comply with "Architectural Sheet Metal Manual" by SMACNA for each general category for work required.
   B. NRCA" "Roofing and Waterproofing Manual".
   C. CBC Chapter 15.
   D. Published installation instructions by manufacturer of roofing material used.
2. Coordinate with other trades to ensure proper sequencing of each installation.

Materials:
1. Zinc-coated steel: commercial quality, .20% copper, ASTM A-653, G 90 hot-dip galvanized, min. 26 gage.
2. Aluminum: ASTM B-209, Alloy 3003, temper H 14, anodized or bakes enameled to match adjacent aluminum products min. 0.032" thick.
3. Solder: for steel 50, 50 tin/lead solder (ASTM B 32), with rosin flux.
4. Epoxy seam sealer: 2-part non-corrosive metal seam cementing compound for non-moving joints.
5. Fasteners: compatible with metals being fastened.
6. Bituminous coatings: (for use as a dielectric separation): FS TP0494 or SSPC-paint 12, solvent type. Nominally free of sulfur, compound for 15 mil dry thickness per coat.
7. Roofing cement: ASTM D-2822 asphalt.

Execution:
1. Seams: Fabricate sheet metal with flat-lock seams: solder with type solder and flux recommended by manufacturer, except seal aluminum seams with epoxy metal seam cement and where required for strength rivet seams and joints.
2. Shop fabricate to greatest extent possible in accordance with applicable reference standards to provide a permanently waterproof weather resistant installation provide for separation of non-compatible materials from each other.
3. Anchor units securely in place using concealed fasteners where possible in a manner that will be true to line plumb and level where indicated with a minimum of joints.
4. Seal Laps: Set flanges in full bed of roofing cement.
5. Expansion: Provide for thermal expansion of running sheet metal work.
6. Roof/Wall: Flash and counter flass at all roof to wall conditions. G.I. flash and caulk wood beams and outlookers projecting through exterior walls or roof surfaces.
7. Roof valley flashing shall be provided of not less than No. 26 galvanized sheet gauge corrosion-resistant metal and shall extend at least 11" from the center line each way and shall have a splash diverter rib not less than 1" high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4" set in a bed of continuous roofing mastic.
8. Seal moving joints in metal work with elastomeric sealants.
9. Exterior openings exposed to the weather shall be flashed in such a manner as to make them waterproof. Flashing and counterflashing shall be provided at the junction of roof and vertical surfaces (walls, etc.)
10. Wood beams and Outlookers projecting through exterior walls and roof surfaces shall be flashed with galvanized iron flashing and caulked.
11. Wood Trim Exposed to Weather shall be flashed where butting to exterior finish.

Workmanship
1. Work shall be accurately fabricated to match detail and fitted to job conditions.
2. Molded and brake-formed members shall be finished true and straight with sharp lines and angles.
3. Lock seams flat and true to line, 1/2 inch wide, sweated full with solder where overlapping does not provide water tight connections.
4. Sheet metal work shall be designed to provide complete weather tight and waterproof connections.
5. All galvanized metal shall be shop primed with one coat of zinc dust-zinc oxide primer over all surfaces and as recommended by metal specialist.
6. Sheet metal used as flashing adjacent to wood surfaces shall be set in high quality sealant to ensure waterproofing between such materials.

SKYLIGHTS
1. Skylights are to be constructed and installed as per manufacturer's specifications and Section 2610 of CBC

Division 8

Doors and Windows

DOORS
General:
1. Standards: Comply with requirements of ANSI/NWMA I.S. 1 and Section 1300 of AWI "Architectural Woodwork Quality Standards".
2. Wood door standards: the requirements of NWMA I.S. 3-70 apply to the work.
3. Aluminum door standards: requirements of ANSI/AAMA 402.9 and SMA 2005 apply to work.

Materials:
1. Fire-rated doors to be labeled and listed with rating required by a testing inspection agency acceptable to authority.
2. Door classification: provide aluminum sliding glass doors of type SGD-BL (residential).

Execution:
1. Install doors to comply with manufacturer's instructions.
2. Maintain design concept as indicated (door sizes, member sizes, basic profiles, and operating units), modify only as necessary to meet performance requirements.
3. Install units with accurately aligned and tight joints manufacturer instructions. Apply hardware and adjust weather tight closure. Set sill members in a full bed of sealants and fillers.
4. Provide pulls and keyless locking device, lockable from inside only on each sliding panel.
5. Provide deadbolt and latchset at all exterior swinging doors, including house to garage doors, or as required by local codes.
6. Viewer: All main, or front entry doors shall be equipped with a wide angle viewer (180 degree) except where the occupant has a clear vision of the area outside the door without opening the door.
7. Weather stripping: All sliding, swinging doors and windows opening to the exterior or to unconditioned areas shall be fully weather stripped, gasketed or otherwise treated to limit air infiltration.

OVERHEAD DOOR SPRINGS
1. Spring must be contained with a restraint device to anchor the spring or any part thereof in the event it fractures.
2. Both the spring and the restraint devices must be identified as conforming to the requirements of the California Department of Housing and Community Development.

Division 9

Finishes

GYPSUM DRYWALL
General:
1. Gypsum board standard: ASTM C-840.
2. Comply with the following:
   A. CBC, Chapter 25.
   B. Fire resistant design manual, eleventh edition, gypsum association.
3. All gypsum wallboard at tubs to be installed in such a manner that there are not surfaces out of alignment with adjacent surfaces and the true plane of the wall is maintained.

Materials:
1. Exposed gypsum board: ASTM C-36.
2. Water-resistant gypsum backing board: ASTM C-630.
3. Rounded Corner Bread: Provide rounded corner bread except at windows and wardrobes.
4. Sound reduction: Where shown as "resilient", provide manufacturer's special type designed to reduce sound transmission type RC-1.
5. Acoustical sealant: non-drying, non-hardening, non-staining, non-bleeding, gumable sealant for concealed sealant for exposed applications.
6. Sound attention blankets: semi-grid mineral fiber without membrane.
7. Joint tape & compound: CBC standard 47-6.
8. Fasteners: 5d cooler nails, except 6d cooler nails where necessary for structural or fire-restrictive requirements. Other fasteners with ICC-ES approvals may be used.

Execution:
1. Taping: except as otherwise indicated, apply joint tape and joint compound at joints (both directions) between gypsum boards. Apply compound at accessory flanges, penetrations, fasteners heads and surface defects.
2. Joints: Treated joints, fastener heads, cut edges and penetrations in water-resistant backing board to comply with board manufacturer's directions.
3. Protection: Gypsum wallboard shall not be installed until weather protection for the installation is provided.
4. Edge Bearing: All edges and ends of gypsum wallboard shall occur on the framing members, except those edges and ends which are perpendicular to the framing members.
5. Gypsum board nailing shall be as follows: (Unless otherwise noted on plans) Fasteners shall be spaced not less than 3/8 inch from edges and ends of gypsum wall board. Apply fasteners in a manner that does not fracture paper face. The size and spacing of fasteners shall comply with UBC application edition, state and local codes.
   A. 1/2" and 5/8" type "X" gypsum board to receive 6d cooler nails at 7" O.C. to all studs, plates and blocking.
   B. Gypsum board attached to trusses at 24" O.C. shall have long dimension perpendicular to framing members.
6. Installation: Install board continuous behind tubs, showers, and under stairs, at all party, sound, and fire walls.
7. Fire Resistance: Provide type "X" where indicated and where required in fire-resistance rated assemblies.

TILEWORK
Scope:
1. Furnish and install tile, grout, mastic, mortar, sealer, etc., complete. Work shall be clean, plumb, level, except at areas intended to drain, true to line with consistent joints.

General:
1. Standards: apply to the work except as otherwise indicated.
   A. American National Standards Institute (ANSI), mortar and grout materials and installation standards.
   B. Standard specification for ceramic tile ANSI A137.1
2. Single-component sealants: ASTM C-920, Type S, Grade NS, use NT for use in joints in non-traffic areas.

Installation:
1. Tile on floor, slab or wood framed shall be installed per the Ceramic Tile Institute standards and the Tile Council of America.
2. Install mud set tile at counters, tubs and showers per the Ceramic Tile Institute and Tile Council of America Standards.
3. Provide waterproof membrane beneath tile over water resistant backing board as recommended by manufacturer and Ceramic Tile Institute and the Tile Council of America Standards at all areas subject to moisture and water (i.e., tubs and showers).

Materials:
1. Tile and grout as selected by Owner.
2. Installation of grouted tile flooring is not recommended over wood framed floor systems.

PAINTING:
Scope:
1. Provide painting work as indicated and specified, complete including preparation of surfaces other than those that are factory primed.

General:
1. Color Selection: Seven (7) days prior to beginning work, furnish Architect with color ships for surfaces other than those that are factory primed. Submit samples for Architect's review of color and texture only.

Workmanship:
1. Each coat shall be uniformly applied, well brushed out and free of running, streaks, runs, sags, or skips.
2. Paint finishes shall be cut sharply to line. Protect adjacent surfaces.
3. Mix and apply paint and stains in accordance with the manufacturer's instructions.
4. Hardware shall be masked or removed prior to painting or staining.
5. Subcontractor will be responsible for any damage resulting from overspray, and all necessary clean-up.
6. Semi-gloss paint to be roller or brush applied.

Preparation of Surfaces:
1. Surfaces shall be clean and dry, and in suitable condition for finish specified. Remove all oil, grease, bond breaking agents, dust, mill scale and efflorescence.
2. Cracks, holes, and knots shall be filled, sanded smooth, and sealed. Wood surfaces, except resawn wood, shall be sanded evenly smooth. Sanding dust shall be completely removed.
3. Trim and other finish work shall be back-painted prior to installation, to minimize inconsistent shrinkage.

Materials:
1. Mix, prepare, and store painting and finishing materials in accordance with manufacturer's directions.
2. Submit list of materials and manufacturers for Owner's and Architect's approval.
3. All materials shall be delivered to the site in sealed original manufacturer's containers.

Execution:
1. Preparation: Prepare cementitious surfaces of concrete, concrete block and similar materials to be painted by removing efflorescence, chalk, dust, dirt, grease and oils, and by roughing to remove glaze. Do not paint over surfaces where alkalinity or moisture content exceeds manufacturer's recommendations.
2. Seal wood required to be job-painted, prime edges, ends, face, undersides and backsides of counters, cases, cabinets, etc., use spar varnish for back priming where transparent finish is required.
3. Paneling: Back prime interior paneling only where masonry, plaster or other wet wall construction occurs on backside.
4. Ferrous metal: Clean ferrous surfaces which are not galvanized or shop-coated; remove oil, grease, loose dirt, mill scale and other foreign substances by solvent or mechanical cleaning. Touch-up shop-applied prime coats wherever damaged.
5. Non-ferrous metal: Clean galvanized surfaces free of oil and surface contaminants with non-petroleum based solvent.
6. Rough sawn and resawn surfaces to receive stain. DO NOT prime unless otherwise noted on plans.
7. Roof Flashings: Painting Sub-Contractor shall provide paint to match roofing color for painting roof flashings and vents. Painting of such flashings and vents shall be by Roofing Sub-Contractor.

EXTERIOR PLASTER
General:
1. Comply with the following:
   A. "Plaster/Metal Framing Systems/Lath Manual."
   B. California Lathing and Plastering Contractors Association recommendations.

Materials:
1. Plaster: Portland Cement Plaster, ASTM C150, Type I, II, III.
2. Lime: ASTM C-206.
3. Aggregates: Clean and graded from coarse to fine, ASTM C144-62 T.
4. Water: Potable.
5. Lath: Wire fabric over 15 lbs. paper or paper backed woven wire fabric.

ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

LICENSED ARCHITECT DOUGLAS ANDRESEN No. C 14504 Reg. 12-31-23 STATE OF CALIFORNIA

General Notes

N-2

Division 9 (continued)

Finishes

Execution:
1. Weather: Do not apply plaster when temperature is below 40 degrees F.
2. Expansion Joints: Use metal expansion joints as required to control cracking.
3. Corners: Use corner reinforcing at all corners, verify type with Architect.
4. Scratch Coat: Apply scratch coat with sufficient material and pressure to form good keys on lath. Allow the scratch coat to cure for 48 hours before applying brown coat.
5. Brown Coat: Apply brown coat to scratch coat, bring out grounds, straighten to a true surface, and leave tough to assure adequate bond for finish. Allow finish 48 hours for curing prior to finish coat.
6. Variation: Brown coat to have no greater variation than 1/2" in 5'-0".
7. Finish Coat: Apply finish coat of 1/8" minimum thickness.
8. Soffits: Use only expanded metal or ribbed metal lath at horizontal surfaced such as bottom of soffits, etc.
9. Coats: Use not less than three (3) coats when applied over metal lath and not less than 2 coats when applied over masonry.
10. Apply building paper and lath per manufacturer's recommendations, use 2 layers of Grade D paper minimum over wood based sheathing.
11. Weep Screed: Provide continuous galvanized stucco based screed per Section 2512.1.2 of the CBC by Plaster Sub-Contractor.
12. Finish: Exterior stucco to have a smooth float finish and shall be color-coated.

FLOORING
Resilient Flooring:
1. Scope:
   A. Furnish and install all resilient flooring material complete as scheduled.
   B. General Contractor shall coordinate Flooring Sub-Contractor with Framing and Concrete Contractors to ensure compatibility of adhesives and subfloor surface texture, materials, and preparation.
2. Installation: Install all work in strict accordance with manufacturer's written instructions and only by contractors approved by the manufacturer.
   A. Subfloors shall be clean, free of dust and perfectly dry, level, and smooth.
   B. Surfaces shall be primed as recommended by the manufacturer.
   C. Materials shall be applied in accordance with the manufacturer's instructions.
3. Materials:
   A. Vinyl sheeting, as selected by owner.
   B. Adhesives: As recommended by the manufacturer of the floor covering.
   C. Provide positive slope at tile sheets within showers and at floor towards floor drain.

LAMINATE PLASTIC FINISHES
1. Laminate plastic: Formica, Wilson art or Nevamar. 1/16th inch general purpose grade 10.
2. Application: Laminate plastic shall be installed in strict accordance with the manufacturer's instructions. Splashes shall be fully formed (U.N.O.) range cuts and counters shall be self-edged (U.N.O.)

SYNTHETIC COUNTER TOPS
1. Where indicated on interior elevations, shall be cultured marble or Corian with splash. Colors shall be selected by owner. All Pullman tops shall be installed per manufacturer's recommendations.

Division 10

Specialties

LOUVERS & VENTS
General:
1. Performance standard: For performance-rated louvers, provide units whose ratings have been determined in compliance with AMCA Standard 500.
2. SMACNA Standard: Comply with "Architectural Sheet Metal Manual" recommendations for fabrication, construction, and installation procedures.

Materials:
1. Galvanized sheet steel: ASTM A-653/A-653M-00, G90, Mill phosphatized not less than 16 gauge.
2. Cold-rolled sheet steel: ASTM A-1008, Class I, matte finish.
3. Louver screens: on inside face of exterior louvers, provide 1/4" square mesh galvanized steel wire mesh.

Execution:
1. Field measurements: verify size, location, and placement of louver units prior to fabrication, where possible.
2. Preassemble units in shop to greatest extent possible.
3. Metal finish: comply with NAAMM "Metal Finished Manual" to provide uniformly finished products.
4. Installation: Locate and place louver units plumb, level in proper alignment with adjoining work and in accordance with manufacturer's instructions.
5. Fastening: Use non-ferrous metal or galvanized anchors and inserts for exterior installation and elsewhere where required for corrosion resistance.
6. Weather Protection: Provide concealed gasket, flashing and joint fillers as indicated and as required to make installation water tight.
7. Attic ventilation: Enclosed attic spaces and enclosed roof rafters shall have cross ventilation for each separate space by ventilating openings protected against the entrance of rain. The net free ventilating area shall be not less than 1/150 of the area of the space ventilated, except that the area may be 1/300 provided at least 50 percent of the required ventilated area is provided by ventilators located in the upper portion of the space to be ventilated at least 3 feet above eave or cornice vents with the balance of the required ventilation provided by eave or cornice vents.
8. Ventilation: Provide all concealed under floor spaces with ventilation which provides not less than 1 square foot of vent area for each 150 square feet under floor area. Such openings shall be approximately equally distributed along the length of at least two opposite sides.

Mirrors:
1. Attachment: Mirrors shall be set in "J" metal at top of splash with a minimum of two clips at top.

Divisions 11, 12, 13, 14

Not Applicable to this Project

Division 15

Mechanical and Plumbing

HEATING
Scope:
1. Supply all labor, transportation, materials, etc. for installation of a complete heating and air conditioning system to operate according to the best practices of the trade including, but not limited to: mechanical units, ducts, registers, catwalks, grilles boots, vent pipes, dampers, combustion air, fans, ventilators, refrigerant lines, refrigerant, etc. All materials, work, etc. to comply with all requirements of all legally constituted public authorities having jurisdiction including all County and State ordinances. Furnish and install all equipment complete and operable. Verify all material and installation requirements and limitations at fire and sound assemblies.

Installation:
1. No alterations to the structural frame, diaphragms, connections or shear panels shall be made which would compromise the designed structural integrity of such elements without prior written approval from the Structural Engineer.
2. Fuel burning equipment located in garages and subject to mechanical damage from the normal vehicular path shall be protected as indicated in drawings and as required by C.M.C.
3. Provide high and low combustion air in accordance with manufacturer's requirements.
4. Ducts piercing wall between house living area and garage shall be 26 GA G.I. material in the garage sealed at the edges with no opening into the garage. 2019 C.M.C.
5. Appliances shall be accessible for inspection, service, repair and replacement without removing permanent construction.
6. Equipment regulated by the C.M.C. shall have an electrical disconnect within line of sight and a 120-volt receptacle located within 25-feet for service and maintenance purpose.

Materials:
1. Ducts: Constructed, installed and insulated per C.M.C.
2. Dampers: Provide approved automatic fire dampers of minimum 26 gauge corrosion resistant metal material with steel edges at all ductwork penetrating fire rated walls, floors or ceilings as required and allowed by the C.M.C. All fan systems exhausting air from the building envelope to the outside shall be provided with the backdraft dampers.

Calculations and Drawings:
1. Contractor to supply and submit to the building department, calculations and drawings for approval. Submit one (1) set to the Architect for review for conformance with the visual design concept prior to commencing work. Equipment shall comply with State energy requirements for efficiency. Duct work "R" value shall also comply with State energy requirements.

PLUMBING
Scope:
1. Supply all labor, transportation, materials, etc. for installation of complete plumbing system to operate according to the best practices of the trade and including, but not limited to: fixtures, hot and cold water piping, exhaust fuels, combustion air, gas piping, log lighters, drains, soil and vent piping, hot water heaters, pipe insulation, meters, valves, vaults, etc. All materials, work, etc., to comply with all requirements of all legally constituted public authorities having jurisdiction, including all County and State ordinances. Furnish and install plumbing work complete and operable, including trenching and backfilling. Verify all material and installation requirements and limitations at fire and sound assemblies.

General
1. Codes: Comply with the following:
   A. 2019 California Plumbing Code.
   B. 2019 California Mechanical Code.
   D. 2019 California Electrical Code.
   E. 2019 Title 24
   F. Local codes and ordinances.

Installation
1. Roughing-in shall be completed, tested and inspected as required by code before closing-in with other work.
2. Openings in pipes, drains, and fittings shall be kept covered during construction.
3. Provide solid backing for securing fixtures. All fixtures to be set level.
4. Provide cleanouts at ends of all lines and where required by codes.
5. Copper tubing shall be fully sweated to fittings. All copper pipe connections to ferrous piping shall be made with dielectric coupling or isolation flanges.
6. Black iron and galvanized steel pipe joints shall be made with approved pipe thread compound.
7. Provide shut-off valves at each fixture.
8. Provide condensate line at each F.A.U. location. Provide primary and secondary condensate line to an approved drainage receptacle at attic F.A.U. locations.
9. Provide cold water line with shut off valve to refrigerator space in recessed box or in cabinet immediately adjacent to refrigerator space.
10. All vents to lead outside air. Where practical locate all roof vents to rear side of ridges.
11. Provide water heater seismic restraints as required by local code.
12. Shower stalls must conform to requirements of C.P.C. 417 (1024 sq. in.)

Materials
1. Water piping:
   A. Copper tube for water piping shall have a weight of not less than copper water tube Type L. Exception: Type M copper tubing may be used for water piping when piping is above ground, and the normal maximum pressure does not exceed 100 pounds, and the working temperature does not exceed 210 degrees F.
   B. Water heater: with non-rigid water connections shall be strapped for lateral support.
2. Gas Piping:
   A. All pipe used for the installation of any gas piping shall be standard weight wrought iron or steel (black), yellow brass (containing not more than seventy-five (75) percent copper), or internally timed or equivalently treated copper or iron pipe size.
   B. All fittings used in connection with the above piping shall be of malleable iron or yellow brass (containing not more than seventy-five (75) percent copper), or internally timed or equivalently treated copper or iron pipe size.
3. Waste Piping:
   A. All waste piping which penetrates walls with 1 hour fire resistive materials applied shall be cast iron.
   B. Oatey waste and overflow fittings shall be used in lieu of access panel as per IAPMO file No. 1646.
4. Corrosive properties of soil: Follow all recommendations in the final soils report for all materials placed within or in proximity of soil as necessary.
5. Water heaters over 4 feet high with non-rigid water connections shall be secured to resist earthquakes, per C.M.C. requirements.
6. No gas piping shall be installed in or on the ground, under any building or structure. All exposed gas piping shall be kept at least 6 inches above any structure. The term "building or structure" shall include structures such as porches and steps, whether covered or uncovered, breezeways, roof porte-cocheres, roofed patios, carports, covered walks, covered driveways, and similar structures or appurtenances.
7. All hose bibs to have non-removable anti-siphon device.
8. Calculations and drawings: Contractor to supply and submit to the building department load calculations and drawings for approval prior to commencing work. Submit one (1) set to the Architect for review for conformance with the visual design concept prior to commencing work.

Execution:
1. Testing: Perform hydrostatic testing of completed conduit lines in accordance with local authorities having jurisdiction.
2. Valves: Perform operational testing of valves by opening and closing under water pressure to ensure proper operation.
3. Backfilling: Conduct backfilling operations of open-cut trenches closely following laying, jointing and bedding of pipe, and after initial inspection and testing are completed.
4. Combustion Air Vents: Combustion air vents and ducts shall be provided with minimum unobstructed combustion air openings equal to that set forth in Chapter 7 of C.M.C.
5. Fan or other exhaust systems exhausting air from the building to the outside shall be provided with backdraft dampers or automatic dampers to prevent air leakage.
6. Ducts shall be constructed, installed and insulated according to Chapter 6 of C.M.C. (Title 24, Part 4).
7. Setback Thermostat: Thermostatically controlled heating or cooling systems, except electric heat pumps, shall have an automatic thermostat with a clock mechanism which the building occupant can manually program to automatically set back the thermostat set point for at least 2 periods within 24 hours.
8. Water Heating System Insulation:
   A. Tank Wrapping: Storage type water heaters and storage and backup tanks for solar water heating systems shall be externally wrapped with insulation having an installed thermal resistance of R-12 or greater.
   B. Piping in unconditioned space leading to and from water heaters shall be insulated with an installed thermal resistance of R-4 or greater for the five feet of pipe closest to the water heater, or whatever shorter length is the unconditioned space.

Division 15 (continued)

Mechanical and Plumbing

9. Icemaker: Provide recessed plastic box in wall for water stub-out at refrigerator space for icemaker. Locate 6" above floor line.
10. Access Panel: Provide direct plumbing connection at tub/shower drain so that no access panel is required.
11. Equipment Locations: No mechanical equipment shall be installed on roofs or within side yards less than 7'-0" wide.
12. Clearances: Range hood, vent exhaust ducts and cabinet clearances shall be as per Ch. 8 of the CMC.
13. The sound levels of kitchen exhaust range hood fans shall not exceed 8.0 sones. Bathroom exhaust shall not exceed 6.5 sones.
14. Cleanouts: An approved, two-way cast iron cleanout, shall be provided at the front of each new single family residence prior to final inspection. Do not locate soil line cleanout or condensate lines within front porch or entry walk. Locate in an inconspicuous location.
15. All water heaters shall be vented for combustion air and shall be equipped with a pressure and temperature relief valve piped to within 6" of grade outside and shall be anchored or strapped to resist horizontal displacement due to earthquake motion. Strapping shall be at points within the upper one-third (1/3) and lower one-third (1/3) of its vertical dimensions. At the lower point, a minimum distance of four (4) inches above the controls with the strapping. Per California Plumbing Code, Section 510.5.
16. HVAC System: Sun-Contractor to follow plans for size and location of ducts, registers, and return air grilles. F.A.U. system shall be thermostatically controlled and properly sized with regards to the State Energy Ordinance Standards. Mechanical Contractor is responsible for all air balance adjusting of installed system.
17. Irrigation Pipe: Plumbing Sub-Contractor shall provide one 3/4 inch schedule 40 PVC pipe for future sprinkler system under driveway (Verify with Landscape Contractor). Pipe shall be installed by Concrete Sub-Contractor.
18. Roof Vents: Wherever possible, roof vents shall be ganged and centered to the back of the structure.
19. Maximum flow for shower heads is 1.8 gpm. For lavatory and sink faucets the maximum flow is 1.2 gpm at 60 psi. Maximum flush volume for water closets is 1.28 gpf. The flow rate must be marked on the valves.
20. "As-Builts": Plumbing Sub-Contractor to provide an "As-Built" drawing of the sewer line and cleanout locations for approval by the Building Inspector at the time of inspection (before covering) of the underground plumbing. The "As-Built" drawing must show the building footprint and the location of the line and the cleanouts must be fully dimensioned.
21. Showerheads must be certified by California Energy Commission and be marked with a flow rate of 1.8 gpm max.
22. Lavatory & Sink Faucets and tub spout diverters must be certified by California Energy Commission and be marked with a flow rate of 1.2 gpm at 60 psi.

Division 16

Electrical

ELECTRICAL
7. Electrical System Layouts are generally diagrammatic, location of outlets and equipment is approximate. Exact routing of wiring, locations of outlets to be governed by structural conditions and constructions. Wiring for equipment requiring maintenance and inspection to be readily accessible.
8. Scope: Supply all labor, transportation, materials, etc., for installation of complete electrical system to operate according to the best practices of the trade and including, but not limited to: fixtures, appliances, wiring, switches, outlets, television jacks, services, ground, temporary power, junction boxes, conduit, subpanels, etc. All work materials, etc. to comply with all requirements of all legally constituted authorities having jurisdiction, including all County and State ordinances. Furnish and install electrical work complete and operable. Verify all material and installation requirements and limitations at fire and sound assemblies.

General
1. All work shall be in full accordance with all codes, rules and regulations of Governing Agencies and shall comply with all requirements of the serving power and telephone companies.

Standards:
1. Electrical services: Underground the serving utility will provide and install all primary and secondary service raceways and conductrs including transformer pads and connections to the line side of all building main disconnects. Raceways, sized as designated by the service utility, shall be provided by the electrical contractor from each building main disconnect to the exterior building line for continuation by the servicing utility.
2. Work and equipment shall be in accordance with the best practices of the trade and conform to all local governing agencies.
3. Materials and equipment shall be U.L. approved.
4. Corrosive properties of soil: Follow all recommendations in the final soils report for all materials within or in proximity of soil as necessary.
5. Should a conflict arise between this specification, the drawings or another electrical specification issued as a part of these documents, the more stringent shall prevail.

Installation:
1. Provide separate circuits each for dishwasher, garbage disposal, refrigerator, washer, dryer, F.A.U. and microwave oven.
2. Switched outlets shall be 1/2 hot.
3. All equipment installed outdoors and exposed to weather shall be weatherproof.
4. Provide ground fault circuit interrupters, G.F.I., at all baths, garages, outdoor and wet area outlets.
5. Provide low voltage stub out for house numbers if local code requires illumination.
6. Kitchen and bathroom lighting shall be in accordance with State energy mandatory requirements.
7. Each conductor of every system shall be permanently tagged in compliance with O.S.H.A.
8. All conduit shall be installed concealed where physically possible. All exposed conduit shall be intermediate metal conduit or E.M.T. and installed parallel to or at right angles with the building walls. If viewed by the public, paint to match surface to which it is attached.
9. The complete electrical system shall be grounded in accordance with the presently adopted edition of the C.E.C., Art. #250.
10. Penetrations to fire-rated materials shall be restored to equal rating as required by local enforcing agency. Flame seal as manufactured by Nelson Electric or approved equal. All electrical system conductors shall be installed in approved raceways. Non-metallic, sheathed cable "Romex" is not approved for penetrations of fire-rated assemblies.
11. Use only competent and skilled personnel and perform all work, including aesthetic as well as electrical and mechanical aspects to standards consistent with the best practices of the trade.
12. All conduit only installations shall have a pull wire or rope.
13. No alterations to the structural frame, diaphragms, connections or shear panels shall be made which would compromise the designed structural integrity of such elements without prior written approval from the structural engineer.
14. Electrical panels, including mechanical equipment disconnects, require 30" wide, 36" deep and 75" high clear working space in front. Air conditioning equipment shall not be located in required path of bedroom egress. CEC Section 110-26: CBC 1026.
15. Exterior receptacles cannot be connected to a kitchen counter top GFCI protected receptacle. CEC Section 210-52(B)(2).
16. Bathroom receptacles must be connected to a 20 ampere branch circuit interrupters (GFCI). CEC Section 210-52(D).
17. All kitchen counter receptacles must be protected by ground fault circuit interrupters (GFCI). CEC Section 210.8(A)(6).
18. Verify and locate all outlets prior to installation of gypsum wallboard. Locate all switches and fixtures from finished floor per electrical plans and notes.

Materials:
1. Aluminum wire No. 6 AWG and smaller shall not be used in electrical wiring.
2. Switches: Silent type.
3. Interior outlets: Duplex type, 15A, 125 volt.
4. Exterior outlets: Single weatherproof type, G.F.I.
5. Outlets and pullboxes: Galvanized or shearardized.
6. Panel boxes: Circuit breaker type, recessed flush mounted, galvanized and prime coated with latch. Provide typewritten card identifying circuits.
7. Conduit, cable, wire: Per presently adopted edition of the C.E.C.
8. Fluorescent tubes and bulbs: Fill spectrum 3500K.
9. Recessed incandescent light fixtures: In the proximity of attic, ceiling or floor insulation shall be I.C. type.

Division 16 (continued)

Electrical

10. All materials shall be new and of the same manufacturer for each glass or group of equipment. Materials shall be listed and approved by Underwriter's Laboratories and shall bear the inspection label where subject to such approval. Materials shall meet with the approval of the Division of Industrial Safety and all governing bodies having jurisdiction. Materials shall be manufactured in accordance with applicable standards established by A.N.S.I., U.L., N.E.M.A., N.B.F.U. Install per manufacturer's recommendations.
11. Conductors shall be code grade, 600 volt class, copper, marked 24 inch along its length showing manufacturer's name, maximum allowage voltage and size. Conductors shall be type "THWN"- wet. Deliver the wire to the site in unbroken packages.
12. If aluminum feeder conductors are approved for substitution, copper only within units, and installed, final connections to vibrating equipment shall be copper only and all aluminum terminations shall be made using a "Hypress" tool or other manufacturer's recommendations. Provide anti-oxide compound on all aluminum terminations. No aluminum conductor smaller than #4 AWG.
13. House service: Size per requirements, minimum 60A, 1 inch diameter, 3 W service.

Execution:
1. Outdoor Protection: All equipment installed outdoors and exposed to weather shall be weather-proof.
2. Countertops: Receptacles in kitchen and bathrooms shall be installed above work top unless otherwise noted on plans.
3. Receptacles shall be installed vertically at 12"+ above floor. Electrical switches and boxes shall be plastic as per National Electric Code.
4. Wall switches to be 36" above floor to switch centerline.
5. Fans & Suspended Fixtures: Provide metal junction boxes with solid 2x backing where hanging fixtures and fans occur. Lighting fixture supplier to supply two (2) additional feet of chain and wiring at dining fixture and all other suspended fixtures.
6. GFCI: All receptacles in kitchen, bathrooms, garage, and at exterior shall be equipped with ground fault circuit interrupter. GFCI test button shall be located in Master Bathroom electrical outlet.
7. Grounding: Provide two (2) spaces of electrical grounding:
   A. Clamp at hose bib.
   B. One additional #4 bar 20'-0" long in footing at electric meter location for "UFER Ground".
8. Provide exhaust fans at al baths and laundry areas which are not capable of being exhausted by natural means. Fans shall be capable of producing one complete air change every twelve (12) minutes. Fans shall be switched separately from lights.
9. Fluorescent fixtures: Provide direct connections to all fluorescent fixtures.
10. Provide chimes in a central location or as indicated on the plans. Provide push button located at the front door.
11. Street Numbers: Install low voltage illuminated street numbers easily visible from the street (4 inches high). Verify exact location with Project Superintendent.
12. PVC Conduit in Footings: Electrical Sub-Contractor shall supply a separate 1" diameter capped PVC conduit for irrigation controller, CATV, and telephone underground feed. Conduit shall be installed by Concrete Sub-Contractor.
13. Required smoke detectors shall receive their primary power from the building wiring. Such wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection. Smoke detectors shall be equipped with a battery backup power source and shall be wired so that when one is activated, all are activated.

Colors and Design
1. Switch plates, covers, etc.: As selected by Owner.
2. Fixtures: As selected by Owner.

Fire warning system:
1. Smoke detectors and alarm system shall be hard-wired with battery back-up power and low battery signal and installed as required. Detectors shall be placed in corridors, adjacent rooms and sleeping rooms - per manufacturer's recommendations. Detectors shall be placed in close proximity to stairway when bedrooms are located on upper floor. All detectors shall be interconnected to sound a simultaneous alarm audible in all sleeping areas of the dwelling unit.

Meters:
1. Verify all requirements with governing utility company.

Electrical plans and calculations:
1. Shall be drawn and submitted by the Electrical Sub-Contractor to the building department for approval. Submit one (1) set to the Architect for review for conformance with the visual design concept. Electrical Sub-Contractor shall coordinate his drawings with the Architect's.

Division 17

Equipment Requirements

Mandatory requirements for the manufacture, construction, and installation of systems, equipment, and building components - State of California.

1. Any appliance for which there is a California standard established in the appliance efficiency regulations may be installed only if the Manufacturer has certified to the Commission that the appliance complies with the applicable standard for that appliance.
2. Controls for heat pumps with supplementary electric resistance heaters shall comply with the requirements of Section 112(b).
3. Any service water heating system or equipment may be installed only if the Manufacturer has certified that the system or equipment complies with the requirements of Section 113.
4. Any pool or spa heating system or equipment may be installed only if the Manufacturer has certified that the system or equipment complies with Section 114.
5. Any natural gas system or equipment listed below may be installed only if it does not have any continuously burning pilot light:
   (a) Fan type central furnaces.
   (b) Household cooking appliances.
   Exception: Household cooking appliances without an electrical supply voltage connection and in which each pilot consumes less than 150 btu/hr.
   (c) Pool heaters.
   (d) Spa heaters.
6. Any manufactured doors or windows or manufactured fenestration product may be installed only if the Manufacturer has certified to the Commission, or if an independent certifying organization approved by the Commission has certified, that the product complies with all applicable requirements of Section 116.
7. Joints and other openings in the building envelope that are potential sources of air leakage shall be caulked, gasketed, weather-stripped, or otherwise sealed to limit infiltration and exfiltration. Drop ceilings that are a component of the building envelope, including but not limited to those between conditioned and unconditioned spaces that create a vented attic space above, shall be caulked, gasketed, or otherwise sealed to limit infiltration and exfiltration.
8. Any insulation of the type and form listed in Section 118 may be installed only if the Manufacturer has certified that the insulation complies with the California quality standards for insulating material.
9. Any automatic time switch control device, occupant-sensing device, automatic daylighting control device, lumen maintenance control device, or interior photocell sensor device may be installed only if the Manufacturer has certified to the Commission that the device complies with all applicable requirements of Section 119, and if the device is installed in compliance with Subsection 119(h).

Division 18

Mandatory Measures (MF-1R)

Lowrise residential buildings subject to the standards must contain these measures regardless of the compliance approach used. Items marked with an asterisk (*) may be superseded by more stringent compliance requirements listed on the Certificate of Compliance. When this checklist is incorporated into the permit documents, the features noted shall be considered by all parties as binding minimum component performance specifications for the mandatory measures whether they are shown elsewhere in the documents or on this checklist only.

Building Envelope Measures:
*150(a): Minimum R-19 ceiling insulation
150(b): Loose fill insulation manufacturers labeled R-value.
*150(c): Minimum R-13 wall insulation in framed walls (does not apply to exterior mass walls).
*150(d): Minimum R-13 raised floor insulation in framed floors; Minimum R-8 in concrete raised floors.
118: Insulation specified or installed meets CEC quality standards. Indicate type and form.
116-17: Fenestration products, exterior doors and infiltration/exfiltration controls
   a. Doors and windows between conditioned and unconditioned spaces designed to limit air leakage.
   b. Manufactured fenestration products have label with certified U-value, and infiltration certification.
   c. Exterior doors and windows weather-stripped; all joints and penetration caulked and sealed.
150(e): Installation of fireplaces, decorative gas appliances and gas logs
1. Masonry and factory-built fireplaces have:
   a. Closeable metal or glass doors covering the entire opening of the fire box which can be closed when the fire is burning.
   b. A combustion air intake to draw air from the outside of the building directly into the firebox, which is at least six (6) sq. inches in area and is equipped with a readily accessible, operable and tight fitting damper or combustion air control device.
   c. Flue damper with readily accessible control.
2. No continuous burning gas pilots allowed.
150(g): Vapor barriers mandatory in climate zones 14 and 16 only.
150(f): Special infiltration barrier installed to comply with Section 151 meets CEC quality standards.
150(i): Slab edge insulation - water absorption rate no greater than 2.0 perm.inch.

Space Conditioning, Water Heating and Plumbing System Measures:
110-13: HVAC equipment , water heaters, showerheads and faucets certified by the CEC.
150(i): Pipe and tank insulation
1. Indirect hot water tanks (e.g., unfired storage tanks or backup solar hot water tanks) have insulation blanket (R-12 or greater) or combined interior/exterior insulation (R-16 or greater).
2. First 5 feet of pipes closest to water heater tank, non-recirculation systems, insulated (R-4 or greater).
3. All buried or exposed piping insulated in re-circulation sections of hot water system.
4. Cooling system piping below 55 degrees insulated.
5. Piping insulated between heating source and indirect hot water tank.
150(m): Ducts and fans
1. Ducts constructed, installed and sealed to comply with CMC Chapter 6; ducts insulated to a minimum installed value of R-6 or ducts enclosed entirely within conditioned space.
2. Exhaust fan systems have back draft or automatic dampers.
3. Gravity ventilating systems serving conditioned space have either automatic or readily accessible, manually operated dampers.
114: Pool and spa heating systems and equipment
1. System is certified with 78% thermal efficiency , on-off switch, weatherproof operating instructions, no electric resistance heating and no pilot light.
2. System installed with:
   a. At least 36 inches pipe between filter and heater for future solar heating.
   b. Cover for outdoor pools or outdoor spa.
3. Pool system has directional inlets and a circulation pump time switch.
115: Gas-fired central furnace, pool heater, spa heater or household cooking appliance have no continuously burning pilot light (exception: non-electrical cooking appliance with pilot <150 btu/hr).

Design Criteria

Soils
Foundation engineering has been predicated on data and recommendations contained in the soils report (when available). Report is considered part of the calculations and construction documents and is to be adhered to in all of its recommendations and requirements. Verify minimum foundation depth, width, reinforcing steel and additional expansive soil requirements with valid soils report and if they are any more restrictive, then they shall supersede the Andresen Architecture, Inc. minimums.

Lateral Loads & Design Loads
(Refer to Structural Calculations for Loading Conditions)

ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

LICENSED ARCHITECT DOUGLAS ANDRESEN No. C 14504 Reg. 12-31-21 STATE OF CALIFORNIA

General Notes

N-3

May 18, 2022

SENT VIA EMAIL

Gloriane (Glo) Conover
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MODEL FIRE FLOW UPDATE – 13063 VIA ALIA, APN 269-470-030, GRID 42028, ID EL SOBRANTE, SEC. 29, T3S, R5W, PRESSURE ZONE 1515

Due to site and drainage constraints or drought conditions, empirical fire flow data could not be obtained for the subject location. Theoretical fire flow rates and pressures in this area were evaluated by using Western Municipal Water District's (Western) hydraulic model.

At the subject location the model results suggest a maximum static pressure of 102 psi based on ground elevation of 1,254'. The residual pressure for fire flow not less than 500 gpm is 95 psi from the nearest standard fire hydrant located at the frontage of 13038 Via Tuscany (APN: 269-470-048) as shown on the attached exhibit.

Under Western's design criteria, the flow in a 8-inch diameter pipeline in this location must be limited to 1,174 gpm. Any flow exceeding this rate may result in line damage.

Please be advised the hydraulic data provided are estimates based on various assumptions that may or may not occur. The design engineer should use sound judgement to apply this information.

Please contact Development Services at (951) 571-7100 should you have any questions.

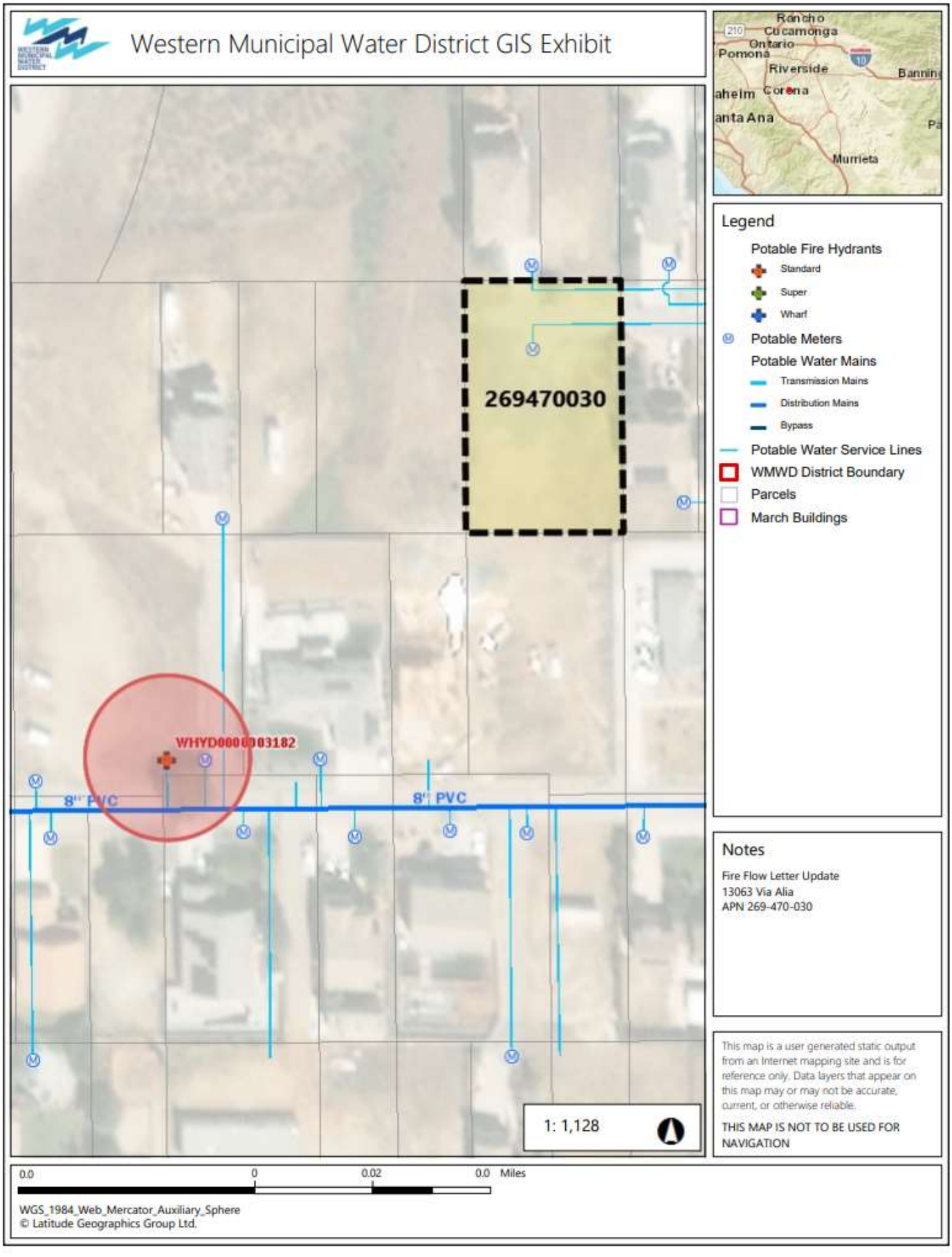
Tom Scott

THOMAS G. SCOTT, P.E.
Principal Engineer

TGS:tp:bp:sc

Attachments: Western Municipal Water District GIS Exhibit
Model Fire Flow letter dated May 21, 2021

cc: John Russo, jrusso.ent@gmail.com


Western Municipal Water District GIS Exhibit
Rancho Cucamonga
Ontario
Pomona
Riverside
Corona
Murrieta
269470030
WHYD0000003182
8" PVC
8" PVC
Legend
Potable Fire Hydrants
Standard
Super
Wharf
Potable Meters
Potable Water Mains
Transmission Mains
Distribution Mains
Bypass
Potable Water Service Lines
WMWD District Boundary
Parcels
March Buildings
Notes
Fire Flow Letter Update
13063 Via Alia
APN 269-470-030
This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION
1: 1,128
0.0 0 0.02 0.0 Miles
WGS_1984_Web_Mercator_Auxiliary_Sphere
© Latitude Geographics Group Ltd.

May 21, 2021

Riverside County Fire Department
2300 Market Street, Suite 150
Riverside, CA 92501

MODEL FIRE FLOW
APN: 269-470-029, -048, & 269-201-016, -13; GRID 42028; ID EL SOBRANTE, SEC. 29, T3S, R5W; PRESSURE ZONE 1515

Due to site and drainage constraints or drought conditions, empirical fire flow data could not be obtained for the subject location. Theoretical fire flow rates and pressures in this area were evaluated by using Western Municipal Water District's (Western) hydraulic model.

At the subject location the model results suggest a maximum static pressure of 102 psi based on ground elevation of 1,254'. The residual pressure for fire flow not less than 500 gpm is 95 psi from the nearest standard fire hydrant located at the frontage of 13038 Via Tuscany (APN: 269-470-048) as shown on the attached exhibit.

Under Western's design criteria, the flow in a 8-inch diameter pipeline in this location must be limited to 1,174 gpm. Any flow exceeding this rate may result in line damage.

Please be advised the hydraulic data provided are estimates based on various assumptions that may or may not occur. The design engineer should use sound judgement to apply this information.

Please contact Development Services at (951) 571-7100 should you have any questions.

Tom Scott

Thomas G. Scott, P.E.
Principal Engineer

Attachment: Western Fire Flow Letter GIS Exhibit

CC: John A. Russo, J. A. Russo Enterprises, Inc., P.O. Box 77816, Corona, CA 92877

Sent Via Email: jrusso@e-equities.com

Fire Flow
APN: 269-470-029, -048, & 269-201-016
5/21/21